TK25

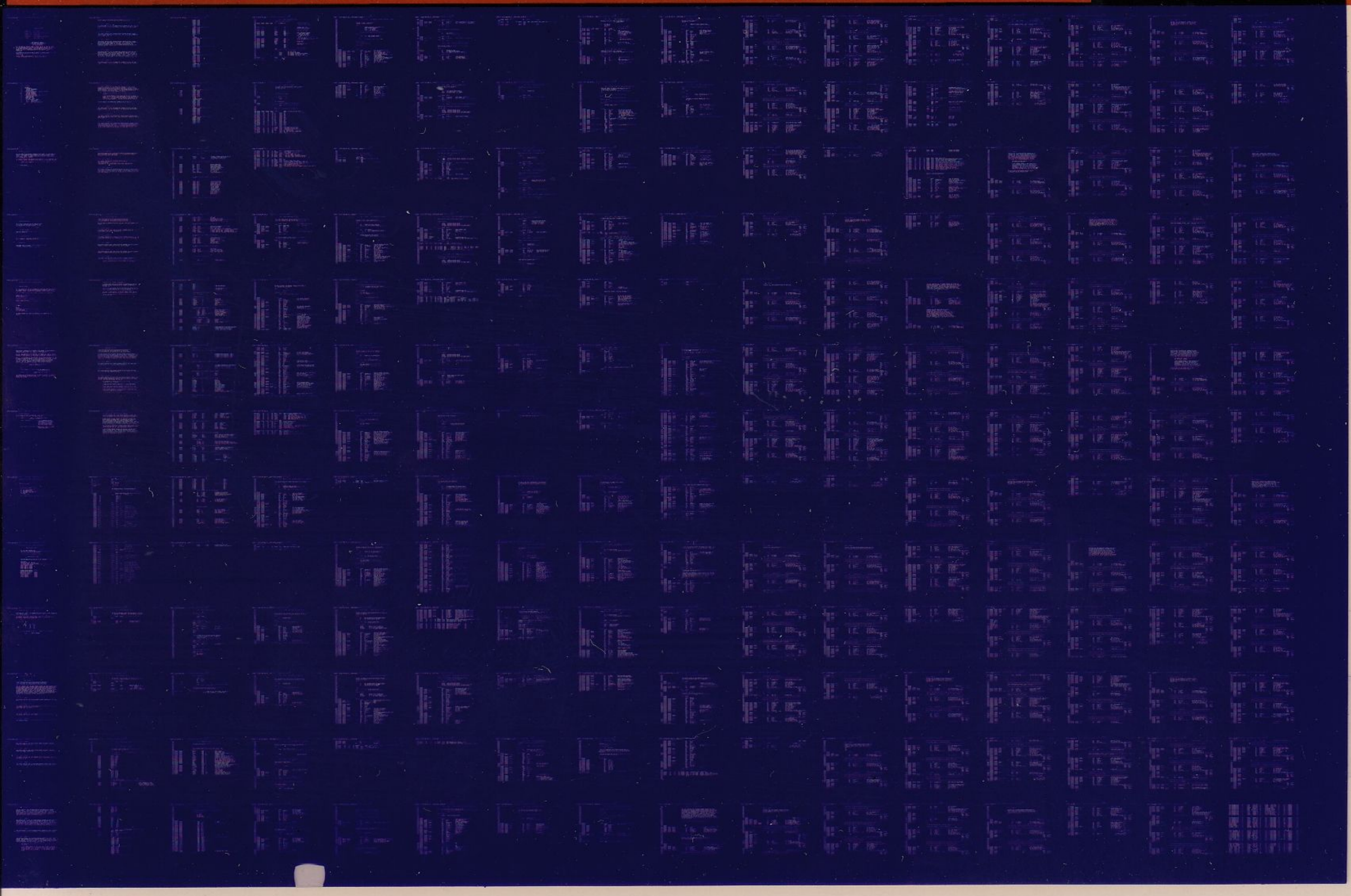
TK25 FRT END FUNC #3

CZTKGAO

AH-T280A-MC

FICHE 01 OF 02

JUL 1984
digital
Made In USA



TKZ5

TKZ5 FRT END FUNC #3
CZTKGA0

AH-T780A-MC
FICHE 02 OF 02

JUL 1984
digital
Made In USA

.REM\

IDENTIFICATION

PRODUCT ID:	AC-T779A-MC
PRODUCT TITLE:	CZTKGA TK25 FRT END FUNC #3
PRODUCT DATE:	MARCH, 1984
DEPARTMENT:	TAPE DIAGNOSTIC ENGINEERING
AUTHOR:	DICE SYSTEMS, INC.

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1.0 ABSTRACT

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

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

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

1.1 REVISION HISTORY

NEW RELEASE APRIL 1984

2.0 REQUIREMENTS

2.1 HARDWARE REQUIREMENTS

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

2.1.1 OPTIONAL HARDWARE -

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

2.2 SOFTWARE REQUIREMENTS

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

2.3 PREREQUISITES

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

3.0 OPERATING INSTRUCTIONS - OPERATOR COMMANDS

3.1 OPERATOR COMMANDS

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

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

```
CHMDLE0 XXDP+ DL MONITOR
BOOTED VIA UNIT 0
28K NON-UNIBUS SYSTEM

ENTER DATE <DD-MMM-YY>: 29-JAN-82
                        ---------
RESTART ADDRESS: 152010
THIS IS XXDP+ TYPE "H" OR "H/L" FOR HELP.

.R CZTKGA
 - ------
CZTKGA.BIC

DRS-E0
CZTKG-A-0
CZTKGA TK-25 FRT END FUNC #3 UNIT IS TK25
RSTRT ADR 147642
DR>START/FLAG:PNT:HOE
   ------------------
```

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

3.2 HARDWARE PARAMETERS

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

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

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

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


UNIT 0

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

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

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

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

4.0 OPERATING INSTRUCTIONS - SAMPLE PRINTOUTS

4.1 SUCCESSUL RUN EXAMPLES

4.1.1 SUCCESSFUL RUN EXAMPLE - CZTKG -

```
TST: 001 SPACE RECORDS TEST
TST: 002 REREADS TEST
TST: 003 WRITE DATA RETRY TEST
TST: 004 WRITE TAPE MARK TEST
CZTKG EOP 1
    0 TOTAL ERRS
```

NOTE: PROGRAM NOW STARTS OVER AGAIN AT TEST 1

4.2 OPERATING INSTRUCTIONS - SAMPLE ERROR MESSAGES

ERROR MESSAGE EXAMPLE 1

```
TST: 001 SPACE RECORDS TEST
CZTKG HRD ERR  00120 ON UNIT 00 TST 001 SUB 003 PC: 025214
TAPE NOT AT BOT AFTER REWIND COMMAND

 EXPD: 002022 RECV: 002020 XOR: 000002
```

ERROR MESSAGE EXAMPLE 2

```
CZTKG HRD ERR 00122 ON UNIT 00 TST 001 SUB 003 PC: 025332
TSSR NOT CORRECT AFTER POSITION (SPACE) COMMAND

TSSR=100306
TSSR BITS SET: SC, SSR, OFL
TERMINATION CODE = FUNCTION REJECT
*****CHECK CABLES BETWEEN CONTROLLER AND TRANSPORT*****
PACKET ADDRESS =030240
PACKET WORD #0 =140410
PACKET WORD #1 =000001
PACKET WORD #2 =000000
PACKET WORD #3 =000000

MESSAGE BUFFER ADDRESS  =030130
MESSAGE BUFFER CONTENTS:
MESSAGE BUFFER HEADER   =101021
DATA FIELD LENGTH       =000012
RESIDUAL BYTE COUNTER   =000000
XSTAT0 CONTENTS         =000012
XSTAT1 CONTENTS         =000000
XSTAT2 CONTENTS         =001000
XSTAT3 CONTENTS         =000040
```

5.0 PROGRAM RUN TIMES

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

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

5.1 RUN TIMES - CZTKG

TEST NUMBER	N/I SECS.	DEF SECS.
1	65	65
2	130	130
3	120	120
4	35	35

THE TIMES REQUIRED TO RUN TESTS 1 THROUGH 4 IN ONE COMMAND:

Q.V.	5 MINS 50 SECONDS
DEFAULT	5 MINS 50 SECONDS

6.0 TEST DESCRIPTIONS - CZTKG

6.1 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.

6.1.1 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.

6.1.2 TEST 1, SUBTEST 2: -

THIS SUBTEST 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.

6.1.3 TEST 1, SUBTEST 3: -

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

6.1.4 TEST 1, SUBTEST 4: -

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

6.1.5 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.).

6.1.6 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).

6.1.7 TEST 1, SUBTEST 7: -

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

6.1.8 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.

6.2 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.

6.2.1 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.

6.2.2 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 STORED BY THE COMMAND CONTAINS SWAPPED BYTES.

6.2.3 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.

6.2.4 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 CONTAINS SWAPPED BYTES.

6.2.5 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).

6.2.6 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).

6.2.7 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.) 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.

6.2.8 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.

6.2.9 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.

6.2.10 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.

6.2.11 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).

6.2.12 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).

6.2.13 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.

6.2.14 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 RE
VERSE SPACE FORWARD)
ISSUED WHEN THE TAPE IS POSITIONED AT BOT CAUSES FUNCTION REJECT TERMINATION WITH THE NONEXECUTABLE FUNCTION (NEF) ERROR BIT SET.

6.2.15 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.

6.3 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.

6.3.1 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.

6.3.2 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.

6.3.3 TEST 3, SUBTEST 3: -

THIS SUBTEST VERIFIES THAT A WRITE DATA RETRY COMMAND WITH SW8=0 TERMINATES PROPERLY AND WRITES CORRECT DATA ON TAPE (THE WRITTEN RECORD IS READ AND CHECKED). VARIOUS BYTE COUNTS AND DATA PATTERNS ARE USED.

6.3.4 TEST 3, SUBTEST 4: -

THIS SUBTEST VERIFIES THAT A WRITE DATA RETRY COMMAND WITH SW8=1 TERMINATES PROPERLY AND WRITES CORRECT DATA ON TAPE (THE WRITTEN RECORD IS READ AND CHECKED). VARIOUS BYTE COUNTS AND DATA PATTERNS ARE USED.

6.3.5 TEST 3, SUBTEST 5: -

THIS SUBTEST VERIFIES THAT A WRITE DATA RETRY COMMAND IS PERFORMING THE ERASE PART OF THE OPERATION BY COMPLETING THE FOLLOWING 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 SHOULD 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.

6.4 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.

6.4.1 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.

6.4.2 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.

6.4.3 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 MARKS TERMINATE WITH TAPE STATUS ALERT AND 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 THE DEVICE POSITIONED JUST BEFORE THE FIRST 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  CZTKG,A,0,655.,0
002000                          L$NAME::                ;DIAGNOSTIC NAME
002000  103                             .ASCII /C/
002001  132                             .ASCII /Z/
002002  124                             .ASCII /T/
002003  113                             .ASCII /K/
002004  107                             .ASCII /G/
002005  000                             .BYTE   0
002006  000                             .BYTE   0
002007  000                             .BYTE   0
002010                          L$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$HPCP::                ;POINTER TO H.W. QUES.
002016  065460                          .WORD   L$HARD
002020                          L$SPCP::                ;POINTER TO S.W. QUES.
002020  065620                          .WORD   L$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$LADP::                ;DIAG. END ADDRESS
002026  066026                          .WORD   L$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$DTP::                 ;PTR. TO DISPATCH TABLE
002040  066012                          .WORD   L$DISPATCH
002042                          L$PRIO::                ;DIAGNOSTIC RUN PRIORITY
002042  000000                          .WORD   0
```

PROGRAM HEADER

```
002044                          L$ENVI::                ;FLAGS DESCRIBE HOW IT WAS SETUP
002044  000000                          .WORD   0
002046                          L$EXP1::                ;EXPANSION WORD
002046  000000                          .WORD   0
002050                          L$MREV::                ;SVC REV AND EDIT #
002050     003                          .BYTE   C$REVISION
002051     003                          .BYTE   C$EDIT
002052                          L$EF::                  ;DIAG. EVENT FLAGS
002052  000000                          .WORD   0
002054  000000                          .WORD   0
002056                          L$SPC::
002056  000000                          .WORD   0
002060                          L$DEVP::                ; POINTER TO DEVICE TYPE LIST
002060  003334                          .WORD   L$DVTYP
002062                          L$REPP::                ;PTR. TO REPORT CODE
002062  023066                          .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  022000                          .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  021770                          .WORD   L$PROT
002114                          L$TEST::                ;TEST NUMBER
002114  000000                          .WORD   0
002116                          L$DLY::                 ;DELAY COUNT
002116  000000                          .WORD   0
002120                          L$HIME::                ;PTR. TO HIGH MEM
002120  000000                          .WORD   0
```

```
                                .SBTTL  DEFAULT HARDWARE P-TABLE

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

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

```
                                .SBTTL  SOFTWARE P-TABLE

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

002134  000000          TRANSTST::      .WORD   0       ;ENABLE RAM DUMP IF =1
002136  000000          NOITS::         .WORD   0       ; INHIBIT ITERATION OPTION.
                                                        ; ... 0 = ITERATE.
                                                        ; ...NZ = INHIBIT ITERATE.
002140  000031          LERRMAX::       .WORD   25.     ; LOCAL (PER TEST) ERROR LIMIT
002142  000310          GERRMAX::       .WORD   200.    ; GLOBAL (PER UNIT) ERROR LIMIT
002144                          ENDSW
002144                  L10001:
```

```
812
819                                     .SBTTL  GLOBAL EQUATES SECTION
824
830
831
832
833                                     .SBTTL  GLOBAL EQUATES SECTION
834
835                                 ;++
836                                 ; THE GLOBAL EQUATES SECTION CONTAINS PROGRAM EQUATES THAT
837                                 ; ARE USED IN MORE THAN ONE TEST.
838                                 ;--
839
843 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
844
845 002144                              KT11    ..      ;DEFINE MEMORY MANAGEMENT REGISTERS
                                .SBTTL  MEMORY MANAGEMENT DEFINITIONS
                                ;*KT11 VECTOR ADDRESS
                000250          MMVEC=  250
                                ;*KT11 STATUS REGISTER ADDRESSES
                177572          SR0=    177572
                177574          SR1=    177574
                177576          SR2=    177576
                172516          SR3=    172516
                                .IF NB
                                ;*USER "I" PAGE DESCRIPTOR REGISTERS
                                UIPDR0= 177600
                                UIPDR1= 177602
                                UIPDR2= 177604
                                UIPDR3= 177606
                                UIPDR4= 177610
                                UIPDR5= 177612
                                UIPDR6= 177614
                                UIPDR7= 177616
                                .IF NB
                                ;*USER "D" PAGE DESCRIPTOR REGISTORS
                                UDPDR0= 177620
                                UDPDR1= 177622
                                UDPDR2= 177624
                                UDPDR3= 177626
                                UDPDR4= 177630
                                UDPDR5= 177632
                                UDPDR6= 177634
                                UDPDR7= 177636
                                .ENDC
                                ;*USER "I" PAGE ADDRESS REGISTERS
```

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

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

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

                        ;
                        ; SOME GENERAL EQUATES.
                        ;

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

                        ;+
                        ;BIT DEFINITIONS FOR TSSR REGISTER
                        ;-

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

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

100000                  XSOTMK= BIT15                   ;TAPE MARK DETECTED
040000                  XSORLS= BIT14                   ;RECORD LENGTH SHORT
020000                  XSOLET= BIT13                   ;LOGICAL END OF TAPE
010000                  XSORLL= BIT12                   ;RECORD LENGTH LONG
004000                  XSOWLE= BIT11                   ;WRITE LOCK ERROR
002000                  XSONEF= BIT10                   ;NON EXECUTABLE FUNCTION
001000                  XSOILC= BIT9                    ;ILLEGAL COMMAND
000400                  XSOILA= BIT8                    ;ILLEGAL ADDRESS
000200                  XSOMOT= BIT7                    ;TAPE IN MOTION
000100                  XSOONL= BIT6                    ;TRANSPORT ON LINE
000040                  XSOIE=  BIT5                    ;INTERRUPT ENABLE
000020                  XSOVCK= BIT4                    ;VOLUME CHECK BIT
000010                  XSOPED= BIT3                    ;PHASE ENCODED DRIVE
000004                  XSOWLK= BIT2                    ;WRITE LOCKED
000002                  XSOBOT= BIT1                    ;BEGINNING OF TAPE
000001                  XSOEOT= BIT0                    ;END OF TAPE


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

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

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

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

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


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

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

                        ;+
                        ;
                        ;DEVICE REGISTER OFFSETS
                        ;
```

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

```
1021    000117                  RMMSGEND= 117                           ;MESSAGE BUFFER END RAM ADDRESS
1022                            ;+
1023                            ;
1024                            ;REGISTER DEFINITIONS IN THE MESSAGE BUFFER
1025                            ;
1026                            ;-
1027
1028    000006                  XST0==  6                               ;EXTENDED STATUS REGISTER 0 (WORD 4)
1029    000010                  XST1==  8.                              ;EXTENDED STATUS REGISTER 1 (WORD 5)
1030    000012                  XST2==  10.                             ;EXTENDED STATUS REGISTER 2 (WORD 6)
1031    000014                  XST3==  12.                             ;EXTENDED STATUS REGISTER 3 (WORD 7)
1032    000016                  XST4==  14.                             ;EXTENDED STATUS REGISTER 4 (WORD 8)
1033
1034
1035                            ;+
1036                            ;
1037                            ;OFFSETS TO WORD LOCATIONS IN PACKET DEFINITIONS
1038                            ;
1039                            ;-
1040
1041    000002                          PKLOW   = 2                     ;LOW ORDER CHARACTERISTIC DATA POINTER
1042    000004                          PKHI    = 4                     ;HIGH ORDER CHARACTERISTIC DATA POINTER
1043    000006                          PKBCNT  = 6                     ;NUMBER OF BYTES IN DATA PACKET
1044
1045    000010                          EXBCNT=10                       ;NUMBER OF BYTES IN EXTENDED DATA PACKET
1046
1047                            ;+
1048                            ;DATA PACKET OFFSETS FOR WRITE SUBSYTEM COMMAND
1049                            ;-
1050    000000                          BSEL0   = 0                     ;BYTE 0
1051    000001                          BSEL1   = 1                     ;BYTE 1
1052    000002                          SEL2    = 2                     ;WORD 2
1053    000004                          SELDATA = 4                     ;WORD 3
1054
1055                            ;+
1056                            ;BSEL0 SELECT CODES FOR WRITE SUBSYSTEM COMMAND
1057                            ;-
1058    000000                  PW.NOP          = 0                     ;NO-OP
1059    000001                  PW.RDRAM        = 1                     ;READ RAM
1060    000002                  PW.WTRAM        = 2                     ;WRITE RAM
1061    000003                  PW.RFIFO        = 3                     ;READ FIFO
1062    000004                  PW.WFIFO        = 4                     ;WRITE FIFO
1063    000005                  PW.RDSTAT       = 5                     ;READ STATUS
1064    000006                  PW.WCTL         = 6                     ;WRITE TAPE CONTROL
1065    000007                  PW.WFMT         = 7                     ;WRITE TAPE FORMAT
1066    000010                  PW.WMISC        = 10                    ;WRITE MISCELLANEOUS
1067    000011                  PW.WNPR         = 11                    ;WRITE NPR CONTROL
1068    000020                  PW.D22          = 20                    ;DO MICROTEST 22
1069    000021                  PW.D11          = 21                    ;DO MICROTEST 11
1070    000022                  PW.D13          = 22                    ;DO MICROTEST 13
1071    000023                  PW.NO1311       = 23                    ;DISABLE MICROTEST 11 AND 13
1072    000024                  PW.RDEXT        = 24                    ;READ EXT. TAPE STATUS (NOT SUPPORTED BY ALL TRANSPO
RTS
1073
1074                            ;+
1075                            ;BSEL1 CODES FOR WRITE TAPE CONTROL
1076                            ;-
1077    000200                  WC.IFAD         = BIT7                  ;IFAD - FORMATTER ADDRESS
```

```
1078        000100          WC.IOTAD        = BIT6                  ;ITAD0  - TRANSPORT ADDRESS BIT 0
1079        000040          WC.I1TAD        = BIT5                  ;ITAD1  - TRANSPORT ADDRESS BIT 1
1080        000020          WC.I5RESV       = BIT4                  ;IRESV5 - RESERVED #5
1081        000010          WC.IREW         = BIT3                  ;IREW   - REWIND
1082        000004          WC.IRWU         = BIT2                  ;IRWU   - REWIND AND UNLOAD
1083        000002          WC.IFEN         = BIT1                  ;IFEN   - FORMATTER ENABLE
1084        000001          WC.IGO          = BIT0                  ;GO
1085
1086                        ;+
1087                        ;BSEL1 CODES FOR WRITE FORMAT
1088                        ;-
1089        000200          WF.IHISP        = BIT7                  ;IHISP  - HIGH SPEED
1090        000100          WF.IWRT         = BIT6                  ;IWRT   - WRITE
1091        000040          WF.IREV         = BIT5                  ;IREV   - REVERSE
1092        000020          WF.IWFM         = BIT4                  ;IWFM   - WRITE FILE MARK
1093        000010          WF.IEDIT        = BIT3                  ;IEDIT  - EDIT
1094        000004          WF.IERASE       = BIT2                  ;IERASE - ERASE
1095        000002          WF.I3RESV       = BIT1                  ;IRESV3 - RESERVED #3
1096        000001          WF.I4RESV       = BIT0                  ;IRESV4 - RESERVED #4
1097
1098
1099                        ;+
1100                        ;BSEL1 CODES FOR WRITE MISCELLANEOUS SUBCOMMAND
1101                        ;-
1102        000200          MS.EXT          = BIT7                  ;INVERT SENSE OF EXTENDED FEATURES SWITCH
1103        000020          MS.RSFIFO       = BIT4                  ;RESET FIFO AND INPUT PARITY ERRORR
1104        000010          MS.RSTAPE       = BIT3                  ;RESET TAPE STATUS IN 2 FLIP-FLOPS
1105        000006          MS.ATTN         = BIT2!BIT1             ;ATTENTION TRIGGER FIELD
1106        000001          MS.RSD          = BIT0                  ;RESET TIMER A,B THEN DELAY TIMES IN SEL2
1107                        ;+
1108                        ; MS.ATTN SUBCODES
1109                        ;-
1110        000000                  MSA.NOP = 0*2                   ;NO-OP (NOTHING TRIGGERED)
1111        000002                  MSA.VOL = 1*2                   ;SIMULATE ON-LINE/OFF-LINE TRANSISTION
1112        000004                  MSA.NRAM= 2*2                   ;FORCE NON-FATAL RAM ERROR (FORCES ERRCODE 54)
1113        000006                  MSA.FRAM= 3*2                   ;FORCE FATAL RAM ERROR (CAUSES SCE TO SET)
1114                        ;+
1115                        ; WRITE SUBSYSTEM WRITE NPR BSEL1 BIT DEFINITIONS
1116                        ;-
1117        000200          NP.IR           = BIT7                  ;INTERRUPT REQUEST (0-1 TRANSITION)
1118        000100          NP.OUT          = BIT6                  ;TAPE DATA DIRECTION OUT (0= IN)
1119        000040          NP.LOOP         = BIT5                  ;ENABLE TRANSPORT LOOPBACK
1120        000020          NP.WRP          = BIT4                  ;WRITE CORRECT PARITY (SET=0 TO WRITE WRONG)
1121                        ;+
1122                        ; READ STATUS MESSAGE BUFFER BIT DEFINITIONS
1123                        ;-
1124
1125        000200          S2.DIM          = BIT7                  ;WORD #9 BYTE 2 DATA IN MISS
1126        000100          S2.ILW          = BIT6                  ;               ILW H
1127        000040          S2.OUTRDY       = BIT5                  ;               OUT RDY H
1128        000020          S2.INRDY        = BIT4                  ;               IN RDY H
1129        000010          S2.ATIMR        = BIT3                  ;               TIMER A FLAG H
1130        000004          S2.BTIMR        = BIT2                  ;               TIMER B FLAG H
1131        000003          S2.UNDEF        = BIT1+BIT0             ;(UNDEFINED)
1132        100000          S1.PARIN        = BIT15                 ;WORD #8 BYTE 1 PARIN H
1133        040000          S1.I2RESV       = BIT14                 ;               IRESV2
1134        020000          S1.I1RESV       = BIT13                 ;               IRESV1
```

TK-25 REGISTER AND PACKET DEFINITIONS

```
1135    010000          S1.IEOT     = BIT12         ;               IEOT L
1136    004000          S1.IIDENT   = BIT11         ;               IIDENT H
1137    002000          S1.ICER     = BIT10         ;               ICER H
1138    001000          S1.IFMK     = BIT9          ;               IFMK H
1139    000400          S1.IHER     = BIT8          ;               IHER H
1140    000200          S0.ISPEED   = BIT7          ;WORD #8 BYTE 0 ISPEED H
1141    000100          S0.IRDY     = BIT6          ;               IRDY L
1142    000040          S0.IONL     = BIT5          ;               IONL L
1143    000020          S0.ILDP     = BIT4          ;               ILDP L
1144    000010          S0.IDBY     = BIT3          ;               IDBY L
1145    000004          S0.IRWD     = BIT2          ;               IRWD L
1146    000002          S0.IFBY     = BIT1          ;               IFBY L
1147    000001          S0.IFPT     = BIT0          ;               IFPT L
1148                    ;       SPECIAL KEYBOARD STUFF FOR MOVER PROGRAM
1149
1150    177560              TKS     =177560         ;KEYBOARD STATUS REGISTER
1151    177562              TKB     =177562         ;KEYBOARD DATA REGISTER
1152    177564              TPS     =177564         ;CONSOLE PRINTER STATUS REGISTER
1153    177566              TPB     =177566         ;CONSOLE PRINTER DATA REGISTER
1154    007776              HIMEM   =007776         ;HIGH MEMORY MASK VALUE
1155                ;       CONTROLLER DEFINITIONS
1156                ;
1157                ;
1158    174400              CSR     =174400         ;STATUS AND CONTROL REGISTER
1159    174402              BAR     =174402         ;DL ADDRESS REGISTER
1160    174404              DAR     =174404         ;PLATTER ADDRESS
1161    174406              MPR     =174406         ;MULTIPURPOSE REGISTER
1162                ;
1163                ;
1164                ;
1165                ;
1166                ;
1167                ;       CONTROLLER COMMANDS
1168                ;
1169                ;
1170    000004              DLGETS  =4              ;GET STATUS COMMAND
1171    000006              SEEK    =6              ;SEEK TRACK AND HEAD SELECT
1172    000010              DLRDHD  =10             ;READ SECTOR HEADER
1173    000014              READ    =14             ;READ COMMAND
1174    000016              DLRDNH  =16             ;READ SECTOR NO HEADER CHECK
1175                ;
1176                ;
1177                ;
1178                ;
1179                ;
1180                ;
1181    000001              READY   =1              ;DRIVE READY BIT IN STATUS REG.
1182    000013              DLSR    =13             ;STATUS AND RESET
1183    177730              DLERR   =177730         ;MASK FOR COVER OPEN
1184    000006              DLUN    =6              ;HEADS UNLOADED
1185    000177              DLCYL   =000177         ;MASK FOR CYLINDER ADDRESS
1186    100200              DLDNER  =100200         ;DONE SET OR ERROR SET BITS
1187                ;
1188                ;
1189                ;
1190                ;
1191    177560              TTICSR  =       17756C  ;KEYBOARD INPUT STATUS
```

```
1192        177562                  TTIBFR  =       177562          ;KEYBOARD DATA REGISTER
1193        177564                  TTOCSR  =       177564          ;CONSOLE PRINTER STATUS REGISTER
1194        177566                  TTOBFR  =       177566          ;CONSOLE PRINTER DATA REGISTER
1195
```

```
1197                                    .SBTTL  SPECIAL MACROS AND OPDEFS.
1198
1199
1200                                    ;+
1201                                    ;SAVE GENERAL REGS 1 TO 5
1202                                    ;-
1203
1204                                            .MACRO  SAVREG
1205                                            JSR     R5,REGSAV
1206                                            .ENDM
1207
1208                                    ;+
1209                                    ; MACRO TO FORCE AN ERROR
1210                                    ;-
1211                                    .MACRO  FORCERROR       TAG,NOTSSR
1212                                    .NLIST
1213                                    .IIF NDF LISTALL, .NLIST
1214                                    .LIST
1215                                    .IF B NOTSSR
1216                                            MOV     TSSR(R5),R1             ;READ TSSR
1217                                    .ENDC
1218                                            MOV     FORCER,FORCER           ;IS FORCER SET? (LEAVE C BIT ALONE)
1219                                            BNE     TAG                     ;BR IF YES
1220                                    .NLIST
1221                                    .IIF NDF LISTALL, .LIST
1222                                    .LIST
1223                                    .ENDM
1224
1225                                    ;+
1226                                    ; MACRO TO FORCE AN EXIT TO AVOID SECTION ITERATIONS
1227                                    ;       WILL EXIT TO A LABEL IF FORCER IS NEGATIVE
1228                                    ;       SO TO FORCE ERRORS AND EXIT ON 1 ERROR SET
1229                                    ;       FORCER TO 177777
1230                                    ;       TO FORCE ERRORS AND ITERATIONS SET FORCER TO 1.
1231                                    ;-
1232                                    .MACRO  FORCEXIT        TAG
1233                                    .NLIST
1234                                    .IIF NDF LISTALL, .NLIST
1235                                    .LIST
1236                                            MOV     FORCER,FORCER           ;IS FORCER NEGATIVE?
1237                                            BMI     TAG                     ;BR IF YES
1238                                    .NLIST
1239                                    .IIF NDF LISTALL, .LIST
1240                                    .LIST
1241                                    .ENDM
1242                                    ;+
1243                                    ; MACRO TO INCREMENT ERROR COUNTS
1244                                    ;-
1245                                    .MACRO  NEXT.ERRNO
1246                                    .NLIST
1247                                    ;;;.IIF NDF LISTALL, .NLIST
1248                                            ERRNO=ERRNO+1
1249                                    ;;;.IIF NDF LISTALL, .LIST
1250                                    .LIST
1251                                    .ENDM
1252
1253                                    ;+
```

```
                                ;MACRO TO PERFORM XOR
                                ;-

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

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

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

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

```
                                        .SBTTL  GLOBAL DATA SECTION

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

                                ;
                                ;THE FOLLOWING DATA ARE SET FOR EACH UNIT AT INIT TIME.
                                ;SINGLE UNIT DEFAULTS (LISTED) ARE IN THE DEFAULT P-TABLE.
                                ;
002146  000000                  EPRTSW::        .WORD   0               ;PRINT SWITCH
002150  000000                  UNITN::         .WORD   0               ;UNIT # UNDER TEST.
002152  000000                  QVP::           .WORD   0               ;QUICK VERIFY FLAG.
002154  000000                  CSRADDR::       .WORD   0               ;ADDRESS OF CSR FOR CURRENT DEVICE
002156  000224                  IVEC::          .WORD   224             ;INTERRUPT VECTOR
002160  000200                  IPRI::          .WORD   PRI04           ;INTERRUPT PRIORITY.
002162  000000                  TSTCNT::        .WORD   0               ;NUMBER OF TESTS RUN IN THIS PASS
002164  000000                  LOOPCNT::       .WORD   0               ;REMAINING ITERATION COUNT FOR TEST
002166  000000                  DEVCNT::        .WORD   0               ;NUMBER OF DEVICE UNDER TEST
002170  000000                  FATFLG::        .WORD   0               ;SET IF FATAL ERROR IS DETECTED IN TEST
002172  000000                  INTRECV::       .WORD   0               ;SET IF TAPE INTERRUPT WAS RECEIVED
002174  000000                  BENBSW::        .WORD   0               ;BUFFER ENABLE SWITCH SW 0=OFF;1=ON
002176  000000                  EXPD::          .WORD   0               ;EXPECTED RAM DATA FOR PRAMPKT ROUTINE
002200  000000                  RECV::          .WORD   0               ;RECEIVED RAM DATA FOR PRAMPKT ROUTINE
002202  000000                  ERRHI::         .WORD   0               ;HIGH ADDRESS MEMORY ERROR
002204  000000                  ERRLO::         .WORD   0               ;LOW ADDRESS MEMORY ERROR
002206                          RAMDATA::       .BLKW   16.             ;DATA READ FROM RAM PACKET OR MESSAGE BUF AREA
002246  000000                  RAMSIZ::        .WORD   0               ;RAM DATA SIZE FOR PRAMPKT ROUTINE
002250  000000                  RCVHIADD::      .WORD   0               ;RECEIVED BUFFER HIGH ADDRESS
002252  000000                  RCVLOADD::      .WORD   0               ;RECEIVED BUFFER LOW ADDRESS
002254  000000                  COUNT::         .WORD   0               ;TEST COUNT PATTERN
002256  000000                  DATA::          .WORD   0               ;TEST DATA
002260  000000                  TSTFLAG::       .WORD   0               ;TEST FLAG WORD
002262  000000                  TSTPTR::        .WORD   0               ;TSTBLK POINTER
002264  000000                  PRMNO::         .WORD   0               ;PRINT ROUTINE TEMP
002266                          EXPMSG::        .BLKB   100.            ;EXPECTED MESSAGE BUFFER DATA
002432                          RECMSG::        .BLKB   100.            ;RECEIVED MESSAGE BUFFER DATA
002576                          TMPBFR::        .BLKB   80.             ;TEMPORARY STORAGE FOR PRINT
002716  000000                  MESBFA::        .WORD   0               ;STORES ADDRESS OF MESSAGE BUFFER FOR ERR PRT
```

```
                                        .SBTTL  TSTBLK  - TEST DATA TABLE

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

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

```
1375                                            .SBTTL  GLOBAL ENVIRONMENT STORAGE
1376                                    ;
1377                                    ;STORAGE FOR DEVICE REGISTERS
1378                                    ;
1379 003030  000000  100000  000000  DUMMY:  0,100000,0,0                    ;DUMMY DEVICE REGISTERS...
1380 003040  000000  000000  000000          0,0,0,0,0,0,0,0
1381                                                                         ;...FOR MULTI-UNIT CHECKOUT.
1382
1383
1384 003060  000000                  DUFLG::         .WORD   0              ;"DROPPED UNIT" FLAG.
1385                                                                         ;INHIBITS CODE IN "CLEAN-UP".
1386 003062  000000                  NODEV::         .WORD   0              ;FLAG TO SAY NO DEVICE.
1387
1388 003064  000000                  TEMP1::         .WORD   0              ;SOME TEMP LOCATIONS.
1389 003066  000000                  TEMP2::         .WORD   0
1390 003070  000000                  XXCOMM::        .WORD   0              ;XXDP+ COMM BLOCK POINTER.
1391 003072  000000                  FREE::          .WORD   0              ;1ST FREE MEMORY ADDRESS...
1392 003074  000000                  FRESIZ::        .WORD   0              ;...AND SIZE (IN WORDS).
1393 003076  000000                  FREEHI:         .WORD   0              ;LAST WORD IN FREE SPACE
1394 003100  000000                  KTFLG::         .WORD   0              ;KT11, MEM AVAIL FLAG -
1395                                                                         ;- .WORD        0 = <24K OR NO KT -
1396                                                                         ;- NZ = >24K AND KT.
1397 003102  000000                  KTENABLE::      .WORD   0              ;SET BY TEST ROUTINES TO FLAG >28K UNDER TEST
1398 003104  002000                  PST32W::        .WORD   2000           ;32W BLOCK ADDRESS FOR 32K START
1399 003106  000000                  SIFLAG::        .WORD   0              ;
1400 003110  000000                  BADDAT::        .WORD   0              ;ACTUAL DATA
1401 003112  000000                  GDDAT::         .WORD   0              ;EXPECTED DATA
1402 003114  000000                  LOOPFL::        .WORD   0
1403 003116                          CTAB::                                 ;CONFIGURATION TABLES.
1404 003116  000000                  CTABM::         .WORD   0              ;CONFIG WORK.
1405 003120  000000                                  .WORD   0
1406 003122  000000                                  .WORD   0
1407 003124  000000                                  .WORD   0
1408 003126  177777                                  .WORD   -1                     ;END OF MEM TABLE.
1409 003130                          CTABE::
1410                                    ;ERROR STATISTICS TABLE (1 WORD PER UNIT), 64 UNITS MAX:
1411                                    ;
1412                                    ;       0       =       UNIT NOT TESTED
1413                                    ;       100000  =       UNIT ONLINE, NO ERRORS
1414                                    ;       10XXXX  =       UNIT ONLINE, ENCOUNTERED XXXX ERRORS
1415                                    ;       160000  =       UNIT DROPPED, NON-EXISTENT DEVICE REGISTER
1416                                    ;       160001  =       UNIT DROPPED, NOT IDLE AT START
1417                                    ;       14XXXX  =       UNIT DROPPED, ENCOUNTERED XXXX ERRORS
1418                                    ;
1419 003130                          ERTABL:         .BLKW   64.
1420 003330  000000                  ERTABE:         .WORD   0
1421
1422 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  <TK-25>
003334                          L$DVTYP::
003334  124  113  055                    .ASCIZ  /TK-25/
                                        .EVEN

                                ;+
                                ;TEST DESCRIPTION
                                ;-
003342                                  DESCRIPT <CZTKGA TK-25 FRT END FUNC #3>
003342                          L$DESC::
003342  103  132  124                    .ASCIZ  /CZTKGA TK-25 FRT END FUNC #3/
                                        .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/
```

```
1475 004050  040  040  111  NSI:     .ASCIZ  /  INTERRUPT EXPECTED, NOT RECEIVED/
1476 004113  045  116  045  FNOINTR:         .ASCII  /%N%A/
1477 004117  040  040  116  NOINTR:  .ASCIZ  /  NO INTERRUPT WAS GENERATED/
1478 004154  040  040  111  IFAULT:  .ASCIZ  /  INTERRUPT FAULT/
1479 004176  045  101  040  INTX:    .ASCIZ  /%A  CPU PC: %O6%A  TSBA: %O6/
1480 004233  040  040  042  NOINIT:  .ASCIZ  /  "BUS-INIT" DIDN'T INITIALIZE CONTROLLER/
1481 004305  040  040  042  NSINIT:  .ASCIZ  /  "SOFT-INIT" DIDN'T INITIALIZE THE DPU/
1482 004355  040  040  042  BRINIT:  .ASCIZ  /  "BUS-RESET" DIDN'T INITIALIZE THE DPU/
1483
1484 004425  000            NUL:     .ASCIZ  //
1485 004426  045  116  000  NULCR:   .ASCIZ  /%N/
1486 004431  045  101  040  EXPGOT:  .ASCIZ  /%A EXP'D: %O6%A, REC'D: %O6/
1487 004465  045  116  045  EXPGT2:  .ASCIZ  /%N%A EXP'D: %O6%A, %O6%N%A REC'D: %O%A, %O6/
1488 004541  045  101  040  DUAD12:  .ASCIZ  /%A REG(W) WRITTEN TO: %O6%A REG(R) READ; EXP'D: %O6%A, REC'D: %O6/
1489 004643  122  101  115  PKTRAM::         .ASCIZ  'RAM Contents Do Not Match Packet Sent'
1490 004711  040  040  103  SCME:    .ASCIZ  /  CONFIG DOESN'T MATCH MFG. MASTER/
1491 004754  127  122  111  WRTMSG:  .ASCIZ  'WRITE CHARACTERISTICS Failed'
1492 005011  124  123  123  WRTERR:  .ASCIZ  'TSSR Incorrect After WRITE Command, More Bits Set Than SSR'
1493 005104  124  123  123  RDERR:   .ASCIZ  'TSSR Incorrect After READ Command, More Bits Set Than SSR'
1494                         .EVEN
1495
1496
1497
```

```
                                        .SBTTL  GLOBAL ERROR REPORT SECTION

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

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

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

```
                        .SBTTL  PRITSSR - PRINT TSSR CONTENTS

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

005264          PRITSSR:
005264                  SAVREG                          ;SAVE GENERAL REGISTERS
005270  010104          MOV     R1,R4                   ;SAVE THE TSSR CONTENTS
005272                  PRINTB  @TSSRFOR,R4             ;PRINT THE CONTENTS OF TSSR
005272  010446          MOV     R4,-(SP)
005274  012746  006123  MOV     @TSSRFOR,-(SP)
005300  012746  000002  MOV     @2,-(SP)
005304  010600          MOV     SP,R0
005306  104414          TRAP    C$PNTB
005310  062706  000006  ADD     @6,SP
005314  010400          MOV     R4,R0                   ;GET TSSR BACK FOR CHKAMB
005316  004737  016730  JSR     PC,CHKAMB               ;ARE CONTENTS AMBIGUOUS ?
005322  103410          BCS     5$                      ;BRANCH IF NOT
005324                  PRINTX  @AMBTSSR                ;SHOW CONTENTS ARE AMBIGUOUS
005324  012746  006343  MOV     @AMBTSSR,-(SP)
005330  012746  000001  MOV     @1,-(SP)
005334  010600          MOV     SP,R0
005336  104415          TRAP    C$PNTX
005340  062706  000004  ADD     @4,SP
005344  010403  5$:     MOV     R4,R3                   ;CONTENTS OF TSSR
005346  042703  001476  BIC     @HIADDR!FATERR!TERCLS,R3        ;CLEAR ALL MULTIPLE BIT FIELDS
005352  001434          BEQ     20$                     ;NO BITS ARE SET
005354  012702  002576  MOV     @TMPBFR,R2              ;TEMPORARY ASCII BUFFER
005360  012701  003400  MOV     @TSSRBIT,R1             ;ASCII EQUIVALENT OF BITS
005364  005703  10$:    TST     R3                      ;REMAINING BITS TO CONVERT
005366  001413          BEQ     15$                     ;BRANCH WHEN ALL ARE DONE
005370  000241          CLC                             ;CLEAR CARRY FOR SHIFT
005372  006103          ROL     R3                      ;SHIFT NEXT BIT TO CARRY
005374  103006          BCC     13$                     ;BRANCH IF BIT NOT SET
005376  011100          MOV     (R1),R0                 ;POINTER TO BIT DEFINITION
005400  112022  11$:     MOVB    (R0)+,(R2)+             ;MOVE ASCIZ TO BUFFER
005402  001376          BNE     11$                     ;MOVE ALL BITS
005404  112762  000054  177777  MOVB    @',,-1(R2)      ;INSERT A COMMA TO TERMINATE
005412  005721  13$:     TST     (R1)+                   ;POINT TO NEXT DESCRIPTION
005414  000763          BR      10$                     ;GET THE REMAINING BITS
005416  105042  15$:     CLRB    -(R2)                   ;TERMINATE THE LINE
005420                  PRINTX  @TSSDEF,@TMPBFR         ;PRINT THE BIT DEFINITIONS
005420  012746  002576  MOV     @TMPBFR,-(SP)
005424  012746  006314  MOV     @TSSDEF,-(SP)
```

```
                005430  012746  000002                  MOV     #2,-(SP)
                005434  010600                          MOV     SP,R0
                005436  104415                          TRAP    C$PNTX
                005440  062706  000006                  ADD     #6,SP
     1569
     1570       005444  010403                  20$:    MOV     R4,R3                   ;GET THE TSSR CONTENTS
     1571       005446  042703  177761                  BIC     #^CTERCLS,R3            ;CLEAR ALL BUT TERMINATION
     1572       005452  016303  006404                  MOV     TCOCOD(R3),R3           ;GET THE TERMINATION CODE MEANING
     1573       005456                                  PRINTX  #TCOASC,R3              ;PRINT THE TERMINATION CODE
                005456  010346                          MOV     R3,-(SP)
                005460  012746  006204                  MOV     #TCOASC,-(SP)
                005464  012746  000002                  MOV     #2,-(SP)
                005470  010600                          MOV     SP,R0
                005472  104415                          TRAP    C$PNTX
                005474  062706  000006                  ADD     #6,SP
     1574       005500  010403                          MOV     R4,R3                   ;TSSR CONTENTS AGAIN
     1575       005502  042703  177717                  BIC     #^CFATERR,R3            ;CLEAR ALL BUT FATAL TERMINATION
     1576       005506  001421                          BEQ     25$                     ;DON'T PRINT IF ZERO
     1577       005510  006203                          ASR     R3
     1578       005512  006203                          ASR     R3
     1579       005514  006203                          ASR     R3                      ;ALINE TERMINATION CODE FOR INDEX
     1580       005516  016303  006744                  MOV     TSFCOD(R3),R3           ;GET THE FATAL TERMINATION CODE
     1581       005522                                  PRINTX  #TFCASC,R3              ;PRINT THE FATAL TERMINATION CODE
                005522  010346                          MOV     R3,-(SP)
                005524  012746  006245                  MOV     #TFCASC,-(SP)
                005530  012746  000002                  MOV     #2,-(SP)
                005534  010600                          MOV     SP,R0
                005536  104415                          TRAP    C$PNTX
                005540  062706  000006                  ADD     #6,SP
     1582       005544  012737  000031  002170          MOV     #25.,FATFLG             ;DROP THIS UNIT AFTER ERROR MESSAGE
     1583       005552  010403                  25$:    MOV     R4,R3                   ;GET TSSR CONTENTS
     1584       005554  042703  176377                  BIC     #^CHIADDR,R3            ;CLEAR ALL BUT EXTENDED ADDRESS
     1585       005560  001411                          BEQ     30$                     ;DON'T PRINT IF ZERO
     1586       005562                                  PRINTX  #TEXASC,R3              ;PRINT THE EXTENDED ADDRESS BITS
                005562  010346                          MOV     R3,-(SP)
                005564  012746  006143                  MOV     #TEXASC,-(SP)
                005570  012746  000002                  MOV     #2,-(SP)
                005574  010600                          MOV     SP,R0
                005576  104415                          TRAP    C$PNTX
                005600  062706  000006                  ADD     #6,SP
     1587       005604  022704  100210          30$:    CMP     #100210,R4              ;CHECK FOR MEDIA ERROR
     1588       005610  001003                          BNE     31$                     ;BR, IF PROBABLY NOT TAPE ERROR
     1589       005612  012737  006032  002146          MOV     #EPRT3,EPRTSW           ;"PROBABLY MEDIA RELETED ERROR - BAD TAPE"
     1590       005620  005737  002146          31$:    TST     EPRTSW                  ;CHECK FOR THE SWITCH EMPTY
     1591       005624  001003                          BNE     310$                    ;BR, IF SWITCH IS NOT EMPTY
     1592       005626  012737  005672  002146          MOV     #EPRT1,EPRTSW           ;SET SWITCH TO DEFAULT
     1593       005634  013737  002146  005644  310$:   MOV     EPRTSW,32$+2            ;PUT REAL SWITCHABLE MESSAGE IN PLACE
     1594       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
     1595       005662  012737  005672  002146          MOV     #EPRT1,EPRTSW           ;RESET TO NORMAL ERROR POINTER
     1596       005670  000207                          RTS     PC                      ;RETURN TO CALLER
     1597
     1598       005672      045     116     045  EPRT1:  .ASCIZ  '%N%A ******CHECK CABLES BETWEEN CONTROLLER AND TRANSPORT******%S'
```

```
1599 005771  045  116  045  EPRT2:   .ASCIZ  '%N%A ******CHECK TRANSPORT******%S'
1600 006032  045  116  045  EPRT3:   .ASCIZ  '%N%A ******POSSIBLE MEDIA RELATED ERROR - BAD TAPE******%S'
1601 006123  045  116  045  TSSRFOR:         .ASCIZ  '%N%A TSSR = %O6'
1602 006143  045  116  045  TEXASC:          .ASCIZ  '%N%A Extended Address Bits = %O6'
1603 006204  045  116  045  TCOASC:          .ASCIZ  '%N%A Termination Class Code = %T'
1604 006245  045  116  045  TFCASC:          .ASCIZ  '%N%A Fatal Termination Class Code = %T'
1605 006314  045  116  045  TSSDEF:          .ASCIZ  '%N%A TSSR Bits Set: %T'
1606 006343  045  116  045  AMBTSSR:         .ASCIZ  '%N%A TSSR Contents Are Ambiguous'
1607                                .EVEN
1608 006404  006424  006447  006475  TCOCOD:  .WORD   1$,2$,3$,4$,5$,6$,7$,8$
1609 006424  116  157  162  1$:      .ASCIZ  'Normal Termination'
1610 006447  124  145  162  2$:      .ASCIZ  'Termination Condition'
1611 006475  124  141  160  3$:      .ASCIZ  'Tape Status Alert'
1612 006517  106  165  156  4$:      .ASCIZ  'Function Reject'
1613 006537  122  145  143  5$:      .ASCIZ  'Recoverable Error - Tape Position One Record Down'
1614 006621  122  145  143  6$:      .ASCIZ  'Recoverable Error - Tape Was Not Moved'
1615 006670  125  156  162  7$:      .ASCIZ  'Unrecoverable Error'
1616 006714  106  141  164  8$:      .ASCIZ  'Fatal Controller Error'
1617                                .EVEN
1618
1619 006744  006754  007010  007021  TSFCOD:  .WORD   1$,2$,3$,4$
1620 006754  111  156  164  1$:      .ASCIZ  'Internal Diagnostic Failure'
1621 007010  122  145  163  2$:      .ASCIZ  'Reserved'
1622 007021  102  165  163  3$:      .ASCIZ  'Bus Interface or Sanity Check Error'
1623 007065  122  145  163  4$:      .ASCIZ  'Reserved'
1624                                .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.
                                ;-

007076                          PRIPKT::
007076                                  SAVREG                          ;SAVE THE REGISTERS
007102  010005                          MOV     R0,R5                   ;SAVE NO. OF WORDS IN PACKET
007104  005737  003102                  TST     KTENABLE                ;ABOVE 28K UNDER TEST?
007110  001001                          BNE     10$                     ;BR IF YES
007112  005003                          CLR     R3                      ;SET HIGH ORDER ADDRESS TO 0
007114  010301                  10$:    MOV     R3,R1                   ;COPY HIGH ORDER ADDRESS
007116  010400                          MOV     R4,R0                   ;GET LOWER ADDRESS
007120  006100                          ROL     R0                      ;SHIFT BIT 15 INTO C BIT
007122  006101                          ROL     R1                      ;AND INTO HIGH ORDER.
007124                                  PRINTB  #PKTADD,R1,R4           ;PRINT PACKET ADDRESS
007124  010446                          MOV     R4,-(SP)
007126  010146                          MOV     R1,-(SP)
007130  012746  007302                  MOV     #PKTADD,-(SP)
007134  012746  000003                  MOV     #3,-(SP)
007140  010600                          MOV     SP,R0
007142  104414                          TRAP    C$PNTB
007144  062706  000010                  ADD     #10,SP
007150  010300                  15$:    MOV     R3,R0                   ;GET HIGH ORDER ADDRESS
007152  001404                          BEQ     20$                     ;BR IF NOT ABOVE 28K.
007154  010401                          MOV     R4,R1                   ;GET LOW ORDER ADDRESS
007156  004737  020304                  JSR     PC,SETMAP               ;SETUP PAR6 MAPPING FOR 18 BIT ADDRESS
007162  010004                          MOV     R0,R4                   ;GET RETURNED PAR6 ADDRESS BIAS
007164  005001                  20$:    CLR     R1                      ;SAVE WORD NUMBER
007166  012402                  25$:    MOV     (R4)+,R2                ;GET PACKET CONTENTS
007170                                  PRINTB  #PKTFRM,R1,R2           ;PRINT THE DATA
007170  010246                          MOV     R2,-(SP)
007172  010146                          MOV     R1,-(SP)
007174  012746  007244                  MOV     #PKTFRM,-(SP)
007200  012746  000003                  MOV     #3,-(SP)
007204  010600                          MOV     SP,R0
007206  104414                          TRAP    C$PNTB
007210  062706  000010                  ADD     #10,SP
007214  005201                          INC     R1                      ;NEXT WORD NUMBER
007216  020105                          CMP     R1,R5                   ;DONE ALL PACKET WORDS?
007220  002762                          BLT     25$                     ;LOOP TILL ALL DONE
007222                                  PRINTB  #PKTNEW                 ;JUST A COUPLE NEW LINES
007222  012746  007337                  MOV     #PKTNEW,-(SP)
007226  012746  000001                  MOV     #1,-(SP)
007232  010600                          MOV     SP,R0
007234  104414                          TRAP    C$PNTB
007236  062706  000004                  ADD     #4,SP
```

```
 1664 007242  000207                          RTS     PC              ;RETURN
 1665
 1666 007244      045     116     045  PKTFRM: .ASCIZ  '%N%A Packet Word #%D1%A = %06'
 1667 007302      045     116     045  PKTADD: .ASCIZ  '%N%A Packet Address = %01%05'
 1668
 1669 007337      045     116     045  PKTNEW: .ASCIZ  '%N%N%A  '
 1670                                      .EVEN
 1671
```

```
                        .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
                ;
                ;-

007350          PRIBXOR::
007350                  SAVREG                          ;SAVE THE REGISTERS
007354  010203          MOV     R2,R3                   ;EXPECTED DATA
007356                  XOR     R1,R3                   ;FORM THE EXCLUSIVE OR
007366  012700  177400  MOV     #^C<377>,R0             ;BYTE MASK
007372  040001          BIC     R0,R1                   ;SAVE LOW BYTE RECV
007374  040002          BIC     R0,R2                   ;SAVE LOW BYTE EXPD
007376  040003          BIC     R0,R3                   ;SAVE LOW BYTE XOR
007400                  PRINTB  #XORBFOR,R2,R1,R3 ;PRINT THE MESSAGE
007400  010346          MOV     R3,-(SP)
007402  010146          MOV     R1,-(SP)
007404  010246          MOV     R2,-(SP)
007406  012746  007432  MOV     #XORBFOR,-(SP)
007412  012746  000004  MOV     #4,-(SP)
007416  010600          MOV     SP,R0
007420  104414          TRAP    C$PNTB
007422  062706  000012  ADD     #12,SP
007426  010300          MOV     R3,R0                   ;R0 HAS XOR ON RETURN
007430  000207          RTS     PC                      ;RETURN TO CALLER

007432      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
                                ;
                                ;-

007500                          PRIXOR::
007500                                  SAVREG                          ;SAVE THE REGISTERS
007504  010203                          MOV     R2,R3                   ;EXPECTED DATA
007506                                  XOR     R1,R3                   ;FORM THE EXCLUSIVE OR
007516                                  PRINTB  #XORFOR,R2,R1,R3 ;PRINT THE MESSAGE
007516  010346                          MOV     R3,-(SP)
007520  010146                          MOV     R1,-(SP)
007522  010246                          MOV     R2,-(SP)
007524  012746  007550                  MOV     #XORFOR,-(SP)
007530  012746  000004                  MOV     #4,-(SP)
007534  010600                          MOV     SP,R0
007536  104414                          TRAP    C$PNTB
007540  062706  000012                  ADD     #12,SP
007544  010300                          MOV     R3,R0                   ;R0 HAS XOR ON RETURN
007546  000207                          RTS     PC                      ;RETURN TO CALLER

007550      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
                                ;
                                ;-

007616                          PRIEQU:
007616                                  SAVREG                          ;SAVE THE REGISTERS
007622  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
                                ;
                                ;-
007624                          PRIRAM:
007624                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
007630                                  PRINTB  @RAMFOR,R4              ;PRINT RAM ADDRESS IN ERROR
007630  010446                          MOV     R4,-(SP)
007632  012746  007654                  MOV     @RAMFOR,-(SP)
007636  012746  000002                  MOV     #2,-(SP)
007642  010600                          MOV     SP,R0
007644  104414                          TRAP    C$PNTB
007646  062706  000006                  ADD     #6,SP
007652  000207                          RTS     PC                      ;RETURN

007654    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
```

```
1787                                    ;
1788                                    ;-
1789 007716                             PRIADD:
1790 007716                                     SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
1791 007722  013700  002202                     MOV     ERRHI,R0                ;GET HIGH ADDRESSS
1792 007726  013701  002204                     MOV     ERRLO,R1                ;GET LOW ADDRESS
1793 007732  010102                             MOV     R1,R2                   ;COPY LOW ADDRESS
1794 007734  006101                             ROL     R1                      ;SHIFT BIT 15 TO C BIT
1795 007736  006100                             ROL     R0                      ;SHIFT INTO HIGH ORDER
1796 007740                                     PRINTB  #PRIA0,R0,R2            ;PRINT MEMORY ADDRESS IN ERROR
     007740  010246                             MOV     R2,-(SP)
     007742  010046                             MOV     R0,-(SP)
     007744  012746  007766                     MOV     #PRIA0,-(SP)
     007750  012746  000003                     MOV     #3,-(SP)
     007754  010600                             MOV     SP,R0
     007756  104414                             TRAP    C$PNTB
     007760  062706  000010                     ADD     #10,SP
1797 007764  000207                             RTS     PC                      ;RETURN
1798
1799 007766     045     116     045  PRIA0:     .ASCIZ  '%N%A MEMORY ERROR ADDRESS = %01%05'
1800                                             .EVEN
1801
1802
1803                                             .SBTTL  PRITADD - PRINT MEMORY TEST ADDRESS
1804                                    ;+
1805                                    ;
1806                                    ;PRINT MEMORY ADDRESS
1807                                    ;THIS ROUTINE IS NORMALLY CALLED ONLY FROM PRINT ROUTINES.
1808                                    ;
1809                                    ; IMPLICIT INPUTS
1810                                    ;
1811                                    ;       ERRHI   - HIGH ORDER ADDRESS
1812                                    ;       ERRLO   - LOW ORDER ADDRESS
1813                                    ;
1814                                    ;-
1815 010032                             PRITADD:
1816 010032                                     SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
1817 010036  013700  002202                     MOV     ERRHI,R0                ;GET HIGH ADDRESSS
1818 010042  013701  002204                     MOV     ERRLO,R1                ;GET LOW ADDRESS
1819 010046  010102                             MOV     R1,R2                   ;COPY LOW ADDRESS
1820 010050  006101                             ROL     R1                      ;SHIFT BIT 15 TO C BIT
1821 010052  006100                             ROL     R0                      ;SHIFT INTO HIGH ORDER
1822 010054                                     PRINTB  #PRIT0,R0,R2            ;PRINT MEMORY ADDRESS IN ERROR
     010054  010246                             MOV     R2,-(SP)
     010056  010046                             MOV     R0,-(SP)
     010060  012746  010102                     MOV     #PRIT0,-(SP)
     010064  012746  000003                     MOV     #3,-(SP)
     010070  010600                             MOV     SP,R0
     010072  104414                             TRAP    C$PNTB
     010074  062706  000010                     ADD     #10,SP
1823 010100  000207                             RTS     PC                      ;RETURN
1824
1825 010102     045     116     045  PRIT0:     .ASCIZ  '%N%A MEMORY TEST ADDRESS = %01%05'
1826                                             .EVEN
1827
1828
1829
```

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

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

                SPACE::
010144                          SAVREG                  ;SAVE THE GENERAL REGISTERS
010144  012737  000764  010340  MOV     #500.,SDELAY    ;SET UP DELAY
010150  012737  140010  010330  MOV     #140010,80$     ;SET UP COMMAND, SPACE FORWARD
010156  005703                  TST     R3              ;CHECK FOR DIRECTION
010160  100403                  BMI     5$              ;BR, IF REVERSE INDICATED
010162  010337  010332          MOV     R3,90$          ;LOAD UP NUMBER OF RECORDS TO SPACE
010166  000407                  BR      10$             ;GO DO COMMAND
010170  042703  100000          BIC     #BIT15,R3       ;CLEAR DIRECTION BIT
010174  010337  010332          MOV     R3,90$          ;LOAD UP NUMBER OF RECORDS TO SPACE
010200  052737  000400  010330  BIS     #BIT8,80$       ;SET REVERSE BIT IN COMMAND PACKET
010206  012704  010330          MOV     #80$,R4         ;SET UP R4 WITH PACKET ADDRESS
010212  010465  177776          MOV     R4,TSDB(R5)     ;SEND OUT COMMAND
010216  004737  017134          JSR     PC,WAITF        ;WAIT FOR SSR
010222  103420                  BCS     20$             ;BR, IF SSR IS SET AND OK
010224                          DELAY   250             ;DELAY ABOUT .25 SECONDS
010224  012727  000250          MOV     #250,(PC)+
010230  000000                  .WORD   0
010232  013727  002116          MOV     L$DLY,(PC)+
010236  000000                  .WORD   0
010240  005367  177772          DEC     -6(PC)
010244  001375                  BNE     .-4
```

```
                010254  005367  177756                  DEC     -22(PC)
                010260  001367                          BNE     .-20
     1882       010262  005337  010340                  DEC     SDELAY          ;BUMP DELAY COUNTER DOWN
     1883       010266  001356                          BNE     15$             ;BR, IF MORE DELAY
     1884       010270  000411                          BR      60$             ;BR IF TROUBLE CARRY = CLEAR
     1885       010272  016501  000000          20$:    MOV     TSSR(R5),R1     ;READ TSSR
     1886       010276  012702  000200                  MOV     #SSR,R2         ;SET UP EXPECTED
     1887       010302  020201                  25$:    CMP     R2,R1           ;ARE THEY OK
     1888       010304  001401                          BEQ     40$             ;BR, IF EQUAL = OK
     1889       010306  000402                          BR      60$             ;TROUBLE EXIT
     1890       010310  000261                  40$:    SEC                     ;SET CARRY NO TROUBLE
     1891       010312  000401                          BR      70$             ;EXIT
     1892       010314  000241                  60$:    CLC                     ;CARRY CLEAR = ERROR
     1893       010316                          70$:
     1894       010316  010400                          MOV     R4,R0           ;PASS PACKET ADDRESS
     1895       010320  000207                          RTS     PC              ;RETURN
```

```
1897                                    ;
1898                                    ;
1899                                    ;
1900                                    ;PACKET FOR SPACE COMMAND
1901                                    ;
1903 010322                             .BLKB   10-<.-TUV2A&7>
1905                                    ;
1906                                    ;COMMAND WORD
1907 010330  000000                     80$:    .WORD
1908                                    ;NUMBER OF RECORDS TO BE SPACED OVER WORD
1909 010332  000000                     90$:    .WORD
1910 010334  000000                             .WORD
1911 010336  000000                             .WORD
1912 010340  000000                     SDELAY: .WORD   0               ;DELAY COUNTER
1913                                            .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
                                ;-
                                REWIND::
                                        SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
010444  012704  010540                  MOV     #RWPACK,R4      ;GET PACKET ADDRESS
010450  010465  177776                  MOV     R4,TSDB(R5)     ;SEND PACKET ADDRESS TO EXECUTE
010454  012703  000550                  MOV     #360.,R3        ;ENOUGH TIME FOR 2400' REEL TO REWIND
010460  004737  017134          10$:    JSR     PC,WAITF        ;WAIT FOR SSR TO SET
010464  103417                          BCS     20$             ;LEAVE WHEN SSR IS SET
010466                                  DELAY   250.            ;WAIT FOR .25 SECONDS
010466  012727  000372                  MOV     #250.,(PC)+
010472  000000                          .WORD   0
010474  013727  002116                  MOV     L$DLY,(PC)+
010500  000000                          .WORD   0
010502  005367  177772                  DEC     -6(PC)
010506  001375                          BNE     .-4
010510  005367  177756                  DEC     -22(PC)
010514  001367                          BNE     .-20
010516  005303                          DEC     R3              ;BUMP COUNTER DOWN
010520  001357                          BNE     10$             ;KEEP GOING
010522  000241                          CLC                     ;CLEAR CARRY TO SET ERROR
010524  010400                  20$:    MOV     R4,R0           ;PASS THE PACKET ADDRESS
010526  000207                          RTS     PC              ;RETURN
010530                                  .BLKB   10-<.-TUV2A&7>
010534                          RWPACK:
010534  102010                          .WORD   102010          ;POSTION COMMAND (REWIND)
010536  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:
                                ;
                                ;
                                ;-

010544                          CKRAM::
010544                          SAVREG                          ;SAVE THE GENERAL REGISTERS
010550  012701  002206          MOV     @RAMDATA,R1             ;ADDRESS TO SAVE THE RAM DATA
010554  012702  000020          MOV     @RMPKTBEG,R2            ;BYTE ADDRESS OF FIRST RAM DATA
010560  005003                  CLR     R3                      ;CLEAR THE ERROR FLAG
010562  004737  017252          JSR     PC,CHKTSSR              ;WAIT FOR SSR
010566  004737  017252  10$:    JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
010572  110265  177777          MOVB    R2,TSDBH(R5)            ;SELECT NEXT RAM ADDRESS
010576  004737  017252          JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
010602  116511  177776          MOVB    TSBAL(R5),(R1)          ;READ THE RAM DATA
010606  122124                  CMPB    (R1)+,(R4)+             ;COMPARE TO EXPECTED
010610  001401                  BEQ     20$                     ;BRANCH IF OK
010612  005203                  INC     R3                      ;SET ERROR FLAG
010614  005202          20$:    INC     R2                      ;ADDRESS OF NEXT RAM LOCATION
010616  020227  000027          CMP     R2,@RMPKTEND            ;REACHED END YET ?
010622  003761                  BLE     10$                     ;BRANCH TILL ALL READ
010624  005703                  TST     R3                      ;WAS AN ERROR FOUND ?
010626  001402                  BEQ     30$                     ;BRANCH IF NOT
010630  000241                  CLC                             ;CLEAR CARRY TO SHOW ERROR
010632  000401                  BR      50$                     ;AND EXIT
010634  000261          30$:    SEC                             ;SHOW GOOD COMPARE
010636  012737  000010  002246  50$:    MOV     #8.,RAMSIZ      ;SETUP RAMSIZ FOR PRAMPKT ROUTINE
010644  000207                  RTS     PC                      ;RETURN
```

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

                        RAMER::
                                SAVREG                          ;SAVE THE GENERAL REGISTERS
010652  013705  011032          MOV     RAMR5H,R5               ;RESET R5 TO FIRST DEVICE REGISTER
010656  012701  002206          MOV     #RAMDATA,R1             ;ADDRESS TO SAVE THE RAM DATA
010662  013702  011030          MOV     RAMHLD,R2               ;BYTE ADDRESS OF THE FIRST RAM DATA
010666  013703  002246          MOV     RAMSIZ,R3               ;SET THE SIZE OF THE READ UP
010672  004737  017252  10$:     JSR     PC,CHKTSSR              ;WAIT FOR THE SSR TO SET
010676  110265  177777          MOVB    R2,TSDBH(R5)            ;SELECT NEXT RAM ADDRESS
010702  004737  017252          JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
010706  116521  177776          MOVB    TSBAL(R5),(R1)+         ;READ THE RAM DATA
010712  062702  000001  20$:     ADD     #1,R2                   ;ADDRESS OF THE NEXT RAM LOCATION
010716  077313                  SOB     R3,10$                  ;NUMBER OF LOCATIONS COUNTER
010720  013704  002246          MOV     RAMSIZ,R4               ;GET THE RAM SIZE
010724  013702  011030          MOV     RAMHLD,R2               ;GET THE STARTING RAM ADDRESS
010730  060204                  ADD     R2,R4                   ;CALCULATE THE END ADDRESS
010732  162704  000001          SUB     #1,R4                   ;CORRECT VALUE OF PRINTOUT
010736                          PRINTX  #RAMIOP,R2,R4           ;RAM ADDRESS = 10 - 17, ETC.
010736  010446                  MOV     R4,-(SP)
010740  010246                  MOV     R2,-(SP)
010742  012746  011034          MOV     #RAMIOP,-(SP)
010746  012746  000003          MOV     #3,-(SP)
010752  010600                  MOV     SP,R0
010754  104415                  TRAP    C$PNTX
010756  062706  000010          ADD     #10,SP
010762  012701  002206          MOV     #RAMDATA,R1             ;ADDRESS OF WHERE RAM DATA IS
010766  013703  002246          MOV     RAMSIZ,R3               ;THE SIZE OF THE RAM FIELD READ
010772  005004          30$:    CLR     R4                      ;NO EXTRA DATA LEFT OVER
010774  112104                  MOVB    (R1)+,R4                ;PICK UP BYTE OF RAM DATA
010776  042704  177400          BIC     #177400,R4              ;GET RID OF SIGN EXTEND
011002                          PRINTX  #RAMPD,R4               ;"010 211 111 222 377 000 123 134 ETC."
011002  010446                  MOV     R4,-(SP)
011004  012746  011105          MOV     #RAMPD,-(SP)
011010  012746  000002          MOV     #2,-(SP)
011014  010600                  MOV     SP,R0
011016  104415                  TRAP    C$PNTX
011020  062706  000006          ADD     #6,SP
011024  077316                  SOB     R3,30$                  ;LOOP UNTIL ALL PRINTED
```

```
2114 011026  000207                  50$:    RTS     PC              ;RETURN
2115
2116 011030  000000                  RAMHLD: .WORD   0               ;RAM ADDR HOLDER 1ST ADDRESS
2117 011032  000000                  RAMR5H: .WORD   0               ;HOLDS R5 FOR LATER
2118 011034     045     116     045  RAMIOP: .ASCIZ  '<N><A Ram Address (Octal) - <03><A - <03><N'
2119 011105     045     101     040  RAMPD:  .ASCIZ  '<A <03><A '
2120                                         .EVEN
2121
```

```
                                .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:
                        ;
                        ;
                        ;-

011120                  CKRAM2::
011120                          SAVREG                          ;SAVE THE GENERAL REGISTERS
011124  012701  002206          MOV     @RAMDATA,R1             ;ADDRESS TO SAVE THE RAM DATA
011130  012702  000167          MOV     @RMCHBEG,R2             ;BYTE ADDRESS OF FIRST RAM DATA
011134  005003                  CLR     R3                      ;CLEAR THE ERROR FLAG
011136  004737  017252          JSR     PC,CHKTSSR              ;WAIT FOR SSR
011142  004737  017252  10$:    JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
011146  110265  177777          MOVB    R2,TSDBH(R5)            ;SELECT NEXT RAM ADDRESS
011152  004737  017252          JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
011156  116511  177776          MOVB    TSBAL(R5),(R1)          ;READ THE RAM DATA
011162  122124                  CMPB    (R1)+,(R4)+             ;COMPARE TO EXPECTED
011164  001401                  BEQ     20$                     ;BRANCH IF OK
011166  005203                  INC     R3                      ;SET ERROR FLAG
011170  005202          20$:    INC     R2                      ;ADDRESS OF NEXT RAM LOCATION
011172  012737  000010  002246  MOV     #8.,RAMSIZ              ;ASSUME NORMAL NOT SET
011200  020227  000176          CMP     R2,#RMCHEND-2           ;REACHED END YET ?
011204  003756                  BLE     10$                     ;BRANCH TILL ALL READ
011206  005703          27$:    TST     R3                      ;WAS AN ERROR FOUND ?
011210  001402                  BEQ     30$                     ;BRANCH IF NOT
011212  000241                  CLC                             ;CLEAR CARRY TO SHOW ERROR
011214  000401                  BR      50$                     ;AND EXIT
011216  000261          30$:    SEC                             ;SHOW GOOD COMPARE
011220  000207          50$:    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
                        ;
                        ;-
011222                  CKMSG::
011222                          SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
011226  010037  002250          MOV     R0,RCVHIADD             ;SAVE RECV HIGH ADDRESS
011232  010137  002252          MOV     R1,RCVLOAD              ;SAVE RECV LOW ADDRESS
011236  005737  003102          TST     KTENABLE                ;TESTING ABOVE 28K?
011242  001403                  BEQ     10$                     ;BR IF NO
011244  004737  020304          JSR     PC,SETMAP               ;RETURN ADDRESS BIASED TO PAR6 IN R0
011250  010001                  MOV     R0,R1                   ;GET RETURNED ADDRESS BIASED TO PAR6
011252  005004          10$:    CLR     R4                      ;WORD IN BUFFER
011254  005003                  CLR     R3                      ;CLEAR ERROR SEEN FLAG
011256  010205                  MOV     R2,R5                   ;GET EXPD BUFFER ADDRESS
011260  011264  002266  15$:    MOV     (R2),EXPMSG(R4)         ;SAVE EXPD FOR ERROR REPORT
011264  011164  002432          MOV     (R1),RECMSG(R4)         ;SAVE RECV FOR ERROR REPORT
011270  022221                  CMP     (R2)+,(R1)+             ;EXPD EQUAL RECV?
011272  001401                  BEQ     25$                     ;BR IF YES
011274  005203                  INC     R3                      ;SET ERROR SEEN FLAG
011276  062704  000002  25$:    ADD     #2,R4                   ;POINT TO NEXT WORD ADDRESS
011302  020427  000014          CMP     R4,#14                  ;DONE FIRST 7 WORDS?
011306  003764                  BLE     15$                     ;BR IF NO
011310  032765  000200  000012  BIT     #X2.EXTF,XST2(R5);IS EXTENDED FEATURES SET IN EXPD?
011316  001403                  BEQ     50$                     ;BR IF NO
011320  020427  000016          CMP     R4,#16                  ;DONE EXTENDED FEATURES WORD?
011324  003755                  BLE     15$                     ;BR IF NO
011326  005703          50$:    TST     R3                      ;ANY ERRORS SEEN?
011330  001402                  BEQ     55$                     ;BR IF NO
011332  000241                  CLC                             ;SET FAILURE
011334  000401                  BR      60$                     ;
011336  000261          55$:    SEC                             ;SET SUCCESS
011340  000207          60$:    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
                        ;
                        ;-
011342                  CKMSG2::
011342                          SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
011346  020327  000144          CMP     R3,#RECMSG-EXPMSG;@@D IS COUNT ABOVE MAX ALLOWED?
011352  003412                  BLE     5$                      ;@@D BR IF NO
011354  012703  000144          MOV     #RECMSG-EXPMSG,R3;@@D
011360                          PRINTF  #DEBUGMSG               ;@@D
011360  012746  011474          MOV     #DEBUGMSG,-(SP)
011364  012746  000001          MOV     #1,-(SP)
011370  010600                  MOV     SP,R0
011372  104417                  TRAP    C$PNTF
011374  062706  000004          ADD     #4,SP
011400  010037  002250  5$:      MOV     R0,RCVHIADD             ;SAVE RECV HIGH ADDRESS
011404  010137  002252          MOV     R1,RCVLOAD              ;SAVE RECV LOW ADDRESS
011410  005737  003102          TST     KTENABLE                ;TESTING ABOVE 28K?
011414  001403                  BEQ     10$                     ;BR IF NO
011416  004737  020304          JSR     PC,SETMAP               ;RETURN ADDRESS BIASED TO PAR6 IN R0
011422  010001                  MOV     R0,R1                   ;GET RETURNED ADDRESS BIASED TO PAR6
011424  005004          10$:    CLR     R4                      ;WORD IN BUFFER
011426  005005                  CLR     R5                      ;CLEAR ERROR SEEN FLAG
011430  111264  002266  15$:    MOVB    (R2),EXPMSG(R4)         ;SAVE EXPD FOR ERROR REPORT
011434  111164  002432          MOVB    (R1),RECMSG(R4)         ;SAVE RECV FOR ERROR REPORT
011440  122221                  CMPB    (R2)+,(R1)+             ;EXPD EQUAL RECV?
011442  001401                  BEQ     25$                     ;BR IF YES
011444  005205                  INC     R5                      ;SET ERROR SEEN FLAG
011446  062704  000001  25$:    ADD     #1,R4                   ;POINT TO NEXT BYTE
011452  020403                  CMP     R4,R3                   ;DONE ALL BYTES?
011454  002001                  BGE     50$                     ;BR IF YES
011456  000764                  BR      15$                     ;DO NEXT BYTE
011460  005705          50$:    TST     R5                      ;ANY ERRORS SEEN?
011462  001402                  BEQ     55$                     ;BR IF NO
```

```
2282 011464  000241                        CLC                     ;SET FAILURE
2283 011466  000401                        BR      60$             ;
2284 011470  000261                55$:    SEC                     ;SET SUCCESS
2285 011472  000207                60$:    RTS     PC              ;RETURN
2286
2287 011474      120      122      117  DEBUGMSG:       .ASCIZ  'PROGRAM INTERNAL ERROR -CKMSG2 MESSAGE BUFFER EXCEEDED-';@@D
2288 011564      045      116      045  FERCM:  .ASCII  /%N%A  %%%/
2289 011575      040      040      124  ERCM:   .ASCIZ  /  TSSR ERROR CODE REC'D = /
2290 011630      056      056      056  SIMSG:  .ASCIZ  /.... AFTER DOING SOFT INIT/
2291 011663      124      105      123  TINERR: .ASCIZ  /TEST: .../
2292                                        .EVEN
```

```
2294
2295
2296                                    ;+
2297                                    ;
2298                                    ;PRINT ROUTINE TO FATAL SOFT INIT ERRORS
2299                                    ;
2300                                    ;INPUT:
2301                                    ;
2302                                    ;       R1      CONTENTS OF TSSR AT ERROR
2303                                    ;
2304                                    ;SIDE EFFECTS:
2305                                    ;
2306                                    ;       EXECUTES DROP UNIT TO CEASE TESTING
2307                                    ;
2308                                    ;-
2309
2310 011676                                    BGNMSG  SFIMSG
     011676                             SFIMSG::
2311 011676  004737  005264                    JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
2312 011702  004737  020170                    JSR     PC,CKDROP       ;DROP UNIT, IF ALLOWED
2313 011706                                    ENDMSG
     011706                             L10003:
     011706  104423                            TRAP    C$MSG
2314
2315                                    ;+
2316                                    ;PRINT ROUTINE TO PRINT THE CONTENTS OF
2317                                    ;TSSR AND A COMMAND PACKET OTHER THAN GET STATUS COMMAND PACKET.
2318                                    ;
2319                                    ;INPUTS:
2320                                    ;
2321                                    ;       R1      TSSR CONTENTS
2322                                    ;       R4      ADDRESS OF COMMAND PACKET
2323                                    ;
2324                                    ;-
2325
2326 011710                                    BGNMSG  PKTSSR
     011710                             PKTSSR::
2327 011710  004737  005264                    JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
2328 011714  012700  000004                    MOV     #4,R0           ;NO. OF WORDS IN PACKET
2329 011720  004737  007076                    JSR     PC,PRIPKT       ;PRINT THE CONTENTS OF COMMAND PACKET
2330 011724  013700  002716                    MOV     MESBFA,R0       ;ADDRESS OF MESSAGE BUFFER
2331 011730  005001                            CLR     R1              ;ASSUME NO HIGH MEMORY
2332 011732  004737  014072                    JSR     PC,PRMESS       ;PRINT THE MESSAGE BUFFER ALSO
2333 011736                                    ENDMSG
     011736                             L10004:
     011736  104423                            TRAP    C$MSG
2334
2335                                    ;+
2336                                    ;PRINT ROUTINE TO PRINT THE CONTENTS OF
2337                                    ;TSSR AND A GET STATUS COMMAND PACKET.
2338                                    ;
2339                                    ;INPUTS:
2340                                    ;
2341                                    ;       R1      TSSR CONTENTS
2342                                    ;       R4      ADDRESS OF COMMAND PACKET
2343                                    ;
2344                                    ;-
```

```
2345
2346 011740                                    BGNMSG  PKTGETS
     011740                              PKTGETS::
2347 011740  004737  005264                    JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
2348 011744  012700  000002                    MOV     #2,R0           ;NO. OF WORDS IN GET STATUS PACKET
2349 011750  004737  007076                    JSR     PC,PRIPKT       ;PRINT THE CONTENTS OF COMMAND PACKET
2350 011754                                    ENDMSG
     011754                              L10005:
     011754  104423                            TRAP    C$MSG
2351
2352
2353                                        ;+
2354                                        ;PRINT TSSR ERRORS FOR INITIALIZATION TESTS
2355                                        ;
2356                                        ;INPUTS:
2357                                        ;
2358                                        ;       R1      TSSR CONTENTS
2359                                        ;       R4      ADDRESS OF COMMAND PACKET
2360                                        ;-
2361
2362 011756                                    BGNMSG  SFFMSG
     011756                              SFFMSG::
2363 011756  004737  005264                    JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
2364 011762                                    ENDMSG
     011762                              L10006:
     011762  104423                            TRAP    C$MSG
2365
2366
2367                                            .SBTTL  PKTMES  - PRINT TSSR AND MESSAGE BUFFER
2368                                        ;+
2369                                        ;
2370                                        ;PRINT ROUTINE TO PRINT THE CONTENTS OF TSSR AND MESSAGE
2371                                        ;BUFFER FOR ERROR REPORTS
2372                                        ;
2373                                        ;INPUTS:
2374                                        ;
2375                                        ;       R1      CONTENTS OF TSSR
2376                                        ;       R2      LOW ORDER MESSAGE BUFFER
2377                                        ;       R3      HIGH ORDER MESSAGE BUFFER ADDRESS
2378                                        ;       NOTE: R3 IS IGNORED IF KTENABLE FLAG IS CLEAR
2379                                        ;-
2380 011764                                    BGNMSG  PKTMES
     011764                              PKTMES::
2381 011764  004737  005264                    JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR
2382 011770  010200                            MOV     R2,R0           ;LOW ORDER ADDRESS
2383 011772  010301                            MOV     R3,R1           ;HIGH ORDER ADDRESS
2384 011774  004737  014072                    JSR     PC,PRMESS       ;PRINT THE MESSAGE BUFFER
2385 012000                                    ENDMSG
     012000                              L10007:
     012000  104423                            TRAP    C$MSG
2386
```

```
                                        .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
                                ADDSSR::
                                        JSR     PC,PRITADD      ;PRINT MEMORY TEST ADDRESS
                                        MOV     TSSR(R5),R1     ;GET CURRENT TSSR
                                        JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
                                        ENDMSG
                                L10010:
                                        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
                                MSGEXP::
                                        MOV     #7,R0           ;ASSUME NO EXT FEATURES
                                5$:     JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
                                        ENDMSG
                                L10011:
                                        TRAP    C$MSG
```

```
2426                                            .SBTTL  FIFEXP  - PRINT FIFO EXP/RECV DATA
2427                                    ;*
2428                                    ;
2429                                    ;PRINT ROUTINE TO PRINT FIFO EXP/RECV DATA
2430                                    ;
2431                                    ;       R1      - BYTE COUNT
2432                                    ;
2433                                    ;IMPLICIT INPUTS:
2434                                    ;
2435                                    ;       EXPMSG  - EXPECTED MESSAGE BUFFER (CONTAINS FIFO DATA ONLY
2436                                    ;       RECMSG  - RECEIVED MESSAGE BUFFER (CONTAINS FIFO DATA ONLY)
2437                                    ;-
2438 012032                                    BGNMSG  FIFEXP
      012032                            FIFEXP::
2439 012032                                    PRINTX  #FIF1MSG,R1     ;PRINT BYTES TRANSFERRED
      012032  010146                            MOV     R1,-(SP)
      012034  012746  012104                    MOV     #FIF1MSG,-(SP)
      012040  012746  000002                    MOV     #2,-(SP)
      012044  010600                            MOV     SP,R0
      012046  104415                            TRAP    C$PNTX
      012050  062706  000006                    ADD     #6,SP
2440 012054                                    PRINTX  #FIF2MSG        ;PRINT HEADER MSG
      012054  012746  012153                    MOV     #FIF2MSG,-(SP)
      012060  012746  000001                    MOV     #1,-(SP)
      012064  010600                            MOV     SP,R0
      012066  104415                            TRAP    C$PNTX
      012070  062706  000004                    ADD     #4,SP
2441 012074  010100                            MOV     R1,R0           ;GET BYTE COUNT
2442 012076  004737  016006                    JSR     PC,PRBYTEXP     ;PRINT FIFO BYTES IN ERROR
2443 012102                                    ENDMSG
      012102                            L10012:
      012102  104423                            TRAP    C$MSG
2444 012104     045     116     045  FIF1MSG:          .ASCIZ  '<N><A NUMBER OF BYTES TRANSFERRED = <D2>'
2445 012153     045     116     045  FIF2MSG:          .ASCIZ  '<N><A FIFO DATA BYTES IN ERROR:'
2446                                                    .EVEN
2447
```

```
                                        .SBTTL  MSGSTAT - PRINT STATUS HEADER AND MESSAGE BUFFERS
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT MESSAGE BUFFER EXPD/RECV
                                ;
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                ;-
                                        BGNMSG  MSGSTAT
012212                          MSGSTAT::
012212  012701  012254                  MOV     #STATCOD,R1     ;ASCII ADDRESS TABLE
012216  012100                  10$:    MOV     (R1)+,R0        ;DONE ALL MSG LINES?
012220  001410                          BEQ     20$             ;BR IF YES
012222                                  PRINTX  R0              ;PRINT STATUS BIT NAMES
012222  010046                          MOV     R0,-(SP)
012224  012746  000001                  MOV     #1,-(SP)
012230  010600                          MOV     SP,R0
012232  104415                          TRAP    C$PNTX
012234  062706  000004                  ADD     #4,SP
012240  000766                          BR      10$             ;DO ANOTHER MSG LINE
012242  012700  000012          20$:    MOV     #10.,R0         ;NUMBER OF WORDS IN A READ STATUS BUFFER
012246  004737  015436                  JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
012252                                  ENDMSG
012252                          L10013:
012252  104423                          TRAP    C$MSG

012254  012272  012334  012425  STATCOD:        .WORD   1$,2$,3$,4$,5$,6$,0
012272    045     116     045   1$:.ASCIZ  '%N%A Tape Bus Signals in Word #8:'


012334    045     116     045   2$:.ASCIZ  '%N%A        PARERR<15>  IEOT  <12>  IFMK  <9>  IRDY<6>  IRWD<2>'
012425    045     116     045   3$:.ASCIZ  '%N%A        IRESV2<14>  IIDENT<11>  IHER  <8>  IONL<5>  IFBY<1>'
012516    045     116     045   4$:.ASCIZ  '%N%A        IRESV1<13>  ICER  <10>  ISPEED<7>  ILDP<4>  IFPT<0>'
012607    045     116     045   5$:.ASCIZ  '%N%A Tape Bus Signals in Word #9:'
012651    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
                                ;-
                                        BGNMSG  MSGLOOP
012726
```

MSGLOOP - PRINT LOOPBACK HEADER AND MESSAGE BUFFERS

```
                012726                          MSGLOOP::
2498            012726  012701  012770                  MOV     @LOOPCOD,R1     ;ASCII ADDRESS TABLE
2499            012732  012100                  10$:    MOV     (R1)+,R0        ;DONE ALL MSG LINES?
2500            012734  001410                          BEQ     20$             ;BR IF YES
2501            012736                          .       PRINTX  R0              ;PRINT STATUS BIT NAMES
                012736  010046                          MOV     R0,-(SP)
                012740  012746  000001                  MOV     #1,-(SP)
                012744  010600                          MOV     SP,R0
                012746  104415                          TRAP    C$PNTX
                012750  062706  000004                  ADD     #4,SP
2502            012754  000766                          BR      10$             ;DO ANOTHER MSG LINE
2503            012756  012700  000012          20$:    MOV     #10.,R0         ;NUMBER OF WORDS IN A READ STATUS BUFFER
2504            012762  004737  015436                  JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
2505            012766                          .       ENDMSG
                012766                          L10014:
                012766  104423                          TRAP    C$MSG
2506
2507            012770  013010  013063  013162  LOOPCOD:        .WORD   1$,2$,3$,4$,5$,6$,7$,0
2508            013010     045     116     045  1$:.ASCIZ  '<NL><NL>A Tape Bus Loopback Signals in Word #0:'
2509            013063     045     116     045  2$:.ASCIZ  '<NL><NL>A       PARERR<15>          IRESV2<14>          IRESV1<13>'
2510            013162     045     116     045  3$:.ASCIZ  '<NL><NL>A IHISP=>IEOT<12>    IWRT=>IIDENT<11>    IREV  =>ICER  <10>'
2511            013261     045     116     045  4$:.ASCIZ  '<NL><NL>A IWFM =>IFMK<09>    IEDIT=>IHER <08>    IFAD  =>ISPEED<07>'
2512            013360     045     116     045  5$:.ASCIZ  '<NL><NL>A ITADO=>IRDY<06>    ITAD1=>IONL <05>    IERASE=>ILDP  <04>'
2513            013457     045     116     045  6$:.ASCIZ  '<NL><NL>A IREW =>IDBY<03>    IRWU =>IRWD <02>    IFEN  =>IFBY  <01>'
2514            013556     045     116     045  7$:.ASCIZ  '<NL><NL>A IGO  =>IFPT<00>'
2515                                                    .EVEN
2516
```

```
2518                                            .SBTTL  MSGSUB - PRINT WRITE SUBSYSTEM MESSAGE BUFFER
2519                                    ;+
2520                                    ;
2521                                    ;PRINT ROUTINE TO PRINT MESSAGE BUFFER EXPD/RECV
2522                                    ;
2523                                    ;
2524                                    ;IMPLICIT INPUTS:
2525                                    ;
2526                                    ;       EXPMSG  - EXPECTED MESSAGE BUFFER
2527                                    ;       RECMSG  - RECEIVED MESSAGE BUFFER
2528                                    ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
2529                                    ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
2530                                    ;-
2531 013604                                    BGNMSG  MSGSUB
     013604                             MSGSUB::
2532 013604  012700  000012                      MOV     #10.,R0         ;SIZE OF WRITE SUBSYSTEM BUFFER
2533 013610  004737  015436                      JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
2534 013614                                      ENDMSG
     013614                             L10015:
     013614  104423                             TRAP    C$MSG
2535
2536
2537
2538
2539
2540                                            .SBTTL  MEMADD - PRINT MEMORY ADDRESS DATA ERROR
2541                                    ;+
2542                                    ;
2543                                    ;PRINT ROUTINE TO PRINT MEMORY ADDRESS DATA COMPARE ERROR
2544                                    ;
2545                                    ;IMPLICIT INPUTS:
2546                                    ;
2547                                    ;       ERRHI   - MEMORY ERROR HIGH ORDER ADDRESS
2548                                    ;       ERRLO   - MEMORY ERROR LOW ORDER ADDRESS
2549                                    ;       EXP     - EXPECTED DATA
2550                                    ;       RECV    - RECEIVED DATA
2551                                    ;-
2552 013616                                    BGNMSG  MEMADD
     013616                             MEMADD::
2553 013616  004737  007716                      JSR     PC,PRIADD       ;PRINT MEMORY ADDRESS IN ERROR
2554 013622  013701  002176                      MOV     EXPD,R1         ;GET EXPD DATA
2555 013626  013702  002200                      MOV     RECV,R2         ;GET RECEIVED DATA
2556 013632  004737  007500                      JSR     PC,PRIXOR       ;PRINT EXPD/RECV
2557 013636                                      ENDMSG
     013636                             L10016:
     013636  104423                             TRAP    C$MSG
2558
```

```
                                .SBTTL  PRAMPKT - PRINT RAM AND PACKET DATA
                        ;+
                        ;
                        ;PRINT ROUTINE TO DISPLAY RAM/PACKET DATA
                        ;WHEN THE RAM DATA DOES NOT MATCH.
                        ;
                        ;INPUTS:
                        ;
                        ;       R4      POINTER TO COMMAND PACKET
                        ;
                        ;IMPLICIT INPUTS:
                        ;
                        ;       RAMDATA         DATA AS READ FROM THE RAM
                        ;       RAMSIZ          NUMBER OF BYTES IN PACKET
                        ;                       IF RAMSIZ=0 THEN DEFAULT TO 8.
                        ;
                        ;IMPLICIT OUTPUTS:
                        ;
                        ;       RAMSIZ  SET TO 0
                        ;-
                        PRAMPKT:
                                SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
                                MOV     @RAMDATA,R1     ;DATA FROM THE RAM
                                CLR     R2              ;INIT BYTE NUMBER
                        5$:     CMPB    (R1)+,(R4)+     ;COMPARE EXPECTED, RECEIVED
                                BNE     7$              ;BR IF NO MATCH
                        7$:     MOVB    -1(R1),R5       ;GET RECV RAM DATA
                                MOVB    -1(R4),R3       ;GET EXPD PACKET DATA
                                XOR     R5,R3           ;XOR EXPD/RECV
                                BIC     #177400,R3      ;LOW BYTE ONLY
                                MOVB    -1(R1),RECV     ;GET RECEIVED RAM DATA
                                MOVB    -1(R4),EXPD     ;GET EXPECTED RAM DATA
                                PRINTB  @RAMASC,R2,RECV,EXPD,R3
013716  010346                  MOV     R3,-(SP)
013720  013746  002176          MOV     EXPD,-(SP)
013724  013746  002200          MOV     RECV,-(SP)
013730  010246                  MOV     R2,-(SP)
013732  012746  014006          MOV     @RAMASC,-(SP)
013736  012746  000005          MOV     #5,-(SP)
013742  010600                  MOV     SP,R0
013744  104414                  TRAP    C$PNTB
013746  062706  000014          ADD     #14,SP
                        10$:    INC     R2              ;UPDATE BYTE COUNT
                                TST     RAMSIZ          ;DEFAULT TO 8.?
                                BEQ     15$             ;BR IF YES
                                CMP     R2,RAMSIZ       ;DONE ALL BYTES?
                                BLE     5$              ;BR IF NO
                                BR      25$             ;
                        15$:    CMP     R2,#8.          ;DONE DEFAULT NUMBER OF BYTES?
                        20$:    BLT     5$              ;BR IF NO
                        25$:    CLR     RAMSIZ          ;SET DEFAULT RAMSIZ
                                RTS     PC              ;RETURN
014006    045   116   045 RAMASC: .ASCIZ  '%N%A  BYTE: %D2%A RAM: %03%A Packet: %03%A XOR:%03'
                                .EVEN
```

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

014072                          PRMESS:
014072                                  SAVREG                          ;SAVE THE REGISTERS
014076  010537  011032                  MOV     R5,RAMR5H               ;SAVE DEVICE REGISTER POINTER
014102  010005                          MOV     R0,R5                   ;SAVE LOW ORDER ADDRESS
014104  005737  003102                  TST     KTENABLE                ;ADDRESS ABOVE 28K?
014110  001001                          BNE     10$                     ;BR IF YES
014112  005001                          CLR     R1                      ;SET HIGH ORDER ADDRESS TO 0
014114  010103                  10$:    MOV     R1,R3                   ;SAVE HIGH ORDER ADDRESS
014116  006100                          ROL     R0                      ;SHIFT BIT15 TO C BIT
014120  006101                          ROL     R1                      ;SHIFT TO HIGH ORDER FOR PRINTOUT
014122                                  PRINTX  #PROASC,R1,R5            ;PRINT MESSAGE BUFFER ADDRESS
014122  010546                          MOV     R5,-(SP)
014124  010146                          MOV     R1,-(SP)
014126  012746  014730                  MOV     #PROASC,-(SP)
014132  012746  000003                  MOV     #3,-(SP)
014136  010600                          MOV     SP,R0
014140  104415                          TRAP    C$PNTX
014142  062706  000010                  ADD     #10,SP
014146  022715  177777                  CMP     #177777,(R5)            ;MESSAGE BUFFER FULL OF ONES
014152  001010                          BNE     15$                     ;BR IF BUFFER IS PROBABLY OKAY
014154                                  PRINTX  #MESBFN                 ;"MESSAGE BUFFER PROBABLY NOT VALID"
014154  012746  014650                  MOV     #MESBFN,-(SP)
014160  012746  000001                  MOV     #1,-(SP)
014164  010600                          MOV     SP,R0
014166  104415                          TRAP    C$PNTX
014170  062706  000004                  ADD     #4,SP
014174                          15$:    PRINTX  #PR1ASC                 ;PRINT HEADER FOR CONTENTS
014174  012746  014775                  MOV     #PR1ASC,-(SP)
014200  012746  000001                  MOV     #1,-(SP)
014204  010600                          MOV     SP,R0
014206  104415                          TRAP    C$PNTX
014210  062706  000004                  ADD     #4,SP
014214  005004                          CLR     R4                      ;NUMBER OF THE NEXT WORD
014216  010501                          MOV     R5,R1                   ;COPY LOW ORDER ADDRESS
014220  010300                          MOV     R3,R0                   ;COPY HIGH ORDER ADDRESS
014222  001403                          BEQ     20$                     ;BR IF NOT ABOVE 28K
014224  004737  020304                  JSR     PC,SETMAP               ;SETUP PAR ADDRESS IN R0
014230  010005                          MOV     R0,R5                   ;GET PAR FORMAT ADDRESS ABOVE 28K
014232                          20$:
014232                                  PRINTX  #MESHEA,(R5)+           ;PRINT "MESSAGE BUFFER HEADER ="
```

J6


```
                014232  012546                          MOV     (R5)+,-(SP)
                014234  012746  015033                  MOV     #MESHEA,-(SP)
                014240  012746  000002                  MOV     #2,-(SP)
                014244  010600                          MOV     SP,R0
                014246  104415                          TRAP    C$PNTX
                014250  062706  000006                  ADD     #6,SP
2647            014254                                  PRINTX  #DATAFL,(R5)+   ;PRINT "DATA FIELD LENGTH      ="
                014254  012546                          MOV     (R5)+,-(SP)
                014256  012746  015100                  MOV     #DATAFL,-(SP)
                014262  012746  000002                  MOV     #2,-(SP)
                014266  010600                          MOV     SP,R0
                014270  104415                          TRAP    C$PNTX
                014272  062706  000006                  ADD     #6,SP
2648            014276                                  PRINTX  #RBPCRA,(R5)+   ;PRINT "RESIDUAL BYTE COUNTER ="
                014276  012546                          MOV     (R5)+,-(SP)
                014300  012746  015145                  MOV     #RBPCRA,-(SP)
                014304  012746  000002                  MOV     #2,-(SP)
                014310  010600                          MOV     SP,R0
                014312  104415                          TRAP    C$PNTX
                014314  062706  000006                  ADD     #6,SP
2649            014320                                  PRINTX  #XSOCON,(R5)+   ;PRINT "XSTAT0 CONTENTS       ="
                014320  012546                          MOV     (R5)+,-(SP)
                014322  012746  015212                  MOV     #XSOCON,-(SP)
                014326  012746  000002                  MOV     #2,-(SP)
                014332  010600                          MOV     SP,R0
                014334  104415                          TRAP    C$PNTX
                014336  062706  000006                  ADD     #6,SP
2650            014342                                  PRINTX  #XS1CON,(R5)+   ;PRINT "XSTAT1 CONTENTS       ="
                014342  012546                          MOV     (R5)+,-(SP)
                014344  012746  015257                  MOV     #XS1CON,-(SP)
                014350  012746  000002                  MOV     #2,-(SP)
                014354  010600                          MOV     SP,R0
                014356  104415                          TRAP    C$PNTX
                014360  062706  000006                  ADD     #6,SP
2651            014364                                  PRINTX  #XS2CON,(R5)+   ;PRINT "XSTAT2 CONTENTS       ="
                014364  012546                          MOV     (R5)+,-(SP)
                014366  012746  015324                  MOV     #XS2CON,-(SP)
                014372  012746  000002                  MOV     #2,-(SP)
                014376  010600                          MOV     SP,R0
                014400  104415                          TRAP    C$PNTX
                014402  062706  000006                  ADD     #6,SP
2652            014406                                  PRINTX  #XS3CON,(R5)+   ;PRINT "XSTAT3 CONTENTS       ="
                014406  012546                          MOV     (R5)+,-(SP)
                014410  012746  015371                  MOV     #XS3CON,-(SP)
                014414  012746  000002                  MOV     #2,-(SP)
                014420  010600                          MOV     SP,R0
                014422  104415                          TRAP    C$PNTX
                014424  062706  000006                  ADD     #6,SP
2653            014430  022737  000001  002134          CMP     #1,TRANSTST     ;CHECK FOR RAM DUMP REQUIRED
2654            014436  001402                          BEQ     40$             ;BR. IF DUMP REQUIRED
2655            014440  000137  014550                  JMP     50$             ;NO DUMP
2656            014444                          40$:    PRINTX  #RAMFHR
                014444  012746  014552                  MOV     #RAMFHR,-(SP)
                014450  012746  000001                  MOV     #1,-(SP)
                014454  010600                          MOV     SP,R0
                014456  104415                          TRAP    C$PNTX
                014460  062706  000004                  ADD     #4,SP
```

```
2657 014464  012737  000010  002246          MOV     #8.,RAMSIZ      ;RAM FIELD IS 8 BYTES LONG
2658 014472  012737  000020  011030          MOV     #20,RAMHLD      ;FIELD STARTS AT 20 OCTAL (10 HEX)
2659 014500  004737  010646                  JSR     PC,RAMER        ;READ AND PRINT THEM
2660 014504  012737  000040  011030          MOV     #40,RAMHLD      ;FIELD STARTS AT 40 OCTAL (20 HEX)
2661 014512  004737  010646                  JSR     PC,RAMER        ;READ AND PRINT THEM
2662 014516  012737  000060  011030          MOV     #60,RAMHLD      ;FIELD STARTS AT 60 OCTAL (30 HEX)
2663 014524  004737  010646                  JSR     PC,RAMER        ;READ AND PRINT THEM
2664 014530  012737  000020  002246          MOV     #16.,RAMSIZ     ;RAM FIELD IS SIXTEEN BYTES LONG
2665 014536  012737  000100  011030          MOV     #100,RAMHLD     ;FIELD STARTS AT 100 OCTAL (40 HEX)
2666 014544  004737  010646                  JSR     PC,RAMER        ;READ AND PRINT THEM
2667 014550  000207                  50$:    RTS     PC              ;RETURN
2668 014552     045     116     045  RAMFHR: .ASCIZ  '<N><A ********** SPECIAL CONTROLLER RAM MEMORY DUMP **********'
2669 014650     045     116     045  MESBFN: .ASCIZ  '<N><A MESSAGE BUFFER CONTENTS PROBABLY NOT VALID'
2670 014730     045     116     045  PROASC: .ASCIZ  '<N><A Message Buffer Address = <01><05>'
2671 014775     045     116     045  PR1ASC: .ASCIZ  '<N><A Message Buffer Contents:'
2672
2673 015033     045     116     045  MESHEA: .ASCIZ  '<N><A Message Buffer Header      = <06>'
2674 015100     045     116     045  DATAFL: .ASCIZ  '<N><A Data Field Length          = <06>'
2675 015145     045     116     045  RBPCRA: .ASCIZ  '<N><A Residual Byte Counter      = <06>'
2676 015212     045     116     045  XS0CON: .ASCIZ  '<N><A XSTAT0 Contents            = <06>'
2677 015257     045     116     045  XS1CON: .ASCIZ  '<N><A XSTAT1 Contents            = <06>'
2678 015324     045     116     045  XS2CON: .ASCIZ  '<N><A XSTAT2 Contents            = <06>'
2679 015371     045     116     045  XS3CON: .ASCIZ  '<N><A XSTAT3 Contents            = <06>'
2680                                  .EVEN
```

```
                                        .SBTTL  PRMSGEXP - PRINT EXPD/RECV MESSAGE BUFFERS
                                ;+[B
                                ;
                                ;ROUTINE TO PRINT EXPECTED AND RECEIVED MESSAGE BUFFERS
                                ;
                                ;       R0      - NUMBER OF WORDS IN BUFFER
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                ;-
2696 015436                     PRMSGEXP::
2697 015436                             SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
2698 015442  010005                     MOV     R0,R5                   ;SAVE NUMBER OF WORDS
2699 015444  013700  002252             MOV     RCVLOADD,R0             ;GET RECV LOW ADDRESS
2700 015450  010004                     MOV     R0,R4                   ;COPY LOW ADDRESS
2701 015452  013701  002250             MOV     RCVHIADD,R1             ;GET RECV HIGH ADDRESS
2702 015456  006100                     ROL     R0                      ;SHIFT BIT15 TO C BIT
2703 015460  006101                     ROL     R1                      ;SHIFT TO HIGH ORDER FOR PRINTOUT
2704 015462                             PRINTX  #PRMSG0,R1,R4           ;PRINT MESSAGE BUFFER ADDRESS
     015462  010446                     MOV     R4,-(SP)
     015464  010146                     MOV     R1,-(SP)
     015466  012746  015616             MOV     #PRMSG0,-(SP)
     015472  012746  000003             MOV     #3,-(SP)
     015476  010600                     MOV     SP,R0
     015500  104415                     TRAP    C$PNTX
     015502  062706  000010             ADD     #10,SP
2705 015506                             PRINTX  #PRMSG1                 ;PRINT HEADER FOR CONTENTS
     015506  012746  015663             MOV     #PRMSG1,-(SP)
     015512  012746  000001             MOV     #1,-(SP)
     015516  010600                     MOV     SP,R0
     015520  104415                     TRAP    C$PNTX
     015522  062706  000004             ADD     #4,SP
2706 015526  005004                     CLR     R4                      ;NUMBER OF THE CURRENT WORD
2707 015530  012701  002266             MOV     #EXPMSG,R1              ;GET EXPD BUFFER ADDRESS
2708 015534  012702  002432             MOV     #RECMSG,R2              ;GET RECV BUFFER ADDRESS
2709 015540  011100             20$:    MOV     (R1),R0                 ;GET EXPD
2710 015542  011203                     MOV     (R2),R3                 ;GET RECV
2711 015544                             XOR     R0,R3                   ;XOR EXPD/RECV
2712 015554                             PRINTX  #PRMSG2,R4,(R1)+,(R2)+,R3
     015554  010346                     MOV     R3,-(SP)
     015556  012246                     MOV     (R2)+,-(SP)
     015560  012146                     MOV     (R1)+,-(SP)
     015562  010446                     MOV     R4,-(SP)
     015564  012746  015721             MOV     #PRMSG2,-(SP)
     015570  012746  000005             MOV     #5,-(SP)
     015574  010600                     MOV     SP,R0
     015576  104415                     TRAP    C$PNTX
     015600  062706  000014             ADD     #14,SP
2713 015604  005204                     INC     R4                      ;NUMBER OF THE NEXT
2714 015606  020405                     CMP     R4,R5                   ;DONE ALL YET?
2715 015610  002001                     BGE     50$                     ;BR IF YES
2716 015612  000752                     BR      20$                     ;DO ANOTHER
2717 015614  000207             50$:    RTS     PC                      ;RETURN
```

```
2718
2719 015616     045     116     045  PRMSG0: .ASCIZ  '%N%A Message Buffer Address = %01%05'
2720 015663     045     116     045  PRMSG1: .ASCIZ  '%N%A Message Buffer Contents:'
2721 015721     045     116     045  PRMSG2: .ASCIZ  '%N%A   WORD #%D2%A  EXPD: %06%A  RECV: %06%A  XOR: %06'
2722                                          .EVEN
2723
```

```
                                        .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
                                ;-
016006                          PRBYTEXP::
016006                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
016012  010005                          MOV     R0,R5                   ;SAVE NUMBER OF BYTES
016014  005037  002264                  CLR     PRMNO                   ;INIT ERROR COUNT
016020  005004                          CLR     R4                      ;NUMBER OF THE CURRENT BYTE
016022  012701  002266                  MOV     @EXPMSG,R1              ;GET EXPD BUFFER ADDRESS
016026  012702  002432                  MOV     @RECMSG,R2              ;GET RECV BUFFER ADDRESS
016032  111100                  20$:    MOVB    (R1),R0                 ;GET EXPD BYTE
016034  042700  177400                  BIC     #^C<377>,R0             ;CLEAR UPPER BYTE
016040  110037  016354                  MOVB    R0,PRBEXP               ;SAVE FOR ERROR REPORT
016044  111203                          MOVB    (R2),R3                 ;GET RECV BYTE
016046  042703  177400                  BIC     #^C<377>,R3             ;CLEAR UPPER BYTE
016052  110337  016356                  MOVB    R3,PRBREC               ;FOR ERROR REPORT
016056                                  XOR     R0,R3                   ;XOR EXPD/RECV
016066  122122                          CMPB    (R1)+,(R2)+             ;EXPD = RECV?
016070  001431                          BEQ     30$                     ;BR IF YES
016072  005237  002264                  INC     PRMNO                   ;UPDATE ERROR COUNT
016076  023727  002264  000010          CMP     PRMNO,#8.               ;PRINTED 8?
016104  101023                          BHI     30$                     ;BR IF YES
016106                          27$:    PRINTX  #PRBMSG,R4,PRBEXP,PRBREC,R3
016106  010346                          MOV     R3,-(SP)
016110  013746  016356                  MOV     PRBREC,-(SP)
016114  013746  016354                  MOV     PRBEXP,-(SP)
016120  010446                          MOV     R4,-(SP)
016122  012746  016222                  MOV     #PRBMSG,-(SP)
016126  012746  000005                  MOV     #5,-(SP)
016132  010600                          MOV     SP,R0
016134  104415                          TRAP    C$PNTX
016136  062706  000014                  ADD     #14,SP
016142                                  FORCEXIT        50$             ;@@D
016152  000404                          BR      35$                     ;@@D
016154                          30$:
016154                                  FORCERROR  27$,NOTSSR           ;@@D
016164                          35$:                                    ;@@D
016164  005204                          INC     R4                      ;NUMBER OF THE NEXT
016166  020405                          CMP     R4,R5                   ;DONE ALL YET?
016170  002001                          BGE     50$                     ;BR IF YES
016172  000717                          BR      20$                     ;DO ANOTHER
016174                          50$:    PRINTX  #PRBTOT,PRMNO           ;PRINT TOTAL ERROR COUNT
016174  013746  002264                  MOV     PRMNO,-(SP)
016200  012746  016307                  MOV     #PRBTOT,-(SP)
016204  012746  000002                  MOV     #2,-(SP)
016210  010600                          MOV     SP,R0
016212  104415                          TRAP    C$PNTX
```

```
        016214  062706  000006                  ADD     #6,SP
   2768 016220  000207                          RTS     PC              ;RETURN
   2769
   2770 016222     045     116     045  PRBMSG: .ASCIZ  '<N><A>   BYTE #<D2><A>  EXPD: <03><A>  RECV: <03><A>  XOR: <03>'
   2771 016307     045     116     045  PRBTOT: .ASCIZ  '<N><A> NUMBER OF BYTES IN ERROR = <D2>'
   2772                                 .EVEN
   2773 016354  000000                  PRBEXP: .WORD   0               ;EXPD
   2774 016356  000000                  PRBREC: .WORD   0               ;RECV
   2775
```

```
2777                                            .SBTTL  EXPREC  - PRINT EXPD/RECV WORD DATA
2778                                    ;+
2779                                    ;
2780                                    ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
2781                                    ;
2782                                    ;INPUTS:
2783                                    ;
2784                                    ;       R1      RECEIVED DATA
2785                                    ;       R2      EXPECTED DATA
2786                                    ;
2787                                    ;-
2788
2789 016360                                      BGNMSG  EXPREC
     016360                             EXPREC::
2790 016360  004737  007500                       JSR     PC,PRIXOR       ;PRINT THE DATA
2791 016364                                       ENDMSG
     016364                             L10017:
     016364  104423                             TRAP    C$MSG
2792
2793
```

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

                                        BGNMSG  EXPBREC
                                EXPBREC::
004737  007350                          JSR     PC,PRIBXOR      ;PRINT THE DATA
                                        ENDMSG
                                L10020:
104423                                  TRAP    C$MSG


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

                                        BGNMSG  RAMERR
                                RAMERR::
004737  013640                          JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
                                        ENDMSG
                                L10021:
104423                                  TRAP    C$MSG


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

```
2846                                    ;
2847                                    ;       R4      POINTER TO COMMAND PACKET
2848                                    ;
2849                                    ;IMPLICIT INPUTS:
2850                                    ;
2851                                    ;       RAMDATA         DATA AS READ FROM THE RAM
2852                                    ;       RAMSIZ          NUMBER OF BYTES IN PACKET
2853                                    ;                       IF RAMSIZ=0 THEN DEFAULT TO 8.
2854                                    ;       ERRHI           HIGH ORDER TEST ADDRESS
2855                                    ;       ERRLO           LOW ORDER TEST ADDRESS
2856                                    ;
2857                                    ;IMPLICIT OUTPUTS:
2858                                    ;
2859                                    ;       RAMSIZ  SET TO 0
2860                                    ;-
2861
2862 016402                                         BGNMSG  RAMTADD
       016402                           RAMTADD::
2863 016402  004737  010032                        JSR     PC,PRITADD      ;PRINT TEST ADDRESS
2864 016406  004737  013640                        JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
2865 016412                                         ENDMSG
       016412                           L10022:
       016412  104423                             TRAP    C$MSG
2866
2867
2868                                                .SBTTL  RAMEXP  - PRINT RAM EXPD/RECV DATA
2869                                    ;+
2870                                    ;
2871                                    ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
2872                                    ;
2873                                    ;INPUTS:
2874                                    ;
2875                                    ;       R1      RECEIVED DATA
2876                                    ;       R2      EXPECTED DATA
2877                                    ;       R4      CONTROLLER RAM ADDRESS
2878                                    ;-
2879
2880 016414                                         BGNMSG  RAMEXP
       016414                           RAMEXP::
2881 016414  042701  177400                        BIC     #^C<377>,R1     ;SAVE EXPD RAM DATA BYTE
2882 016420  042702  177400                        BIC     #^C<377>,R2     ;SAVE EXPD RAM DATA BYTE
2883 016424  004737  007624                        JSR     PC,PRIRAM       ;PRINT THE RAM ADDRESS
2884 016430  004737  007500                        JSR     PC,PRIXOR       ;PRINT THE DATA
2885 016434                                         ENDMSG
       016434                           L10023:
       016434  104423                             TRAP    C$MSG
2886
2887
2888                                                .SBTTL  TIMEXP  - PRINT TIMER A,B AND EXP/REC
2889                                    ;+
2890                                    ;
2891                                    ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
2892                                    ;AND TIMER A,B HEADER MESSAGE
2893                                    ;
2894                                    ;INPUTS:
2895                                    ;
2896                                    ;       R1      RECEIVED DATA
                                        ;       R2      EXPECTED DATA
```

```
2897                                    ;-
2898
2899 016436                                     BGNMSG  TIMEXP
     016436                             TIMEXP::
2900 016436                                     PRINTX  #TIMSGO         ;PRINT HEADER
     016436  012746  016464                     MOV     #TIMSGO,-(SP)
     016442  012746  000001                     MOV     #1,-(SP)
     016446  010600                             MOV     SP,R0
     016450  104415                             TRAP    C$PNTX
     016452  062706  000004                     ADD     #4,SP
2901 016456  004737  007500                     JSR     PC,PRIXOR       ;PRINT THE DATA
2902 016462                                     ENDMSG
     016462                             L10024:
     016462  104423                             TRAP    C$MSG
2903
2904
2905 016464      045     116     045   TIMSGO: .ASCIZ  '<N><A TIMER A STATUS IS IN BIT 3<N><A TIMER B STATUS IS IN BIT 2'
2906                                    .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
016564                  BADSSR::
016564  010246                  MOV     R2,-(SP)        ;SAVE DATA TRANSFERRED
016566  042702  177400          BIC     #177400,R2      ;GET JUST ONE BYTE
016572                          PRINTB  #XFERASC,R2
016572  010246                  MOV     R2,-(SP)
016574  012746  016624          MOV     #XFERASC,-(SP)
016600  012746  000002          MOV     #2,-(SP)
016604  010600                  MOV     SP,R0
016606  104414                  TRAP    C$PNTB
016610  062706  000006          ADD     #6,SP
016614  012602                  MOV     (SP)+,R2        ;RESTORE R2
016616  004737  005264          JSR     PC,PRITSSR      ;DECODE TSSR CONTENTS
016622                          ENDMSG
016622                  L10025:
016622  104423                  TRAP    C$MSG
016624     045     116     045  XFERASC:        .ASCIZ  '%N%A Data Transferred = %03'
```

```
                                .SBTTL  GLOBAL SUBROUTINES SECTION

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

```
                                .SBTTL  SOFINIT - SOFT INITIALIZE OF CONTROLLER

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

016660                  SOFINIT::
016660                          SAVREG                  ; SAVE THE REGISTERS
016664  012765  000000  000000          MOV     #0,TSSR(R5)     ; DO THE INIT.
016672  004737  017134                  JSR     PC,WAITF        ; WAIT FOR SSR
016676  016500  000000                  MOV     TSSR(R5),R0     ;GET THE TSSR REGISTER
016702  010004                          MOV     R0,R4           ;START SETUP OF EXPECTED TSSR
016704  042704  176277                  BIC     #^C<HIADDR!OFL>,R4 ;CLEAR OUT UNUSED BITS
016710  052704  002200                  BIS     #SSR!NBA,R4     ;R4 HAS EXPECTED CONTENTS
016714  020400                          CMP     R4,R0           ;ONLY EXPECTED BITS SET ?
016716  001402                          BEQ     5$              ;BRANCH IF OKAY
016720  000241                          CLC                     ;CLEAR THE CARRY FOR ERROR
016722  000401                          BR      10$             ;GO TO EXIT
016724  000261                  5$:     SEC                     ;SET THE CARRY BIT
016726  000207                  10$:    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
                        ;
                        ;-

016730                  CHKAMB:
016730                          SAVREG                  ;SAVE THE GENERAL REGISTERS
016734  010004                  MOV     R0,R4           ;CONTENTS OF TSSR
016736  032700  100000          BIT     #SC,R0          ;IS BIT 15 SET ?
016742  001004                  BNE     5$              ;BRANCH IF YES
016744  032700  174077          BIT     #^C<NBA!OFL!SSR!HIADDR>,R0      ;ANY OTHER BITS SET ?
016750  001023                  BNE     40$             ;MUST BE AN ERROR
016752  000424                  BR      45$             ;RETURN WITH SUCCESS
016754  032700  000200  5$:     BIT     #SSR,R0         ;IS READY BIT SET ?
016760  001011                  BNE     10$             ;BRANCH IF READY BIT IS SET.
016762  032700  000040          BIT     #BIT5,R0        ;IS FATAL ERROR BIT SET ?
016766  001414                  BEQ     40$             ;ERROR IF NOT
016770  042704  177761          BIC     #^CTERCLS,R4    ;CLEAR ALL BUT TERMINATION CODE
016774  020427  000016          CMP     R4,#16          ;ALL THREE BITS MUST BE SET
017000  001007                  BNE     40$             ;ERROR IF NOT SET
017002  000410                  BR      45$             ;OK IF ALL ARE SET
017004  032700  000040  10$:    BIT     #BIT5,R0        ;IS FATAL ERROR BIT SET ?
017010  001405                  BEQ     45$             ;ERROR IF BIT IS SET WITH SSR
017012  032700  000006          BIT     #BIT2!BIT1,R0   ;IS THIS A FUNCTION REJECT
017016  001002                  BNE     45$             ;BR, IF TSSR IS OK
017020  000241  40$:     CLC                             ;AMBIGUOUS CONTENTS
017022  000401                  BR      50$
017024  000261  45$:     SEC                             ;SHOW SUCCESS - NO AMBIGUITY
017026  000207  50$:     RTS     PC                      ;RETURN TO CALLER
```

```
3028                                            .SBTTL  ENAINT,DSBINT - ENABLE/DISABLE INTERRUPTS
3029                                    ;
3030                                    ; DEFAULT DISPLAY INTERRUPT HANDLERS.
3031                                    ; IF DISPLAY TIME-OUT, REPORT DEV FATAL, AND ABORT PASS.
3032                                    ; OTHERWISE, SAVE CPU REGISTERS AND DISMISS.
3033                                    ;
3034
3035                                    ; BIT DEFINITIONS FOR "INTMASK" AND "INTFLAG" BYTES:
3036                                    ;
3037            000200                          IOKCKIN=BIT7            ; DON'T CHECK FOR BAD INTERRUPTS -- TEST WILL.
3038            000001                          IOKSTP=BIT0             ; EXPECT "STOP" INTERRUPT.
3039                                    ;
3040                                    ;INTERRUPT MASK -- SAYS EXPECTING INTERRUPTS
3041 017030      000                   INTMASK:        .BYTE   0
3042                                    ;INTERRUPT FLAG -- SAYS WE GOT ONE (IF POSITIVE)
3043 017031      000                   INTFLAG:        .BYTE   0
3044
3045                                    ;SAVED INTERRUPT VECTOR:
3046 017032  000000                    INTVEC: .WORD   0
3047                                    ;SAVE CPU PC
3048 017034  000000                    INTCPC: .WORD   0
3049
3050                                    ;SUBROUTINE TO ENABLE INTERRUPTS:
3051 017036  010046                    ENAINT: MOV     R0,-(SP)        ;SAVE R0
3052 017040  013700  002156                    MOV     IVEC,R0         ;GET POINTER TO VECTORS
3053 017044  012720  017102                    MOV     #INTR,(R0)+     ;SET UP INTERRUPT VECTOR
3054 017050  012720  000340                    MOV     #PRI07,(R0)+
3055 017054  012600                            MOV     (SP)+,R0        ;RESTORE R0
3056 017056  011646                            MOV     (SP),-(SP)
3057 017060  012766  000000  000002            MOV     #0,2(SP)        ;SET CPU TO LEVEL 0
3058 017066  000002                            RTI
3059
3060                                    ;SUBROUTINE TO DISABLE INTERRUPTS (RAISE PRIORITY TO LEVEL 7)
3061 017070  011646                    DSBINT: MOV     (SP),-(SP)
3062 017072  012766  000340  000002            MOV     #PRI07,2(SP)
3063 017100  000002                            RTI
3064
```

```
3066                                            .SBTTL  INTR    - INTERRUPT HANDLERS
3067
3068 017102                                     BGNSRV  INTR            ;DEFINE INTERRUPT ENTRY
     017102                             INTR::
3069 017102  012737  000001  002172             MOV     #1,INTRECV      ;SET FLAG TO SHOW INTERRUPT RECEIVED
3070 017110  105037  017031                     CLRB    INTFLAG         ;CLEAR FLAG TO SAY WE GOT INTERRUPT
3071 017114  132737  000001  017030             BITB    #IOKSTP,INTMASK ;EXPECTING STOP INTERRUPT?
3072 017122  001003                             BNE     1$              ;BR IF YES
3073 017124  152737  000001  017031             BISB    #IOKSTP,INTFLAG ;NO. SET THE ERROR FLAG.
3074
3075                                     ;SAVE REGISTERS, MSG BUFFER, ETC.
3076 017132                             1$:
3077 017132                                     ENDSRV
     017132                             L10026:
     017132  000002                             RTI
3078
3079
```

```
                                        .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
                                ;
017134                          WAITF:: BREAK                   ; DO A SUPVSR BREAK FIRST.
017134  104422                          TRAP    C$BRK
017136  012746  177776                  MOV     #177776,-(SP)   ;BIG MSEC TIMER
017142                                  DELAY   1               ;DELAY 100US
017142  012727  000001                  MOV     #1,(PC)+
017146  000000                          .WORD   0
017150  013727  002116                  MOV     L$DLY,(PC)+
017154  000000                          .WORD   0
017156  005367  177772                  DEC     -6(PC)
017162  001375                          BNE     .-4
017164  005367  177756                  DEC     -22(PC)
017170  001367                          BNE     .-20
017172  016500  000000          2$:     MOV     TSSR(R5),R0     ;READ THE TSSR REGISTER
017176  105700                          TSTB    R0              ;TEST FOR READY BIT SET
                                
017200  100421                          BMI     3$              ; EXIT ON STOP FLAG.
017202                                  DELAY   1               ; WAIT 100 USEC
017202  012727  000001                  MOV     #1,(PC)+
017206  000000                          .WORD   0
017210  013727  002116                  MOV     L$DLY,(PC)+
017214  000000                          .WORD   0
017216  005367  177772                  DEC     -6(PC)
017222  001375                          BNE     .-4
017224  005367  177756                  DEC     -22(PC)
017230  001367                          BNE     .-20
017232                                  BREAK                   ; DO A SUPVSR BREAK FIRST.
017232  104422                          TRAP    C$BRK
017234  005316                          DEC     (SP)            ;REDUCE DELAY COUNT
017236  001355                          BNE     2$              ;RETRY UNTIL TIMER EXPIRES
017240  000241                          CLC                     ; C = 0, CONTROLLER STILL RUNNING...
017242  000401                          BR      4$              ;...OR HUNG-UP AFTER 300 MSEC.
017244  000261                  3$:     SEC                     ; C = 1, CONTROLLER IS STOPPED.
017246  005326                  4$:     DEC     (SP)+           ;RESTORE STACK WITHOUT CHANGING CARRY BIT
017250  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
                        ;
                        ;-

017252                  CHKTSSR:
017252  004737  017134          JSR     PC,WAITF        ;WAIT FOR READY
017256  103014                  BCC     20$             ;BRANCH IF TIME OUT
017260  004737  016730          JSR     PC,CHKAMB       ;TSSR AMBIGOUS?
017264  103006                  BCC     10$             ;BR IF YES
017266  032700  100000          BIT     #SC,R0          ;SPECIAL CONDITION SET?
017272  001405                  BEQ     15$             ;BR IF NO
017274  032700  074000          BIT     #<SCE!BIE!RMR!NXM>,R0   ;ANY ERROR BITS SET?
017300  001402                  BEQ     15$             ;BR IF NO
017302  000241          10$:    CLC                     ;SET FAILURE
017304  000401                  BR      20$             ;
017306  000261          15$:    SEC                     ;SET SUCCESS
017310  000207          20$:    RTS     PC              ;RETURN TO CALLER
```

```
3145                                            .SBTTL  XNXM    - CHECK FOR NONEXISTENT MEMORY
3146                                    ;+
3147                                    ; ROUTINE TO TEST FOR A NEXM IN THE RANGE (R1) THRU (R2).
3148                                    ; ON RETURN, IF "C" = 1, (R1) = NEXM ADDRESS.
3149                                    ;               "C" = 0, ALL ADDRESSES OK.
3150                                    ;
3151                                    ;CALL:  MOV ADR1,R1
3152                                    ;       MOV ADR2,R2
3153                                    ;       JSR PC,NXM
3154                                    ;       RETURN                  ;TEST "C" AND PROCEED.
3155                                    ;
3156 017312  012737  017344  000004    XNXM:   MOV     #2$,@#4         ; SET BUSERR VECTOR.
3157 017320  012737  000200  000006            MOV     #PRI04,@#6
3158 017326  005003                            CLR     R3              ;FLAG.
3159 017330  005711                    1$:     TST     (R1)            ;TEST THE ADDRESS(ES).
3160                                                                    ;IF ANY TRAP, CONTINUE AT 2$.
3161 017332  020102                            CMP     R1,R2           ;OTHERWISE, CONTINUE HERE.
3162 017334  001407                            BEQ     3$              ;BR IF FINISHED (NO NEXM'S).
3163 017336  062701  000002                    ADD     #2,R1           ;SET NEXT ADDRESS...
3164 017342  000772                            BR      1$              ;...AND CONTINUE.
3165
3166 017344  005103                    2$:     COM     R3              ;GOT ONE, SET FLAG...
3167 017346  012716  017354                    MOV     #3$,(SP)
3168 017352  000002                            RTI                     ;...AND DISMISS INTERRUPT...
3169 017354                            3$:     CLRVEC  #4              ;...AND GIVE BACK THE VECTOR.
     017354  012700  000004                    MOV     #4,R0
     017360  104436                            TRAP    C$CVEC
3170 017362  005703                            TST     R3              ;DID WE CATCH ONE ??
3171 017364  001401                            BEQ     .+4             ;NO, "C" = 0, SKIP NEXT.
3172 017366  000261                            SEC                     ;YES, "C" = 1, (R1) = NEXM ADDR.
3173 017370  000207                            RTS     PC
3174
3175
3176
3177  .
3178                                            .SBTTL  TSTLOOP - CHECK ITERATION COUNT
3179                                    ;+
3180                                    ; SUBROUTINE TO EXECUTE TEST ITERATIONS.
3181                                    ; EXIT WITH "C" SET IF LOOPS ALLOWED AND LOOP COUNT NON-ZERO.
3182                                    ; LOOP COUNTER IS SET BY "BEGIN.TEST" MACRO.
3183                                    ;
3184                                    ; CALL: LOOPTO  ARG
3185                                    ;
3186 017372                            TSTLOOP::
3187 017372  005737  002136                    TST     NOITS           ; ITERATIONS INHIBITED?
3188 017376  001006                            BNE     1$              ; YES.
3189 017400  005737  002152                    TST     QVP             ; NO.
3190 017404  100403                            BMI     1$              ;LOOPS DISALLOWED IN QUICK PASS.
3191 017406  005337  002164                    DEC     LOOPCNT         ; BUMP LOOP COUNTER.
3192 017412  001002                            BNE     2$
3193 017414  000241                    1$:     CLC                     ;LOOP DISALLOWED, OR DONE.
3194 017416  000401                            BR      3$
3195 017420  000261                    2$:     SEC                     ;LOOP ENABLED.
3196 017422  000207                    3$:     RTS     PC
```

```
                                        .SBTTL  TSTSETUP - PRINT TEST NAME AND INIT ERROR COUNTS
                                ;+
                                ; PRINT THE NUMBER AND NAME OF EACH TEST AS WE GO ALONG.
                                ; INCREMENT "TESTK" TO INDICATE THE NUMBER OF TESTS
                                ; IN THE CURRENT RUN SEQUENCE.
                                ; CLEAR THE ERROR COUNTER AND SIGNATURE EXTENSION FLAGS.
                                ;
                                ;INPUT:
                                ;
                                ;       R0      POINTER TO TEST ID ASCIZ STRING
                                ;
                                ;OUTPUT:
                                ;
                                ;       R5      ADDRESS OF FIRST DEVICE REGISTER
                                ;
                                ;IMPLICIT OUTPUTS:
                                ;
                                ;       TSTCNT  UPDATED TO COUNT TESTS PERFORMED SINCE START OR RESTART
                                ;
                                ;SIDE EFFECTS:
                                ;
                                ;       INTERRUPT LEVEL IS RASIED TO LEVEL OF
                                ;       THE DEVICE UNDER TEST
                                ;
                                ;-
017424                          TSTSETUP::
017424  010046                         MOV     R0,-(SP)        ;SAVE THE TEST ID MESSAGE
017426  005037  003106                 CLR     SIFLAG          ; CLEAR "SOFT INIT" FLAG
017432  005037  017672                 CLR     ERRK            ; CLEAR LOCAL ERROR COUNTER.
017436  005037  005232                 CLR     EXTA            ; CLEAR ERROR EXTENSION FLAG.
017442  105037  017030                 CLRB    INTMASK         ; CLEAR INTERRUPT MASK (CHECK ERROR)
017446  013700  002150                 MOV     UNITN,R0        ; GET THE UNIT NUMBER,
017452  006300                         ASL     R0              ; ... AND MAKE IT A WORD OFFSET.
017454  005737  003062                 TST     NODEV           ; DID STARTUP FIND THE DEVICE?
017460  001430                         BEQ     4$              ; BR IF YES
017462  100010                         BPL     3$              ; BR IF NOT IDLE
017464  052760  160000  003130         BIS     #160000,ERTABL(R0) ; FLAG ERROR IN THE ERROR TABLE
017472                                 ERRDF   1,NXR,NXRERR    ; NO DEVICE HERE -- PRINT IT
017472  104455                         TRAP    C$ERDF
017474  000001                         .WORD   1
017476  003636                         .WORD   NXR
017500  005176                         .WORD   NXRERR
017502  000407                         BR      2$
017504  052760  160001  003130  3$:    BIS     #160001,ERTABL(R0) ; FLAG ERROR IN THE ERROR TABLE
017512                                 ERRDF   2,NOINIT         ; DEVICE NOT IDLE
017512  104455                         TRAP    C$ERDF
017514  000002                         .WORD   2
017516  004233                         .WORD   NOINIT
017520  000000                         .WORD   0
017522  012737  177777  003060  2$:    MOV     #-1,DUFLG       ; DROP THE UNIT
017530                                 DODU    UNITN
017530  013700  002150                 MOV     UNITN,R0
017534  104451                         TRAP    C$DODU
017536                                 DOCLN                   ; ABORT THE PASS
```

```
                017536  104444                          TRAP    C$DCLN
3245            017540  000423                          BR      5$
3246
3247            017542                          4$:     RFLAGS  R0              ; GET THE OPERATOR FLAGS.
                017542  104421                          TRAP    C$RFLA
3248            017544  032700  001000                  BIT     #PNT,R0         ; PRINT THE TEST NUMBERS?
3249            017550  001412                          BEQ     1$              ; BR IF NO
3250            017552  011600                          MOV     (SP),R0         ;GET THE ID MESSAGE
3251            017554                                  PRINTF  #TNAM,R0        ;DISPLAY THE TEST ID
                017554  010046                          MOV     R0,-(SP)
                017556  012746  017620                  MOV     #TNAM,-(SP)
                017562  012746  000002                  MOV     #2,-(SP)
                017566  010600                          MOV     SP,R0
                017570  104417                          TRAP    C$PNTF
                017572  062706  000006                  ADD     #6,SP
3252            017576  005237  002162          1$:     INC     TSTCNT          ; BUMP TEST COUNTER.
3253            017602                                  SETPRI  IPRI            ;PRIORITY THAT OF DEVICE
                017602  013700  002160                  MOV     IPRI,R0
                017606  104441                          TRAP    C$SPRI
3254            017610  005726                  5$:     TST     (SP)+           ;FIX UP THE STACK
3255            017612  013705  002154                  MOV     CSRADDR,R5      ; ADDRESS OF TSV REGISTERS ON UNIBUS
3256            017616  000207                          RTS     PC
3257            017620     045     123     045  TNAM:  .ASCIZ  '%S%T%A Test'
3258                                                    .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).
                                ;
017634                          TSTEND: RFLAGS  R0
017634  104421                         TRAP    C$RFLA
017636  030027  020000                 BIT     R0,#IER
017642  001412                         BEQ     1$                      ; BR IF "IER" NOT SET.
017644                                 PRINTF  #ESUM,ERRK              ; PRINT ERROR COUNT.
017644  013746  017672                 MOV     ERRK,-(SP)
017650  012746  017674                 MOV     #ESUM,-(SP)
017654  012746  000002                 MOV     #2,-(SP)
017660  010600                         MOV     SP,R0
017662  104417                         TRAP    C$PNTF
017664  062706  000006                 ADD     #6,SP
017670  000207                  1$:    RTS     PC

017672  000000                  ERRK:   0                               ; LOCAL ERROR COUNT.
017674     045     101     040  ESUM:   .ASCIZ  /%A %D%A ERRORS/
017713     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:
                                ;-
017760  005237  017672          INCERK: INC     ERRK                    ; INCREMENT LOCAL ERROR COUNT
017764  010046                         MOV     R0,-(SP)                ; SAVE R0
017766  013700  002150                 MOV     UNITN,R0                ; GET UNIT NUMBER,
017772  006300                         ASL     R0                      ; ... AND MAKE IT A WORD OFFSET.
017774  062700  003130                 ADD     #ERTABL,R0              ; R0 GETS ADDRESS OF ERROR TABLE ENTRY.
020000  005210                         INC     (R0)                    ; INCREMENT THE DEVICE ERROR COUNT
020002  032710  007777                 BIT     #7777,(R0)              ; DID WE OVERFLOW THE FIELD?
020006  001001                         BNE     1$                      ; BR IF NO.
020010  005310                         DEC     (R0)                    ; YES -- BACK IT UP TO 7777.
020012  012600                  1$:    MOV     (SP)+,R0                ; RESTORE R0
020014  000207                         RTS     PC                      ; RETURN TO CALLER.

020016  010046                  CKEMAX: MOV     R0,-(SP)                ; SAVE R0
020020  013700  002150                 MOV     UNITN,R0                ; GET UNIT NUMBER
020024  006300                         ASL     R0                      ; ... AND MAKE IT A WORD OFFSET
020026  016000  003130                 MOV     ERTABL(R0),R0           ; GET ERROR TABLE ENTRY
020032  042700  170000                 BIC     #170000,R0              ; EXTRACT ERROR COUNT FIELD
020036  020037  002142                 CMP     R0,GERRMAX              ; IS GLOBAL LIMIT EXCEEDED FOR THIS UNIT?
020042  103004                         BHIS    1$                      ; BR IF YES
020044  023737  017672  002140         CMP     ERRK,LERRMAX            ; IS LOCAL LIMIT EXCEEDED FOR THIS TEST?
020052  103417                         BLO     2$                      ; BR IF NO
020054                          1$:    RFLAGS  R0                      ; GET OPERATOR FLAGS
020054  104421                         TRAP    C$RFLA
020056  032700  000040                 BIT     #IDU,R0                 ; IS DROPPING INHIBITED?
020062  001013                         BNE     2$                      ; BR IF YES.
020064  012737  177777  003060         MOV     #-1,DUFLG               ; NO -- DROP THE UNIT
020072                                 ERRDF   4,EMAXDU
020072  104455                         TRAP    C$ERDF
020074  000004                         .WORD   4
020076  017713                         .WORD   EMAXDU
```

```
      020100  000000                          .WORD   0
 3306 020102                                  DODU    UNITN
      020102  013700  002150                  MOV     UNITN,R0
      020106  104451                          TRAP    C$DODU
 3307 020110                                  DOCLN
      020110  104444                          TRAP    C$DCLN
 3308 020112  012600                  2$:     MOV     (SP)+,R0        ; RESTORE R0
 3309 020114  000207                          RTS     PC              ; RETURN TO CALLER
 3310                                         .SBTTL  FATCHK - INC FATAL ERRORS AND CHECK FOR LIMIT
 3311                                 ;+
 3312                                 ;
 3313                                 ;       CHECK FATAL COUNTER, AFTER INC, FOR MORE THAN 25
 3314                                 ;       ERRORS AND IF OVER CALL UNIT DROP ROUTINE
 3315                                 ;
 3316                                 ;-
 3317 020116                          FATCHK:
 3318 020116                                  SAVREG                          ;BETTER SAVE THE REGISTERS
 3319 020122  013701  002150                  MOV     UNITN,R1                ;PICK UP THE UNIT NUMBER
 3320 020126  006301                          ASL     R1                      ;MAKE IT INTO A BYTE OFFSET
 3321 020130  062761  000001  003130          ADD     #1,ERTABL(R1)           ;ADD 1 TO THE PROPER UNIT'S ERROR COUNTER
 3322 020136  005237  002170                  INC     FATFLG                  ;BUMP FATAL ERROR COUNTER
 3323 020142  023727  002170  000031          CMP     FATFLG,#25.             ;CHECK AGAINST 25
 3324 020150  002406                          BLT     9$                      ;BR, IF LESS THAN 25 ERRORS
 3325 020152                                  RFLAGS  R0                      ;READ THE FLAGS INTO R0
      020152  104421                          TRAP    C$RFLA
 3326 020154  032700  040000                  BIT     #BIT14,R0               ;BR, IF LOOP ON ERROR IS SET
 3327 020160  001002                          BNE     9$                      ;OTHERWISE NEVER BE ABLE TO SCOPE ETC.
 3328 020162  004737  020170                  JSR     PC,CKDROP               ;DROP UNIT IF ALLOWED
 3329 020166  000207                  9$:     RTS     PC                      ;RETURN ETC.
 3330                                 ;
 3331                                 ;
 3332                                 ;
```

```
3334                                            .SBTTL  CKDROP  - CHECK IF UNIT SHOULD BE DROPPED
3335                                    ;+
3336                                    ; CHECK IF UNIT SHOULD BE DROPPED
3337                                    ;-
3338 020170  010046                    CKDROP: MOV     R0,-(SP)
3339 020172                                    FORCERROR       1$,NOTSSR
3340 020202                                    RFLAGS  R0
     020202  104421                            TRAP    C$RFLA
3341 020204  032700  000040                    BIT     #IDU,R0
3342 020210  001010                            BNE     1$
3343 020212  011600                            MOV     (SP),R0
3344 020214  012737  177777  003060            MOV     #-1,DUFLG
3345 020222                                    DODU    UNITN
     020222  013700  002150                    MOV     UNITN,R0
     020226  104451                            TRAP    C$DODU
3346 020230                                    DOCLN                   ;ABORT THE PASS
     020230  104444                            TRAP    C$DCLN
3347 020232  012600                    1$:     MOV     (SP)+,R0
3348 020234  000207                            RTS     PC
3349
3350
3351
3352
3353                                            .SBTTL  CONFIG  - DETERMINE CONFIGURATION OF SYSTEM
3354                                    ;
3355                                    ; SUBROUTINE - DETERMINE CONFIGURATION OF TK-25 SYSTEM.
3356                                    ;
3357 020236                            CONFIG:
3358 020236  004737  016660                    JSR     PC,SOFINIT
3359 020242  000207                            RTS     PC
3360
3361
3362
```

```
                                        .SBTTL  KTON,KTOFF      - ENABLE/DISABLE MEMORY MANAGEMENT
                                ;
                                ; SUBROUTINE - ENABLE MEM MGT.
                                ;
020244  005737  003100        KTON:   TST     KTFLG           ; GOT KT?
020250  001403                        BEQ     1$              ; NO.
020252  012737  000001  177572        MOV     #1,SR0          ; YES. ENABLE KT11.
020260  000207                1$:     RTS     PC
                                ;
                                ; SUBROUTINE - DISABLE MEM MGT.
                                ;
020262  005737  003100        KTOFF:  TST     KTFLG           ; GOT KT11?
020266  001405                        BEQ     1$              ; NO.
020270  000240                        NOP
020272  000240                        NOP
020274  012737  000000  177572        MOV     #0,SR0          ; DISABLE KT.
020302  000207                1$:     RTS     PC
```

```
                                .SBTTL  SETMAP  - SETUP PAR6 MAPPING

                        ;+
                        ;
                        ;THIS ROUTINE SETS UP KERNEL PAR6 TP HANDLE
                        ;AN 18 BIT ADDRESS. THE OFFSET INTO THE PAGE
                        ;IS RETURNED BIASED TO PAR6.
                        ;
                        ;INPUTS:
                        ;
                        ;       R0      HIGH ORDER ADDRESS BITS
                        ;       R1      LOW ORDER ADDRESS BITS
                        ;
                        ;OUTPUTS:
                        ;
                        ;       R0      OFFSET INTO BLOCK WITH PAR6 BIAS (I.E. THE ADDRESS)
                        ;       CARRY   SET IF SUCCESS
                        ;               CLR IF ERROR
                        ;-
020304                  SETMAP:
020304                          SAVREG                  ;SAVE R1-R4 UNTIL NEXT RETURN
020310  005737  003100          TST     KTFLG           ;SYSTEM HAVE ABOVE 28K?
020314  001433                  BEQ     10$             ;BR IF NO
020316  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
020350  042701  000177          BIC     #177,R1         ;ALINE FOR LOWER 4K BOUNDARY
020354  020137  003100          CMP     R1,KTFLG        ;HIGHER THAN EXISTING MEMORY?
020360  103011                  BHIS    10$             ;BR IF YES
020362  010137  172354          MOV     R1,@#KIPAR6     ;SETUP MAPPING REGISTER PAR6
020366  042702  160000          BIC     #160000,R2      ;SETUP DISPLACEMENT IN PAGE
020372  062702  140000          ADD     #140000,R2      ;ADD IN PAR6 BIAS
020376  010200                  MOV     R2,R0           ;RETURN IN R0
020400  000261                  SEC                     ;SET SUCCESS
020402  000401                  BR      15$             ;
020404  000241          10$:    CLC                     ;SET FAILURE
020406  000207          15$:    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
                                ;-
                                ;
020410                          FILLMEM:
020410                                  SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
020414  004737  020262                  JSR     PC,KTOFF        ;DISABLE KT.
020420  010003                          MOV     R0,R3           ;COPY TEST PATTERN
020422  013701  003072                  MOV     FREE,R1         ;GET FIRST FREE LOCATION
020426  013702  003074                  MOV     FRESIZ,R2       ;SIZE OF FREE SPACE BELOW 28K.
020432  010321                  10$:    MOV     R3,(R1)+        ;STORE A BACKGROUND WORD
020434  005302                          DEC     R2              ;DONE ALL MEMORY IN FREE SPACE?
020436  003375                          BGT     10$             ;BR IF NO
020440  005737  003100                  TST     KTFLG           ; GOT KT?
020444  001452                          BEQ     55$             ; NO. GET OUT.
020446  004737  020244                  JSR     PC,KTON         ; YES. ENABLE KT.
020452  005000                          CLR     R0              ;HIGH ORDER ADDRESS START
020454  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
020524  004737  020304                  JSR     PC,SETMAP       ;SETUP PAR6 MAPPING REGISTER
020530  010320                  30$:    MOV     R3,(R0)+        ;STORE TEST PATTERN IN >28K ADDRESS
020532  020027  160000                  CMP     R0,#160000      ;END OF PAR6 MAPPING AREA?
020536  103774                          BLO     30$             ;BR IF NO
020540  162700  020000                  SUB     #20000,R0       ;BACKUP INTO PAR6 MAPPING BEGIN
020544  062737  000200  172354          ADD     #200,@#KIPAR6   ;POINT TO NEXT 4K BLOCK >28K.
020552  023737  172354  003100          CMP     @#KIPAR6,KTFLG  ;END OF MEMORY?
020560  001402                          BEQ     50$             ;BR IF YES
020562  000137  020530                  JMP     30$             ;KEEP GOING ON ETC.
020566  004737  020262          50$:    JSR     PC,KTOFF        ; DISABLE KT.
020572  000207                  55$:    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
                                ;-
020574                          CMPMEM:
020574                                  SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
020600  010003                          MOV     R0,R3           ;COPY TEST PATTERN
020602  004737  020262                  JSR     PC,KTOFF        ;DISABLE KT.
020606  013701  003072                  MOV     FREE,R1         ;GET FIRST FREE LOCATION
020612  013702  003074                  MOV     FRESIZ,R2       ;SIZE OF FREE SPACE BELOW 28K.
020616  020311                  10$:    CMP     R3,(R1)         ;FREE SPACE LOCATION EQUAL TO EXPD?
020620  001411                          BEQ     15$             ;BR IF YES
020622  010137  002204                  MOV     R1,ERRLO        ;SAVE ADDRESS IN ERROR
020626  005037  002202                  CLR     ERRHI           ;NO HIGH ADDRESS
020632  010337  002176                  MOV     R3,EXPD         ;SAVE EXPD FOR ERROR REPORT
020636  011137  002200                  MOV     (R1),RECV       ;SAVE RECV FOR ERROR REPORT
020642  000474                          BR      50$             ;
020644  005721                  15$:    TST     (R1)+           ;POINT TO NEXT ADDRESS
020646  005302                          DEC     R2              ;DONE ALL MEMORY IN FREE SPACE?
020650  003362                          BGT     10$             ;BR IF NO
020652  005737  003100                  TST     KTFLG           ; GOT KT?
020656  001472                          BEQ     55$             ; NO. GET OUT.
020660  004737  020244                  JSR     PC,KTON         ; YES. ENABLE KT.
020664  005000                          CLR     R0              ;HIGH ORDER ADDRESS START
020666  013701  003104                  MOV     PST32W,R1       ;GET >28K START ADDRESS (IN 32W BLOCKS)
        000006                          .REPT   6
020722  042701  000177                  BIC     #177,R1         ;ALINE 4K BOUNDARY
020726  010046                          MOV     R0,-(SP)        ;SAVE HIGH ORDER
020730  010146                          MOV     R1,-(SP)        ;SAVE LOW ORDER
020732  004737  020304                  JSR     PC,SETMAP       ;SETUP PAR6 MAPPING REGISTER
020736  010004                          MOV     R0,R4           ;COPY ADDRESS BIASED TO PAR6
020740  012601                          MOV     (SP)+,R1        ;RESTORE LOW ORDER IN NON PAR6 FORMAT
020742  012600                          MOV     (SP)+,R0        ;RESTORE HIGH ORDER IN NON PAR6 FORMAT
020744  020314                  30$:    CMP     R3,(R4)         ;ABOVE 28K LOCATION EQUAL EXPD?
020746  001411                          BEQ     32$             ;BR IF YES
020750  010037  002202                  MOV     R0,ERRHI        ;SAVE HIGH ORDER IN ERROR
```

CMPMEM - COMPARE MEMORY TO BACKGROUND PATTERN

```
3533 020754  010137  002204                    MOV     R1,ERRLO          ;SAVE LOW ORDER IN ERROR
3534 020760  010337  002176                    MOV     R3,EXPD           ;SAVE EXPD FOR ERROR REPORT
3535 020764  011437  002200                    MOV     (R4),RECV         ;SAVE RECV FOR ERROR REPORT
3536 020770  000421                            BR      50$               ;
3537 020772  062701  000002          32$:      ADD     #2,R1             ;UPDATE NON PAR6 ADDRESS
3538 020776  005500                            ADC     R0                ;MAKE IT DOUBLE PRECISION ADD
3539 021000  062704  000002                    ADD     #2,R4             ;UPDATE PAR FORMAT ADDRESS
3540 021004  020427  160000                    CMP     R4,#160000        ;END OF PAR6 MAPPING AREA?
3541 021010  103755                            BLO     30$               ;BR IF NO
3542 021012  162704  020000                    SUB     #20000,R4         ;BACKUP INTO PAR6 MAPPING BEGIN
3543 021016  062737  000200  172354            ADD     #200,@#KIPAR6     ;POINT TO NEXT 4K BLOCK >28K.
3544 021024  023737  172354  003100            CMP     @#KIPAR6,KTFLG    ;END OF MEMORY?
3545 021032  101744                            BLOS    30$               ;BR IF NO
3546 021034  004737  020262          50$:      JSR     PC,KTOFF          ;TURN OFF MEMORY MAPPING
3547 021040  000241                            CLC                       ;SET FAILURE
3548 021042  000403                            BR      60$               ;
3549 021044  004737  020262          55$:      JSR     PC,KTOFF          ;TURN OFF MEMORY MAPPING
3550 021050  000261                            SEC                       ;SET SUCCESS
3551 021052  000207                  60$:      RTS     PC
3552
```

```
                                        .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
                                ;
                                ;-

021054                          REGSAV:
021054                                  BREAK                   ;LOOK FOR CNTL C
021054  104422                          TRAP    C$BRK
021056  010446                          MOV     R4,-(SP)
021060  010346                          MOV     R3,-(SP)
021062  010246                          MOV     R2,-(SP)
021064  010146                          MOV     R1,-(SP)
021066  010546                          MOV     R5,-(SP)
021070  016605  000012                  MOV     10.(SP),R5
021074  004736                          JSR     PC,@(SP)+
021076  012601                          MOV     (SP)+,R1
021100  012602                          MOV     (SP)+,R2
021102  012603                          MOV     (SP)+,R3
021104  012604                          MOV     (SP)+,R4
021106  012605                          MOV     (SP)+,R5
021110                                  BREAK                   ;LOOK FOR CNTL C
021110  104422                          TRAP    C$BRK
021112  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::
021114                          SAVREG                          ;SAVE THE GENERAL REGISTERS
021114                  1$:     GMANID  DATASC,PATDAT,0,377,0,377,NO
021120  104443                  TRAP    C$GMAN
021122  000406                  BR      10000$
021124  021150                  .WORD   PATDAT
021126  000022                  .WORD   T$CODE
021130  021152                  .WORD   DATASC
021132  000377                  .WORD   377
021134  000000                  .WORD   T$LOLIM
021136  000377                  .WORD   T$HILIM
021140                  10000$:
021140                          BNCOMPLETE      1$      ;RETRY IF ERROR
021140  103367                  BCC     1$
021142  013700  021150                MOV     PATDAT,R0       ;DATA PATTERN FROM OPERATOR
021146  000207                  RTS     PC              ;RETURN TO CALLER

                        ;+
                        ;LOCAL DATA AREA
                        ;-

021150  000000          PATDAT: .WORD   0               ;TEMPORARY STORAGE FOR DATA
021152     105     116     124 DATASC: .ASCIZ  'ENTER DATA PATTERN'
                                .EVEN
```

GETSEL - ISSUE MENU AND GET OPERATOR RESPONSE

```
                                        .SBTTL  GETSEL  - ISSUE MENU AND GET OPERATOR RESPONSE
                                ;+
                                ;ROUTINE TO ISSUE A MENU AND GET
                                ;THE OPERATOR'S RESPONSE.
                                ;INPUTS:
                                ;
                                ;       R0      ADDRESS OF ASCIZ STRING OF MENU
                                ;       R1      MAXIMUM ALLOWABLE OPERATOR RESPONSE
                                ;OUTPUTS:
                                ;
                                ;       R0      NUMBER OF THE OPERATOR'S SELECTION
                                ;-
021176                          GETSEL::
021176                                  SAVREG                          ;SAVE GENERAL REGISTERS
021202  010002                          MOV     R0,R2                   ;SAVE THE MENU ADDRESS
021204  010203                  1$:     MOV     R2,R3                   ;START OF MENU STRING
021206  005713                  2$:     TST     (R3)                    ;END OF ASCII ?
021210  001412                          BEQ     3$                      ;BRANCH IF ALL LINES DISPLAYED
021212                                  PRINTF  @SELASC,(R3)+           ;DISPLAY THE MENU
021212  012346                          MOV     (R3)+,-(SP)
021214  012746  021362                  MOV     @SELASC,-(SP)
021220  012746  000002                  MOV     #2,-(SP)
021224  010600                          MOV     SP,R0
021226  104417                          TRAP    C$PNTF
021230  062706  000006                  ADD     #6,SP
021234  000764                          BR      2$
021236                          3$:     GMANID  MENASC,MENRES,D,-1,0,-1,NO
021236  104443                          TRAP    C$GMAN
021240  000406                          BR      10001$
021242  021416                          .WORD   MENRES
021244  000042                          .WORD   T$CODE
021246  021367                          .WORD   MENASC
021250  177777                          .WORD   -1
021252  000000                          .WORD   T$LOLIM
021254  177777                          .WORD   T$HILIM
021256                          10001$:
021256                                  BNCOMPLETE      1$              ;RETRY IF ERROR
021256  103352                          BCC     1$
021260  013700  021416                  MOV     MENRES,R0               ;GET THE OPERATOR'S REPLY
021264  020001                          CMP     R0,R1                   ;COMPARE TO MAXIMUM ALLOWED
021266  101411                          BLOS    5$                      ;BRANCH IF OK
021270                                  PRINTF  @MENERR                 ;DISPLAY ERROR MESSAGE
021270  012746  021314                  MOV     @MENERR,-(SP)
021274  012746  000001                  MOV     #1,-(SP)
021300  010600                          MOV     SP,R0
021302  104417                          TRAP    C$PNTF
021304  062706  000004                  ADD     #4,SP
021310  000735                          BR      1$                      ;RETRY
021312  000207                  5$:     RTS     PC                      ;RETURN TO CALLER
021314     045     116     045  MENERR: .ASCIZ  '%N%A *** Menu Selection Too Large ***'
021362     045     116     045  SELASC: .ASCIZ  '%N%T'
021367     105     156     164  MENASC: .ASCIZ  'Enter Menu Selection: '
                                        .EVEN
021416  000000                  MENRES:         .WORD   0
```

```
3660                                            .SBTTL  CHKMAN  - CHECK MANUAL INTERVENTION LEGALITY
3661                                    ;+
3662                                    ;
3663                                    ;ROUTINE TO TEST FOR MANUAL INTERVENTION LEGALITY.
3664                                    ;
3665                                    ;INPUT:
3666                                    ;
3667                                    ;       NONE.
3668                                    ;
3669                                    ;OUTPUT:
3670                                    ;
3671                                    ;       CARRY   0       MANUAL INTERVENTION NOT ALLOWED
3672                                    ;               1       MANUAL INTERVENTION IS OK
3673                                    ;
3674                                    ;SIDE EFFECTS:
3675                                    ;
3676                                    ;       A MESSAGE IS DISPLAYED WARNING THAT TEST IS
3677                                    ;       NOT EXECUTED IF MANUAL INTERVENTION IS NOT
3678                                    ;       ALLOWED.
3679                                    ;
3680                                    ;-
3681
3682 021420                             CHKMAN::
3683 021420                                     SAVREG                  ;SAVE THE REGISTERS
3684 021424                                     MANUAL                  ;SEE IF MANUAL INTERVENTION OK
     021424  104450                             TRAP    C$MANI
3685 021426                                     BCOMPLETE 1$            ;BRANCH IF ALLOWED
     021426  103411                             BCS     1$
3686 021430                                     PRINTF  @NOMAN          ;PRINT THE WARNING MESSAGE
     021430  012746  021454                     MOV     @NOMAN,-(SP)
     021434  012746  000001                     MOV     #1,-(SP)
     021440  010600                             MOV     SP,R0
     021442  104417                             TRAP    C$PNTF
     021444  062706  000004                     ADD     #4,SP
3687 021450  000241                             CLC                     ;CLEAR CARRY FOR ERROR
3688 021452  000207                     1$:     RTS     PC              ;RETURN
3689
3690 021454      045     116     045    NOMAN:  .ASCIZ  '%N%A *** Manual Intervention not Allowed - Test Aborted ***'
3691                                             .even
```

```
                                        .SBTTL  ENVIRN  - SETUP FREE DIAGNOSTIC SPACE
                                ;
                                ; SUBROUTINE TO SET-UP VARIOUS ENVIRONMENTAL PARAMETERS.
                                ;
021550                          ENVIRN: MEMORY  R0
021550  104431                          TRAP    C$MEM
021552  010037  003072                  MOV     R0,FREE         ; GET 1ST FREE ADDRESS...
021556  062737  000002  003072          ADD     #2,FREE
021564  011037  003074                  MOV     (R0),FRESIZ     ;...AND WORD COUNT.
021570  162737  000004  003074          SUB     #4,FRESIZ
021576  013702  002012                  MOV     L$UNIT,R2       ; GET NUMBER OF UNITS
021602  162737  000007  003074  10$:    SUB     #7,FRESIZ       ; TAKE AWAY 7 WORDS PER UNIT
021610  005302                          DEC     R2
021612  001373                          BNE     10$
021614  013700  003072                  MOV     FREE,R0         ;GET FIRST FREE ADDRESS
021620  063700  003074                  ADD     FRESIZ,R0       ;POINT TO LAST FREE ADDRESS
021624  162700  000002                  SUB     #2,R0           ;BACKUP 1 WORD
021630  010037  003076                  MOV     R0,FREEHI       ;STORE LAST FREE ADDRESS
021634  000207                          RTS     PC              ;RETURN
```

```
3713                                    .SBTTL  KTINIT  - SETUP KT11 MEMORY MANAGEMENT REGISTERS
3714                                ;+
3715                                ;
3716                                ;ROUTINE TO INIT KT-11
3717                                ;
3718                                ;-
3719
3720 021636                        KTINIT:
3721 021636  005037  003100                CLR     KTFLG           ; INIT >28K MEMORY FLAG
3722 021642  005037  003102                CLR     KTENABLE        ; INIT TEST >28K FLAG
3723 021646  023727  002120  001577        CMP     L$HIME,#1577    ; GOT ENOUGH MEMORY (>28K)?
3724 021654  101444                      BLOS    9$              ; NO.
3725 021656  013700  000004              MOV     @#ERRVEC,R0     ; SAVE OLD ERR VEC PTR.
3726 021662  012737  021754  000004      MOV     #2$,@#ERRVEC    ; SET ERR VEC PTR.
3727 021670  005737  177572              TST     @#SR0           ; GOT KT11?
3728 021674  000240                      NOP                     ;  (TRAP IF NO).
3729 021676  013737  002120  003100      MOV     L$HIME,KTFLG    ; YES. SET KT FLAG.
3730 021704  042737  000177  003100      BIC     #177,KTFLG      ;
3731 021712  010037  000004              MOV     R0,@#ERRVEC     ; RESTORE OLD ERR VEC PTR.
3732 021716  005000                      CLR     R0              ; R0 = AR DATA.
3733 021720  012701  172340              MOV     #KIPAR0,R1      ; R1 = KI REGS PTR.
3734 021724  012761  077406  177740  1$: MOV     #77406,-40(R1)  ; SET DESCRIPTOR REG.
3735 021732  010021                      MOV     R0,(R1)+        ; SET KIPAR REG.
3736 021734  062700  000200              ADD     #200,R0         ; BUMP AR DATA BY "4K".
3737 021740  020027  002000              CMP     R0,#2000        ; AT "I/O"?
3738 021744  001367                      BNE     1$              ; NO.
3739 021746  012741  177600              MOV     #177600,-(R1)   ; YES. SET KTPAR7 FOR I/O.
3740 021752  000405                      BR      9$
3741
3742 021754  012716  021762          2$: MOV     #6$,(SP)        ; SET UP RETURN
3743 021760  000002                      RTI                     ; RTI TO NEXT LOCATION
3744
3745 021762  010037  000004          6$: MOV     R0,@#ERRVEC     ; RESTORE OLD ERR VEC PTR.
3746
3747 021766  000207                  9$: RTS     PC
3756
3757
3763
```

```
3765                                            .SBTTL  PROTECTION TABLE
3766 021770                                     BGNPROT
     021770                             L$PROT::
3767 021770  177777  177777  177777             .WORD   -1, -1, -1, -1  ;NO DEVICE PROTECTION REQUIRED.
3768 022000                                     ENDPROT
3769
```

```
                                        .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
022000                          L$INIT::
022000                          40$:
022000  012737  005672  002146          MOV     #EPRT1,EPRTSW   ;SET UP PRIMARY MESSAGE FOR REPLACEMENT
022006  005037  003106                  CLR     SIFLAG          ;CLEAR "SOFT INIT" FLAG
022012  005037  003102                  CLR     KTENABLE        ;CLEAR TEST ABOVE 28K FLAG
022016  005037  002246                  CLR     RAMSIZ          ;CLEAR RAM SIZE FOR RAMERR ROUTINE
022022                                  READEF  #EF.CONTINUE
022022  012700  000036                  MOV     #EF.CONTINUE,R0
022026  104447                          TRAP    C$REFG
022030                                  BNCOMPLETE 1$
022030  103023                          BCC     1$
022032  023737  002150  002012          CMP     UNITN,L$UNIT    ;UNIT IN RANGE?
022040  103064                          BHIS    4$              ;BR IF NO.
022042  005737  003060                  TST     DUFLG           ;DROPPED UNIT?
022046  100466                          BMI     NXTU            ;BR IF YES
022050  013701  002150                  MOV     UNITN,R1
022054  006301                          ASL     R1
022056  005761  003130                  TST     ERTABL(R1)
022062  001512                          BEQ     SETU
022064  032761  040000  003130          BIT     #BIT14,ERTABL(R1) ;DROPPED?
022072  001054                          BNE     NXTU
022074                                  EXIT    INIT            ;DO NOTHING IF "CONTINUE".
022074  104432                          TRAP    C$EXIT
022076  000412                          .WORD   L10030-.
022100                          1$:     READEF  #EF.NEW
022100  012700  000035                  MOV     #EF.NEW,R0
022104  104447                          TRAP    C$REFG
022106                                  BNCOMPLETE NXTU         ;TAKE NEXT UNIT IF NOT NEW PASS.
022106  103046                          BCC     NXTU
022110                                  READEF  #EF.START
022110  012700  000040                  MOV     #EF.START,R0
022114  104447                          TRAP    C$REFG
022116                                  BCOMPLETE 2$
022116  103404                          BCS     2$
022120                                  READEF  #EF.RESTART
022120  012700  000037                  MOV     #EF.RESTART,R0
022124  104447                          TRAP    C$REFG
022126                                  BNCOMPLETE 31$
022126  103025                          BCC     31$
022130                          2$:                             ;1ST PASS, BUS-INIT...
022130                                  BRESET                  ;BUS RESET.
022130  104433                          TRAP    C$RESET
022132  005037  002162                  CLR     TSTCNT          ;NUMBER OF TESTS RUN IN PASS
```

```
3812 022136  005037  002170                    CLR     FATFLG          ;RESET FLAG TO ZERO "FATAL ERRORS"
3813 022142  005037  003332          19$:      CLR     SKIPT           ;CLEAR THE SUBTEST "SKIPPER"
3814 022146                          20$:
3815 022146  012737  177777  002152            MOV     #-1,QVP         ;...QUICK VERIFY...
3816 022154  004737  021550                    JSR     PC,ENVIRN       ;SET ENVIRONMENT.
3817 022160  004737  021636                    JSR     PC,KTINIT       ;INITIALIZE KT MEMORY MANAGEMENT
3818 022164  012700  003130                    MOV     #ERTABL,R0
3819 022170  005020                  30$:      CLR     (R0)+           ;CLEAR THE ERROR TABLE
3820 022172  020027  003330                    CMP     R0,#ERTABE
3821 022176  103774                          BLO     30$
3822 022200  000404                          BR      4$
3823 022202  005037  002152          31$:      CLR     QVP
3824 022206  000137  022256                    JMP     PASRPT          ;GO REPORT THE STATUS
3825
3826 022212                          4$:
3827 022212  012737  177777  002150  NEWPAS:   MOV     #-1,UNITN       ;INIT UNIT NUMBER...
3828 022220  005037  002166                    CLR     DEVCNT          ;CLEAR COUNT OF DEVICES RUNNING
3829 022224                          NXTU:     BREAK
     022224  104422                          TRAP    C$BRK
3830 022226  005237  002150                    INC     UNITN           ;...AND SET NEXT UNIT NUMBER.
3831 022232  023737  002150  002012            CMP     UNITN,L$UNIT
3832 022240  103423                          BLO     SETU
3833 022242  012737  177777  003060            MOV     #-1,DUFLG
3834 022250  000401                          BR      11$
3835 022252                                   DOCLN                   ;ABORT, NO MORE UNITS.
     022252  104444                          TRAP    C$DCLN
3836 022254  000240                  11$:      NOP
3837 022256                          PASRPT:
3838 022256  023727  002012  000001            CMP     L$UNIT,#1       ;HOW MANY UNITS SELECTED?
3839 022264  101752                          BLOS    NEWPAS          ;BR IF ONLY 1
3840 022266  005737  002166                    TST     DEVCNT          ;ARE ANY STILL RUNNING?
3841 022272  001747                          BEQ     NEWPAS          ;BR IF NO
3842 022274                                   RFLAGS  R0
     022274  104421                          TRAP    C$RFLA
3843 022276  032700  000100                    BIT     #ISR,R0         ;SHOULD WE PRINT STATISTICS
3844 022302  001343                          BNE     NEWPAS          ;BR IF NO
3845
3846 022304                                   DORPT
     022304  104424                          TRAP    C$DRPT
3847 022306  000741                          BR      NEWPAS
3848 022310                          10$:
3849
3850 022310                          SETU:     GPHARD  UNITN,R0        ;GET UNIT N P-TABLE POINTER.
     022310  013700  002150                    MOV     UNITN,R0
     022314  104442                          TRAP    C$GPHRD
3851 022316                                   BNCOMPLETE NXTU         ;BR IF UNIT NOT AVAILABLE.
     022316  103342                          BCC     NXTU
3852 022320  005037  003060                    CLR     DUFLG           ;CLEAR "DROPPED" FLAG.
3853 022324  005237  002166                    INC     DEVCNT
3854 022330  012001                          MOV     (R0)+,R1        ;GET 1ST REGISTER ADDRESS.
3855 022332  010137  002154                    MOV     R1,CSRADDR      ;ADDRESS OF REGISTERS OF UNIT UNDER TEST
3856
3857 022336  012001                          MOV     (R0)+,R1        ;GET VECTOR ADDRESS.
3858 022340  011002                          MOV     (R0),R2         ;GET INTERRUPT PRIORITY
3859 022342  010237  002160                    MOV     R2,IPRI         ;SET INTERRUPT PRIORITY.
3860 022346  010137  002156                    MOV     R1,IVEC         ;SET INTERRUPT VECTOR POINTER...
3861 022352  012721  017102                    MOV     #INTR,(R1)+     ;...VECTOR...
```

```
3862 022356  010221                        MOV     R2,(R1)+        ;...AND PRIORITY.
3863
3864 022360                          1$:
3865                                 ;       TST     QVP             ;1ST PASS ??
3866                                 ;       BEQ     5$              ;NO, SKIP THE PASS 1 STUFF.
3867
3868                                 ;
3869                                 ;1ST PASS, CHECK THAT DEVICE ADDRESSES ARE VALID, AND
3870                                 ;THAT THE DISPLAY STATUS IS PROPERLY INITIALIZED.
3871                                 ;
3872 022360  013701  002150                  MOV     UNITN,R1
3873 022364  006301                        ASL     R1
3874 022366  052761  100000  003130        BIS     #BIT15,ERTABL(R1) ;SAY DEVICE RUNNING
3875 022374  005037  005232                CLR     EXTA            ;CLEAR ERROR EXTENSION FLAG.
3876 022400  023727  002012  000001        CMP     L$UNIT,#1       ;ARE WE TESTING MULTIPLE UNITS?
3877 022406  101416                        BLOS    10$             ;BR IF NO.
3878 022410                                RFLAGS  R0              ;YES -- GET OPERATOR FLAGS.
     022410  104421                        TRAP    C$RFLA
3879 022412  032700  001000                BIT     #PNT,R0         ;SHOULD WE PRINT UNIT #?
3880 022416  001412                        BEQ     10$             ;BR IF NOT.
3881 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$PNTF
     022440  062706  000006                ADD     #6,SP
3882 022444                          10$:
3883 022444  005037  003062                CLR     NODEV
3884 022450  013701  002154                MOV     CSRADDR,R1      ;ADDRESS OF FIRST REGISTER
3885 022454  010102                        MOV     R1,R2           ;START OF REGISTERS
3886 022456  062702  000000                ADD     #TSSR,R2        ;ADDRESS OF TSSR REGISTER
3887 022462  004737  017312                JSR     PC,XNXM         ;TEST BOTH CONTROLLER REGISTERS...
3888 022466  103005                        BCC     2$              ;...AND BR IF ALL OK.
3889 022470  010137  003062                MOV     R1,NODEV        ;FLAG DEVICE AS NON-EXISTENT
3890 022474  012737  177777  003060        MOV     #-1,DUFLG       ;DROP THIS UNIT.
3891 022502                          2$:
3892                                 ;
3893                                 ;FINALLY, SET CPU PRIORITY AND WE'RE DONE.
3894                                 ;
3895 022502                          5$:     SETPRI  #PRI00          ;ENABLE INTERRUPTS.
     022502  012700  000000                MOV     #PRI00,R0
     022506  104441                        TRAP    C$SPRI
3896 022510                                ENDINIT
     022510                          L10030:
     022510  104411                        TRAP    C$INIT
3897
3898 022512     045     116     045  PUNIT:  .ASCIZ  /%N%N%A***** TESTING UNIT %D2%A *****/
3899                                        .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-.
```

```
3938 022732     045     116     045 1$:     .ASCIZ  /%N%A  UNIT %D%A DROPPED/
3939                                 .EVEN
3940 022762                          ENDDU
     022762                     L10032:
     022762  104453                       TRAP    C$DU
3941                                 ;++
3942                                 ; AUTO-DROP CODE SECTION.
3943                                 ;--
3944 022764                          BGNAUTO
     022764                     L$AUTO::
3945 022764  012703  000550           MOV     #360.,R3        ;ENOUGH TIME FOR 2400' REEL TO REWIND
3946 022770  004737  017134     10$:  JSR     PC,WAITF        ;WAIT FOR SSR TO SET
3947 022774  103420                 BCS     20$             ;LEAVE WHEN SSR IS SET
3948 022776                       DELAY   250.              ;WAIT FOR .25 SECONDS
     022776  012727  000372           MOV     #250.,(PC)+
     023002  000000                 .WORD   0
     023004  013727  002116           MOV     L$DLY,(PC)+
     023010  000000                 .WORD   0
     023012  005367  177772           DEC     -6(PC)
     023016  001375                 BNE     .-4
     023020  005367  177756           DEC     -22(PC)
     023024  001367                 BNE     .-20
3949 023026  005303                 DEC     R3              ;BUMP COUNTER DOWN
3950 023030  001357                 BNE     10$             ;KEEP GOING
3951 023032  004737  020170           JSR     PC,CKDROP       ;TRY AND DROP UNIT
3952 023036                     20$:
3953 023036                          ENDAUTO                 ; UNUSED.
     023036                     L10033:
     023036  104461                       TRAP    C$AUTO
```

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

                                ;++
                                ; THE CLEANUP CODING SECTION CONTAINS THE CODING THAT IS
                                ; EXECUTED AT THE END OF EACH PASS (OR SUB-PASS).
                                ; USE TO RETURN DEVICE UNDER TEST TO A NEUTRAL STATE.
                                ;--
023040                                  BGNCLN
023040                          L$CLEAN::
023040  005737  003060                   TST     DUFLG           ;"DROPPED" FLAG IS SET ON...
023044  100407                           BMI     1$              ;...AND GROSS CONTROLLER FAULT...
                                                                 ;...DON'T TRY TO XCT CLEANUP CODE.
023046  013705  002154                   MOV     CSRADDR,R5      ; ADDRESS OF TSV REGISTERS ON UNIBUS
023052  012765  000000  000000           MOV     #0,TSSR(R5)     ;DO SOFT INIT
023060  004737  017134                   JSR     PC,WAITF
023064                          1$:
023064                          2$:     ENDCLN
023064                          L10034:
023064  104412                          TRAP    C$CLEAN
                                ;++
                                ; THE REPORT CODING SECTION CONTAINS THE
                                ; "PRINTS" CALLS THAT GENERATE STATISTICAL REPORTS.
                                ;--
023066                                  BGNRPT
023066                          L$RPT::
023066                                  PRINTS  #DEVSUM
023066  012746  023330                   MOV     #DEVSUM,-(SP)
023072  012746  000001                   MOV     #1,-(SP)
023076  010600                           MOV     SP,R0
023100  104416                           TRAP    C$PNTS
023102  062706  000004                   ADD     #4,SP
023106  010246                           MOV     R2,-(SP)
023110  010346                           MOV     R3,-(SP)
023112  010446                           MOV     R4,-(SP)
023114  012704  003130                   MOV     #ERTABL,R4      ; GET START OF ERROR TABLE.
023120  005003                           CLR     R3              ; CLEAR UNIT NUMBER
023122  011402                  1$:      MOV     (R4),R2         ; GET ERROR TABLE ENTRY & TEST IT.
023124  001467                           BEQ     4$              ; ZERO IF UNIT NOT RUN
023126  100066                           BPL     4$
023130  032702  040000                   BIT     #BIT14,R2       ; WAS UNIT DROPPED?
023134  001015                           BNE     2$              ; BR IF YES
023136  042702  170000                   BIC     #^C7777,R2      ; GET ERROR COUNT FIELD
023142                                   PRINTS  #DEVONL,R3,R2   ; PRINT
023142  010246                           MOV     R2,-(SP)
023144  010346                           MOV     R3,-(SP)
023146  012746  023365                   MOV     #DEVONL,-(SP)
023152  012746  000003                   MOV     #3,-(SP)
023156  010600                           MOV     SP,R0
023160  104416                           TRAP    C$PNTS
023162  062706  000010                   ADD     #10,SP
023166  000446                           BR      4$
023170  020227  160000          2$:      CMP     R2,#160000      ; WAS UNIT NON-EXISTENT?
023174  001012                           BNE     3$              ; BR IF NO
023176                                   PRINTS  #DEVNXR,R3
023176  010346                           MOV     R3,-(SP)
023200  012746  023435                   MOV     #DEVNXR,-(SP)
```

```
                023204  012746  000002                  MOV     #2,-(SP)
                023210  010600                          MOV     SP,R0
                023212  104416                          TRAP    C$PNTS
                023214  062706  000006                  ADD     #6,SP
        3994    023220  000431                          BR      4$
        3995    023222  020227  160001          3$:     CMP     R2,#160001      ; WAS UNIT NOT READY AT STARTUP?
        3996    023226  001012                          BNE     30$             ; BR IF NO.
        3997    023230                                  PRINTS  #DEVNRD,R3
                023230  010346                          MOV     R3,-(SP)
                023232  012746  023517                  MOV     #DEVNRD,-(SP)
                023236  012746  000002                  MOV     #2,-(SP)
                023242  010600                          MOV     SP,R0
                023244  104416                          TRAP    C$PNTS
                023246  062706  000006                  ADD     #6,SP
        3998    023252  000414                          BR      4$
        3999    023254  042702  170000          30$:    BIC     #^C7777,R2
        4000    023260                                  PRINTS  #DEVDRO,R3,R2
                023260  010246                          MOV     R2,-(SP)
                023262  010346                          MOV     R3,-(SP)
                023264  012746  023600                  MOV     #DEVDRO,-(SP)
                023270  012746  000003                  MOV     #3,-(SP)
                023274  010600                          MOV     SP,R0
                023276  104416                          TRAP    C$PNTS
                023300  062706  000010                  ADD     #10,SP
        4001    023304  062704  000002          4$:     ADD     #2,R4
        4002    023310  005203                          INC     R3
        4003    023312  020427  003330                  CMP     R4,#ERTABE
        4004    023316  103701                          BLO     1$
        4005    023320  012604                          MOV     (SP)+,R4
        4006    023322  012603                          MOV     (SP)+,R3
        4007    023324  012602                          MOV     (SP)+,R2
        4008    023326                                  ENDRPT                  ; UNUSED.
                023326                  L10035:
                023326  104425                          TRAP    C$RPT
        4009
        4010
        4011    023330      045     116     045  DEVSUM: .ASCIZ  /%N%ADEVICE STATUS SUMMARY:%N/
        4012    023365      045     101     040  DEVONL: .ASCIZ  /%A  UNIT %D3%A   ONLINE,  ERRORS = %D%N/
        4013    023435      045     101     040  DEVNXR: .ASCIZ  /%A  UNIT %D3%A   DROPPED, NON-EXISTENT REGISTER%N/
        4014    023517      045     101     040  DEVNRD: .ASCIZ  /%A  UNIT %D3%A   DROPPED, NOT READY AT STARTUP%N/
        4015    023600      045     101     040  DEVDRO: .ASCIZ  /%A  UNIT %D3%A   DROPPED, ERRORS = %D%N/
        4016                                            .EVEN
        4019
        4026
        4032
        4040
```

```
                                .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
                              ;
                              ;
                              ;
                              ;-
023650                              BGNTST
023650                                                                  T1::
023650  005037  002170                CLR     FATFLG                  ;CLEAR FATAL ERROR FLAG
023654  005037  003100                CLR     KTFLG           ;HOLD OFF KT11
023660  012737  005771  002146        MOV     #EPRT2,EPRTSW           ;SECONDARY ERROR MESSAGE
023666  004737  020262                JSR     PC,KTOFF                ;DON'T NEED LOTS OF MEMORY
023672  012700  031462                MOV     #TST25ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
023676  004737  017424                JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
023702  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.
                              ;
                              ;
                              ;-
023710                        T25LOOP:
023710                              BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
023710                                                                  T1.1:
023710  104402                                                              TRAP    C$BSUB
023712  004737  031500                JSR     PC,T25REST              ;SET COMMAND PACKET
023716  005037  030270                CLR     T25CNT                  ;CLEAR THE RECORD COUNTER AREA
023722  004737  031572                JSR     PC,T25RT2               ;SET UP OTHER COMMAND PACKET
023726  004737  031634                JSR     PC,T25RT3               ;SET UP OTHER COMMAND PACKET
023732  012737  176750  030272        MOV     #65000.,T25DLY          ;SET UP LOOP COUNTER
                              ;*****************************************************************
                              ;
                              ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
                              ;
```

```
4100                                    ;*****************************************************************
4101
4102 023740  004737  016660             5$:     JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
4103 023744  103427                             BCS     10$                     ;BR IF INIT WAS OK
4104 023746                                     DELAY   250                     ;DELAY IF REQUIRED
     023746  012727  000250                                                             MOV     #250,(PC)+
     023752  000000                                                                     .WORD   0
     023754  013727  002116                                                             MOV     L$DLY,(PC)+
     023760  000000                                                                     .WORD   0
     023762  005367  177772                                                             DEC     -6(PC)
     023766  001375                                                                     BNE     .-4
     023770  005367  177756                                                             DEC     -22(PC)
     023774  001367                                                                     BNE     .-20
4105 023776  005337  030272                     DEC     T25DLY                  ;DEC DELAY COUNTER
4106 024002  001356                             BNE     5$                              ;BR, IF LOOP IS REQUIRED
4107 024004  004737  020116                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4111 024010  016501  000000                     MOV     TSSR(R5),R1             ;CONTENTS OF TSSR REGISTER
4112 024014                                     ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     024014  104455                                                                     TRAP    C$ERDF
     024016  000145                                                                     .WORD   101
     024020  003550                                                                     .WORD   SFIERR
     024022  011676                                                                     .WORD   SFIMSG
4113 024024                             10$:
4114
4115 024024  012704  030110                     MOV     #T25PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4116
4117                                    ;*****************************************************************
4118                                    ;
4119                                    ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
4120                                    ;
4121                                    ;*****************************************************************
4122
4123 024030  004737  010342                     JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4124 024034  103407                             BCS     14$                     ;BR, IF COMMAND ISSUED OK
4125 024036  004737  020116                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4129 024042  010001                             MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4130 024044                                     ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     024044  104456                                                                     TRAP    C$ERHRD
     024046  000146                                                                     .WORD   102
     024050  004754                                                                     .WORD   WRTMSG
     024052  011676                                                                     .WORD   SFIMSG
4131
4132                                    ;
4133                                    ;       CHECK FOR DRIVE OFF-LINE
4134                                    ;
4135 024054  016501  000000             14$:    MOV     TSSR(R5),R1             ;READ THE TSSR
4136 024060  032701  000100                     BIT     #OFL,R1                 ;CHECK FOR DRIVE OFF LINE
4137 024064  001406                             BEQ     15$                     ;BR, IF DRIVE IS ON LINE (GOOD)
4141 024066                                     ERRDF   ERRNO,T210FL,EXPREC     ;"DRIVE IS OFF-LINE" (BAD)
     024066  104455                                                                     TRAP    C$ERDF
     024070  000147                                                                     .WORD   103
     024072  030274                                                                     .WORD   T210FL
     024074  016360                                                                     .WORD   EXPREC
4142 024076  004737  020170                     JSR     PC,CKDROP               ;TRY AND DROP UNIT
4143
4144                                    ;*****************************************************************
4145                                    ;
```

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

024102  004737  010444          15$:    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
024106  103407                          BCS     30$                     ;BR. IF NO PROBLEM
024110  010001                          MOV     R0,R1                   ;SAVE TSSR
024112  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
024116                                  ERRHRD  ERRNO,T25RWN,PKTSSR     ;REWIND NOT ACCEPTED
024116  104456                                                          TRAP    C$ERHRD
024120  000150                                                          .WORD   104
024122  031267                                                          .WORD   T25RWN
024124  011710                                                          .WORD   PKTSSR
024126                          30$:    CKLOOP                          ;LOOP IF SELECTED
024126  104406                                                          TRAP    C$CLP1

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

024130  013701  030136                  MOV     T25BFR+6,R1             ;PICK UP XST0
024134  010102                          MOV     R1,R2                   ;SET UP EXPECTED
024136  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
024142  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
024144  001406                          BEQ     40$                     ;BR. IF EQUAL (OK)
024146  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
024152                                  ERRHRD  ERRNO,T25BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
024152  104456                                                          TRAP    C$ERHRD
024154  000151                                                          .WORD   105
024156  030457                                                          .WORD   T25BOT
024160  016360                                                          .WORD   EXPREC
024162                          40$:    CKLOOP                          ;LOOP IF SELECTED
024162  104406                                                          TRAP    C$CLP1
024164  012703  000400                  MOV     #256.,R3                ;RECORD SIZE
024170  013737  003072  030242          MOV     FREE,T25RB              ;STARTING WRITE BUFFER ADDRESS

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

024176  012737  140005  030240          MOV     #140005,T25PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
024204  012704  030240                  MOV     #T25PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
024210                          65$:
024210  010337  030246                  MOV     R3,T25SZ                ;SET UP RECORD SIZE IN PACKET
024214  013777  030270  156650          MOV     T25CNT,@FREE            ;LOAD UP RECORD COUNTER IN WRT BUFFER
024222  062737  000001  030270          ADD     #1,T25CNT               ;GET READY FOR NEXT RECORD
024230  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
024234  004737  017134                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
024240  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
024244  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
024250  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
024252  001411                          BEQ     75$                     ;BR. IF OK
024254  032701  000004                  BIT     #BIT2,R1                ;CHECK FOR TAPE STATUS ALERT
```

```
4199 024260  001014                    BNE     120$                    ;BR, IF TSA IS SET (SUSPECT IS EOT)
4200 024262  004737  020116            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4204                                                                   ;SOFT ERROR GENERATED BECAUSE THE
4205                                                                   ;WRITE COMMAND IS NOT BEING CHECKED
4206                                                                   ;HERE. IT WAS CHECKED IN LEAH2
4207 024266                            ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     024266  104457                                                                    TRAP    C$ERSOFT
     024270  000152                                                                    .WORD   106
     024272  005011                                                                    .WORD   WRTERR
     024274  011710                                                                    .WORD   PKTSSR
4208 024276                        75$:    CKLOOP                          ;LOOP IF SELECTED
     024276  104406                                                                    TRAP    C$CLP1
4209 024300  005203                        INC     R3                      ;BUMP RECORD SIZE
4210 024302  022703  001000              CMP     #512.,R3                ;END OF RECORD YET
4211 024306  001340                      BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
4212 024310  000415                      BR      125$                    ;ENOUGH RECORDS
4213 024312                        120$:
4214                               ;*************************************************************************
4215                               ;
4216                               ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
4217                               ;
4218                               ;*************************************************************************
4219
4220 024312  013701  030136              MOV     T25BFR+6,R1             ;QUICK CHECK FOR EOT SET
4221 024316  010102                      MOV     R1,R2                   ;SET UP EXPECTED
4222 024320  052702  000001              BIS     #BIT0,R2                ;SET THE EOT BIT XSTO
4223 024324  020102                      CMP     R1,R2                   ;IS THE EOT BIT SET IN XSTO
4224 024326  001406                      BEQ     125$                    ;BR, IF SET (GOOD)
4225 024330  004737  020116              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4229 024334                            ERRDF   ERRNO,T25NET,EXPREC     ;DEVICE FATAL NOT EOT FOUND ETC.
     024334  104455                                                                    TRAP    C$ERDF
     024336  000153                                                                    .WORD   107
     024340  030613                                                                    .WORD   T25NET
     024342  016360                                                                    .WORD   EXPREC
```

```
4231 024344                          125$:
4232                                 ;*****************************************************************
4233                                 ;
4234                                 ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
4235                                 ;
4236                                 ;*****************************************************************
4237
4238 024344  004737  010444                 JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4239 024350  103407                         BCS     130$                    ;BR, IF NO PROBLEM
4240 024352  010001                         MOV     R0,R1                   ;SAVE TSSR
4241 024354  004737  020116                 JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4245 024360                                 ERRHRD  ERRNO,T25RWN,PKTSSR     ;REWIND NOT ACCEPTED
      024360  104456                                                                TRAP    C$ERHRD
      024362  000154                                                                .WORD   108
      024364  031267                                                                .WORD   T25RWN
      024366  011710                                                                .WORD   PKTSSR
4246 024370                          130$:  CKLOOP                          ;LOOP IF SELECTED
      024370  104406                                                                TRAP    C$CLP1
4247 024372                                 ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
      024372                                                                      L10037:
      024372  104403                                                                TRAP    C$ESUB
4248 024374  023727  002170  000031         CMP     FATFLG,#25.                     ;IS ERROR COUNT AT 25
4249 024402  002402                         BLT     999$                            ;BR, IF LESS THAN 25
4250 024404  004737  020170                 JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
4251 024410                          999$:
```

```
4253                                    ;*
4254                                    ;
4255                                    ;TEST 1, SUBTEST 2
4256                                    ;
4257                                    ;VERIFIES THAT SPACE RECORDS FORWARD CAN SPACE ONE
4258                                    ;RECORD OFF BOT AND CAUSES BOT STATUS TO BE CLEARED.
4259                                    ;
4260                                    ;
4261                                    ;
4262                                    ;-
4263 024410                                    BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
     024410                                                                                    T1.2:
     024410 104402                                                                                  TRAP    C$BSUB
4264 024412 004737 031500                      JSR     PC,T25REST              ;SET COMMAND PACKET
4265 024416 004737 031572                      JSR     PC,T25RT2               ;SET UP OTHER COMMAND PACKET
4266 024422 004737 031634                      JSR     PC,T25RT3               ;SET UP OTHER COMMAND PACKET
4267
4268                                    ;*****************************************************************************
4269                                    ;
4270                                    ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
4271                                    ;
4272                                    ;*****************************************************************************
4273
4274 024426 004737 016660                      JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
4275 024432 103407                             BCS     10$                     ;BR IF INIT WAS OK
4276 024434 004737 020116                      JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4280 024440 010001                             MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
4281 024442                                    ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     024442 104455                                                                              TRAP    C$ERDF
     024444 000155                                                                              .WORD   109
     024446 003550                                                                              .WORD   SFIERR
     024450 011676                                                                              .WORD   SFIMSG
4282 024452                                    10$:
4283
4284 024452 012704 030110                      MOV     #T25PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4285
4286                                    ;*****************************************************************************
4287                                    ;
4288                                    ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
4289                                    ;
4290                                    ;*****************************************************************************
4291
4292 024456 004737 010342                      JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4293 024462 103407                             BCS     15$                     ;BR, IF COMMAND ISSUED OK
4294 024464 004737 020116                      JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4298 024470 010001                             MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4299 024472                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     024472 104456                                                                              TRAP    C$ERHRD
     024474 000156                                                                              .WORD   110
     024476 004754                                                                              .WORD   WRTMSG
     024500 011676                                                                              .WORD   SFIMSG
4300
4301                                    ;*****************************************************************************
4302                                    ;
4303                                    ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
4304                                    ;
4305                                    ;*****************************************************************************
```

```
4306
4307 024502  004737  010444          15$:    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4308 024506  103407                          BCS     30$                     ;BR, IF NO PROBLEM
4309 024510  010001                          MOV     R0,R1                   ;SAVE TSSR
4310 024512  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4314 024516                                  ERRHRD  ERRNO,T25RWN,PKTSSR     ;REWIND NOT ACCEPTED
     024516  104456                                                                  TRAP    C$ERHRD
     024520  000157                                                                  .WORD   111
     024522  031267                                                                  .WORD   T25RWN
     024524  011710                                                                  .WORD   PKTSSR
4315 024526                          30$:    CKLOOP                          ;LOOP IF SELECTED
     024526  104406                                                                  TRAP    C$CLP1
4316
4317                                 ;*************************************************************************
4318                                 ;
4319                                 ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
4320                                 ;
4321                                 ;*************************************************************************
4322
4323 024530  013701  030136                  MOV     T25BFR+6,R1             ;PICK UP XST0
4324 024534  010102                          MOV     R1,R2                   ;SET UP EXPECTED
4325 024536  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4326 024542  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
4327 024544  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
4328 024546  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4332 024552                                  ERRHRD  ERRNO,T25BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     024552  104456                                                                  TRAP    C$ERHRD
     024554  000160                                                                  .WORD   112
     024556  030457                                                                  .WORD   T25BOT
     024560  016360                                                                  .WORD   EXPREC
4333 024562                          40$:    CKLOOP                          ;LOOP IF SELECTED
     024562  104406                                                                  TRAP    C$CLP1
4334 024564  012737  000001  030242          MOV     #000001,T25R8           ;NUMBER OF RECORDS TO SPACE OVER
4335
4336                                 ;*************************************************************************
4337                                 ;
4338                                 ;SPACE FORWARD,ACK,CVC=1 COMMAND
4339                                 ;
4340                                 ;*************************************************************************
4341
4342 024572  012737  140010  030240          MOV     #140010,T25PK3          ;SPACE FORWARD,ACK,CVC=1 COMMAND
4343 024600  012704  030240                  MOV     #T25PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4344 024604                          65$:
4345 024604  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4346 024610  004737  017134                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4347 024614  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4348 024620  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
4349 024624  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4350 024626  001411                          BEQ     75$                     ;BR, IF OK
4351 024630  032701  000004                  BIT     #BIT2,R1                ;CHECK FOR TAPE STATUS ALERT
4352 024634  001006                          BNE     75$                     ;BR, IF TSA IS SET (SUSPECT IS EOT)
4353 024636  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4357 024642                                  ERRHRD  ERRNO,T25WDE,EXPREC     ;TSSR INCORRECT AFTER READ DATA
     024642  104456                                                                  TRAP    C$ERHRD
     024644  000161                                                                  .WORD   113
     024646  030377                                                                  .WORD   T25WDE
     024650  016360                                                                  .WORD   EXPREC
```

```
4358 024652                          75$:    CKLOOP                          ;LOOP IF SELECTED
     024652  104406                                                                  TRAP    C$CLP1
4359 024654                          120$:
4360
4361                                 ;*************************************************************************
4362                                 ;
4363                                 ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
4364                                 ;
4365                                 ;*************************************************************************
4366
4367 024654  013701  030136                  MOV     T25BFR+6,R1             ;QUICK CHECK FOR BOT SET
4368 024660  010102                          MOV     R1,R2                   ;SET UP EXPECTED
4369 024662  042702  000002                  BIC     #BIT1,R2                ;CLEAR THE BOT BIT (XST0)
4370 024666  020102                          CMP     R1,R2                   ;IS THE EOT BIT SET IN XST0
4371 024670  001406                          BEQ     125$                    ;BR, IF SET (GOOD)
4372 024672  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4376 024676                                  ERRHRD  ERRNO,T25BNC,EXPREC     ;BOT NOT CLEARED AFTER SPACE FROM BOT
     024676  104456                                                                  TRAP    C$ERHRD
     024700  000162                                                                  .WORD   114
     024702  030752                                                                  .WORD   T25BNC
     024704  016360                                                                  .WORD   EXPREC
4377 024706  004737  031634          125$:   JSR     PC,T25RT3               ;CLEAN UP PACKET
4378 024712  012737  000401  030246          MOV     #257.,T25SZ             ;SET THE CORRECT SIZE UP
4379
4380                                 ;*************************************************************************
4381                                 ;
4382                                 ;READ DATA COMMAND IN PLACE
4383                                 ;
4384                                 ;*************************************************************************
4385
4386 024720  012737  140001  030240          MOV     #140001,T25PK3          ;READ DATA COMMAND IN PLACE
4387 024726  013737  003072  030242          MOV     FREE,T25RB              ;READ BUFFER ADDRESS TO PACKET
4388 024734  012704  030240                  MOV     #T25PK3,R4              ;R4 = POINTER TO PACKET
4389 024740  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4390 024744  004737  017134                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4391 024750  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4392 024754  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
4393 024760  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4394 024762  001406                          BEQ     190$                    ;BR, IF OK ESP. FUNCTION REJECT
4395 024764  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4399 024770                                  ERRHRD  ERRNO,RDERR,PKTSSR      ;TSSR INCORRECT AFTER READ DATA CMD
     024770  104456                                                                  TRAP    C$ERHRD
     024772  000163                                                                  .WORD   115
     024774  005104                                                                  .WORD   RDERR
     024776  011710                                                                  .WORD   PKTSSR
4400 025000                          190$:   CKLOOP                          ;LOOP IF SELECTED
     025000  104406                                                                  TRAP    C$CLP1
4401 025002  017701  156064                  MOV     @FREE,R1                ;GET FIRST WORD FROM BUFFER
4402 025006  012702  000001                  MOV     #1,R2                   ;SET UP EXPECTED
4403 025012  020102                          CMP     R1,R2                   ;WAS RECORD NUMBERED 1
4404 025014  001406                          BEQ     200$                    ;BR, IF CORRECT RECORD
4405 025016  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4409 025022                                  ERRHRD  ERRNO,T25WNG,EXPREC     ;SHOULD HAVE BEEN RECORD NUMBER 1
     025022  104456                                                                  TRAP    C$ERHRD
     025024  000164                                                                  .WORD   116
     025026  030667                                                                  .WORD   T25WNG
     025030  016360                                                                  .WORD   EXPREC
```

```
4410 025032                       200$:
4411 025032                               ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
     025032                                                                       L10040:
     025032  104403                                                                       TRAP    C$ESUB
4412 025034  023727  002170  000031       CMP     FATFLG,#25.                     ;IS ERROR COUNT AT 25
4413 025042  002402                       BLT     999$                            ;BR, IF LESS THAN 25
4414 025044  004737  020170               JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
4415 025050                       999$:
```

```
4417                                    ;*
4418                                    ;
4419                                    ;TEST 1, SUBTEST 3
4420                                    ;
4421                                    ;VERIFIES THAT SPACE RECORDS REVERSE CAN SPACE BACK
4422                                    ;OVER THE FIRST RECORD ON TAPE.
4423                                    ;
4424                                    ;
4425                                    ;-
4426
4427 025050                                    BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
      025050                                                                                    T1.3:
      025050  104402                                                                              TRAP    C$BSUB
4428 025052  004737  031500                    JSR     PC,T25REST              ;SET COMMAND PACKET
4429 025056  004737  031572                    JSR     PC,T25RT2               ;SET UP OTHER COMMAND PACKET
4430 025062  004737  031634                    JSR     PC,T25RT3               ;SET UP OTHER COMMAND PACKET
4431
4432                                    ;*************************************************************************
4433                                    ;
4434                                    ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
4435                                    ;
4436                                    ;*************************************************************************
4437
4438 025066  004737  016660                    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
4439 025072  103407                            BCS     20$                     ;BR IF INIT WAS OK
4440 025074  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4444 025100  010001                            MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
4445 025102                                    ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      025102  104455                                                                            TRAP    C$ERDF
      025104  000165                                                                            .WORD   117
      025106  003550                                                                            .WORD   SFIERR
      025110  011676                                                                            .WORD   SFIMSG
4446 025112                            20$:
4447
4448 025112  012704  030110                    MOV     #T25PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4449
4450                                    ;*************************************************************************
4451                                    ;
4452                                    ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
4453                                    ;
4454                                    ;*************************************************************************
4455
4456 025116  004737  010342                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4457 025122  103407                            BCS     25$                     ;BR, IF COMMAND ISSUED OK
4458 025124  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4462 025130  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4463 025132                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      025132  104456                                                                            TRAP    C$ERHRD
      025134  000166                                                                            .WORD   118
      025136  004754                                                                            .WORD   WRTMSG
      025140  011676                                                                            .WORD   SFIMSG
4464 025142                            25$:    CKLOOP                          ;LOOP IF SELECTED
      025142  104406                                                                            TRAP    C$CLP1
4465
4466                                    ;*************************************************************************
4467                                    ;
4468                                    ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
```

```
4469                                    ;
4470                                    ;*************************************************************************
4471
4472 025144  004737  010444                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4473 025150  103407                            BCS     30$                     ;BR, IF NO PROBLEM
4474 025152  010001                            MOV     R0,R1                   ;SAVE TSSR
4475 025154  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4479 025160                                    ERRHRD  ERRNO,T25RWN,PKTSSR     ;REWIND NOT ACCEPTED
      025160  104456                                                                    TRAP    C$ERHRD
      025162  000167                                                                    .WORD   119
      025164  031267                                                                    .WORD   T25RWN
      025166  011710                                                                    .WORD   PKTSSR
4480 025170                             30$:    CKLOOP                          ;LOOP IF SELECTED
      025170  104406                                                                    TRAP    C$CLP1
4481
4482                                    ;*************************************************************************
4483                                    ;
4484                                    ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
4485                                    ;
4486                                    ;*************************************************************************
4487
4488 025172  013701  030136                    MOV     T25BFR+6,R1             ;PICK UP XST0
4489 025176  010102                            MOV     R1,R2                   ;SET UP EXPECTED
4490 025200  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4491 025204  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
4492 025206  001406                            BEQ     40$                     ;BR, IF EQUAL (OK)
4493 025210  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4497 025214                                    ERRHRD  ERRNO,T25BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      025214  104456                                                                    TRAP    C$ERHRD
      025216  000170                                                                    .WORD   120
      025220  030457                                                                    .WORD   T25BOT
      025222  016360                                                                    .WORD   EXPREC
4498 025224                             40$:    CKLOOP                          ;LOOP IF SELECTED
      025224  104406                                                                    TRAP    C$CLP1
4499
4500                                    ;*************************************************************************
4501                                    ;
4502                                    ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
4503                                    ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
4504                                    ;
4505                                    ;*************************************************************************
4506
4507 025226  012703  000001                    MOV     #000001,R3              ;NUMBER OF RECORDS TO SPACE FORWARD
4508 025232  004737  010144                    JSR     PC,SPACE                ;CALL SPACE COMMAND
4509 025236  103410                            BCS     50$                     ;CHECK FOR ERROR
4510 025240  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4511 025244  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4515 025250                                    ERRHRD  ERRNO,T25WDE,SFFMSG     ;SPACE FORWARD FAILED
      025250  104456                                                                    TRAP    C$ERHRD
      025252  000171                                                                    .WORD   121
      025254  030377                                                                    .WORD   T25WDE
      025256  011756                                                                    .WORD   SFFMSG
4516 025260                             50$:    CKLOOP                          ;LOOP IF SELECTED
      025260  104406                                                                    TRAP    C$CLP1
4517 025262  012737  000001  030242            MOV     #1,T25RB                ;NUMBER OF RECORDS TO SPACE OVER
4518
4519                                    ;*************************************************************************
```

```
4520                                    ;
4521                                    ;SPACE REVERSE,ACK,CVC=1 COMMAND
4522                                    ;
4523                                    ;*************************************************************************
4524
4525 025270  012737  140410  030240          MOV     #140410,T25PK3          ;SPACE REVERSE,ACK,CVC=1 COMMAND
4526 025276  012704  030240                  MOV     #T25PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4527 025302                             65$:
4528 025302  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4529 025306  004737  017134                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4530 025312  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4531 025316  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
4532 025322  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4533 025324  001406                          BEQ     75$                     ;BR, IF OK
4534 025326  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4538 025332                                  ERRHRD  ERRNO,T25WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     025332  104456                                                                      TRAP    C$ERHRD
     025334  000172                                                                      .WORD   122
     025336  030377                                                                      .WORD   T25WDE
     025340  011710                                                                      .WORD   PKTSSR
4539 025342                             75$:    CKLOOP                          ;LOOP IF SELECTED
     025342  104406                                                                      TRAP    C$CLP1
4540 025344                             120$:
4541 025344  012703  000400                  MOV     #256.,R3                ;RECORD SIZE
4542 025350  013737  003072  030242          MOV     FREE,T25RB              ;STARTING READ BUFFER ADDRESS
4543
4544                                    ;*************************************************************************
4545                                    ;
4546                                    ;READ DATA,ACK,CVC=1 COMMAND
4547                                    ;
4548                                    ;*************************************************************************
4549
4550 025356  012737  140001  030240          MOV     #140001,T25PK3          ;READ DATA,ACK,CVC=1 COMMAND
4551 025364  012704  030240             165$:MOV     #T25PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4552 025370  010337  030246                  MOV     R3,T25SZ                ;SET UP RECORD SIZE IN PACKET
4553 025374  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4554 025400  004737  017134                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4555 025404  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4556 025410  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
4557 025414  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4558 025416  001406                          BEQ     170$                    ;BR, IF OK
4559 025420  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4563 025424                                  ERRHRD  ERRNO,RDERR,PKTSSR      ;TSSR INCORRECT AFTER READ DATA
     025424  104456                                                                      TRAP    C$ERHRD
     025426  000173                                                                      .WORD   123
     025430  005104                                                                      .WORD   RDERR
     025432  011710                                                                      .WORD   PKTSSR
4564 025434                             170$:   CKLOOP                          ;LOOP IF SELECTED
     025434  104406                                                                      TRAP    C$CLP1
4565 025436  017701  155430                  MOV     @FREE,R1                        ;GET FIRST WORD FROM BUFFER
4566 025442  012702  000000                  MOV     #0,R2                   ;SET UP EXPECTED
4567 025446  020102                          CMP     R1,R2                   ;WAS RECORD NUMBERED 1
4568 025450  001406                          BEQ     200$                    ;BR, IF CORRECT RECORD
4569 025452  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4573 025456                                  ERRHRD  ERRNO,T25WNG,EXPREC     ;SHOULD HAVE BEEN RECORD NUMBER 1
     025456  104456                                                                      TRAP    C$ERHRD
     025460  000174                                                                      .WORD   124
```

```
      025462  030667                                                    .WORD   T25WNG
      025464  016360                                                    .WORD   EXPREC
4574  025466                          200$:
4575  025466                                ENDSUB                ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      025466                                                              L10041:
      025466  104403                                                        TRAP    C$ESUB
4576  025470  023727  002170  000031        CMP     FATFLG,#25.       ;IS ERROR COUNT AT 25
4577  025476  002402                        BLT     999$              ;BR, IF LESS THAN 25
4578  025500  004737  020170                JSR     PC,CKDROP         ;TRY TO DROP THE UNIT
4579  025504                          999$:
```

```
4581                                    ;*
4582                                    ;
4583                                    ;TEST 1, SUBTEST 4
4584                                    ;
4585                                    ;VERIFIES THAT SPACE RECORDS FORWARD CAN SPACE A
4586                                    ;MULTIPLE NUMBER OF RECORDS (2 THROUGH 64K OR THE
4587                                    ;MAXIMUM NUMBER OF RECORDS WRITTEN ON THE TAPE,
4588                                    ;WHICH EVER IS LESS.
4589                                    ;
4590                                    ;
4591                                    ;
4592                                    ;-
4593
4594 025504                                    BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
      025504                                                                                  T1.4:
      025504  104402                                                                              TRAP    C$BSUB
4595 025506  004737  031500                    JSR     PC,T25REST              ;SET COMMAND PACKET
4596 025512  004737  031572                    JSR     PC,T25RT2               ;SET UP OTHER COMMAND PACKET
4597 025516  004737  031634                    JSR     PC,T25RT3               ;SET UP OTHER COMMAND PACKET
4598 025522  013737  030270  030266            MOV     T25CNT,T25CN2           ;HOLD NUMBER OF RECORDS
4599 025530  162737  000002  030266            SUB     #2,T25CN2               ;ACTUAL NUMBER OF RECORDS ON TAPE
4600 025536  013737  030270  030272            MOV     T25CNT,T25DLY           ;SET UP REWIND DELAY COUNTER
4601
4602                                    ;*****************************************************************
4603                                    ;
4604                                    ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
4605                                    ;
4606                                    ;*****************************************************************
4607
4608 025544  004737  016660            10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
4609 025550  103427                            BCS     20$                     ;BR IF INIT WAS OK
4610 025552                                    DELAY   250                     ;WAIT ABOUT .25 SECONDS
      025552  012727  000250                                                          MOV     #250.,(PC)+
      025556  000000                                                                  .WORD   0
      025560  013727  002116                                                          MOV     L$DLY,(PC)+
      025564  000000                                                                  .WORD   0
      025566  005367  177772                                                          DEC     -6(PC)
      025572  001375                                                                  BNE     .-4
      025574  005367  177756                                                          DEC     -22(PC)
      025600  001367                                                                  BNE     .-20
4611 025602  005337  030272                    DEC     T25DLY                  ;DEC COUNTER
4612 025606  001356                            BNE     10$                     ;BR, IF MORE LOOPS REQUIRED
4613 025610  016501  000000                    MOV     TSSR(R5),R1                     ;CONTENTS OF TSSR REGISTER
4614 025614  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4618 025620                                    ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      025620  104455                                                                  TRAP    C$ERDF
      025622  000175                                                                  .WORD   125
      025624  003550                                                                  .WORD   SFIERR
      025626  011676                                                                  .WORD   SFIMSG
4619 025630                            20$:
4620
4621 025630  012704  030110                    MOV     #T25PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4622
4623                                    ;*****************************************************************
4624                                    ;
4625                                    ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
4626                                    ;
```

```
4627                                    ;*****************************************************************
4628
4629 025634  004737  010342                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4630 025640  103407                            BCS     25$                     ;BR, IF COMMAND ISSUED OK
4631 025642  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4635 025646  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4636 025650                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     025650  104456                                                            TRAP    C$ERHRD
     025652  000176                                                            .WORD   126
     025654  004754                                                            .WORD   WRTMSG
     025656  011676                                                            .WORD   SFIMSG
4637 025660                            25$:    CKLOOP                          ;LOOP IF SELECTED
     025660  104406                                                            TRAP    C$CLP1
4638
4639                                    ;*****************************************************************
4640                                    ;
4641                                    ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
4642                                    ;
4643                                    ;*****************************************************************
4644
4645 025662  004737  010444                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4646 025666  103407                            BCS     30$                     ;BR, IF NO PROBLEM
4647 025670  010001                            MOV     R0,R1                   ;SAVE TSSR
4648 025672  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4652 025676                                    ERRHRD  ERRNO,T25RWN,PKTSSR     ;REWIND NOT ACCEPTED
     025676  104456                                                            TRAP    C$ERHRD
     025700  000177                                                            .WORD   127
     025702  031267                                                            .WORD   T25RWN
     025704  011710                                                            .WORD   PKTSSR
4653 025706                            30$:    CKLOOP                          ;LOOP IF SELECTED
     025706  104406                                                            TRAP    C$CLP1
4654 025710  013701  030266                    MOV     T25CN2,R1               ;NUMBER OF RECORDS ON TAPE
4655 025714  012702  177776                    MOV     #65534.,R2              ;MAX IT CAN SPACE OVER
4656 025720  020201                            CMP     R2,R1                   ;WHICH VALUE CAN WE USE
4657 025722  003002                            BGT     46$                     ;BR, IF # WRITTEN > 64K
4658 025724  010103                            MOV     R1,R3                   ;# WRITTEN CAN BE USED
4659 025726  000401                            BR      47$                     ;MOVE ON
4660 025730  010203                    46$:    MOV     R2,R3                   ;USE MAX NUMBER
4661 025732  162703  000001            47$:    SUB     #1,R3                   ;DON'T GO ALL THE WAY YET
4662 025736  010337  030242                    MOV     R3,T25RB                ;NUMBER OF RECORDS TO SPACE OVER
4663
4664                                    ;*****************************************************************
4665                                    ;
4666                                    ;SPACE FORWARD,ACK,CVC=1 COMMAND
4667                                    ;
4668                                    ;*****************************************************************
4669
4670 025742  012737  140010  030240            MOV     #140010,T25PK3          ;SPACE FORWARD,ACK,CVC=1 COMMAND
4671 025750  012704  030240                    MOV     #T25PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4672 025754                            65$:
4673 025754  013737  030266  030272            MOV     T25CN2,T25DLY           ;NUMBER OF RECORDS USED AS DELAY COUNTER
4674 025762  010465  177776                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4675 025766  004737  017134            67$:    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4676 025772  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4677 025776  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
4678 026002  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
4679 026004  001425                            BEQ     75$                     ;BR, IF OK
```

```
4680 026006                          DELAY   250                    ;DELAY .25 SECONDS
     026006  012727  000250                                                MOV     #250,(PC)+
     026012  000000                                                      .WORD   0
     026014  013727  002116                                              MOV     L$DLY,(PC)+
     026020  000000                                                      .WORD   0
     026022  005367  177772                                              DEC     -6(PC)
     026026  001375                                                      BNE     .-4
     026030  005367  177756                                              DEC     -22(PC)
     026034  001367                                                      BNE     .-20
4681 026036  005337  030272          DEC     T25DLY                 ;BUMP DOWN COUNTER
4682 026042  001351                  BNE     67$                    ;BR, IF NOT AT END OF DELAY
4683 026044  004737  020116          JSR     PC,FATCHK              ;INC AND CHECK FOR MORE THAN 25 ERRORS
4687 026050                          ERRHRD  ERRNO,T25WDE,PKTSSR    ;TSSR INCORRECT AFTER READ DATA
     026050  104456                                                      TRAP    C$ERHRD
     026052  000200                                                      .WORD   128
     026054  030377                                                      .WORD   T25WDE
     026056  011710                                                      .WORD   PKTSSR
4688 026060                    75$:  CKLOOP                         ;LOOP IF SELECTED
     026060  104406                                                      TRAP    C$CLP1
4689 026062  012703  010000          MOV     #4096.,R3              ;RECORD SIZE
4690 026066  013737  003072  030242  MOV     FREE,T25RB             ;STARTING READ BUFFER ADDRESS
4691
4692                                 ;*************************************************************
4693                                 ;
4694                                 ;READ DATA,ACK COMMAND
4695                                 ;
4696                                 ;*************************************************************
4697
4698 026074  012737  100001  030240          MOV     #100001,T25PK3         ;READ DATA,ACK COMMAND
4699 026102  012704  030240          165$:   MOV     #T25PK3,R4             ;SET UP R4 WITH PACKET ADDRESS
4700 026106  010337  030246                  MOV     R3,T25SZ               ;SET UP RECORD SIZE IN PACKET
4701 026112  010465  177776                  MOV     R4,TSDB(R5)            ;ISSUE COMMAND
4702 026116  004737  017134                  JSR     PC,WAITF               ;WAIT FOR SSR TO SET
4703 026122  016501  000000                  MOV     TSSR(R5),R1            ;GET TSSR CONTENTS
4704 026126  012702  000200                  MOV     #SSR,R2                ;SET UP EXPECTED
4705 026132  020102                          CMP     R1,R2                  ;ARE THEY EQUAL
4706 026134  001411                          BEQ     170$                   ;BR, IF OK
4707 026136  032701  000004                  BIT     #BIT2,R1               ;CHECK FOR TAPE STATUS ALERT
4708 026142  001006                          BNE     170$                   ;IF SET ALL IS WELL
4709 026144  004737  020116                  JSR     PC,FATCHK              ;INC AND CHECK FOR MORE THAN 25 ERRORS
4713 026150                                  ERRHRD  ERRNO,RDERR,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     026150  104456                                                              TRAP    C$ERHRD
     026152  000201                                                              .WORD   129
     026154  005104                                                              .WORD   RDERR
     026156  011710                                                              .WORD   PKTSSR
4714 026160                          170$:   CKLOOP                         ;LOOP IF SELECTED
     026160  104406                                                              TRAP    C$CLP1
4715 026162  017701  154704                  MOV     @FREE,R1                       ;GET FIRST WORD FROM BUFFER
4716 026166  013702  030266                  MOV     T25CN2,R2                      ;SET UP EXPECTED
4717 026172  162702  000001                  SUB     #1,R2                  ;SHOULD BE LAST RECORD
4718 026176  020102                          CMP     R1,R2                  ;WAS RECORD NUMBERED R3
4719 026200  001406                          BEQ     200$                   ;BR, IF CORRECT RECORD
4720 026202  004737  020116                  JSR     PC,FATCHK              ;INC AND CHECK FOR MORE THAN 25 ERRORS
4724 026206                                  ERRHRD  ERRNO,T25WNG,EXPREC    ;SHOULD HAVE BEEN RECORD NUMBER 1
     026206  104456                                                              TRAP    C$ERHRD
     026210  000202                                                              .WORD   130
     026212  030667                                                              .WORD   T25WNG
```

```
     026214  016360                                                        .WORD   EXPREC
4725 026216                        200$:
4726 026216                                  ENDSUB                ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
     026216                                                              L10042:
     026216  104403                                                        TRAP    C$ESUB
4727 026220  023727  002170  000031          CMP     FATFLG,#25.          ;IS ERROR COUNT AT 25
4728 026226  002402                          BLT     999$                 ;BR, IF LESS THAN 25
4729 026230  004737  020170                  JSR     PC,CKDROP            ;TRY TO DROP THE UNIT
4730 026234                        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.
                                        ;
                                        ;
                                        ;
                                        ;-
4745 026234                                     BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
     026234                                                                                     T1.5:
     026234  104402                                                                                 TRAP    C$BSUB
4746 026236  004737  031500                     JSR     PC,T25REST              ;SET COMMAND PACKET
4747 026242  013737  030270  030266             MOV     T25CNT,T25CN2           ;SET UP RECORD COUNTER
4748 026250  004737  031572                     JSR     PC,T25RT2               ;SET UP OTHER COMMAND PACKET
4749 026254  004737  031634                     JSR     PC,T25RT3               ;SET UP OTHER COMMAND PACKET
4750 026260  013737  030270  030272             MOV     T25CNT,T25DLY           ;SET UP REWIND DELAY COUNTER
4751
4752                                    ;*************************************************************************
4753                                    ;
4754                                    ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
4755                                    ;
4756                                    ;*************************************************************************
4757
4758 026266  004737  016660             10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
4759 026272  103427                             BCS     20$                     ;BR IF INIT WAS OK
4760 026274                                     DELAY   250                     ;WAIT ABOUT .25 SECONDS
     026274  012727  000250                                                             MOV     #250.,(PC)+
     026300  000000                                                                    .WORD   0
     026302  013727  002116                                                             MOV     L$DLY,(PC)+
     026306  000000                                                                    .WORD   0
     026310  005367  177772                                                             DEC     -6(PC)
     026314  001375                                                                     BNE     .-4
     026316  005367  177756                                                             DEC     -22(PC)
     026322  001367                                                                     BNE     .-20
4761 026324  005337  030272                     DEC     T25DLY                  ;DEC COUNTER
4762 026330  001356                             BNE     10$                     ;BR, IF MORE LOOPS REQUIRED
4763 026332  016501  000000                     MOV     TSSR(R5),R1                     ;CONTENTS OF TSSR REGISTER
4764 026336  004737  020116                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4768 026342                                     ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     026342  104455                                                                     TRAP    C$ERDF
     026344  000203                                                                    .WORD   131
     026346  003550                                                                    .WORD   SFIERR
     026350  011676                                                                    .WORD   SFIMSG
4769 026352                             20$:
4770
4771 026352  012704  030110                     MOV     #T25PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4772
4773                                    ;*************************************************************************
4774                                    ;
4775                                    ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
4776                                    ;
4777                                    ;*************************************************************************
4778
```

```
4779 026356  004737  010342                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4780 026362  103407                        BCS     25$                     ;BR, IF COMMAND ISSUED OK
4781 026364  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4785 026370  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4786 026372                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      026372  104456                                                                TRAP    C$ERHRD
      026374  000204                                                                .WORD   132
      026376  004754                                                                .WORD   WRTMSG
      026400  011676                                                                .WORD   SFIMSG
4787 026402                        25$:    CKLOOP                          ;LOOP IF SELECTED
      026402  104406                                                                TRAP    C$CLP1
4788
4789                               ;*****************************************************************
4790                               ;
4791                               ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
4792                               ;
4793                               ;*****************************************************************
4794
4795 026404  004737  010444                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4796 026410  103407                        BCS     30$                     ;BR, IF NO PROBLEM
4797 026412  010001                        MOV     R0,R1                   ;SAVE TSSR
4798 026414  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4802 026420                                ERRHRD  ERRNO,T25RWN,PKTSSR     ;REWIND NOT ACCEPTED
      026420  104456                                                                TRAP    C$ERHRD
      026422  000205                                                                .WORD   133
      026424  031267                                                                .WORD   T25RWN
      026426  011710                                                                .WORD   PKTSSR
4803 026430                        30$:    CKLOOP                          ;LOOP IF SELECTED
      026430  104406                                                                TRAP    C$CLP1
4804
4805                               ;*****************************************************************
4806                               ;
4807                               ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
4808                               ;
4809                               ;*****************************************************************
4810
4811 026432  013701  030136                MOV     T25BFR+6,R1             ;PICK UP XSTO
4812 026436  010102                        MOV     R1,R2                   ;SET UP EXPECTED
4813 026440  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4814 026444  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
4815 026446  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
4816 026450  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4820 026454                                ERRHRD  ERRNO,T25BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      026454  104456                                                                TRAP    C$ERHRD
      026456  000206                                                                .WORD   134
      026460  030457                                                                .WORD   T25BOT
      026462  016360                                                                .WORD   EXPREC
4821 026464                        40$:    CKLOOP                          ;LOOP IF SELECTED
      026464  104406                                                                TRAP    C$CLP1
4822 026466  013701  030266                MOV     T25CN2,R1               ;NUMBER OF RECORDS ON TAPE
4823 026472  012702  177776                MOV     #65534.,R2              ;MAX IT CAN SPACE OVER
4824 026476  020201                        CMP     R2,R1                   ;WHICH VALUE CAN WE USE
4825 026500  003002                        BGT     46$                     ;BR, IF # WRITTEN > 64K
4826 026502  010103                        MOV     R1,R3                   ;# WRITTEN CAN BE USED
4827 026504  000401                        BR      47$                     ;MOVE ON
4828 026506  010203                46$:    MOV     R2,R3                   ;USE MAX NUMBER
4829 026510                        47$:
```

```
4830 026510  010337  030242                MOV     R3,T25RB                ;NUMBER OF RECORDS TO SPACE OVER
4831
4832                                ;*************************************************************************
4833                                ;
4834                                ;SPACE FORWARD,ACK,CVC=1 COMMAND
4835                                ;
4836                                ;*************************************************************************
4837
4838 026514  012737  140010  030240        MOV     #140010,T25PK3          ;SPACE FORWARD,ACK,CVC=1 COMMAND
4839 026522  012704  030240                MOV     #T25PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4840 026526  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4841 026532  013737  030266  030272        MOV     T25CN2,T25DLY           ;SET UP DELAY COUNTER
4842 026540  004737  017134          48$:  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4843 026544  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4844 026550  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
4845 026554  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
4846 026556  001425                        BEQ     50$                     ;BR, IF OK
4847 026560                                DELAY   250                     ;WAIT .25 SECONDS
      026560  012727  000250                                                        MOV     #250.,(PC)+
      026564  000000                                                                .WORD   0
      026566  013727  002116                                                        MOV     L$DLY,(PC)+
      026572  000000                                                                .WORD   0
      026574  005367  177772                                                        DEC     -6(PC)
      026600  001375                                                                BNE     .-4
      026602  005367  177756                                                        DEC     -22(PC)
      026606  001367                                                                BNE     .-20
4848 026610  005337  030272                DEC     T25DLY                  ;DEC THE DELAY COUNTER
4849 026614  001351                        BNE     48$                     ;BR, IF COUNTER HASN'T EXPIRED
4850 026616  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4854 026622                                ERRHRD  ERRNO,T25WDE,EXPREC     ;TSSR INCORRECT AFTER READ DATA
      026622  104456                                                                TRAP    C$ERHRD
      026624  000207                                                                .WORD   135
      026626  030377                                                                .WORD   T25WDE
      026630  016360                                                                .WORD   EXPREC
4855 026632  013701  030266          50$:  MOV     T25CN2,R1               ;NUMBER OF RECORDS ON TAPE
4856 026636  012702  177776                MOV     #65534.,R2              ;MAX IT CAN SPACE OVER
4857 026642  020201                        CMP     R2,R1                   ;WHICH VALUE CAN WE USE
4858 026644  003002                        BGT     55$                     ;BR, IF # WRITTEN > 64K
4859 026646  010103                        MOV     R1,R3                   ;# WRITTEN CAN BE USED
4860 026650  000401                        BR      60$                     ;MOVE ON
4861 026652  010203                  55$:  MOV     R2,R3                   ;USE MAX NUMBER
4862 026654  162703  000001          60$:  SUB     #1,R3                   ;DON'T GO ALL THE WAY YET
4863 026660  010337  030242                MOV     R3,T25RB                ;NUMBER OF RECORDS TO SPACE OVER
4864
4865                                ;*************************************************************************
4866                                ;
4867                                ;SPACE REVERSE,ACK,CVC=1 COMMAND
4868                                ;
4869                                ;*************************************************************************
4870
4871 026664  012737  140410  030240        MOV     #140410,T25PK3          ;SPACE REVERSE,ACK,CVC=1 COMMAND
4872 026672  012704  030240                MOV     #T25PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4873 026676  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4874 026702  013737  030266  030272        MOV     T25CN2,T25DLY           ;SET UP COUNTER
4875 026710  004737  017134          70$:  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4876 026714  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4877 026720  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
```

```
4878 026724  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
4879 026726  001425                        BEQ     75$                     ;BR, IF OK
4880 026730                                DELAY   250                     ;WAIT ABOUT .25 SECONDS
     026730  012727  000250                                                        MOV     #250.,(PC)+
     026734  000000                                                                .WORD   0
     026736  013727  002116                                                        MOV     L$DLY,(PC)+
     026742  000000                                                                .WORD   0
     026744  005367  177772                                                        DEC     -6(PC)
     026750  001375                                                                BNE     .-4
     026752  005367  177756                                                        DEC     -22(PC)
     026756  001367                                                                BNE     .-20
4881 026760  005337  030272                DEC     T25DLY                  ;BUMP COUNTER DOWN
4882 026764  001351                        BNE     70$                     ;BR, IF COUNTER HASN'T EXPIRED
4883 026766  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4887 026772                                ERRHRD  ERRNO,T25WDE,EXPREC     ;TSSR INCORRECT AFTER READ DATA
     026772  104456                                                                TRAP    C$ERHRD
     026774  000210                                                                .WORD   136
     026776  030377                                                                .WORD   T25WDE
     027000  016360                                                                .WORD   EXPREC
4888 027002                        75$:    CKLOOP                          ;LOOP IF SELECTED
     027002  104406                                                                TRAP    C$CLP1
4889 027004  012703  010000                MOV     #4096.,R3               ;RECORD SIZE
4890 027010  013737  003072  030242        MOV     FREE,T25RB              ;STARTING READ BUFFER ADDRESS
4891
4892                               ;*****************************************************************
4893                               ;
4894                               ;READ DATA,ACK COMMAND
4895                               ;
4896                               ;*****************************************************************
4897
4898 027016  012737  100001  030240        MOV     #100001,T25PK3          ;READ DATA,ACK COMMAND
4899 027024  012704  030240        165$:   MOV     #T25PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4900 027030  012700  177777                MOV     #177777,R0              ;SET ALL ONES INTO CORRECT REGISTER
4901 027034  004737  020410                JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
4902 027040  010337  030246                MOV     R3,T25SZ                ;SET UP RECORD SIZE IN PACKET
4903 027044  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4904 027050  004737  017134                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4905 027054  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4906 027060  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
4907 027064  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
4908 027066  001411                        BEQ     170$                    ;BR, IF OK
4909 027070  032701  000004                BIT     #BIT2,R1                ;CHECK FOR TAPE STATUS ALERT
4910 027074  001006                        BNE     170$                    ;BR, IF BIT SET
4911 027076  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4915 027102                                ERRHRD  ERRNO,RDERR,EXPREC      ;TSSR INCORRECT AFTER READ DATA
     027102  104456                                                                TRAP    C$ERHRD
     027104  000211                                                                .WORD   137
     027106  005104                                                                .WORD   RDERR
     027110  016360                                                                .WORD   EXPREC
4916 027112                        170$:   CKLOOP                          ;LOOP IF SELECTED
     027112  104406                                                                TRAP    C$CLP1
4917 027114  017701  153752                MOV     @FREE,R1                        ;GET FIRST WORD FROM BUFFER
4918 027120  012702  000001                MOV     #1,R2                   ;SET UP EXPECTED
4919 027124  020102                        CMP     R1,R2                   ;WAS RECORD NUMBERED R3
4920 027126  001406                        BEQ     200$                    ;BR, IF CORRECT RECORD
4921 027130  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4925 027134                                ERRHRD  ERRNO,T25WNH,EXPREC     ;SHOULD HAVE BEEN RECORD NUMBER 1
```

```
      027134  104456                                                      TRAP    C$ERHRD
      027136  000212                                                      .WORD   138
      027140  031042                                                      .WORD   T25WNH
      027142  016360                                                      .WORD   EXPREC
4926  027144                          200$:
4927  027144                                  ENDSUB              ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      027144                                                              L10043:
      027144  104403                                                      TRAP    C$ESUB
4928  027146  023727  002170  000031          CMP     FATFLG,#25.        ;IS ERROR COUNT AT 25
4929  027154  002402                          BLT     999$               ;BR, IF LESS THAN 25
4930  027156  004737  020170                  JSR     PC,CKDROP          ;TRY TO DROP THE UNIT
4931  027162                          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.
                                        ;
                                        ;
                                        ;
                                        ;-
4944 027162                                     BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
     027162                                                                                     T1.6:
     027162  104402                                                                                 TRAP    C$BSUB
4945 027164  004737  031500                     JSR     PC,T25REST              ;SET COMMAND PACKET
4946 027170  004737  031572                     JSR     PC,T25RT2               ;SET UP OTHER COMMAND PACKET
4947 027174  004737  031634                     JSR     PC,T25RT3               ;SET UP OTHER COMMAND PACKET
4948
4949                                    ;*************************************************************************
                                        ;
4951                                    ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
                                        ;
4953                                    ;*************************************************************************
4954
4955 027200  004737  016660                     JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
4956 027204  103407                             BCS     20$                     ;BR IF INIT WAS OK
4957 027206  004737  020116                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4961 027212  010001                             MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
4962 027214                                     ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     027214  104455                                                                             TRAP    C$ERDF
     027216  000213                                                                             .WORD   139
     027220  003550                                                                             .WORD   SFIERR
     027222  011676                                                                             .WORD   SFIMSG
4963 027224                             20$:
4964
4965 027224  012704  030110                     MOV     #T25PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4966
4967                                    ;*************************************************************************
                                        ;
4969                                    ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
                                        ;
4971                                    ;*************************************************************************
4972
4973 027230  004737  010342                     JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4974 027234  103407                             BCS     25$                     ;BR, IF COMMAND ISSUED OK
4975 027236  004737  020116                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
4979 027242  010001                             MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4980 027244                                     ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     027244  104456                                                                             TRAP    C$ERHRD
     027246  000214                                                                             .WORD   140
     027250  004754                                                                             .WORD   WRTMSG
     027252  011676                                                                             .WORD   SFIMSG
4981 027254                             25$:    CKLOOP                          ;LOOP IF SELECTED
     027254  104406                                                                             TRAP    C$CLP1
4982
4983                                    ;*************************************************************************
4984                                    ;
```

```
                                ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
                                ;
                                ;*************************************************************************
                                
027256  004737  010444                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
027262  103407                        BCS     30$                     ;BR, IF NO PROBLEM
027264  010001                        MOV     R0,R1                   ;SAVE TSSR
027266  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
027272                                ERRHRD  ERRNO,T25RWN,PKTSSR     ;REWIND NOT ACCEPTED
027272  104456                                                                TRAP    C$ERHRD
027274  000215                                                                .WORD   141
027276  031267                                                                .WORD   T25RWN
027300  011710                                                                .WORD   PKTSSR
027302                          30$:    CKLOOP                          ;LOOP IF SELECTED
027302  104406                                                                TRAP    C$CLP1
                                
                                ;*************************************************************************
                                ;
                                ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
                                ;
                                ;*************************************************************************
                                
027304  013701  030136                MOV     T25BFR+6,R1             ;PICK UP XSTO
027310  010102                        MOV     R1,R2                   ;SET UP EXPECTED
027312  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
027316  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
027320  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
027322  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
027326                                ERRHRD  ERRNO,T25BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
027326  104456                                                                TRAP    C$ERHRD
027330  000216                                                                .WORD   142
027332  030457                                                                .WORD   T25BOT
027334  016360                                                                .WORD   EXPREC
027336                          40$:    CKLOOP                          ;LOOP IF SELECTED
027336  104406                                                                TRAP    C$CLP1
027340  012737  000001  030242        MOV     #1,T25RB                ;NUMBER OF RECORDS TO SPACE OVER
                                
                                ;*************************************************************************
                                ;
                                ;SPACE REVERSE,ACK COMMAND
                                ;
                                ;*************************************************************************
                                
027346  012737  100410  030240        MOV     #100410,T25PK3          ;SPACE REVERSE,ACK COMMAND
027354  012704  030240                MOV     #T25PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
027360                          65$:
027360  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
027364  004737  017134                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
027370  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
027374  012702  100206                MOV     #SSR!SC!BIT1!BIT2,R2    ;SET UP EXPECTED
027400  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
027402  001406                        BEQ     75$                     ;BR, IF OK
027404  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
027410                                ERRHRD  ERRNO,T25WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
027410  104456                                                                TRAP    C$ERHRD
027412  000217                                                                .WORD   143
027414  030377                                                                .WORD   T25WDE
```

```
027416  011710                                                              .WORD   PKTSSR
027420                    75$:    CKLOOP  .                   ;LOOP IF SELECTED
027420  104406                                                              TRAP    C$CLP1

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

027422  013701  030136            MOV     T25BFR+6,R1         ;GET XSTO STATUS WORD
027426  010102                    MOV     R1,R2               ;SET UP EXPECTED
027430  052702  002000            BIS     #BIT10,R2           ;SET THE NEF BIT
027434  020102                    CMP     R1,R2               ;ARE THEY EQUAL
027436  001406                    BEQ     170$                ;BR, IF EQUAL (GOOD)
027440  004737  020116            JSR     PC,FATCHK           ;INC AND CHECK FOR MORE THAN 25 ERRORS
027444                            ERRHRD  ERRNO,T25NEF,EXPREC ;NEF SHOULD BE SET
027444  104456                                                              TRAP    C$ERHRD
027446  000220                                                              .WORD   144
027450  031125                                                              .WORD   T25NEF
027452  016360                                                              .WORD   EXPREC
027454                    170$:
027454                            ENDSUB
027454                                                            L10044:
027454  104403                                                              TRAP    C$ESUB
027456  023727  002170  000031    CMP     FATFLG,#25.             ;IS ERROR COUNT AT 25
027464  002402                    BLT     999$                    ;BR, IF LESS THAN 25
027466  004737  020170            JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
027472                    999$:
```

```
5063                                    ;*
5064                                    ;
5065                                    ;TEST 1, SUBTEST 7
5066                                    ;
5067                                    ;VERIFIES THAT A SPACE RECORDS REVERSE COMMAND THAT
5068                                    ;CUASES THE TAPE TO RUN INTO BOT (WITH THE TAPE NOT
5069                                    ;INITIALLY AT BOT) CAUSES A TAPE STATUS ALERT
5070                                    ;TERMINATION AND SETS THE REVERSE INTO BOT (RIB)
5071                                    ;STATUS BIT
5072                                    ;
5073                                    ;
5074                                    ;
5075                                    ;-
5076 027472                                    BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      027472                                                                                    T1.7:
      027472  104402                                                                              TRAP    C$BSUB
5077 027474  004737  031500                    JSR     PC,T25REST              ;SET COMMAND PACKET
5078 027500  004737  031572                    JSR     PC,T25RT2               ;SET UP OTHER COMMAND PACKET
5079 027504  004737  031634                    JSR     PC,T25RT3               ;SET UP OTHER COMMAND PACKET
5080
5081                                    ;*************************************************************************
5082                                    ;
5083                                    ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
5084                                    ;
5085                                    ;*************************************************************************
5086
5087 027510  004737  016660                    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
5088 027514  103407                            BCS     20$                     ;BR IF INIT WAS OK
5089 027516  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5093 027522  010001                            MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
5094 027524                                    ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      027524  104455                                                                           TRAP    C$ERDF
      027526  000221                                                                          .WORD   145
      027530  003550                                                                          .WORD   SFIERR
      027532  011676                                                                          .WORD   SFIMSG
5095 027534                             20$:
5096
5097 027534  012704  030110                        MOV     #T25PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5098
5099                                    ;*************************************************************************
5100                                    ;
5101                                    ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
5102                                    ;
5103                                    ;*************************************************************************
5104
5105 027540  004737  010342                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5106 027544  103407                            BCS     25$                     ;BR, IF COMMAND ISSUED OK
5107 027546  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5111 027552  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5112 027554                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      027554  104456                                                                           TRAP    C$ERHRD
      027556  000222                                                                          .WORD   146
      027560  004754                                                                          .WORD   WRTMSG
      027562  011676                                                                          .WORD   SFIMSG
5113 027564                             25$:    CKLOOP                          ;LOOP IF SELECTED
      027564  104406                                                                          TRAP    C$CLP1
5114
```

```
5115                                ;*****************************************************************
5116                                ;
5117                                ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
5118                                ;
5119                                ;*****************************************************************
5120
5121 027566  004737  010444              JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5122 027572  103407                      BCS     30$                     ;BR, IF NO PROBLEM
5123 027574  010001                      MOV     R0,R1                   ;SAVE TSSR
5124 027576  004737  020116              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5128 027602                              ERRHRD  ERRNO,T25RWN,PKTSSR     ;REWIND NOT ACCEPTED
      027602  104456                                                              TRAP    C$ERHRD
      027604  000223                                                              .WORD   147
      027606  031267                                                              .WORD   T25RWN
      027610  011710                                                              .WORD   PKTSSR
5129 027612                         30$:    CKLOOP                          ;LOOP IF SELECTED
      027612  104406                                                              TRAP    C$CLP1
5130
5131                                ;*****************************************************************
5132                                ;
5133                                ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
5134                                ;
5135                                ;*****************************************************************
5136
5137 027614  013701  030136              MOV     T25BFR+6,R1             ;PICK UP XST0
5138 027620  010102                      MOV     R1,R2                   ;SET UP EXPECTED
5139 027622  052702  000002              BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5140 027626  020102                      CMP     R1,R2                   ;DOES EXP = REC'D
5141 027630  001406                      BEQ     40$                     ;BR, IF EQUAL (OK)
5142 027632  004737  020116              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5146 027636                              ERRHRD  ERRNO,T25BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      027636  104456                                                              TRAP    C$ERHRD
      027640  000224                                                              .WORD   148
      027642  030457                                                              .WORD   T25BOT
      027644  016360                                                              .WORD   EXPREC
5147 027646  012737  000001  030242 40$:    MOV     #1,T25RB                ;NUMBER OF RECORDS TO SPACE OVER
5148
5149                                ;*****************************************************************
5150                                ;
5151                                ;SPACE FORWARD,IE,ACK,CVC=1 COMMAND
5152                                ;
5153                                ;*****************************************************************
5154
5155 027654  012737  140210  030240        MOV     #140210,T25PK3          ;SPACE FORWARD,IE,ACK,CVC=1 COMMAND
5156 027662  012704  030240              MOV     #T25PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5157 027666  010465  177776              MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5158 027672  004737  017134              JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5159 027676  016501  000000              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5160 027702  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED
5161 027706  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
5162 027710  001406                      BEQ     75$                     ;BR, IF OK
5163 027712  004737  020116              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5167 027716                              ERRHRD  ERRNO,T25WDE,EXPREC     ;TSSR INCORRECT AFTER READ DATA
      027716  104456                                                              TRAP    C$ERHRD
      027720  000225                                                              .WORD   149
      027722  030377                                                              .WORD   T25WDE
      027724  016360                                                              .WORD   EXPREC
```

```
5168 027726                          75$:    CKLOOP                          ;LOOP IF SELECTED
     027726  104406                                                                  TRAP    C$CLP1
5169 027730  012737  000020  030242          MOV     #20,T25RB               ;NUMBER OF RECORDS TO SPACE OVER
5170
5171                                 ;*************************************************************************
5172                                 ;
5173                                 ;SPACE REVERSE,IE,ACK COMMAND
5174                                 ;
5175                                 ;*************************************************************************
5176
5177 027736  012737  100610  030240          MOV     #100610,T25PK3          ;SPACE REVERSE,IE,ACK COMMAND
5178 027744  012704  030240                  MOV     #T25PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5179 027750  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5180 027754  004737  017134                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5181 027760  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5182 027764  012702  100204                  MOV     #SSR!BIT2!SC,R2         ;SET UP EXPECTED
5183 027770  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
5184 027772  001406                          BEQ     175$                    ;BR, IF OK
5185 027774  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5189 030000                                  ERRHRD  ERRNO,T25WDE,EXPREC     ;TSSR INCORRECT AFTER READ DATA
     030000  104456                                                                  TRAP    C$ERHRD
     030002  000226                                                                  .WORD   150
     030004  030377                                                                  .WORD   T25WDE
     030006  016360                                                                  .WORD   EXPREC
5190 030010                          175$:   CKLOOP                          ;LOOP IF SELECTED
     030010  104406                                                                  TRAP    C$CLP1
5191 030012  013701  030144                  MOV     T25BFR+14,R1            ;GET XST3 STATUS WORD
5192 030016  010102                          MOV     R1,R2                   ;SET UP EXPECTED
5193 030020  052702  000001                  BIS     #BIT0,R2                ;SET THE RIB BIT
5194 030024  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
5195 030026  001406                          BEQ     180$                    ;BR, IF EQUAL (GOOD)
5196 030030  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5200 030034                                  ERRHRD  ERRNO,T25NEF,EXPREC     ;NEF SHOULD BE SET
     030034  104456                                                                  TRAP    C$ERHRD
     030036  000227                                                                  .WORD   151
     030040  031125                                                                  .WORD   T25NEF
     030042  016360                                                                  .WORD   EXPREC
5201 030044                          180$:
5202 030044                                  ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     030044                                                                                L10045:
     030044  104403                                                                  TRAP    C$ESUB
5203 030046  023727  002170  000031          CMP     FATFLG,#25.                     ;IS ERROR COUNT AT 25
5204 030054  002402                          BLT     999$                            ;BR, IF LESS THAN 25
5205 030056  004737  020170                  JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
5206 030062                          999$:
5207                                 ;
5208                                 ;
5209                                 ;
5210 030062  004737  017372                  JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
5211 030066  103002                          BCC     193$                    ;BR, IF NO LOOP REQUIRED
5212 030070  000137  023710                  JMP     T25LOOP                 ;EXECUTE AGAIN
5213 030074                          193$:
5214 030074                                  EXIT    TST                     ;ALL DONE THIS TEST
     030074  104432                                                                  TRAP    C$EXIT
     030076  001566                                                                  .WORD   L10036
```

```
5216                                    ;*
5217                                    ;LOCAL STORAGE FOR THIS TEST
5218                                    ;-
5220 030100                                     .BLKB   10-<.-TUV2A&7>
5222 030110                             T25PACKET:                      ;COMMAND PACKET FOR TEST
5223 030110  100004                             .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH  ACK
5224 030112  030120                             .WORD   T25DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
5225 030114  000000                             .WORD   0
5226 030116  000010                             .WORD   8.              ;STARTING VALUE OF BLOCK SIZE
5227 030120                             T25DATA:                        ;CHARACTERISTICS DATA BLOCK
5228 030120  030130                             .WORD   T258FR          ;ADDRESS OF MESSAGE BUFFER
5229 030122  000000                             .WORD   0
5230 030124  000012                             .WORD   10.             ;LENGTH OF MESSAGE BUFFER
5231 030126  000000                             .WORD   0
5232 030130                             T258FR: .BLKW   25.             ;MESSAGE BUFFER
5233                                    ;
5234                                    ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
5235                                    ;
5237 030212                                     .BLKB   10-<.-TUV2A&7>
5239 030220                             T25PK2:
5240 030220  100006                             .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
5241 030222  030250                             .WORD   T258F2          ;ADDRESS OF SELECT BLOCK DATA
5242 030224  000000                             .WORD   0
5243 030226  000006                             .WORD   6.              ;SIZE OF DATA PACKET
5244
5246 030230                                     .BLKB   10-<.-TUV2A&7>
5248 030240                             T25PK3:
5249 030240  100005                             .WORD   100005          ;READ COMMAND, AND ACK
5250 030242                             T25RB:
5251 030242  003072                     T25WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
5252 030244  000000                             .WORD   0
5253 030246  000000                     T25SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
5254                                            .EVEN
5255                                    ;
5256                                    ;
5257                                    ;
5258 030250                             T258F2:
5259 030250      010                    T25BS0: .BYTE   10              ;BSEL0 AREA
5260 030251      200                    T25BS1: .BYTE   200             ;BSEL1 AREA
5261 030252  000000                     T25S2:  .WORD   0               ;SEL 2 AREA
5262 030254  000000                     T25S3:  .WORD   0               ;DATA AREA
5263                                    ;
5264                                    ;
5265                                            .EVEN
5266                                    ;TAPE MOTION PACKET COMMAND VALUES
5267
5268 030256  100005                     T25RN:  .WORD   100005          ;READ DATA (NEXT)
5269 030260  100405                     T25WDR: .WORD   100405          ;READ DATA RETRY
5270 030262  102005                     T25CON: .WORD   102005          ;WRITE CONTINOUS
5271 030264  177777                             .WORD   177777          ;END OF DATA
5272
5273
```

```
5275 030266  000000                  T25CN2: .WORD   0                       ;COUNTER FOR RECORDS
5276 030270  000000                  T25CNT: .WORD   0                       ;COUNTER FOR RECORDS
5277 030272  000000                  T25DLY: .WORD   0                       ;COUNTER FOR RECORDS
5278
5279                                 ;+
5280                                 ;LOCAL TEXT MESSAGES FOR TEST
5281                                 ;-
5282
5283
5284 030274      104     122     111  T21OFL: .ASCIZ  'DRIVE IS OFF-LINE'
5285 030316      127     122     111  T25SSR: .ASCIZ  'WRITE SUBSYSTEM Miscellaneous Read Status Failed'
5286 030377      124     123     123  T25WDE: .ASCIZ  'TSSR Not Correct After POSITION (SPACE) Command'
5287 030457      124     141     160  T25BOT: .ASCIZ  'Tape Not At BOT After REWIND Command'
5288 030524      124     123     123  T25TM:  .ASCIZ  'TSSR Not Correct After POSITION (Space Command) Reject'
5289 030613      127     162     151  T25NET: .ASCIZ  'Write Tape, Status Alert, But No EOT Sensed'
5290 030667      123     160     141  T25WNG: .ASCIZ  'Space Forward Failed To Position On Correct Record'
5291 030752      123     160     141  T25BNC: .ASCIZ  'Space Forward, From BOT, Failed To Clear BOT Indication'
5292 031042      123     160     141  T25WNH: .ASCIZ  'Space Reverse Failed To Position On Correct Record'
5293 031125      123     160     141  T25NEF: .ASCIZ  'Space Reverse, At BOT, Failed To Set NEF (XST0)'
5294 031205      123     160     141  T25RIB: .ASCIZ  'Space Reverse, Into BOT, Failed To Set RIB (XST3)'
5295 031267      122     145     167  T25RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
5296 031336      104     162     151  T25OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
5297 031411      124     123     123  T25WDC: .ASCIZ  'TSSR Not Correct After READ DATA Command'
5298 031462      123     160     141  TST25ID:        .ASCIZ  'Space Records'
5299                                          .EVEN
5300                                 ;+
5301                                 ;
5302                                 ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
5303                                 ;WRITE SUBSYSTEM MEMORY COMMAND
5304                                 ;
5305                                 ;-
5306
5307 031500                       T25REST:
5308 031500                              SAVREG                          ;SAVE THE REGISTERS
5309 031504  012701  030110              MOV     #T25PACKET,R1           ;START OF THE PACKET
5310 031510  012721  100004              MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK
5311 031514  012721  030120              MOV     #T25DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
5312 031520  005021                      CLR     (R1)+                   ;EXTENDED ADDRESS
5313 031522  012721  000012              MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
5314 031526  012721  030130              MOV     #T25BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
5315 031532  005021                      CLR     (R1)+
5316 031534  012721  000024              MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
5317 031540  005021                      CLR     (R1)+
5318 031542  012711  000000              MOV     #0,(R1)                 ;SELECT DRIVE ZERO
5319 031546  012702  000030              MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
5320 031552  012762  177777  030130  64$:MOV     #177777,T25BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
5321 031560  005742                      TST     -(R2)                   ;NEXT LOCATION
5322 031562  022702  000000              CMP     #0,R2                   ;IS R2 AT ZERO YET
5323 031566  001371                      BNE     64$                     ;KEEP GOING UNTIL DONE
5324 031570  000207                      RTS     PC                      ;RETURN
5325
5326 031572                       T25RT2:
5327 031572                              SAVREG                          ;SAVE THE REGISTERS
5328 031576  012701  030220              MOV     #T25PK2,R1              ;START OF THE PACKET
5329 031602  012721  100006              MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
5330 031606  012721  030250              MOV     #T25BF2,(R1)+           ;ADDRESS OF DATA BLOCK
5331 031612  005021                      CLR     (R1)+                   ;EXTENDED ADDRESS
```

```
5332 031614  012721  000006                MOV     #6.,(R1)+       ;SIZE OF DATA BLOCK IN BYTES
5333 031620  005021                        CLR     (R1)+
5334 031622  012701  030250                MOV     #T25BF2,R1      ;POINT TO DATA SEL AREA
5335 031626  005021                        CLR     (R1)+
5336 031630  005011                        CLR     (R1)
5337 031632  000207                        RTS     PC              ;RETURN
5338 031634                        T25RT3:
5339 031634                                SAVREG                  ;SAVE THE REGISTERS
5340 031640  012701  030240                MOV     #T25PK3,R1      ;START OF THE PACKET
5341 031644  012721  000000                MOV     #0,(R1)+        ;WRITE SUBSYSTEM MEM. WITH ACK,
5342 031650  012721  000000                MOV     #0,(R1)+        ;ADDRESS OF DATA BLOCK
5343 031654  005021                        CLR     (R1)+           ;EXTENDED ADDRESS
5344 031656  012721  000000                MOV     #0,(R1)+        ;SIZE OF DATA BLOCK IN BYTES
5345 031662  000207                        RTS     PC              ;RETURN
5346 031664                                ENDTST
     031664                                                    L10036:
     031664  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
                                ;
                                ;
                                ;
                                ;-
031666                                  BGNTST
031666                                                                          T2::
031666  005037  002170                    CLR     FATFLG                  ;CLEAR FATAL ERROR FLAG
031672  005037  003100                    CLR     KTFLG           ;HOLD OFF KT11
031676  012737  005771  002146            MOV     #EPRT2,EPRTSW           ;SECONDARY ERROR MESSAGE
031704  004737  020262                    JSR     PC,KTOFF                ;DON'T NEED KT11
031710  012700  050637                    MOV     #TST26ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
031714  004737  017424                    JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
031720  012737  000001  002164            MOV     #1,LOOPCNT              ;PERFORM 1 ITERATIONS
031726  005037  046106                    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.
                                ;
                                ;
                                ;-

031732                          T26LOOP:

                                        BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
031732                                                                          T2.1:
031732  104402                                                                  TRAP    C$BSUB
031734  004737  050650                    JSR     PC,T26REST              ;SET COMMAND PACKET
031740  004737  050742                    JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
031744  004737  051004                    JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET
031750  012737  176750  046114            MOV     #65000.,T26DLY                  ;SET UP DELAY COUNTER
```

```
5406                            ;*****************************************************************
5407                            ;
5408                            ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
5409                            ;
5410                            ;*****************************************************************
5411
5412 031756  004737  016660    10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
5413 031762  103426                    BCS     20$                     ;BR IF INIT WAS OK
5414 031764                            DELAY   250                     ;DELAY FOR A REWIND TO FINISH
      031764  012727  000250                                                    MOV     #250,(PC)+
      031770  000000                                                            .WORD   0
      031772  013727  002116                                                    MOV     L$DLY,(PC)+
      031776  000000                                                            .WORD   0
      032000  005367  177772                                                    DEC     -6(PC)
      032004  001375                                                            BNE     .-4
      032006  005367  177756                                                    DEC     -22(PC)
      032012  001367                                                            BNE     .-20
5415 032014  005337  046114            DEC     T26DLY                  ;DEC COUNTER
5416 032020  001356                    BNE     10$                     ;BR, IF DELAY NOT READY
5417 032022  004737  020116            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5421 032026  010001                    MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
5422 032030                            ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      032030  104455                                                            TRAP    C$ERDF
      032032  000311                                                            .WORD   201
      032034  003550                                                            .WORD   SFIERR
      032036  011676                                                            .WORD   SFIMSG
5423 032040                    20$:
5424
5425 032040  012704  045730            MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5426
5427                            ;*****************************************************************
5428                            ;
5429                            ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
5430                            ;
5431                            ;*****************************************************************
5432
5433 032044  004737  010342            JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5434 032050  103407                    BCS     26$                     ;BR, IF COMMAND ISSUED OK
5435 032052  004737  020116            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5439 032056  010001                    MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5440 032060                            ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      032060  104456                                                            TRAP    C$ERHRD
      032062  000312                                                            .WORD   202
      032064  004754                                                            .WORD   WRTMSG
      032066  011676                                                            .WORD   SFIMSG
5441 032070                    26$:    CKLOOP                          ;LOOP IF SELECTED
      032070  104406                                                            TRAP    C$CLP1
5442
5443                            ;*****************************************************************
5444                            ;
5445                            ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
5446                            ;
5447                            ;*****************************************************************
5448
5449 032072  004737  010444            JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5450 032076  103413                    BCS     30$                     ;BR, IF NO PROBLEM
5451 032100  016501  000000            MOV     TSSR(R5),R1             ;GET TSSR
```

```
5452 032104  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
5453 032110  010004                        MOV     R0,R4                   ;PACKET ADDRESS SET UP
5454 032112  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5458 032116                                ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     032116  104456                                                        TRAP    C$ERHRD
     032120  000313                                                        .WORD   203
     032122  047414                                                        .WORD   T26RWN
     032124  011710                                                        .WORD   PKTSSR
5459 032126                        30$:    CKLOOP                          ;LOOP IF SELECTED
     032126  104406                                                        TRAP    C$CLP1
5460
5461                               ;*****************************************************************
5462                               ;
5463                               ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
5464                               ;
5465                               ;*****************************************************************
5466
5467 032130  013701  045756                MOV     T26BFR+6,R1             ;PICK UP XSTO
5468 032134  010102                        MOV     R1,R2                   ;SET UP EXPECTED
5469 032136  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5470 032142  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
5471 032144  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
5472 032146  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5476 032152                                ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     032152  104456                                                        TRAP    C$ERHRD
     032154  000314                                                        .WORD   204
     032156  047125                                                        .WORD   T26BOT
     032160  016360                                                        .WORD   EXPREC
5477 032162                        40$:    CKLOOP                          ;LOOP IF SELECTED
     032162  104406                                                        TRAP    C$CLP1
5478 032164  012703  000400                MOV     #256.,R3                ;RECORD SIZE
5479 032170  013737  003072  046062        MOV     FREE,T26RB              ;STARTING WRITE BUFFER ADDRESS
5480
5481                               ;*****************************************************************
5482                               ;
5483                               ;WRITE DATA,ACK,CVC=1 COMMAND
5484                               ;
5485                               ;*****************************************************************
5486
5487 032176  012737  140005  046060        MOV     #140005,T26PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
5488 032204  012704  046060                MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5489 032210                        65$:
5490 032210  010300                        MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
5491 032212  004737  020410                JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
5492 032216  010337  046066                MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
5493 032222  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5494 032226  004737  017134                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5495 032232  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5496 032236  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
5497 032242  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
5498 032244  001406                        BEQ     75$                     ;BR, IF OK
5499 032246  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5503                                                                       ;SOFT ERROR GENERATED BECAUSE THE
5504                                                                       ;WRITE COMMAND IS NOT BEING CHECKED
5505                                                                       ;HERE. IT WAS CHECKED IN LEAH2
5506 032252                                ERRSOFT ERRNO,WRTERR,EXPREC     ;TSSR INCORRECT AFTER WRITE DATA
     032252  104457                                                        TRAP    C$ERSOFT
```

```
                032254  000315                                                          .WORD   205
                032256  005011                                                          .WORD   WRTERR
                032260  016360                                                          .WORD   EXPREC
5507            032262                          75$:    CKLOOP                  ;LOOP IF SELECTED
                032262  104406                                                          TRAP    C$CLP1
5508            032264  005723                  TST     (R3)+                   ;BUMP RECORD SIZE
5509            032266  022703  000414          CMP     #268.,R3                ;END OF RECORD YET
5510            032272  001346                  BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
5511            032274                          80$:    CKLOOP                  ;LOOP IF SELECTED
                032274  104406                                                          TRAP    C$CLP1
5512            032276                          120$:
5513
5514                                            ;*************************************************************************
5515                                            ;
5516                                            ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
5517                                            ;
5518                                            ;*************************************************************************
5519
5520            032276  004737  010444                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5521            032302  103413                  BCS     130$                    ;BR, IF NO PROBLEM
5522            032304  016501  000000          MOV     TSSR(R5),R1             ;GET TSSR
5523            032310  012702  000200          MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
5524            032314  010004                  MOV     R0,R4                   ;PACKET ADDRESS SET UP
5525            032316  004737  020116          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5529            032322                          ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
                032322  104456                                                          TRAP    C$ERHRD
                032324  000316                                                          .WORD   206
                032326  047414                                                          .WORD   T26RWN
                032330  011710                                                          .WORD   PKTSSR
5530            032332                          130$:   CKLOOP                  ;LOOP IF SELECTED
                032332  104406                                                          TRAP    C$CLP1
5531
5532                                            ;*************************************************************************
5533                                            ;
5534                                            ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
5535                                            ;
5536                                            ;*************************************************************************
5537
5538            032334  013701  045756                  MOV     T26BFR+6,R1             ;PICK UP XST0
5539            032340  010102                  MOV     R1,R2                   ;SET UP EXPECTED
5540            032342  052702  000002          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5541            032346  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
5542            032350  001406                  BEQ     140$                    ;BR, IF EQUAL (OK)
5543            032352  004737  020116          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5547            032356                          ERRHRD  ERRNO,T26BOT,PKTSSR     ;TAPE NOT AT BOT AFTER REWIND
                032356  104456                                                          TRAP    C$ERHRD
                032360  000317                                                          .WORD   207
                032362  047125                                                          .WORD   T26BOT
                032364  011710                                                          .WORD   PKTSSR
5548            032366                          140$:   CKLOOP                  ;LOOP IF SELECTED
                032366  104406                                                          TRAP    C$CLP1
5549            032370  012737  000400  046112          MOV     #256.,T26RSZ            ;SET RECORD SIZE
5550
5551                                            ;*************************************************************************
5552                                            ;
5553                                            ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
5554                                            ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
```

```
5555                                    ;
5556                                    ;*************************************************************************
5557
5558 032376  012703  000001            145$:   MOV     #1,R3                   ;SPACE ONE RECORD PARAMETER
5559 032402  004737  010144                    JSR     PC,SPACE                ;CALL SPACE ROUTINE
5560 032406  103412                            BCS     150$                    ;BR, IF NO PROBLEM WITH SPACE COMMAND
5561 032410  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR
5562 032414  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
5563 032420  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5567 032424                                    ERRHRD  ERRNO,T26SC,EXPREC      ;POSITION (SPACE RECORDS) FAILED
     032424  104456                                                                    TRAP    C$ERHRD
     032426  000320                                                                    .WORD   208
     032430  046527                                                                    .WORD   T26SC
     032432  016360                                                                    .WORD   EXPREC
5568 032434                            150$:
5569 032434  013703  046112                    MOV     T26RSZ,R3               ;RECORD SIZE
5570 032440  013737  003072  046062            MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
5571
5572                                    ;*************************************************************************
5573                                    ;
5574                                    ;REREREAD DATA,CVC=1,ACK COMMAND
5575                                    ;
5576                                    ;*************************************************************************
5577
5578 032446  012737  141001  046060            MOV     #141001,T26PK3          ;REREREAD DATA,CVC=1,ACK COMMAND
5579 032454  012704  046060            165$:   MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5580 032460  010337  046066                    MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
5581 032464  010465  177776                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5582 032470  004737  017134                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5583 032474  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5584 032500  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
5585 032504  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
5586 032506  001406                            BEQ     170$                    ;BR, IF OK
5587 032510  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5591 032514                                    ERRHRD  ERRNO,T26WDC,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
     032514  104456                                                                    TRAP    C$ERHRD
     032516  000321                                                                    .WORD   209
     032520  047750                                                                    .WORD   T26WDC
     032522  011710                                                                    .WORD   PKTSSR
5592 032524                            170$:   CKLOOP                          ;LOOP IF SELECTED
     032524  104406                                                                    TRAP    C$CLP1
5593 032526  013702  003072                    MOV     FREE,R2                 ;CURRENT BUFFER ADDRESS TO R2
5594 032532  010304                            MOV     R3,R4                   ;CURRENT RECORD SIZE
5595 032534  162704  000400                    SUB     #256.,R4                ;FIRST LOCATION IN BUFFER
5596 032540  060204                    173$:   ADD     R2,R4                   ;SET UP POINTER
5597 032542  021403                            CMP     (R4),R3                 ;CHECK DATA READ (R3=DATA ALSO)
5598 032544  001410                            BEQ     180$                    ;BR, IF ALL IS WELL
5599 032546  011401                            MOV     (R4),R1                 ;RECD DATA
5600 032550  010302                            MOV     R3,R2                   ;EXPECTED DATA
5601 032552  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5605 032556                                    ERRHRD  ERRNO,T26DTA,EXPREC     ;DATA READ NOT = WRITTEN
     032556  104456                                                                    TRAP    C$ERHRD
     032560  000322                                                                    .WORD   210
     032562  047172                                                                    .WORD   T26DTA
     032564  016360                                                                    .WORD   EXPREC
5606 032566                            180$:   CKLOOP                          ;LOOP IF SELECTED
     032566  104406                                                                    TRAP    C$CLP1
```

```
 5607 032570  005724                          TST     (R4)+           ;BUMP TO NEXT LOCATION
 5608 032572  160204                          SUB     R2,R4           ;CORRECT RECORDS SIZE VALUE
 5609 032574  020403                          CMP     R4,R3           ;END OF RECORD YET
 5610 032576  001360                          BNE     173$            ;BR, IF NOT AT END OF RECORD
 5611 032600  005723                          TST     (R3)+           ;BUMP RECORD SIZE
 5612 032602  010337  046112                  MOV     R3,T26RSZ       ;RESET RECORD SIZE
 5613 032606  022703  000412                  CMP     #266.,R3        ;END OF RECORD YET
 5614 032612  001271                          BNE     145$            ;BR, IF MORE RECORDS TO READ
 5615 032614                          190$:   CKLOOP                  ;LOOP IF SELECTED
      032614  104406                                                                  TRAP    C$CLP1
 5616 032616                          ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      032616                                                                      L10047:
      032616  104403                                                              TRAP    C$ESUB
 5617 032620  023727  002170  000031          CMP     FATFLG,#25.             ;IS ERROR COUNT AT 25
 5618 032626  002402                          BLT     999$                    ;BR, IF LESS THAN 25
 5619 032630  004737  020170                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
 5620 032634                          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.
                                        ;
                                        ;
                                        ;-
5635 032634                                     BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
     032634                                                                                     T2.2:
     032634  104402                                                                             TRAP    C$BSUB
5636 032636  004737  050650                     JSR     PC,T26REST              ;SET COMMAND PACKET
5637 032642  004737  050742                     JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
5638 032646  004737  051004                     JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET
5639
5640                                    ;*************************************************************************
5641                                    ;
5642                                    ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
5643                                    ;
5644                                    ;*************************************************************************
5645
5646 032652  004737  016660                     JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
5647 032656  103407                             BCS     20$                     ;BR IF INIT WAS OK
5648 032660  004737  020116                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5652 032664  010001                             MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
5653 032666                                     ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     032666  104455                                                                             TRAP    C$ERDF
     032670  000323                                                                             .WORD   211
     032672  003550                                                                             .WORD   SFIERR
     032674  011676                                                                             .WORD   SFIMSG
5654 032676                             20$:
5655
5656 032676  012704  045730                     MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5657
5658                                    ;*************************************************************************
5659                                    ;
5660                                    ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
5661                                    ;
5662                                    ;*************************************************************************
5663
5664 032702  004737  010342                     JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5665 032706  103407                             BCS     26$                     ;BR, IF COMMAND ISSUED OK
5666 032710  004737  020116                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5670 032714  010001                             MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5671 032716                                     ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     032716  104456                                                                             TRAP    C$ERHRD
     032720  000324                                                                             .WORD   212
     032722  004754                                                                             .WORD   WRTMSG
     032724  011676                                                                             .WORD   SFIMSG
5672 032726                             26$:    CKLOOP                          ;LOOP IF SELECTED
     032726  104406                                                                             TRAP    C$CLP1
5673
```

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

032730  004737  010444                   JSR     PC,REWIND                ;CALL TAPE REWIND COMMAND
032734  103413                           BCS     30$                      ;BR, IF NO PROBLEM
032736  016501  000000                   MOV     TSSR(R5),R1              ;GET TSSR
032742  012702  000200                   MOV     #SSR,R2                  ;SET UP EXPECTED TSSR
032746  010004                           MOV     R0,R4                    ;PACKET ADDRESS SET UP
032750  004737  020116                   JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
032754                                   ERRHRD  ERRNO,T26RWN,PKTSSR      ;REWIND NOT ACCEPTED
032754  104456                                                                              TRAP    C$ERHRD
032756  000325                                                                              .WORD   213
032760  047414                                                                              .WORD   T26RWN
032762  011710                                                                              .WORD   PKTSSR
032764                           30$:    CKLOOP                           ;LOOP IF SELECTED
032764  104406                                                                              TRAP    C$CLP1

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

032766  013701  045756                   MOV     T26BFR+6,R1              ;PICK UP XSTO
032772  010102                           MOV     R1,R2                    ;SET UP EXPECTED
032774  052702  000002                   BIS     #BIT1,R2                 ;SET BOT BIT IN EXPECTED
033000  020102                           CMP     R1,R2                    ;DOES EXP = REC'D
033002  001406                           BEQ     40$                      ;BR, IF EQUAL (OK)
033004  004737  020116                   JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
033010                                   ERRHRD  ERRNO,T26BOT,EXPREC      ;TAPE NOT AT BOT AFTER REWIND
033010  104456                                                                              TRAP    C$ERHRD
033012  000326                                                                              .WORD   214
033014  047125                                                                              .WORD   T26BOT
033016  016360                                                                              .WORD   EXPREC
033020                           40$:    CKLOOP                           ;LOOP IF SELECTED
033020  104406                                                                              TRAP    C$CLP1
033022  012703  000400                   MOV     #256.,R3                 ;RECORD SIZE
033026  013737  003072  046062           MOV     FREE,T26RB               ;STARTING WRITE BUFFER ADDRESS

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

033034  012737  110005  046060           MOV     #110005,T26PK3           ;WRITE DATA,ACK,SWB COMMAND
033042  012704  046060                   MOV     #T26PK3,R4               ;SET UP R4 WITH PACKET ADDRESS
033046                           65$:
033046  010300                           MOV     R3,R0                    ;SET PATTERN IN CORRECT REGISTER
033050  004737  020410                   JSR     PC,FILLMEM               ;FILL MEMORY WITH RECORD SIZE
033054  010337  046066                   MOV     R3,T26SZ                 ;SET UP RECORD SIZE IN PACKET
033060  010465  177776                   MOV     R4,TSDB(R5)              ;ISSUE COMMAND
033064  004737  017134                   JSR     PC,WAITF                 ;WAIT FOR SSR TO SET
033070  016501  000000                   MOV     TSSR(R5),R1              ;GET TSSR CONTENTS
```

```
5727 033074  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED
5728 033100  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
5729 033102  001406                      BEQ     75$                     ;BR, IF OK
5730 033104  004737  020116              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5734                                                                     ;SOFT ERROR GENERATED BECAUSE THE
5735                                                                     ;WRITE COMMAND IS NOT BEING CHECKED
5736                                                                     ;HERE. IT WAS CHECKED IN LEAH2
5737 033110                              ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     033110  104457                                                              TRAP    C$ERSOFT
     033112  000327                                                              .WORD   215
     033114  005011                                                              .WORD   WRTERR
     033116  011710                                                              .WORD   PKTSSR
5738 033120                      75$:    CKLOOP                          ;LOOP IF SELECTED
     033120  104406                                                              TRAP    C$CLP1
5739 033122  005723                      TST     (R3)+                   ;BUMP RECORD SIZE
5740 033124  022703  000414              CMP     #268.,R3                ;END OF RECORD YET
5741 033130  001346                      BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
5742 033132                      80$:    CKLOOP                          ;LOOP IF SELECTED
     033132  10440[illegible]                                                    TRAP    C$CLP1
5743 033134                      120$:
5744
5745                             ;*************************************************************************
5746                             ;
5747                             ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
5748                             ;
5749                             ;*************************************************************************
5750
5751 033134  004737  010444              JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5752 033140  103413                      BCS     130$                    ;BR, IF NO PROBLEM
5753 033142  016501  000000              MOV     TSSR(R5),R1             ;GET TSSR
5754 033146  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
5755 033152  010004                      MOV     R0,R4                   ;PACKET ADDRESS SET UP
5756 033154  004737  020116              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5760 033160                              ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     033160  104456                                                              TRAP    C$ERHRD
     033162  000330                                                              .WORD   216
     033164  047414                                                              .WORD   T26RWN
     033166  011710                                                              .WORD   PKTSSR
5761 033170                      130$:   CKLOOP                          ;LOOP IF SELECTED
     033170  104406                                                              TRAP    C$CLP1
5762
5763                             ;*************************************************************************
5764                             ;
5765                             ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
5766                             ;
5767                             ;*************************************************************************
5768
5769 033172  013701  045756              MOV     T26BFR+6,R1             ;PICK UP XST0
5770 033176  010102                      MOV     R1,R2                   ;SET UP EXPECTED
5771 033200  052702  000002              BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5772 033204  020102                      CMP     R1,R2                   ;DOES EXP = REC'D
5773 033206  001406                      BEQ     140$                    ;BR, IF EQUAL (OK)
5774 033210  004737  020116              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5778 033214                              ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     033214  104456                                                              TRAP    C$ERHRD
     033216  000331                                                              .WORD   217
     033220  047125                                                              .WORD   T26BOT
```

```
 033222  016360                                                                               .WORD   EXPREC
 033224                          140$:   CKLOOP                          ;LOOP IF SELECTED
 033224  104406                                                                               TRAP    C$CLP1
 033226  012737  000400  046112          MOV     #256.,T26RSZ            ;SET UP RECORD SIZE

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

 033234  012703  000001          145$:   MOV     #1,R3                   ;SPACE ONE RECORD PARAMETER
 033240  004737  010144                  JSR     PC,SPACE                ;CALL SPACE ROUTINE
 033244  103412                          BCS     150$                    ;BR, IF NO PROBLEM WITH SPACE COMMAND
 033246  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR
 033252  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
 033256  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 033262                                  ERRHRD  ERRNO,T26SC,EXPREC      ;POSITION (SPACE RECORDS) FAILED
 033262  104456                                                                               TRAP    C$ERHRD
 033264  000332                                                                               .WORD   218
 033266  046527                                                                               .WCRD   T26SC
 033270  016360                                                                               .WORD   EXPREC
 033272                          150$:
 033272  013703  046112                  MOV     T26RSZ,R3               ;RECORD SIZE
 033276  013737  003072  046062          MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS

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

 033304  012737  151001  046060          MOV     #151001,T26PK3          ;REREAD DATA,CVC=1,ACK,SWB COMMAND
 033312  012704  046060          165$:   MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 033316  010337  046066                  MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
 033322  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 033326  004737  017134                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 033332  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 033336  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 033342  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 033344  001406                          BEQ     170$                    ;BR, IF OK
 033346  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 033352                                  ERRHRD  ERRNO,T26WDC,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
 033352  104456                                                                               TRAP    C$ERHRD
 033354  000333                                                                               .WORD   219
 033356  047750                                                                               .WORD   T26WDC
 033360  011710                                                                               .WORD   PKTSSR
 033362                          170$:   CKLOOP                          ;LOOP IF SELECTED
 033362  104406                                                                               TRAP    C$CLP1
 033364  013702  003072                  MOV     FREE,R2                 ;CURRENT BUFFER ADDRESS TO R2
 033370  010304                          MOV     R3,R4                   ;CURRENT RECORD SIZE
 033372  162704  000400                  SUB     #256.,R4                ;FIRST LOCATION IN BUFFER
 033376  060204                  173$:   ADD     R2,R4                   ;SET UP POINTER
 033400  021403                          CMP     (R4),R3                 ;CHECK DATA READ (R3=DATA ALSO)
 033402  001410                          BEQ     180$                    ;BR, IF ALL IS WELL
 033404  011401                          MOV     (R4),R1                 ;RECD DATA
```

```
5831 033406  010302                          MOV     R3,R2                   ;EXPECTED DATA
5832 033410  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
5836 033414                                  ERRHRD  ERRNO,T26DTA,EXPREC     ;DATA READ NOT = WRITTEN
     033414  104456                                                              TRAP    C$ERHRD
     033416  000334                                                              .WORD   220
     033420  047172                                                              .WORD   T26DTA
     033422  016360                                                              .WORD   EXPREC
5837 033424                          180$:   CKLOOP                          ;LOOP IF SELECTED
     033424  104406                                                              TRAP    C$CLP1
5838 033426  005724                          TST     (R4)+                   ;BUMP TO NEXT LOCATION
5839 033430  160204                          SUB     R2,R4                   ;CORRECT RECORDS SIZE VALUE
5840 033432  020403                          CMP     R4,R3                   ;END OF RECORD YET
5841 033434  001360                          BNE     173$                    ;BR, IF NOT AT END OF RECORD
5842 033436  005723                          TST     (R3)+                   ;BUMP RECORD SIZE
5843 033440  010337  046112                  MOV     R3,T26RSZ               ;STORE RECORD SIZE
5844 033444  022703  000412                  CMP     #266.,R3                ;END OF RECORD YET
5845 033450  001271                          BNE     145$                    ;BR, IF MORE RECORDS TO READ
5846 033452                          190$:   CKLOOP                          ;LOOP IF SELECTED
     033452  104406                                                              TRAP    C$CLP1
5847 033454                                  ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     033454                                                                  L10050:
     033454  104403                                                              TRAP    C$ESUB
5848 033456  023727  002170  000031                  CMP     FATFLG,#25.             ;IS ERROR COUNT AT 25
5849 033464  002402                                  BLT     999$                    ;BR, IF LESS THAN 25
5850 033466  004737  020170                          JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
5851 033472                          999$:
```

```
5853                                    ;*
5854                                    ;
5855                                    ;TEST 2, SUBTEST 3
5856                                    ;
5857                                    ;VERIFIES THAT THE REREAD PREVIOUS COMMAND WITH OPP=1
5858                                    ;(READ REVERSE, SPACE FORWARD) AND SWB=0 OPERATES
5859                                    ;PROPERLY. THE TAPE IS FIRST REWOUND AND THEN WRITTEN
5860                                    ;WITH A SERIES OF TEST RECORDS VARYING IN LENGTH AND
5861                                    ;DATA CONTENT; THE FIRST FOUR BYTES OF EACH RECORD
5862                                    ;CONTAIN ITS RECORD NUMBER (INDICATING POSITION ON
5863                                    ;TAPE). THE TAPE IS THEN REWOUND AGAIN. FOR EACH
5864                                    ;TEST RECORD, THE FOLLOWING SEQUENCE IS EXECUTED.
5865                                    ;
5866                                    ;1.     THE REREAD PREVIOUS COMMAND WITH OPP=1 IS ISSUED
5867                                    ;       AND THE RESULTS CHECKED
5868                                    ;
5869                                    ;2.     A READ FORWARD COMMAND IS THEN ISSUED AND THE
5870                                    ;       DATA IS CHECKED TO VERIFY THAT THE TAPE WAS
5871                                    ;       POSITIONED PROPERLY AFTER THE REREAD PREVIOUS
5872                                    ;       COMMAND (E.G. THE TAPE SHOULD HAVE BEEN LEFT
5873                                    ;       POSITIONED AT THE START OF THE TEST RECORD). THE
5874                                    ;       READ FORWARD COMMAND LEAVES THE TAPE POSITIONED
5875                                    ;       PROPERLY AT THE START OF THE NEXT TEST RECORD.
5876                                    ;
5877                                    ;THE BYTE COUNT ON EACH REREAD PREVIOUS COMMAND IS SET
5878                                    ;TO THE LENGTH OF THE EXPECTED RECORD, SO NO
5879                                    ;EXCEPTIONAL CONDITIONS SHOULD OCCUR.
5880                                    ;
5881                                    ;
5882                                    ;
5883                                    ;
5884                                    ;-
5885
5886 033472                                     BGNSUB                  ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
      033472                                                                    T2.3:
      033472  104402                                                              TRAP    C$BSUB
5887 033474  004737  050650                     JSR     PC,T26REST      ;SET COMMAND PACKET
5888 033500  005037  046106                     CLR     T26CNT          ;CLEAR TAPE RECORD COUNTER
5889 033504  004737  050742                     JSR     PC,T26RT2       ;SET UP OTHER COMMAND PACKET
5890 033510  004737  051004                     JSR     PC,T26RT3       ;SET UP OTHER COMMAND PACKET
5891
5892                                    ;*************************************************************************
5893                                    ;
5894                                    ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
5895                                    ;
5896                                    ;*************************************************************************
5897
5898 033514  004737  016660                     JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
5899 033520  103407                     BCS     20$             ;BR IF INIT WAS OK
5900 033522  004737  020116                     JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
5904 033526  010001                     MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
5905 033530                             ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      033530  104455                                                            TRAP    C$ERDF
      033532  000335                                                            .WORD   221
      033534  003550                                                            .WORD   SFIERR
      033536  011676                                                            .WORD   SFIMSG
5906 033540                             20$:
```

```
 5907
 5908 033540  012704  045730                MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 5909
 5910                                       ;*************************************************************************
 5911                                       ;
 5912                                       ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
 5913                                       ;
 5914                                       ;*************************************************************************
 5915
 5916 033544  004737  010342                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 5917 033550  103407                        BCS     26$                     ;BR, IF COMMAND ISSUED OK
 5918 033552  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 5922 033556  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 5923 033560                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      033560  104456                                                            TRAP    C$ERHRD
      033562  000336                                                            .WORD   222
      033564  004754                                                            .WORD   WRTMSG
      033566  011676                                                            .WORD   SFIMSG
 5924 033570                           26$:  CKLOOP                          ;LOOP IF SELECTED
      033570  104406                                                            TRAP    C$CLP1
 5925
 5926                                       ;*************************************************************************
 5927                                       ;
 5928                                       ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
 5929                                       ;
 5930                                       ;*************************************************************************
 5931
 5932 033572  004737  010444                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 5933 033576  103413                        BCS     30$                     ;BR, IF NO PROBLEM
 5934 033600  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR
 5935 033604  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
 5936 033610  010004                        MOV     R0,R4                   ;PACKET ADDRESS SET UP
 5937 033612  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 5941 033616                                ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
      033616  104456                                                            TRAP    C$ERHRD
      033620  000337                                                            .WORD   223
      033622  047414                                                            .WORD   T26RWN
      033624  011710                                                            .WORD   PKTSSR
 5942 033626                           30$:  CKLOOP                          ;LOOP IF SELECTED
      033626  104406                                                            TRAP    C$CLP1
 5943
 5944                                       ;*************************************************************************
 5945                                       ;
 5946                                       ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 5947                                       ;
 5948                                       ;*************************************************************************
 5949
 5950 033630  013701  045756                MOV     T26BFR+6,R1             ;PICK UP XST0
 5951 033634  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 5952 033636  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 5953 033642  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 5954 033644  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
 5955 033646  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 5959 033652                                ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      033652  104456                                                            TRAP    C$ERHRD
      033654  000340                                                            .WORD   224
      033656  047125                                                            .WORD   T26BOT
```

```
      033660  016360                                                        .WORD   EXPREC
5960  033662                        40$:    CKLOOP                          ;LOOP IF SELECTED
      033662  104406                                                        TRAP    C$CLP1
5961  033664  012703  000400              MOV     #256.,R3                  ;RECORD SIZE
5962  033670  013737  003072  046062      MOV     FREE,T26RB                ;STARTING WRITE BUFFER ADDRESS
5963
5964                                  ;*************************************************************************
5965                                  ;
5966                                  ;WRITE DATA,CVC=1,ACK COMMAND
5967                                  ;
5968                                  ;*************************************************************************
5969
5970  033676  012737  140005  046060      MOV     #140005,T26PK3            ;WRITE DATA,CVC=1,ACK COMMAND
5971  033704  012704  046060              MOV     #T26PK3,R4                ;SET UP R4 WITH PACKET ADDRESS
5972  033710                        65$:
5973  033710  010300                      MOV     R3,R0                     ;SET PATTERN IN CORRECT REGISTER
5974  033712  004737  020410              JSR     PC,FILLMEM                ;FILL MEMORY WITH RECORD SIZE
5975  033716  010337  046066              MOV     R3,T26SZ                  ;SET UP RECORD SIZE IN PACKET
5976  033722  013777  046106  147142      MOV     T26CNT,@FREE              ;MOVE TAPE RECORD NUMBER TO BUFFER
5977  033730  062737  000001  046106      ADD     #1,T26CNT                 ;NUMBER READY FOR NEXT RECORD
5978  033736  010465  177776              MOV     R4,TSDB(R5)               ;ISSUE COMMAND
5979  033742  004737  017134              JSR     PC,WAITF                  ;WAIT FOR SSR TO SET
5980  033746  016501  000000              MOV     TSSR(R5),R1               ;GET TSSR CONTENTS
5981  033752  012702  000200              MOV     #SSR,R2                   ;SET UP EXPECTED
5982  033756  020102                      CMP     R1,R2                     ;ARE THEY EQUAL
5983  033760  001406                      BEQ     75$                       ;BR, IF OK
5984  033762  004737  020116              JSR     PC,FATCHK                 ;INC AND CHECK FOR MORE THAN 25 ERRORS
5988                                                                        ;SOFT ERROR GENERATED BECAUSE THE
5989                                                                        ;WRITE COMMAND IS NOT BEING CHECKED
5990                                                                        ;HERE. IT WAS CHECKED IN LEAH2
5991  033766                              ERRSOFT ERRNO,WRTERR,PKTSSR       ;TSSR INCORRECT AFTER WRITE DATA
      033766  104457                                                        TRAP    C$ERSOFT
      033770  000341                                                        .WORD   225
      033772  005011                                                        .WORD   WRTERR
      033774  011710                                                        .WORD   PKTSSR
5992  033776                        75$:    CKLOOP                          ;LOOP IF SELECTED
      033776  104406                                                        TRAP    C$CLP1
5993  034000  005723                      TST     (R3)+                     ;BUMP THE RECORD SIZE
5994  034002  022703  000414              CMP     #268.,R3                  ;MAXIMUM SIZE YET
5995  034006  001401                      BEQ     120$                      ;BR, IF AT END OF WRITE SEQUENCE
5996  034010  000737                      BR      65$                       ;WRITE MORE RECORDS
5997  034012                        120$:
5998  034012  005037  046106              CLR     T26CNT                    ;SET RECORD COUNTER BACK TO ZERO
5999
6000                                  ;*************************************************************************
6001                                  ;
6002                                  ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
6003                                  ;
6004                                  ;*************************************************************************
6005
6006  034016  004737  010444              JSR     PC,REWIND                 ;CALL TAPE REWIND COMMAND
6007  034022  103413                      BCS     130$                      ;BR, IF NO PROBLEM
6008  034024  016501  000000              MOV     TSSR(R5),R1               ;GET TSSR
6009  034030  012702  000200              MOV     #SSR,R2                   ;SET UP EXPECTED TSSR
6010  034034  010004                      MOV     R0,R4                     ;PACKET ADDRESS SET UP
6011  034036  004737  020116              JSR     PC,FATCHK                 ;INC AND CHECK FOR MORE THAN 25 ERRORS
6015  034042                              ERRHRD  ERRNO,T26RWN,PKTSSR       ;REWIND NOT ACCEPTED
```

```
                034042  104456                                                          TRAP    C$ERHRD
                034044  000342                                                          .WORD   226
                034046  047414                                                          .WORD   T26RWN
                034050  011710                                                          .WORD   PKTSSR
6016            034052                  130$:   CKLOOP                  ;LOOP IF SELECTED
                034052  104406                                                          TRAP    C$CLP1
6017
6018                                    ;*******************************************************************
6019                                    ;
6020                                    ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
6021                                    ;
6022                                    ;*******************************************************************
6023
6024 034054  013701  045756                    MOV     T26BFR+6,R1             ;PICK UP XSTO
6025 034060  010102                            MOV     R1,R2                   ;SET UP EXPECTED
6026 034062  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
6027 034066  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
6028 034070  001406                            BEQ     140$                    ;BR, IF EQUAL (OK)
6029 034072  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6033 034076                                    ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                034076  104456                                                          TRAP    C$ERHRD
                034100  000343                                                          .WORD   227
                034102  047125                                                          .WORD   T26BOT
                034104  016360                                                          .WORD   EXPREC
6034            034106                  140$:   CKLOOP                  ;LOOP IF SELECTED
                034106  104406                                                          TRAP    C$CLP1
6035
6036                                    ;*******************************************************************
6037                                    ;
6038                                    ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
6039                                    ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
6040                                    ;
6041                                    ;*******************************************************************
6042
6043 034110  012703  000001                    MOV     #1,R3                   ;SPACE 1 RECORD FORWARD
6044 034114  004737  010144                    JSR     PC,SPACE                ;SPACE CALL
6045 034120  012703  000400                    MOV     #256.,R3                ;RECORD SIZE
6046 034124  013737  003072  046062    150$:   MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
6047
6048                                    ;*******************************************************************
6049                                    ;
6050                                    ;REREAD DATA,CVC=1,ACK, OPP COMMAND
6051                                    ;
6052                                    ;*******************************************************************
6053
6054 034132  012737  161001  046060            MOV     #161001,T26PK3          ;REREAD DATA,CVC=1,ACK, OPP COMMAND
6055 034140  012704  046060            165$:   MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6056 034144  010337  046066                    MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
6057 034150  010465  177776                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6058 034154  004737  017134                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6059 034160  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6060 034164  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
6061 034170  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
6062 034172  001406                            BEQ     170$                    ;BR, IF OK
6063 034174  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6067 034200                                    ERRHRD  ERRNO,T26RRG,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
                034200  104456                                                                  TRAP    C$ERHRD
```

```
                034202  000344                                                          .WORD   228
                034204  046432                                                          .WORD   T26RRG
                034206  011710                                                          .WORD   PKTSSR
6068            034210                  170$:   CKLOOP                  ;LOOP IF SELECTED
                034210  104406                                                          TRAP    C$CLP1
6069            034212  005723                  TST     (R3)+           ;BUMP RECORD SIZE
6070            034214  062737  000001  046106  ADD     #1,T26CNT       ;BUMP TAPE RECORD COUNTER
6071
6072                            ;*****************************************************************
6073                            ;
6074                            ;READ DATA, CVC=1, ACK COMMAND
6075                            ;
6076                            ;*****************************************************************
6077
6078            034222  012737  140001  046060  MOV     #140001,T26PK3  ;READ DATA, CVC=1, ACK COMMAND
6079            034230  010337  046066          MOV     R3,T26SZ        ;SET SIZE INTO PACKET
6080            034234  010465  177776          MOV     R4,TSDB(R5)     ;ISSUE READ DATA COMMAND
6081            034240  004737  017134          JSR     PC,WAITF        ;WAIT FOR SSR
6082            034244  016501  000000          MOV     TSSR(R5),R1     ;PICK UP THE TSSR
6083            034250  012702  000200          MOV     #SSR,R2         ;SET UP EXPECTED
6084            034254  020102                  CMP     R1,R2           ;IS THE TSSR OK
6085            034256  001406                  BEQ     195$            ;BR, IF TSSR OK (GOOD)
6086            034260  004737  020116          JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
6090            034264                  ERRHRD  ERRNO,RDERR,PKTSSR      ;READ DATA COMMAND FAILED
                034264  104456                                                          TRAP    C$ERHRD
                034266  000345                                                          .WORD   229
                034270  005104                                                          .WORD   RDERR
                034272  011710                                                          .WORD   PKTSSR
6091            034274                  195$:   CKLOOP                  ;LOOP IF SELECTED
                034274  104406                                                          TRAP    C$CLP1
6092            034276  017701  146570          MOV     @FREE,R1        ;FIRST WORD FROM READ BUFFER
6093            034302  013702  046106          MOV     T26CNT,R2       ;SET UP EXPECTED
6094            034306  020102                  CMP     R1,R2           ;IS TAPE POSITION CORRECT
6095            034310  001406                  BEQ     197$            ;KEEP GOING POSITION OK
6096            034312  004737  020116          JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
6100            034316                  ERRHRD  ERRNO,T26WNG,EXPREC     ;TAPE POSITION INCORRECT
                034316  104456                                                          TRAP    C$ERHRD
                034320  000346                                                          .WORD   230
                034322  046116                                                          .WORD   T26WNG
                034324  016360                                                          .WORD   EXPREC
6101            034326                  197$:   CKLOOP
                034326  104406                                                          TRAP    C$CLP1
6102            034330  022703  000412          CMP     #266.,R3        ;AT MAX SIZE YET
6103            034334  001401                  BEQ     200$            ;BR, IF AT END OF THE SUBTEST
6104            034336  000672                  BR      150$            ;KEEP GOING MORE RECORDS
6105            034340                  200$:
6106            034340                  ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
                034340                                                                  L10051:
                034340  104403                                                          TRAP    C$ESUB
6107            034342  023727  002170  000031          CMP     FATFLG,#25.             ;IS ERROR COUNT AT 25
6108            034350  002402                  BLT     999$                    ;BR, IF LESS THAN 25
6109            034352  004737  020170          JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
6110            034356                  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.
                                ;
                                ;
                                ;
                                ;-

 034356                                 BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
 034356                                                                                  T2.4:
 034356  104402                                                                                 TRAP    C$BSUB
 034360  004737  050650                JSR     PC,T26REST              ;SET COMMAND PACKET
 034364  005037  046106                CLR     T26CNT                  ;CLEAR TAPE RECORD COUNTER
 034370  004737  050742                JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
 034374  004737  051004                JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET

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

 034400  004737  016660                JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 034404  103407                        BCS     20$                     ;BR IF INIT WAS OK
 034406  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 034412  010001                        MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 034414                                ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
 034414  104455                                                                          TRAP    C$ERDF
 034416  000347                                                                          .WORD   231
 034420  003550                                                                          .WORD   SFIERR
 034422  011676                                                                          .WORD   SFIMSG
 034424                         20$:

 034424  012704  045730                MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

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

 034430  004737  010342                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 034434  103407                        BCS     26$                     ;BR, IF COMMAND ISSUED OK
 034436  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 034442  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 034444                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
 034444  104456                                                                          TRAP    C$ERHRD
 034446  000350                                                                          .WORD   232
 034450  004754                                                                          .WORD   WRTMSG
 034452  011676                                                                          .WORD   SFIMSG
```

```
6165 034454                        26$:    CKLOOP                          ;LOOP IF SELECTED
     034454  104406                                                                TRAP    C$CLP1
6166
6167                               ;*****************************************************************
6168                               ;
6169                               ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
6170                               ;
6171                               ;*****************************************************************
6172
6173 034456  004737  010444              JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
6174 034462  103413                      BCS     30$                     ;BR, IF NO PROBLEM
6175 034464  016501  000000              MOV     TSSR(R5),R1             ;GET TSSR
6176 034470  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
6177 034474  010004                      MOV     R0,R4                   ;PACKET ADDRESS SET UP
6178 034476  004737  020116              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6182 034502                              ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     034502  104456                                                                TRAP    C$ERHRD
     034504  000351                                                                .WORD   233
     034506  047414                                                                .WORD   T26RWN
     034510  011710                                                                .WORD   PKTSSR
6183 034512                        30$:    CKLOOP                          ;LOOP IF SELECTED
     034512  104406                                                                TRAP    C$CLP1
6184
6185                               ;*****************************************************************
6186                               ;
6187                               ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
6188                               ;
6189                               ;*****************************************************************
6190
6191 034514  013701  045756              MOV     T26BFR+6,R1             ;PICK UP XSTO
6192 034520  010102                      MOV     R1,R2                   ;SET UP EXPECTED
6193 034522  052702  000002              BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
6194 034526  020102                      CMP     R1,R2                   ;DOES EXP = REC'D
6195 034530  001406                      BEQ     40$                     ;BR, IF EQUAL (OK)
6196 034532  004737  020116              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6200 034536                              ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     034536  104456                                                                TRAP    C$ERHRD
     034540  000352                                                                .WORD   234
     034542  047125                                                                .WORD   T26BOT
     034544  016360                                                                .WORD   EXPREC
6201 034546                        40$:    CKLOOP                          ;LOOP IF SELECTED
     034546  104406                                                                TRAP    C$CLP1
6202 034550  012703  000400              MOV     #256.,R3                ;RECORD SIZE
6203 034554  013737  003072  046062      MOV     FREE,T26RB              ;STARTING WRITE BUFFER ADDRESS
6204
6205                               ;*****************************************************************
6206                               ;
6207                               ;WRITE DATA,CVC=1,ACK COMMAND
6208                               ;
6209                               ;*****************************************************************
6210
6211 034562  012737  140005  046060      MOV     #140005,T26PK3          ;WRITE DATA,CVC=1,ACK COMMAND
6212 034570  012704  046060              MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6213 034574                        65$:
6214 034574  010300                      MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
6215 034576  004737  020410              JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
6216 034602  010337  046066              MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
```

```
 6217 034606  013777  046106  146256          MOV     T26CNT,@FREE            ;MOVE TAPE RECORD NUMBER TO BUFFER
 6218 034614  062737  000001  046106          ADD     #1,T26CNT               ;NUMBER READY FOR NEXT RECORD
 6219 034622  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 6220 034626  004737  017134                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6221 034632  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6222 034636  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 6223 034642  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 6224 034644  001406                          BEQ     75$                     ;BR, IF OK
 6225 034646  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6229                                                                         ;SOFT ERROR GENERATED BECAUSE THE
 6230                                                                         ;WRITE COMMAND IS NOT BEING CHECKED
 6231                                                                         ;HERE. IT WAS CHECKED IN LEAH2
 6232 034652                                  ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
      034652  104457                                                                  TRAP    C$ERSOFT
      034654  000353                                                                  .WORD   235
      034656  005011                                                                  .WORD   WRTERR
      034660  011710                                                                  .WORD   PKTSSR
 6233 034662                          75$:    CKLOOP                          ;LOOP IF SELECTED
      034662  104406                                                                  TRAP    C$CLP1
 6234 034664  005723                          TST     (R3)+                   ;BUMP THE RECORD SIZE
 6235 034666  022703  000412                  CMP     #266.,R3                ;MAXIMUM SIZE YET
 6236 034672  001401                          BEQ     120$                    ;BR, IF AT END OF WRITE SEQUENCE
 6237 034674  000737                          BR      65$                     ;WRITE MORE RECORDS
 6238 034676                          120$:
 6239 034676  005037  046106                  CLR     T26CNT                  ;SET RECORD COUNTER BACK TO ZERO
 6240
 6241                                 ;*************************************************************************
 6242                                 ;
 6243                                 ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
 6244                                 ;
 6245                                 ;*************************************************************************
 6246
 6247 034702  004737  010444                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 6248 034706  103413                          BCS     130$                    ;BR, IF NO PROBLEM
 6249 034710  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR
 6250 034714  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
 6251 034720  010004                          MOV     R0,R4                   ;PACKET ADDRESS SET UP
 6252 034722  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6256 034726                                  ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
      034726  104456                                                                  TRAP    C$ERHRD
      034730  000354                                                                  .WORD   236
      034732  047414                                                                  .WORD   T26RWN
      034734  011710                                                                  .WORD   PKTSSR
 6257 034736                          130$:   CKLOOP                          ;LOOP IF SELECTED
      034736  104406                                                                  TRAP    C$CLP1
 6258
 6259                                 ;*************************************************************************
 6260                                 ;
 6261                                 ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 6262                                 ;
 6263                                 ;*************************************************************************
 6264
 6265 034740  013701  045756                  MOV     T26BFR+6,R1             ;PICK UP XST0
 6266 034744  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 6267 034746  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 6268 034752  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
 6269 034754  001406                          BEQ     140$                    ;BR, IF EQUAL (OK)
```

```
6270 034756  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6274 034762                                ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     034762  104456                                                                TRAP    C$ERHRD
     034764  000355                                                                .WORD   237
     034766  047125                                                                .WORD   T26BOT
     034770  016360                                                                .WORD   EXPREC
6275 034772                        140$:   CKLOOP                          ;LOOP IF SELECTED
     034772  104406                                                                TRAP    C$CLP1
6276
6277                                ;*************************************************************************
6278                                ;
6279                                ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
6280                                ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
6281                                ;
6282                                ;*************************************************************************
6283
6284 034774  012703  000001                MOV     #1,R3                   ;SET UP SPACE FORWARD 1
6285 035000  004737  010144                JSR     PC,SPACE                ;ISSUE SPACE COMMAND
6286 035004  012703  000400                MOV     #256.,R3                ;RECORD SIZE
6287 035010  013737  003072  046062  150$:  MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
6288
6289                                ;*************************************************************************
6290                                ;
6291                                ;REREAD DATA,CVC=1,ACK, OPP COMMAND
6292                                ;
6293                                ;*************************************************************************
6294
6295 035016  012737  171001  046060        MOV     #171001,T26PK3          ;REREAD DATA,CVC=1,ACK, OPP COMMAND
6296 035024  012704  046060        165$:   MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6297 035030  010337  046066                MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
6298 035034  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6299 035040  004737  017134                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6300 035044  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6301 035050  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
6302 035054  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
6303 035056  001406                        BEQ     170$                    ;BR, IF OK
6304 035060  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6308 035064                                ERRHRD  ERRNO,T26RRF,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
     035064  104456                                                                TRAP    C$ERHRD
     035066  000356                                                                .WORD   238
     035070  046335                                                                .WORD   T26RRF
     035072  011710                                                                .WORD   PKTSSR
6309 035074                        170$:   CKLOOP                          ;LOOP IF SELECTED
     035074  104406                                                                TRAP    C$CLP1
6310 035076  017701  145770                MOV     @FREE,R1                ;FIRST WORD FROM READ BUFFER
6311 035102  013702  046106                MOV     T26CNT,R2               ;SET UP EXPECTED
6312 035106  000302                        SWAB    R2                      ;SWAP BYTES IN EXPECTED
6313 035110  020102                        CMP     R1,R2                   ;IS TAPE POSITION CORRECT
6314 035112  001406                        BEQ     190$                    ;KEEP GOING POSITION OK
6315 035114  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6319 035120                                ERRHRD  ERRNO,T26WNG,EXPREC     ;TAPE POSITION INCORRECT
     035120  104456                                                                TRAP    C$ERHRD
     035122  000357                                                                .WORD   239
     035124  046116                                                                .WORD   T26WNG
     035126  016360                                                                .WORD   EXPREC
6320 035130                        190$:   CKLOOP
     035130  104406                                                                TRAP    C$CLP1
```

```
6321 035132  005723                        TST     (R3)+                   ;NEXT RECORD SIZE
6322 035134  062737  000001  046106        ADD     #1,T26CNT               ;BUMP TAPE RECORD COUNTER
6323
6324                                ;*************************************************************************
6325                                ;
6326                                ;READ DATA, CVC=1, ACK COMMAND
6327                                ;
6328                                ;*************************************************************************
6329
6330 035142  012737  140001  046060        MOV     #140001,T26PK3          ;READ DATA, CVC=1, ACK COMMAND
6331 035150  010337  046066                MOV     R3,T26SZ                ;SET SIZE INTO PACKET
6332 035154  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE READ DATA COMMAND
6333 035160  004737  017134                JSR     PC,WAITF                ;WAIT FOR SSR
6334 035164  016501  000000                MOV     TSSR(R5),R1             ;PICK UP THE TSSR
6335 035170  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
6336 035174  020102                        CMP     R1,R2                   ;IS THE TSSR OK
6337 035176  001406                        BEQ     215$                    ;BR, IF TSSR OK (GOOD)
6338 035200  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6342 035204                                ERRHRD  ERRNO,T26RDF,PKTSSR     ;READ DATA COMMAND FAILED
     035204  104456                                                                TRAP    C$ERHRD
     035206  000360                                                                .WORD   240
     035210  046266                                                                .WORD   T26RDF
     035212  011710                                                                .WORD   PKTSSR
6343 035214                        215$:   CKLOOP                          ;LOOP IF SELECTED
     035214  104406                                                                TRAP    C$CLP1
6344 035216  017701  145650                MOV     @FREE,R1                ;FIRST WORD FROM READ BUFFER
6345 035222  013702  046106                MOV     T26CNT,R2               ;SET UP EXPECTED
6346 035226  020102                        CMP     R1,R2                   ;IS TAPE POSITION CORRECT
6347 035230  001406                        BEQ     217$                    ;KEEP GOING POSITION OK
6348 035232  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6352 035236                                ERRHRD  ERRNO,T26WNG,EXPREC     ;TAPE POSITION INCORRECT
     035236  104456                                                                TRAP    C$ERHRD
     035240  000361                                                                .WORD   241
     035242  046116                                                                .WORD   T26WNG
     035244  016360                                                                .WORD   EXPREC
6353 035246                        217$:   CKLOOP
     035246  104406                                                                TRAP    C$CLP1
6354 035250  022703  000410                CMP     #264.,R3                ;AT MAX SIZE YET
6355 035254  001401                        BEQ     220$                    ;BR, IF AT END OF THE SUBTEST
6356 035256  000654                        BR      150$                    ;KEEP GOING MORE RECORDS
6357 035260                        220$:
6358 035260                                ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     035260                                                                     L10052:
     035260  104403                                                                TRAP    C$ESUB
6359 035262  023727  002170  000031        CMP     FATFLG,#25.                     ;IS ERROR COUNT AT 25
6360 035270  002402                        BLT     999$                            ;BR, IF LESS THAN 25
6361 035272  004737  020170                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
6362 035276                        999$:
```

```
 6364                                   ;*
 6365                                   ;
 6366                                   ;TEST 2, SUBTEST 5
 6367                                   ;
 6368                                   ;VERIFIES THAT A REREAD PREVIOUS COMMAND READING A
 6369                                   ;RECORD LONGER THAN THE SPECIFIED BYTE COUNT CAUSES
 6370                                   ;TAPE STATUS ALERT TERMINATION WITH THE RECORD LENGTH
 6371                                   ;LONG (RLL) BIT SET. RESULTS ARE VERIFIED FOR BOTH
 6372                                   ;STATES OF OPP (0 AND 1).
 6373                                   ;
 6374                                   ;
 6375                                   ;
 6376                                   ;-
 6377
 6378
 6379 035276                                   BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
      035276                                                                                    T2.5:
      035276  104402                                                                                      TRAP    C$BSUB
 6380 035300  004737  050650                   JSR     PC,T26REST              ;SET COMMAND PACKET
 6381 035304  004737  050742                   JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
 6382 035310  004737  051004                   JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET
 6383
 6384                                   ;*************************************************************************
 6385                                   ;
 6386                                   ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
 6387                                   ;
 6388                                   ;*************************************************************************
 6389
 6390 035314  004737  016660                   JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 6391 035320  103407                           BCS     20$                     ;BR IF INIT WAS OK
 6392 035322  004737  020116                   JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6396 035326  010001                           MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 6397 035330                                   ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      035330  104455                                                                           TRAP    C$ERDF
      035332  000362                                                                          .WORD   242
      035334  003550                                                                          .WORD   SFIERR
      035336  011676                                                                          .WORD   SFIMSG
 6398 035340                            20$:
 6399
 6400 035340  012704  045730                   MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 6401
 6402                                   ;*************************************************************************
 6403                                   ;
 6404                                   ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
 6405                                   ;
 6406                                   ;*************************************************************************
 6407
 6408 035344  004737  010342                   JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 6409 035350  103407                           BCS     26$                     ;BR, IF COMMAND ISSUED OK
 6410 035352  004737  020116                   JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 6414 035356  010001                           MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 6415 035360                                   ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      035360  104456                                                                           TRAP    C$ERHRD
      035362  000363                                                                          .WORD   243
      035364  004754                                                                          .WORD   WRTMSG
      035366  011676                                                                          .WORD   SFIMSG
 6416 035370                            26$:    CKLOOP                          ;LOOP IF SELECTED
```

```
     035370  104406                                                                  TRAP    C$CLP1

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

     035372  004737  010444             JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
     035376  103413                     BCS     30$                     ;BR, IF NO PROBLEM
     035400  016501  000000             MOV     TSSR(R5),R1             ;GET TSSR
     035404  012702  000200             MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
     035410  010004                     MOV     R0,R4                   ;PACKET ADDRESS SET UP
     035412  004737  020116             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
     035416                             ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     035416  104456                                                                  TRAP    C$ERHRD
     035420  000364                                                                  .WORD   244
     035422  047414                                                                  .WORD   T26RWN
     035424  011710                                                                  .WORD   PKTSSR
     035426                    30$:     CKLOOP                          ;LOOP IF SELECTED
     035426  104406                                                                  TRAP    C$CLP1

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

     035430  013701  045756             MOV     T26BFR+6,R1             ;PICK UP XSTO
     035434  010102                     MOV     R1,R2                   ;SET UP EXPECTED
     035436  052702  000002             BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
     035442  020102                     CMP     R1,R2                   ;DOES EXP = REC'D
     035444  001406                     BEQ     40$                     ;BR, IF EQUAL (OK)
     035446  004737  020116             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
     035452                             ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     035452  104456                                                                  TRAP    C$ERHRD
     035454  000365                                                                  .WORD   245
     035456  047125                                                                  .WORD   T26BOT
     035460  016360                                                                  .WORD   EXPREC
     035462                    40$:     CKLOOP                          ;LOOP IF SELECTED
     035462  104406                                                                  TRAP    C$CLP1
     035464  012703  001000             MOV     #512.,R3                ;RECORD SIZE
     035470  013737  003072  046062     MOV     FREE,T26RB              ;STARTING WRITE BUFFER ADDRESS

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

     035476  012737  140005  046060     MOV     #140005,T26PK3          ;WRITE DATA,CVC=1,ACK COMMAND
     035504  012704  046060             MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
     035510                    65$:
     035510  010337  046066             MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
     035514  010465  177776             MOV     R4,TSDB(R5)             ;ISSUE COMMAND
     035520  004737  017134             JSR     PC,WAITF                ;WAIT FOR SSR TO SET
     035524  016501  000000             MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
```

```
6469 035530  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED
6470 035534  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
6471 035536  001406                      BEQ     75$                     ;BR, IF OK
6472 035540  004737  020116              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6476                                                                     ;SOFT ERROR GENERATED BECAUSE THE
6477                                                                     ;WRITE COMMAND IS NOT BEING CHECKED
6478                                                                     ;HERE. IT WAS CHECKED IN LEAH2
6479 035544                              ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     035544  104457                                                                      TRAP    C$ERSOFT
     035546  000366                                                                      .WORD   246
     035550  005011                                                                      .WORD   WRTERR
     035552  011710                                                                      .WORD   PKTSSR
6480 035554                      75$:    CKLOOP                          ;LOOP IF SELECTED
     035554  104406                                                                      TRAP    C$CLP1
6481 035556  005303                      DEC     R3                      ;SET RECORD SIZE TO 511.
6482 035560  013737  003072  046062      MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
6483
6484                             ;******************************************************************
6485                             ;
6486                             ;REREAD DATA,CVC=1,ACK,OPP=1 COMMAND
6487                             ;
6488                             ;******************************************************************
6489
6490 035566  012737  161001  046060      MOV     #161001,T26PK3          ;REREAD DATA,CVC=1,ACK,OPP=1 COMMAND
6491 035574  012704  046060      165$:   MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6492 035600  010337  046066              MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
6493 035604  010465  177776              MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6494 035610  004737  017134              JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6495 035614  016501  000000              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6496 035620  012702  100204              MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
6497 035624  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
6498 035626  001406                      BEQ     170$                    ;BR, IF OK
6499 035630  004737  020116              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6503 035634                              ERRHRD  ERRNO,T26TRL,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
     035634  104456                                                                      TRAP    C$ERHRD
     035636  000367                                                                      .WORD   247
     035640  050472                                                                      .WORD   T26TRL
     035642  011710                                                                      .WORD   PKTSSR
6504 035644                      170$:   CKLOOP                          ;LOOP IF SELECTED
     035644  104406                                                                      TRAP    C$CLP1
6505
6506                             ;******************************************************************
6507                             ;
6508                             ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
6509                             ;
6510                             ;******************************************************************
6511
6512 035646  013701  045756              MOV     T26BFR+6,R1             ;GET MESSAGE BUFFER
6513 035652  010102                      MOV     R1,R2                   ;SET UP EXPECTED
6514 035654  052702  010000              BIS     #BIT12,R2               ;SET THE RLL BIT IN EXPECTED
6515 035660  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
6516 035662  001406                      BEQ     180$                    ;BR, IF EQUAL (ALL IS WELL)
6517 035664  004737  020116              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6521 035670                              ERRHRD  ERRNO,T26LON,EXPREC     ;THE RLL BIT WAS NOT SET IN XST0
     035670  104456                                                                      TRAP    C$ERHRD
     035672  000370                                                                      .WORD   248
     035674  050240                                                                      .WORD   T26LON
```

```
                035676  016360                                                          .WORD   EXPREC
6522            035700                  180$:   CKLOOP                          ;LOOP IF SELECTED
                035700  104406                                                          TRAP    C$CLP1
6523            035702  012703  000777          MOV     #511.,R3                ;SET RECORD SIZE
6524            035706  013737  003072  046062  MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
6525
6526                            ;*****************************************************************
6527                            ;
6528                            ;REREAD DATA,CVC=1,ACK COMMAND
6529                            ;
6530                            ;*****************************************************************
6531
6532            035714  012737  141001  046060  MOV     #141001,T26PK3          ;REREAD DATA,CVC=1,ACK COMMAND
6533            035722  012704  046060  365$:   MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6534            035726  010337  046066          MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
6535            035732  010465  177776          MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6536            035736  004737  017134          JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6537            035742  016501  000000          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6538            035746  012702  100204          MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
6539            035752  020102                  CMP     R1,R2                   ;ARE THEY EQUAL
6540            035754  001406                  BEQ     370$                    ;BR, IF OK
6541            035756  004737  020116          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6545            035762                          ERRHRD  ERRNO,T26TRL,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
                035762  104456                                                          TRAP    C$ERHRD
                035764  000371                                                          .WORD   249
                035766  050472                                                          .WORD   T26TRL
                035770  011710                                                          .WORD   PKTSSR
6546            035772                  370$:   CKLOOP                          ;LOOP IF SELECTED
                035772  104406                                                          TRAP    C$CLP1
6547
6548                            ;*****************************************************************
6549                            ;
6550                            ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
6551                            ;
6552                            ;*****************************************************************
6553
6554            035774  013701  045756          MOV     T26BFR+6,R1             ;GET MESSAGE BUFFER
6555            036000  010102                  MOV     R1,R2                   ;SET UP EXPECTED
6556            036002  052702  010000          BIS     #BIT12,R2               ;SET THE RLL BIT IN EXPECTED
6557            036006  020102                  CMP     R1,R2                   ;ARE THEY EQUAL
6558            036010  001406                  BEQ     380$                    ;BR, IF EQUAL (ALL IS WELL)
6559            036012  004737  020116          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6563            036016                          ERRHRD  ERRNO,T26LON,EXPREC     ;THE RLL BIT WAS NOT SET IN XSTO
                036016  104456                                                          TRAP    C$ERHRD
                036020  000372                                                          .WORD   250
                036022  050240                                                          .WORD   T26LON
                036024  016360                                                          .WORD   EXPREC
6564            036026                  380$:
6565            036026                          ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
                036026                                                                  L10053:
                036026  104403                                                          TRAP    C$ESUB
6566            036030  023727  002170  000031          CMP     FATFLG,#25.             ;IS ERROR COUNT AT 25
6567            036036  002402                          BLT     999$                    ;BR, IF LESS THAN 25
6568            036040  004737  020170                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
6569            036044                  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).
                                        ;
                                        ;
                                        ;
                                        ;-
036044                                          BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
036044                                                                                  T2.6:
036044  104402                                                                          TRAP    C$BSUB
036046  004737  050650                      JSR     PC,T26REST                      ;SET COMMAND PACKET
036052  004737  050742                      JSR     PC,T26RT2                       ;SET UP OTHER COMMAND PACKET
036056  004737  051004                      JSR     PC,T26RT3                       ;SET UP OTHER COMMAND PACKET

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

036062  004737  016660                      JSR     PC,SOFINIT                      ;DO INITIALIZE ON CONTROLLER
036066  103407                              BCS     20$                             ;BR IF INIT WAS OK
036070  004737  020116                      JSR     PC,FATCHK                       ;INC AND CHECK FOR MORE THAN 25 ERRORS
036074  010001                              MOV     R0,R1                           ;CONTENTS OF TSSR REGISTER
036076                                      ERRDF   ERRNO,SFIERR,SFIMSG             ;FATAL ERROR TSSR WAS NOT OK
036076  104455                                                                          TRAP    C$ERDF
036100  000373                                                                          .WORD   251
036102  003550                                                                          .WORD   SFIERR
036104  011676                                                                          .WORD   SFIMSG
036106                                  20$:

036106  012704  045730                      MOV     #T26PACKET,R4                   ;SUBROUTINE NEEDS PACKET ADDRESS

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

036112  004737  010342                      JSR     PC,WRTCHR                       ;ISSUE WRITE CHARACTERISTICS
036116  103407                              BCS     26$                             ;BR, IF COMMAND ISSUED OK
036120  004737  020116                      JSR     PC,FATCHK                       ;INC AND CHECK FOR MORE THAN 25 ERRORS
036124  010001                              MOV     R0,R1                           ;SAVE CONTENTS OF TSSR
036126                                      ERRHRD  ERRNO,WRTMSG,SFIMSG             ;WRITE CHARACTERISTISC FAILED
036126  104456                                                                          TRAP    C$ERHRD
036130  000374                                                                          .WORD   252
036132  004754                                                                          .WORD   WRTMSG
```

```
036134  011676                                                                .WORD   SFIMSG
036136                           26$:    CKLOOP                      ;LOOP IF SELECTED
036136  104406                                                                TRAP    C$CLP1

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

036140  004737  010444                   JSR     PC,REWIND           ;CALL TAPE REWIND COMMAND
036144  103413                           BCS     30$                 ;BR, IF NO PROBLEM
036146  016501  000000                   MOV     TSSR(R5),R1         ;GET TSSR
036152  012702  000200                   MOV     #SSR,R2             ;SET UP EXPECTED TSSR
036156  010004                           MOV     R0,R4               ;PACKET ADDRESS SET UP
036160  004737  020116                   JSR     PC,FATCHK           ;INC AND CHECK FOR MORE THAN 25 ERRORS
036164                                   ERRHRD  ERRNO,T26RWN,PKTSSR ;REWIND NOT ACCEPTED
036164  104456                                                                TRAP    C$ERHRD
036166  000375                                                                .WORD   253
036170  047414                                                                .WORD   T26RWN
036172  011710                                                                .WORD   PKTSSR
036174                           30$:    CKLOOP                      ;LOOP IF SELECTED
036174  104406                                                                TRAP    C$CLP1

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

036176  013701  045756                   MOV     T26BFR+6,R1         ;PICK UP XSTO
036202  010102                           MOV     R1,R2               ;SET UP EXPECTED
036204  052702  000002                   BIS     #BIT1,R2            ;SET BOT BIT IN EXPECTED
036210  020102                           CMP     R1,R2               ;DOES EXP = REC'D
036212  001406                           BEQ     40$                 ;BR, IF EQUAL (OK)
036214  004737  020116                   JSR     PC,FATCHK           ;INC AND CHECK FOR MORE THAN 25 ERRORS
036220                                   ERRHRD  ERRNO,T26BOT,EXPREC ;TAPE NOT AT BOT AFTER REWIND
036220  104456                                                                TRAP    C$ERHRD
036222  000376                                                                .WORD   254
036224  047125                                                                .WORD   T26BOT
036226  016360                                                                .WORD   EXPREC
036230                           40$:    CKLOOP                      ;LOOP IF SELECTED
036230  104406                                                                TRAP    C$CLP1
036232  012703  000400                   MOV     #256.,R3            ;RECORD SIZE
036236  013737  003072  046062           MOV     FREE,T26RB          ;STARTING WRITE BUFFER ADDRESS

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

036244  012737  140005  046060           MOV     #140005,T26PK3      ;WRITE DATA,CVC=1,ACK COMMAND
036252  012704  046060                   MOV     #T26PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
036256                           65$:
036256  010337  046066                   MOV     R3,T26SZ            ;SET UP RECORD SIZE IN PACKET
036262  010465  177776                   MOV     R4,TSDB(R5)         ;ISSUE COMMAND
```

```
6676 036266  004737  017134                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6677 036272  016501  000000                MOV     TSSR(R5),R1             ;GET TSSP CONTENTS
6678 036276  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
6679 036302  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
6680 036304  001406                        BEQ     75$                     ;BR, IF OK
6681 036306  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6685                                                                       ;SOFT ERROR GENERATED BECAUSE THE
6686                                                                       ;WRITE COMMAND IS NOT BEING CHECKED
6687                                                                       ;HERE. IT WAS CHECKED IN LEAH2
6688 036312                                ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     036312  104457                                                                TRAP    C$ERSOFT
     036314  000377                                                                .WORD   255
     036316  005011                                                                .WORD   WRTERR
     036320  011710                                                                .WORD   PKTSSR
6689 036322                          75$:  CKLOOP                          ;LOOP IF SELECTED
     036322  104406                                                                TRAP    C$CLP1
6690 036324  012703  001000                MOV     #512.,R3                ;RECORD SIZE
6691 036330  013737  003072  046062        MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
6692
6693                                ;*************************************************************************
6694                                ;
6695                                ;REREAD PREVIOUS,ACK,CVC=1,OPP=1
6696                                ;
6697                                ;*************************************************************************
6698
6699 036336  012737  161001  046060        MOV     #161001,T26PK3          ;REREAD PREVIOUS,ACK,CVC=1,OPP=1
6700 036344  012704  046060          165$: MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6701 036350  010337  046066                MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
6702 036354  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6703 036360  004737  017134                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6704 036364  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6705 036370  012702  100204                MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
6706 036374  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
6707 036376  001406                        BEQ     170$                    ;BR, IF OK
6708 036400  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6712 036404                                ERRHRD  ERRNO,T26TRL,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     036404  104456                                                                TRAP    C$ERHRD
     036406  000400                                                                .WORD   256
     036410  050472                                                                .WORD   T26TRL
     036412  011710                                                                .WORD   PKTSSR
6713 036414                          170$: CKLOOP                          ;LOOP IF SELECTED
     036414  104406                                                                TRAP    C$CLP1
6714
6715                                ;*************************************************************************
6716                                ;
6717                                ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
6718                                ;
6719                                ;*************************************************************************
6720
6721 036416  013701  045756                MOV     T26BFR+6,R1             ;GET MESSAGE BUFFER
6722 036422  010102                        MOV     R1,R2                   ;SET UP EXPECTED
6723 036424  052702  040000                BIS     #BIT14,R2               ;SET THE RLS BIT IN EXPECTED
6724 036430  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
6725 036432  001406                        BEQ     180$                    ;BR, IF EQUAL (ALL IS WELL)
6726 036434  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6730 036440                                ERRHRD  ERRNO,T26LOP,EXPREC     ;THE RLL BIT WAS NOT SET IN XST0
     036440  104456                                                                TRAP    C$ERHRD
```

```
      036442  000401                                                          .WORD   257
      036444  050322                                                          .WORD   T26LOP
      036446  016360                                                          .WORD   EXPREC
6731  036450                  180$:
6732  036450  013701  045754          MOV     T26BFR+4,R1             ;PICK UP RESIDUAL BYTE COUNTER
6733  036454  012702  000400          MOV     #256.,R2                ;THIS SHOULD BE THE DIFFERENCE
6734  036460  020102                  CMP     R1,R2                   ;IS THE DIFFERENCE CORRECT
6735  036462  001406                  BEQ     190$                    ;BR, IF CORRECT
6736  036464  004737  020116          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6740  036470                          ERRHRD  ERRNO,T26PBP,EXPREC     ;RBPCR NOT CORRECT
      036470  104456                                                          TRAP    C$ERHRD
      036472  000402                                                          .WORD   258
      036474  050404                                                          .WORD   T26PBP
      036476  016360                                                          .WORD   EXPREC
6741  036500                  190$:   CKLOOP                          ;LOOP IF SELECTED
      036500  104406                                                          TRAP    C$CLP1
6742  036502  012703  001000          MOV     #512.,R3                ;RECORD SIZE
6743  036506  013737  003072  046062  MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
6744
6745                          ;*************************************************************************
6746                          ;
6747                          ;REREAD PREVIOUS,ACK,CVC=1,OPP=0
6748                          ;
6749                          ;*************************************************************************
6750
6751  036514  012737  141001  046060  MOV     #141001,T26PK3          ;REREAD PREVIOUS,ACK,CVC=1,OPP=0
6752  036522  012704  046060          MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6753  036526  010337  046066          MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
6754  036532  010465  177776          MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6755  036536  004737  017134          JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6756  036542  016501  000000          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6757  036546  012702  100204          MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
6758  036552  020102                  CMP     R1,R2                   ;ARE THEY EQUAL
6759  036554  001406                  BEQ     270$                    ;BR, IF OK
6760  036556  004737  020116          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6764  036562                          ERRHRD  ERRNO,T26TRL,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      036562  104456                                                          TRAP    C$ERHRD
      036564  000403                                                          .WORD   259
      036566  050472                                                          .WORD   T26TRL
      036570  011710                                                          .WORD   PKTSSR
6765  036572                  270$:   CKLOOP                          ;LOOP IF SELECTED
      036572  104406                                                          TRAP    C$CLP1
6766
6767                          ;*************************************************************************
6768                          ;
6769                          ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
6770                          ;
6771                          ;*************************************************************************
6772
6773  036574  013701  045756          MOV     T26BFR+6,R1             ;GET MESSAGE BUFFER
6774  036600  010102                  MOV     R1,R2                   ;SET UP EXPECTED
6775  036602  052702  040000          BIS     #BIT14,R2               ;SET THE RLS BIT IN EXPECTED
6776  036606  020102                  CMP     R1,R2                   ;ARE THEY EQUAL
6777  036610  001406                  BEQ     280$                    ;BR, IF EQUAL (ALL IS WELL)
6778  036612  004737  020116          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6782  036616                          ERRHRD  ERRNO,T26LOP,EXPREC     ;THE RLL BIT WAS NOT SET IN XST0
      036616  104456                                                          TRAP    C$ERHRD
```

```
      036620  000404                                                                  .WORD   260
      036622  050322                                                                  .WORD   T26LOP
      036624  016360                                                                  .WORD   EXPREC
 6783 036626                          280$:
 6784 036626  013701  045754                 MOV     T26BFR+4,R1         ;PICK UP RESIDUAL BYTE COUNTER
 6785 036632  012702  000400                 MOV     #256.,R2            ;THIS SHOULD BE THE DIFFERENCE
 6786 036636  020102                         CMP     R1,R2               ;IS THE DIFFERENCE CORRECT
 6787 036640  001405                         BEQ     290$                ;BR, IF CORRECT
 6791 036644                                 ERRHRD  ERRNO,T26PBP,EXPREC ;RBPCR NOT CORRECT
      036644  104456                                                          TRAP    C$ERHRD
      036646  000404                                                          .WORD   260
      036650  050404                                                          .WORD   T26PBP
      036652  016360                                                          .WORD   EXPREC
 6792 036654                          290$:   CKLOOP                      ;LOOP IF SELECTED
      036654  104406                                                          TRAP    C$CLP1
 6793 036656                                 ENDSUB                      ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
      036656                                                                   L10054:
      036656  104403                                                          TRAP    C$ESUB
 6794 036660  023727  002170  000031         CMP     FATFLG,#25.                 ;IS ERROR COUNT AT 25
 6795 036666  002402                         BLT     999$                        ;BR, IF LESS THAN 25
 6796 036670  004737  020170                 JSR     PC,CKDROP                   ;TRY TO DROP THE UNIT
 6797 036674                          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.
                        ;
                        ;
                        ;-

                                BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
                                                                                T2.7:
                                                                                TRAP    C$BSUB
                                JSR     PC,T26REST              ;SET COMMAND PACKET
                                JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
                                JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET

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

                                JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
                                BCS     20$                     ;BR IF INIT WAS OK
                                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
                                MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
                                ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
                                                                                TRAP    C$ERDF
                                                                                .WORD   261
                                                                                .WORD   SFIERR
                                                                                .WORD   SFIMSG
                        20$:

                                MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

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

                                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
                                BCS     26$                     ;BR, IF COMMAND ISSUED OK
                                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
                                MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
```

```
                036756  104456                                                          TRAP    C$ERHRD
                036760  000406                                                          .WORD   262
                036762  004754                                                          .WORD   WRTMSG
                036764  011676                                                          .WORD   SFIMSG
6856            036766                  26$:    CKLOOP                  ;LOOP IF SELECTED
                036766  104406                                                          TRAP    C$CLP1
6857
6858                                    ;*************************************************************************
6859                                    ;
6860                                    ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
6861                                    ;
6862                                    ;*************************************************************************
6863
6864            036770  004737  010444          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
6865            036774  103413                  BCS     30$                     ;BR, IF NO PROBLEM
6866            036776  016501  000000          MOV     TSSR(R5),R1             ;GET TSSR
6867            037002  012702  000200          MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
6868            037006  010004                  MOV     R0,R4                   ;PACKET ADDRESS SET UP
6869            037010  004737  020116          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6873            037014                          ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
                037014  104456                                                          TRAP    C$ERHRD
                037016  000407                                                          .WORD   263
                037020  047414                                                          .WORD   T26RWN
                037022  011710                                                          .WORD   PKTSSR
6874            037024                  30$:    CKLOOP                  ;LOOP IF SELECTED
                037024  104406                                                          TRAP    C$CLP1
6875
6876                                    ;*************************************************************************
6877                                    ;
6878                                    ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
6879                                    ;
6880                                    ;*************************************************************************
6881
6882            037026  013701  045756          MOV     T26BFR+6,R1             ;PICK UP XSTO
6883            037032  010102                  MOV     R1,R2                   ;SET UP EXPECTED
6884            037034  052702  000002          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
6885            037040  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
6886            037042  001406                  BEQ     40$                     ;BR, IF EQUAL (OK)
6887            037044  004737  020116          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6891            037050                          ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                037050  104456                                                                  TRAP    C$ERHRD
                037052  000410                                                                  .WORD   264
                037054  047125                                                                  .WORD   T26BOT
                037056  016360                                                                  .WORD   EXPREC
6892            037060                  40$:    CKLOOP                  ;LOOP IF SELECTED
                037060  104406                                                                  TRAP    C$CLP1
6893            037062  012703  000400          MOV     #256.,R3                ;RECORD SIZE
6894            037066  013737  003072  046062  MOV     FREE,T26RB              ;STARTING WRITE BUFFER ADDRESS
6895
6896                                    ;*************************************************************************
6897                                    ;
6898                                    ;WRITE DATA,CVC=1,ACK COMMAND
6899                                    ;
6900                                    ;*************************************************************************
6901
6902            037074  012737  140005  046060  MOV     #140005,T26PK3          ;WRITE DATA,CVC=1,ACK COMMAND
6903            037102  012704  046060          MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
```

```
6904 037106                          65$:
6905 037106  010300                         MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
6906 037110  004737  020410                 JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
6907 037114  010337  046066                 MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
6908 037120  010465  177776                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6909 037124  004737  017134                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6910 037130  016501  000000                 MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6911 037134  012702  000200                 MOV     #SSR,R2                 ;SET UP EXPECTED
6912 037140  020102                         CMP     R1,R2                   ;ARE THEY EQUAL
6913 037142  001406                         BEQ     75$                     ;BR, IF OK
6914 037144  004737  020116                 JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6918                                                                         ;SOFT ERROR GENERATED BECAUSE THE
6919                                                                         ;WRITE COMMAND IS NOT BEING CHECKED
6920                                                                         ;HERE. IT WAS CHECKED IN LEAH2
6921 037150                                 ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     037150  104457                                                                 TRAP    C$ERSOFT
     037152  000411                                                                 .WORD   265
     037154  005011                                                                 .WORD   WRTERR
     037156  011710                                                                 .WORD   PKTSSR
6922 037160                          75$:   CKLOOP                          ;LOOP IF SELECTED
     037160  104406                                                                 TRAP    C$CLP1
6923 037162  005723                         TST     (R3)+                   ;BUMP RECORD SIZE
6924 037164  022703  000414                 CMP     #268.,R3                ;END OF RECORD YET
6925 037170  001346                         BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
6926 037172                          80$:   CKLOOP                          ;LOOP IF SELECTED
     037172  104406                                                                 TRAP    C$CLP1
6927 037174                          120$:
6928
6929                                 ;*************************************************************************
6930                                 ;
6931                                 ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
6932                                 ;
6933                                 ;*************************************************************************
6934
6935 037174  004737  010444                 JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
6936 037200  103413                         BCS     130$                    ;BR, IF NO PROBLEM
6937 037202  016501  000000                 MOV     TSSR(R5),R1             ;GET TSSR
6938 037206  012702  000200                 MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
6939 037212  010004                         MOV     R0,R4                   ;PACKET ADDRESS SET UP
6940 037214  004737  020116                 JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6944 037220                                 ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     037220  104456                                                                 TRAP    C$ERHRD
     037222  000412                                                                 .WORD   266
     037224  047414                                                                 .WORD   T26RWN
     037226  011710                                                                 .WORD   PKTSSR
6945 037230                          130$:  CKLOOP                          ;LOOP IF SELECTED
     037230  104406                                                                 TRAP    C$CLP1
6946
6947                                 ;*************************************************************************
6948                                 ;
6949                                 ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
6950                                 ;
6951                                 ;*************************************************************************
6952
6953 037232  013701  045756                 MOV     T26BFR+6,R1             ;PICK UP XST0
6954 037236  010102                         MOV     R1,R2                   ;SET UP EXPECTED
6955 037240  052702  000002                 BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
```

```
6956 037244  020102                    CMP     R1,R2                   ;DOES EXP = REC'D
6957 037246  001406                    BEQ     140$                    ;BR, IF EQUAL (OK)
6958 037250  004737  020116            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6962 037254                            ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     037254  104456                                                                    TRAP    C$ERHRD
     037256  000413                                                                    .WORD   267
     037260  047125                                                                    .WORD   T26BOT
     037262  016360                                                                    .WORD   EXPREC
6963 037264                    140$:   CKLOOP                          ;LOOP IF SELECTED
     037264  104406                                                                    TRAP    C$CLP1
6964 037266  012737  000400  046112            MOV     #256.,T26RSZ    ;STORE START RECORD SIZE
6965 037274  000420                    BR      150$                    ;SKIP THE SAPCE THIS TIME
6966
6967                           ;*************************************************************************
6968                           ;
6969                           ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
6970                           ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
6971                           ;
6972                           ;*************************************************************************
6973
6974 037276  012703  000001    145$:   MOV     #1,R3                   ;SPACE ONE RECORD PARAMETER
6975 037302  004737  010144            JSR     PC,SPACE                ;CALL SPACE ROUTINE
6976 037306  103413                    BCS     150$                    ;BR, IF NO PROBLEM WITH SPACE COMMAND
6977 037310  016501  000000            MOV     TSSR(R5),R1             ;GET TSSR
6978 037314  012702  000200            MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
6979 037320  010004                    MOV     R0,R4                   ;PACKET ADDRESS SET UP
6980 037322  004737  020116            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
6984 037326                            ERRHRD  ERRNO,T26SC,EXPREC      ;POSITION (SPACE RECORDS) FAILED
     037326  104456                                                                    TRAP    C$ERHRD
     037330  000414                                                                    .WORD   268
     037332  046527                                                                    .WORD   T26SC
     037334  016360                                                                    .WORD   EXPREC
6985 037336                    150$:
6986 037336  013703  046112            MOV     T26RSZ,R3               ;RECORD SIZE
6987 037342  013737  003072  046062    MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
6988
6989                           ;*************************************************************************
6990                           ;
6991                           ;REREREAD DATA,CVC=1,ACK COMMAND
6992                           ;
6993                           ;*************************************************************************
6994
6995 037350  012737  141401  046060            MOV     #141401,T26PK3  ;REREREAD DATA,CVC=1,ACK COMMAND
6996 037356  012704  046060    165$:   MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6997 037362  010337  046066            MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
6998 037366  010465  177776            MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6999 037372  004737  017134            JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7000 037376  016501  000000            MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7001 037402  012702  000200            MOV     #SSR,R2                 ;SET UP EXPECTED
7002 037406  020102                    CMP     R1,R2                   ;ARE THEY EQUAL
7003 037410  001406                    BEQ     170$                    ;BR, IF OK
7004 037412  004737  020116            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7008 037416                            ERRHRD  ERRNO,T26WDC,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
     037416  104456                                                                    TRAP    C$ERHRD
     037420  000415                                                                    .WORD   269
     037422  047750                                                                    .WORD   T26WDC
     037424  011710                                                                    .WORD   PKTSSR
```

```
7009 037426                    170$:  CKLOOP                          ;LOOP IF SELECTED
     037426  104406                                                            TRAP    C$CLP1
7010 037430  013702  003072           MOV     FREE,R2          ;CURRENT BUFFER ADDRESS TO R2
7011 037434  010304                   MOV     R3,R4                  ;CURRENT RECORD SIZE
7012 037436  162704  000400           SUB     #256.,R4               ;FIRST LOCATION IN BUFFER
7013 037442  060204                173$:  ADD     R2,R4                  ;SET UP POINTER
7014 037444  021403                   CMP     (R4),R3                ;CHECK DATA READ (R3=DATA ALSO)
7015 037446  001410                   BEQ     180$                   ;BR, IF ALL IS WELL
7016 037450  011401                   MOV     (R4),R1                ;RECD DATA
7017 037452  010302                   MOV     R3,R2                  ;EXPECTED DATA
7018 037454  004737  020116           JSR     PC,FATCHK              ;INC AND CHECK FOR MORE THAN 25 ERRORS
7022 037460                           ERRHRD  ERRNO,T26DTA,EXPREC    ;DATA READ NOT = WRITTEN
     037460  104456                                                            TRAP    C$ERHRD
     037462  000416                                                            .WORD   270
     037464  047172                                                            .WORD   T26DTA
     037466  016360                                                            .WORD   EXPREC
7023 037470                    180$:  CKLOOP                          ;LOOP IF SELECTED
     037470  104406                                                            TRAP    C$CLP1
7024 037472  005724                   TST     (R4)+                  ;BUMP TO NEXT LOCATION
7025 037474  160204                   SUB     R2,R4                  ;CORRECT RECORDS SIZE VALUE
7026 037476  020403                   CMP     R4,R3                  ;END OF RECORD YET
7027 037500  001360                   BNE     173$                   ;BR, IF NOT AT END OF RECORD
7028 037502  005723                   TST     (R3)+                  ;BUMP RECORD SIZE
7029 037504  010337  046112           MOV     R3,T26RSZ              ;STORE PRESENT RECORD SIZE
7030 037510  022703  000410           CMP     #264.,R3               ;END OF RECORD YET
7031 037514  001270                   BNE     145$                   ;BR, IF MORE RECORDS TO READ
7032 037516                    190$:  CKLOOP                          ;LOOP IF SELECTED
     037516  104406                                                            TRAP    C$CLP1
7033 037520                           ENDSUB                         ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     037520                                                                L10055:
     037520  104403                                                            TRAP    C$ESUB
7034 037522  023727  002170  000031       CMP     FATFLG,#25.                ;IS ERROR COUNT AT 25
7035 037530  002402                       BLT     999$                       ;BR, IF LESS THAN 25
7036 037532  004737  020170               JSR     PC,CKDROP                  ;TRY TO DROP THE UNIT
7037 037536                    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.
                                        ;
                                        ;
                                        ;
                                        ;-
037536                                          BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
037536                                                                                  T2.8:
037536  104402                                                                          TRAP    C$BSUB
037540  004737  050650                        JSR     PC,T26REST              ;SET COMMAND PACKET
037544  004737  050742                        JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
037550  004737  051004                        JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET

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

037554  004737  016660                        JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
037560  103407                              BCS     20$                     ;BR IF INIT WAS OK
037562  004737  020116                        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
037566  010001                              MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
037570                                      ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
037570  104455                                                                  TRAP    C$ERDF
037572  000417                                                                  .WORD   271
037574  003550                                                                  .WORD   SFIERR
037576  011676                                                                  .WORD   SFIMSG
037600                                  20$:

037600  012704  045730                          MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

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

037604  004737  010342                        JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
037610  103407                              BCS     26$                     ;BR, IF COMMAND ISSUED OK
037612  004737  020116                        JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
037616  010001                              MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
037620                                      ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
037620  104456                                                                  TRAP    C$ERHRD
037622  000420                                                                  .WORD   272
037624  004754                                                                  .WORD   WRTMSG
037626  011676                                                                  .WORD   SFIMSG
037630                                  26$:    CKLOOP                          ;LOOP IF SELECTED
037630  104406                                                                  TRAP    C$CLP1
```

```
7091                                    ;*****************************************************************
7092                                    ;
7093                                    ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
7094                                    ;
7095                                    ;*****************************************************************
7096
7097 037632  004737  010444                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
7098 037636  103413                            BCS     30$                     ;BR, IF NO PROBLEM
7099 037640  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR
7100 037644  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
7101 037650  010004                            MOV     R0,R4                   ;PACKET ADDRESS SET UP
7102 037652  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7106 037656                                    ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     037656  104456                                                            TRAP    C$ERHRD
     037660  000421                                                            .WORD   273
     037662  047414                                                            .WORD   T26RWN
     037664  011710                                                            .WORD   PKTSSR
7107 037666                            30$:    CKLOOP                          ;LOOP IF SELECTED
     037666  104406                                                            TRAP    C$CLP1
7108
7109                                    ;*****************************************************************
7110                                    ;
7111                                    ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
7112                                    ;
7113                                    ;*****************************************************************
7114
7115 037670  013701  045756                    MOV     T26BFR+6,R1             ;PICK UP XSTO
7116 037674  010102                            MOV     R1,R2                   ;SET UP EXPECTED
7117 037676  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
7118 037702  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
7119 037704  001406                            BEQ     40$                     ;BR, IF EQUAL (OK)
7120 037706  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7124 037712                                    ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     037712  104456                                                            TRAP    C$ERHRD
     037714  000422                                                            .WORD   274
     037716  047125                                                            .WORD   T26BOT
     037720  016360                                                            .WORD   EXPREC
7125 037722                            40$:    CKLOOP                          ;LOOP IF SELECTED
     037722  104406                                                            TRAP    C$CLP1
7126 037724  012703  000400                    MOV     #256.,R3                ;RECORD SIZE
7127 037730  013737  003072  046062            MOV     FREE,T26RB              ;STARTING WRITE BUFFER ADDRESS
7128
7129                                    ;*****************************************************************
7130                                    ;
7131                                    ;WRITE DATA,CVC=1,ACK,SWB COMMAND
7132                                    ;
7133                                    ;*****************************************************************
7134
7135 037736  012737  150005  046060            MOV     #150005,T26PK3          ;WRITE DATA,CVC=1,ACK,SWB COMMAND
7136 037744  012704  046060                    MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
7137 037750                            65$:
7138 037750  010300                            MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
7139 037752  004737  020410                    JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
7140 037756  010337  046066                    MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
7141 037762  010465  177776                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7142 037766  004737  017134                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7143 037772  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
```

```
7144 037776  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
7145 040002  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
7146 040004  001406                        BEQ     75$                     ;BR, IF OK
7147 040006  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7151                                                                       ;SOFT ERROR GENERATED BECAUSE THE
7152                                                                       ;WRITE COMMAND IS NOT BEING CHECKED
7153                                                                       ;HERE. IT WAS CHECKED IN LEAH2
7154 040012                                ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     040012  104457                                                                TRAP    C$ERSOFT
     040014  000423                                                                .WORD   275
     040016  005011                                                                .WORD   WRTERR
     040020  011710                                                                .WORD   PKTSSR
7155 040022                        75$:    CKLOOP                          ;LOOP IF SELECTED
     040022  104406                                                                TRAP    C$CLP1
7156 040024  005723                        TST     (R3)+                   ;BUMP RECORD SIZE
7157 040026  022703  000414                CMP     #268.,R3                ;END OF RECORD YET
7158 040032  001346                        BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
7159 040034                        80$:    CKLOOP                          ;LOOP IF SELECTED
     040034  104406                                                                TRAP    C$CLP1
7160 040036                        120$:
7161
7162                               ;*****************************************************************
7163                               ;
7164                               ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
7165                               ;
7166                               ;*****************************************************************
7167
7168 040036  004737  010444                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
7169 040042  103413                        BCS     130$                    ;BR, IF NO PROBLEM
7170 040044  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR
7171 040050  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
7172 040054  010004                        MOV     R0,R4                   ;PACKET ADDRESS SET UP
7173 040056  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7177 040062                                ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     040062  104456                                                                TRAP    C$ERHRD
     040064  000424                                                                .WORD   276
     040066  047414                                                                .WORD   T26RWN
     040070  011710                                                                .WORD   PKTSSR
7178 040072                        130$:   CKLOOP                          ;LOOP IF SELECTED
     040072  104406                                                                TRAP    C$CLP1
7179
7180                               ;*****************************************************************
7181                               ;
7182                               ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
7183                               ;
7184                               ;*****************************************************************
7185
7186 040074  013701  045756                MOV     T26BFR+6,R1             ;PICK UP XST0
7187 040100  010102                        MOV     R1,R2                   ;SET UP EXPECTED
7188 040102  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
7189 040106  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
7190 040110  001406                        BEQ     140$                    ;BR, IF EQUAL (OK)
7191 040112  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7195 040116                                ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     040116  104456                                                                TRAP    C$ERHRD
     040120  000425                                                                .WORD   277
     040122  047125                                                                .WORD   T26BOT
```

```
     040124  016360                                                                            .WORD    EXPREC
7196 040126                             140$:   CKLOOP                          ;LOOP IF SELECTED
     040126  104406                                                                            TRAP     C$CLP1
7197 040130  012737  000400  046112             MOV     #256.,T26RSZ            ;START RECORD SIZE
7198 040136  000420                             BR      150$                    ;SKIP SAPCE THIS TIME
7199
7200                                    ;*******************************************************************
7201                                    ;
7202                                    ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
7203                                    ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
7204                                    ;
7205                                    ;*******************************************************************
7206
7207 040140  012703  000001             145$:   MOV     #1,R3                   ;SPACE ONE RECORD PARAMETER
7208 040144  004737  010144                     JSR     PC,SPACE                ;CALL SPACE ROUTINE
7209 040150  103413                             BCS     150$                    ;BR, IF NO PROBLEM WITH SPACE COMMAND
7210 040152  016501  000000                     MOV     TSSR(R5),R1             ;GET TSSR
7211 040156  012702  000200                     MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
7212 040162  010004                             MOV     R0,R4                   ;PACKET ADDRESS SET UP
7213 040164  004737  020116                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7217 040170                                     ERRHRD  ERRNO,T26SC,EXPREC      ;POSITION (SPACE RECORDS) FAILED
     040170  104456                                                                            TRAP     C$ERHRD
     040172  000426                                                                            .WORD    278
     040174  046527                                                                            .WORD    T26SC
     040176  016360                                                                            .WORD    EXPREC
7218 040200                             150$:
7219 040200  013703  046112                     MOV     T26RSZ,R3               ;RECORD SIZE
7220 040204  013737  003072  046062             MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
7221
7222                                    ;*******************************************************************
7223                                    ;
7224                                    ;REREAD DATA,ACK,CVC=1,SWB COMMAND
7225                                    ;
7226                                    ;*******************************************************************
7227
7228 040212  012737  151401  046060             MOV     #151401,T26PK3          ;REREAD DATA,ACK,CVC=1,SWB COMMAND
7229 040220  012704  046060             165$:   MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
7230 040224  010337  046066                     MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
7231 040230  010465  177776                     MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7232 040234  004737  017134                     JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7233 040240  016501  000000                     MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7234 040244  012702  000200                     MOV     #SSR,R2                 ;SET UP EXPECTED
7235 040250  020102                             CMP     R1,R2                   ;ARE THEY EQUAL
7236 040252  001406                             BEQ     170$                    ;BR, IF OK
7237 040254  004737  020116                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7241 040260                                     ERRHRD  ERRNO,T26WDC,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
     040260  104456                                                                            TRAP     C$ERHRD
     040262  000427                                                                            .WORD    279
     040264  047750                                                                            .WORD    T26WDC
     040266  011710                                                                            .WORD    PKTSSR
7242 040270                             170$:   CKLOOP                          ;LOOP IF SELECTED
     040270  104406                                                                            TRAP     C$CLP1
7243 040272  013702  003072                     MOV     FREE,R2         ;CURRENT BUFFER ADDRESS TO R2
7244 040276  010304                             MOV     R3,R4                   ;CURRENT RECORD SIZE
7245 040300  162704  000400                     SUB     #256.,R4                ;FIRST LOCATION IN BUFFER
7246 040304  060204                     173$:   ADD     R2,R4                   ;SET UP POINTER
7247 040306  021403                             CMP     (R4),R3                 ;CHECK DATA READ (R3=DATA ALSO)
```

```
7248 040310  001410                          BEQ     180$                ;BR, IF ALL IS WELL
7249 040312  011401                          MOV     (R4),R1             ;RECD DATA
7250 040314  010302                          MOV     R3,R2               ;EXPECTED DATA
7251 040316  004737  020116                  JSR     PC,FATCHK           ;INC AND CHECK FOR MORE THAN 25 ERRORS
7255 040322                                  ERRHRD  ERRNO,T26DTA,EXPREC ;DATA READ NOT = WRITTEN
     040322  104456                                                              TRAP    C$ERHRD
     040324  000430                                                              .WORD   280
     040326  047172                                                              .WORD   T26DTA
     040330  016360                                                              .WORD   EXPREC
7256 040332                          180$:   CKLOOP                      ;LOOP IF SELECTED
     040332  104406                                                              TRAP    C$CLP1
7257 040334  005724                          TST     (R4)+               ;BUMP TO NEXT LOCATION
7258 040336  160204                          SUB     R2,R4               ;CORRECT RECORDS SIZE VALUE
7259 040340  020403                          CMP     R4,R3               ;END OF RECORD YET
7260 040342  001360                          BNE     173$                ;BR, IF NOT AT END OF RECORD
7261 040344  005723                          TST     (R3)+               ;BUMP RECORD SIZE
7262 040346  010337  046112                  MOV     R3,T26RSZ           ;STORE RECORD SIZE
7263 040352  022703  000410                  CMP     #264.,R3            ;END OF RECORD YET
7264 040356  001270                          BNE     145$                ;BR, IF MORE RECORDS TO WRITE
7265 040360                          190$:   CKLOOP                      ;LOOP IF SELECTED
     040360  104406                                                              TRAP    C$CLP1
7266 040362                                  ENDSUB                      ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     040362                                                                  L10056:
     040362  104403                                                              TRAP    C$ESUB
7267 040364  023727  002170  000031                  CMP     FATFLG,#25.         ;IS ERROR COUNT AT 25
7268 040372  002402                          BLT     999$                ;BR, IF LESS THAN 25
7269 040374  004737  020170                  JSR     PC,CKDROP           ;TRY TO DROP THE UNIT
7270 040400                          999$:
```

```
7272                                    ;*
7273                                    ;
7274                                    ;TEST 2, SUBTEST 9
7275                                    ;
7276                                    ;VERIFIES THAT THE REREAD NEXT COMMAND WITH OPP=1
7277                                    ;(READ FORWARD, SPACE REVERSE) AND SWB=0 OPERATES
7278                                    ;PROPERLY. THE TAPE IS FIRST REWOUND AND THEN WRITTEN
7279                                    ;WITH A SERIES OF TEST RECORDS VARYING IN LENGTH AND
7280                                    ;DATA CONTENT; THE FIRST FOUR BYTES OF EACH RECORD
7281                                    ;CONTAIN ITS RECORD NUMBER (INDICATING POSITION ON
7282                                    ;TAPE). THE TAPE IS THEN REWOUND AGAIN. FOR EACH
7283                                    ;TEST RECORD, THE FOLLOWING SEQUENCE IS EXECUTED.
7284                                    ;
7285                                    ;1.     THE REREAD NEXT COMMAND IS ISSUED
7286                                    ;       AND THE RESULTS CHECKED
7287                                    ;
7288                                    ;2.     A READ FORWARD COMMAND IS THEN ISSUED AND THE
7289                                    ;       DATA IS CHECKED TO VERIFY THAT THE TAPE WAS
7290                                    ;       POSITIONED PROPERLY AFTER THE REREAD NEXT
7291                                    ;       COMMAND (E.G. THE TAPE SHOULD HAVE BEEN LEFT
7292                                    ;       POSITIONED AT THE START OF THE TEST RECORD). THE
7293                                    ;       READ FORWARD COMMAND LEAVES THE TAPE POSITIONED
7294                                    ;       PROPERLY AT THE START OF THE NEXT TEST RECORD.
7295                                    ;
7296                                    ;THE BYTE COUNT ON EACH REREAD NEXT COMMAND IS SET
7297                                    ;TO THE LENGTH OF THE EXPECTED RECORD, SO NO
7298                                    ;EXCEPTIONAL CONDITIONS SHOULD OCCUR.
7299                                    ;
7300                                    ;
7301                                    ;
7302                                    ;
7303                                    ;-
7304
7305 040400                                BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
        040400                                                                  T2.9:
        040400  104402                                                                 TRAP    C$BSUB
7306 040402  004737  050650                JSR     PC,T26REST              ;SET COMMAND PACKET
7307 040406  005037  046106                CLR     T26CNT                  ;CLEAR TAPE RECORD COUNTER
7308 040412  004737  050742                JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
7309 040416  004737  051004                JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET
7310
7311                                    ;*************************************************************************
7312                                    ;
7313                                    ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
7314                                    ;
7315                                    ;*************************************************************************
7316
7317 040422  004737  016660                JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
7318 040426  103407                       BCS     20$                     ;BR IF INIT WAS OK
7319 040430  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7323 040434  010001                       MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
7324 040436                               ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
        040436  104455                                                                 TRAP    C$ERDF
        040440  000431                                                                 .WORD   281
        040442  003550                                                                 .WORD   SFIERR
        040444  011676                                                                 .WORD   SFIMSG
7325 040446                            20$:
```

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

040452  004737  010342          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
040456  103407                  BCS     26$                     ;BR, IF COMMAND ISSUED OK
040460  004737  020116          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
040464  010001                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
040466                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
040466  104456                                                          TRAP    C$ERHRD
040470  000432                                                          .WORD   282
040472  004754                                                          .WORD   WRTMSG
040474  011676                                                          .WORD   SFIMSG
040476                  26$:    CKLOOP                          ;LOOP IF SELECTED
040476  104406                                                          TRAP    C$CLP1

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

040500  004737  010444          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
040504  103413                  BCS     30$                     ;BR, IF NO PROBLEM
040506  016501  000000          MOV     TSSR(R5),R1             ;GET TSSR
040512  012702  000200          MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
040516  010004                  MOV     R0,R4                   ;PACKET ADDRESS SET UP
040520  004737  020116          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
040524                          ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
040524  104456                                                          TRAP    C$ERHRD
040526  000433                                                          .WORD   283
040530  047414                                                          .WORD   T26RWN
040532  011710                                                          .WORD   PKTSSR
040534                  30$:    CKLOOP                          ;LOOP IF SELECTED
040534  104406                                                          TRAP    C$CLP1

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

040536  013701  045756          MOV     T26BFR+6,R1             ;PICK UP XST0
040542  010102                  MOV     R1,R2                   ;SET UP EXPECTED
040544  052702  000002          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
040550  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
040552  001406                  BEQ     40$                     ;BR, IF EQUAL (OK)
040554  004737  020116          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
040560                          ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
040560  104456                                                          TRAP    C$ERHRD
040562  000434                                                          .WORD   284
040564  047125                                                          .WORD   T26BOT
```

```
                040566  016360                                                          .WORD   EXPREC
7379            040570                  40$:    CKLOOP                  ;LOOP IF SELECTED
                040570  104406                                                          TRAP    C$CLP1
7380            040572  012703  000400          MOV     #256.,R3        ;RECORD SIZE
7381            040576  013737  003072  046062  MOV     FREE,T26RB      ;STARTING WRITE BUFFER ADDRESS
7382
7383                            ;*****************************************************************
7384                            ;
7385                            ;WRITE DATA,CVC=1,ACK COMMAND
7386                            ;
7387                            ;*****************************************************************
7388
7389            040604  012737  140005  046060  MOV     #140005,T26PK3  ;WRITE DATA,CVC=1,ACK COMMAND
7390            040612  012704  046060          MOV     #T26PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
7391            040616                  65$:
7392            040616  010337  046066          MOV     R3,T26SZ        ;SET UP RECORD SIZE IN PACKET
7393            040622  013777  046106  142242  MOV     T26CNT,@FREE    ;MOVE TAPE RECORD NUMBER TO BUFFER
7394            040630  062737  000001  046106  ADD     #1,T26CNT       ;NUMBER READY FOR NEXT RECORD
7395            040636  010465  177776          MOV     R4,TSDB(R5)     ;ISSUE COMMAND
7396            040642  004737  017134          JSR     PC,WAITF        ;WAIT FOR SSR TO SET
7397            040646  016501  000000          MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
7398            040652  012702  000200          MOV     #SSR,R2         ;SET UP EXPECTED
7399            040656  020102                  CMP     R1,R2           ;ARE THEY EQUAL
7400            040660  001406                  BEQ     75$             ;BR. IF OK
7401            040662  004737  020116          JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
7405                                            ;SOFT ERROR GENERATED BECAUSE THE
7406                                            ;WRITE COMMAND IS NOT BEING CHECKED
7407                                            ;HERE. IT WAS CHECKED IN LEAH2
7408            040666                          ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
                040666  104457                                                          TRAP    C$ERSOFT
                040670  000435                                                          .WORD   285
                040672  005011                                                          .WORD   WRTERR
                040674  011710                                                          .WORD   PKTSSR
7409            040676                  75$:    CKLOOP                  ;LOOP IF SELECTED
                040676  104406                                                          TRAP    C$CLP1
7410            040700  005723                  TST     (R3)+           ;BUMP THE RECORD SIZE
7411            040702  022703  000414          CMP     #268.,R3        ;MAXIMUM SIZE YET
7412            040706  001401                  BEQ     120$            ;BR. IF AT END OF WRITE SEQUENCE
7413            040710  000742                  BR      65$             ;WRITE MORE RECORDS
7414            040712                  120$:
7415            040712  005037  046106          CLR     T26CNT          ;SET RECORD COUNTER BACK TO ZERO
7416
7417                            ;*****************************************************************
7418                            ;
7419                            ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
7420                            ;
7421                            ;*****************************************************************
7422
7423            040716  004737  010444          JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
7424            040722  103411                  BCS     130$            ;BR. IF NO PROBLEM
7425            040724  016501  000000          MOV     TSSR(R5),R1     ;GET TSSR
7426            040730  010004                  MOV     R0,R4           ;PACKET ADDRESS SET UP
7427            040732  004737  020116          JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
7431            040736                          ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
                040736  104456                                                          TRAP    C$ERHRD
                040740  000436                                                          .WORD   286
                040742  047414                                                          .WORD   T26RWN
```

```
     040744  011710                                                                   .WORD   PKTSSR
     040746                          130$:   CKLOOP                         ;LOOP IF SELECTED
     040746  104406                                                                   TRAP    C$CLP1

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

     040750  013701  045756                  MOV     T26BFR+6,R1            ;PICK UP XSTO
     040754  010102                          MOV     R1,R2                  ;SET UP EXPECTED
     040756  052702  000002                  BIS     #BIT1,R2               ;SET BOT BIT IN EXPECTED
     040762  020102                          CMP     R1,R2                  ;DOES EXP = REC'D
     040764  001406                          BEQ     135$                   ;BR, IF EQUAL (OK)
     040766  004737  020116                  JSR     PC,FATCHK              ;INC AND CHECK FOR MORE THAN 25 ERRORS
     040772                                  ERRHRD  ERRNO,T26BOT,EXPREC    ;TAPE NOT AT BOT AFTER REWIND
     040772  104456                                                                   TRAP    C$ERHRD
     040774  000437                                                                   .WORD   287
     040776  047125                                                                   .WORD   T26BOT
     041000  016360                                                                   .WORD   EXPREC
     041002                          135$:   CKLOOP                                 ;LOOP IF SELECTED
     041002  104406                                                                   TRAP    C$CLP1
     041004  012737  000400  046112          MOV     #256.,T26RSZ           ;STARTING RECORD SIZE
     041012  000420                          BR      140$                   ;SKIP OVER THE SAPCE THIS TIME

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

     041014  012703  000001          132$:   MOV     #000001,R3             ;SET UP SPACE COMMAND (1 FORWARD)
     041020  004737  010144                  JSR     PC,SPACE               ;CALL SPACE ROUTINE
     041024  103413                          BCS     140$                   ;BR, IF NO TROUBLE
     041026  016501  000000                  MOV     TSSR(R5),R1            ;GET TSSR
     041032  012702  000200                  MOV     #SSR,R2                ;SET UP EXPECTED TSSR
     041036  010004                          MOV     R0,R4                  ;PACKET ADDRESS SET UP
     041040  004737  020116                  JSR     PC,FATCHK              ;INC AND CHECK FOR MORE THAN 25 ERRORS
     041044                                  ERRHRD  ERRNO,T26SC,PKTSSR     ;SPACE (FORWARD) FAILED
     041044  104456                                                                   TRAP    C$ERHRD
     041046  000440                                                                   .WORD   288
     041050  046527                                                                   .WORD   T26SC
     041052  011710                                                                   .WORD   PKTSSR
     041054                          140$:   CKLOOP                         ;LOOP IF SELECTED
     041054  104406                                                                   TRAP    C$CLP1
     041056  013703  046112                  MOV     T26RSZ,R3              ;RECORD SIZE
     041062  013737  003072  046062  150$:   MOV     FREE,T26RB             ;STARTING READ BUFFER ADDRESS

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

     041070  012737  161401  046060          MOV     #161401,T26PK3         ;REREAD DATA,CVC=1,ACK, OPP COMMAND
```

```
7483 041076  012704  046060          165$:  MOV     #T26PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
7484 041102  010337  046066                 MOV     R3,T26SZ            ;SET UP RECORD SIZE IN PACKET
7485 041106  010465  177776                 MOV     R4,TSDB(R5)         ;ISSUE COMMAND
7486 041112  004737  017134                 JSR     PC,WAITF            ;WAIT FOR SSR TO SET
7487 041116  016501  000000                 MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
7488 041122  012702  000200                 MOV     #SSR,R2             ;SET UP EXPECTED
7489 041126  020102                         CMP     R1,R2               ;ARE THEY EQUAL
7490 041130  001406                         BEQ     170$                ;BR, IF OK
7491 041132  004737  020116                 JSR     PC,FATCHK           ;INC AND CHECK FOR MORE THAN 25 ERRORS
7495 041136                                 ERRHRD  ERRNO,T26RRF,PKTSSR ;TSSR INCORRECT AFTER REREAD DATA
     041136  104456                                                             TRAP    C$ERHRD
     041140  000441                                                             .WORD   289
     041142  046335                                                             .WORD   T26RRF
     041144  011710                                                             .WORD   PKTSSR
7496 041146                         170$:   CKLOOP                      ;LOOP IF SELECTED
     041146  104406                                                             TRAP    C$CLP1
7497 041150  017701  141716                 MOV     @FREE,R1                    ;FIRST WORD FROM READ BUFFER
7498 041154  013702  046106                 MOV     T26CNT,R2           ;SET UP EXPECTED
7499 041160  020102                         CMP     R1,R2               ;IS TAPE POSITION CORRECT
7500 041162  001406                         BEQ     190$                ;KEEP GOING POSITION OK
7501 041164  004737  020116                 JSR     PC,FATCHK           ;INC AND CHECK FOR MORE THAN 25 ERRORS
7505 041170                                 ERRHRD  ERRNO,T26WNG,EXPREC ;TAPE POSITION INCORRECT
     041170  104456                                                             TRAP    C$ERHRD
     041172  000442                                                             .WORD   290
     041174  046116                                                             .WORD   T26WNG
     041176  016360                                                             .WORD   EXPREC
7506 041200                         190$:   CKLOOP
     041200  104406                                                             TRAP    C$CLP1
7507 041202  062737  000001  046106         ADD     #1,T26CNT           ;BUMP TAPE RECORD COUNTER
7508 041210  005723                         TST     (R3)+               ;NEXT RECORD SIZE
7509 041212  010337  046112                 MOV     R3,T26RSZ           ;STORE RECORD SIZE
7510 041216  022703  000412                 CMP     #266.,R3            ;AT MAX SIZE YET
7511 041222  001402                         BEQ     200$                ;BR, IF AT END OF THE SUBTEST
7512 041224  000137  041014                 JMP     132$                ;KEEP GOING MORE RECORDS
7513 041230                         200$:
7514 041230                         ENDSUB                              ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     041230                                                                     L10057:
     041230  104403                                                                     TRAP    C$ESUB
7515 041232  023727  002170  000031         CMP     FATFLG,#25.                 ;IS ERROR COUNT AT 25
7516 041240  002402                         BLT     999$                        ;BR, IF LESS THAN 25
7517 041242  004737  020170                 JSR     PC,CKDROP                   ;TRY TO DROP THE UNIT
7518 041246                         999$:
```

```
 7520                                   ;*
 7521                                   ;
 7522                                   ;TEST 2, SUBTEST 10
 7523                                   ;
 7524                                   ;VERIFIES THAT THE REREAD NEXT COMMAND WITH OPP=1
 7525                                   ;AND SWB=1 OPERATES PROPERLY. THE TEST SEQUENCE IS
 7526                                   ;THE SAME THAT IS USED IN SUBTEST 3, BUT IT IS
 7527                                   ;VERIFIED THAT DATA STORED BY THE COMMAND CONTAINS
 7528                                   ;SWAPPED BYTES.
 7529                                   ;
 7530                                   ;
 7531                                   ;
 7532                                   ;
 7533                                   ;-
 7534
 7535 041246                                   BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
      041246                                                                                    T2.10:
      041246  104402                                                                                      TRAP    C$BSUB
 7536 041250  004737  050650                   JSR     PC,T26REST              ;SET COMMAND PACKET
 7537 041254  005037  046106                   CLR     T26CNT                  ;CLEAR TAPE RECORD COUNTER
 7538 041260  004737  050742                   JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
 7539 041264  004737  051004                   JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET
 7540
 7541                                   ;*************************************************************************
 7542                                   ;
 7543                                   ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
 7544                                   ;
 7545                                   ;*************************************************************************
 7546
 7547 041270  004737  016660                   JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 7548 041274  103407                           BCS     20$                     ;BR IF INIT WAS OK
 7549 041276  004737  020116                   JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7553 041302  010001                           MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 7554 041304                                   ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      041304  104455                                                                           TRAP    C$ERDF
      041306  000443                                                                           .WORD   291
      041310  003550                                                                           .WORD   SFIERR
      041312  011676                                                                           .WORD   SFIMSG
 7555 041314                            20$:
 7556
 7557 041314  012704  045730                   MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 7558
 7559                                   ;*************************************************************************
 7560                                   ;
 7561                                   ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
 7562                                   ;
 7563                                   ;*************************************************************************
 7564
 7565 041320  004737  010342                   JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 7566 041324  103407                           BCS     26$                     ;BR, IF COMMAND ISSUED OK
 7567 041326  004737  020116                   JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7571 041332  010001                           MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 7572 041334                                   ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      041334  104456                                                                           TRAP    C$ERHRD
      041336  000444                                                                           .WORD   292
      041340  004754                                                                           .WORD   WRTMSG
      041342  011676                                                                           .WORD   SFIMSG
```

```
7573 041344                        26$:    CKLOOP                          ;LOOP IF SELECTED
     041344  104406                                                                TRAP    C$CLP1
7574
7575                               ;*****************************************************************
7576                               ;
7577                               ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
7578                               ;
7579                               ;*****************************************************************
7580
7581 041346  004737  010444              JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
7582 041352  016501  000000              MOV     TSSR(R5),R1             ;GET TSSR
7583 041356  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
7584 041362  103407                      BCS     30$                     ;BR, IF NO PROBLEM
7585 041364  010004                      MOV     R0,R4                   ;PACKET ADDRESS SET UP
7586 041366  004737  020116              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7590 041372                              ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     041372  104456                                                                TRAP    C$ERHRD
     041374  000445                                                                .WORD   293
     041376  047414                                                                .WORD   T26RWN
     041400  011710                                                                .WORD   PKTSSR
7591 041402                        30$:    CKLOOP                          ;LOOP IF SELECTED
     041402  104406                                                                TRAP    C$CLP1
7592
7593                               ;*****************************************************************
7594                               ;
7595                               ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
7596                               ;
7597                               ;*****************************************************************
7598
7599 041404  013701  045756              MOV     T26BFR+6,R1             ;PICK UP XSTO
7600 041410  010102                      MOV     R1,R2                   ;SET UP EXPECTED
7601 041412  052702  000002              BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
7602 041416  020102                      CMP     R1,R2                   ;DOES EXP = REC'D
7603 041420  001406                      BEQ     40$                     ;BR, IF EQUAL (OK)
7604 041422  004737  020116              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7608 041426                              ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     041426  104456                                                                TRAP    C$ERHRD
     041430  000446                                                                .WORD   294
     041432  047125                                                                .WORD   T26BOT
     041434  016360                                                                .WORD   EXPREC
7609 041436                        40$:    CKLOOP                          ;LOOP IF SELECTED
     041436  104406                                                                TRAP    C$CLP1
7610 041440  012703  000400              MOV     #256.,R3                ;RECORD SIZE
7611 041444  013737  003072  046062      MOV     FREE,T26RB              ;STARTING WRITE BUFFER ADDRESS
7612
7613                               ;*****************************************************************
7614                               ;
7615                               ;WRITE DATA,CVC=1,ACK COMMAND
7616                               ;
7617                               ;*****************************************************************
7618
7619 041452  012737  140005  046060      MOV     #140005,T26PK3          ;WRITE DATA,CVC=1,ACK COMMAND
7620 041460  012704  046060              MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
7621 041464                        65$:
7622 041464  010337  046066              MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
7623 041470  013777  046106  141374      MOV     T26CNT,@FREE            ;MOVE TAPE RECORD NUMBER TO BUFFER
7624 041476  062737  000001  046106      ADD     #1,T26CNT               ;NUMBER READY FOR NEXT RECORD
```

```
7625 041504  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7626 041510  004737  017134                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7627 041514  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7628 041520  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
7629 041524  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
7630 041526  001406                        BEQ     75$                     ;BR, IF OK
7631 041530  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7635                                                                        ;SOFT ERROR GENERATED BECAUSE THE
7636                                                                        ;WRITE COMMAND IS NOT BEING CHECKED
7637                                                                        ;HERE. IT WAS CHECKED IN LEAH2
7638 041534                                ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     041534  104457                                                                TRAP    C$ERSOFT
     041536  000447                                                                .WORD   295
     041540  005011                                                                .WORD   WRTERR
     041542  011710                                                                .WORD   PKTSSR
7639 041544                        75$:    CKLOOP                          ;LOOP IF SELECTED
     041544  104406                                                                TRAP    C$CLP1
7640 041546  005723                        TST     (R3)+                   ;BUMP THE RECORD SIZE
7641 041550  022703  000414                CMP     #268.,R3                ;MAXIMUM SIZE YET
7642 041554  001401                        BEQ     120$                    ;BR, IF AT END OF WRITE SEQUENCE
7643 041556  000742                        BR      65$                     ;WRITE MORE RECORDS
7644 041560                        120$:
7645 041560  005037  046106                CLR     T26CNT                  ;SET RECORD COUNTER BACK TO ZERO
7646
7647                               ;*************************************************************************
7648                               ;
7649                               ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
7650                               ;
7651                               ;*************************************************************************
7652
7653 041564  004737  010444                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
7654 041570  103411                        BCS     130$                    ;BR, IF NO PROBLEM
7655 041572  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR
7656 041576  010004                        MOV     R0,R4                   ;PACKET ADDRESS SET UP
7657 041600  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7661 041604                                ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     041604  104456                                                                TRAP    C$ERHRD
     041606  000450                                                                .WORD   296
     041610  047414                                                                .WORD   T26RWN
     041612  011710                                                                .WORD   PKTSSR
7662 041614                        130$:   CKLOOP                          ;LOOP IF SELECTED
     041614  104406                                                                TRAP    C$CLP1
7663
7664                               ;*************************************************************************
7665                               ;
7666                               ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
7667                               ;
7668                               ;*************************************************************************
7669
7670 041616  013701  045756                MOV     T26BFR+6,R1             ;PICK UP XST0
7671 041622  010102                        MOV     R1,R2                   ;SET UP EXPECTED
7672 041624  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
7673 041630  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
7674 041632  001406                        BEQ     135$                    ;BR, IF EQUAL (OK)
7675 041634  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7679 041640                                ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     041640  104456                                                                TRAP    C$ERHRD
```

```
        041642  000451                                                          .WORD   297
        041644  047125                                                          .WORD   T26BOT
        041646  016360                                                          .WORD   EXPREC
7680    041650                          135$:   CKLOOP                          ;LOOP IF SELECTED
        041650  104406                                                          TRAP    C$CLP1
7681    041652  012737  000400  046112          MOV     #256.,T26RSZ            ;START RECORD SIZE
7682    041660  000420                  BR      140$                            ;SKIP OVER SPACE
7683
7684                                    ;*****************************************************************
7685                                    ;
7686                                    ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
7687                                    ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
7688                                    ;
7689                                    ;*****************************************************************
7690
7691    041662  012703  000001          136$:   MOV     #000001,R3              ;SET UP SPACE COMMAND (1 FORWARD)
7692    041666  004737  010144                  JSR     PC,SPACE                ;CALL SPACE ROUTINE
7693    041672  103413                  BCS     140$                            ;BR, IF NO TROUBLE
7694    041674  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR
7695    041700  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
7696    041704  010004                  MOV     R0,R4                           ;PACKET ADDRESS SET UP
7697    041706  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7701    041712                          ERRHRD  ERRNO,T26SC,PKTSSR              ;SPACE (FORWARD) FAILED
        041712  104456                                                          TRAP    C$ERHRD
        041714  000452                                                          .WORD   298
        041716  046527                                                          .WORD   T26SC
        041720  011710                                                          .WORD   PKTSSR
7702    041722                          140$:   CKLOOP                          ;LOOP IF SELECTED
        041722  104406                                                          TRAP    C$CLP1
7703    041724  013703  046112                  MOV     T26RSZ,R3               ;RECORD SIZE
7704    041730  013737  003072  046062  150$:   MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
7705
7706                                    ;*****************************************************************
7707                                    ;
7708                                    ;REREAD DATA,CVC=1,ACK, OPP COMMAND
7709                                    ;
7710                                    ;*****************************************************************
7711
7712    041736  012737  161401  046060          MOV     #161401,T26PK3          ;REREAD DATA,CVC=1,ACK, OPP COMMAND
7713    041744  012704  046060  165$:   MOV     #T26PK3,R4                      ;SET UP R4 WITH PACKET ADDRESS
7714    041750  010337  046066                  MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
7715    041754  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7716    041760  004737  017134                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7717    041764  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7718    041770  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
7719    041774  020102                  CMP     R1,R2                           ;ARE THEY EQUAL
7720    041776  001406                  BEQ     170$                            ;BR, IF OK
7721    042000  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7725    042004                          ERRHRD  ERRNO,T26RRF,PKTSSR             ;TSSR INCORRECT AFTER REREAD DATA
        042004  104456                                                                  TRAP    C$ERHRD
        042006  000453                                                                  .WORD   299
        042010  046335                                                                  .WORD   T26RRF
        042012  011710                                                                  .WORD   PKTSSR
7726    042014                          170$:   CKLOOP                          ;LOOP IF SELECTED
        042014  104406                                                                  TRAP    C$CLP1
7727    042016  017701  141050                  MOV     @FREE,R1                        ;FIRST WORD FROM READ BUFFER
7728    042022  013702  046106                  MOV     T26CNT,R2               ;SET UP EXPECTED
```

```
7729 042026  020102                          CMP     R1,R2                ;IS TAPE POSITION CORRECT
7730 042030  001406                          BEQ     190$                 ;KEEP GOING POSITION OK
7731 042032  004737  020116                  JSR     PC,FATCHK            ;INC AND CHECK FOR MORE THAN 25 ERRORS
7735 042036                                  ERRHRD  ERRNO,T26WNG,EXPREC  ;TAPE POSITION INCORRECT
     042036  104456                                                               TRAP    C$ERHRD
     042040  000454                                                               .WORD   300
     042042  046116                                                               .WORD   T26WNG
     042044  016360                                                               .WORD   EXPREC
7736 042046                          190$:   CKLOOP
     042046  104406                                                               TRAP    C$CLP1
7737 042050  062737  000001  046106          ADD     #1,T26CNT            ;BUMP TAPE RECORD COUNTER
7738 042056  005723                          TST     (R3)+                ;NEXT RECORD SIZE
7739 042060  010337  046112                  MOV     R3,T26RSZ            ;STORE RECORD SIZE
7740 042064  022703  000412                  CMP     #266.,R3             ;AT MAX SIZE YET
7741 042070  001402                          BEQ     220$                 ;BR, IF AT END OF THE SUBTEST
7742 042072  000137  041662                  JMP     136$                 ;KEEP GOING MORE RECORDS
7743 042076                          220$:
7744 042076                          ENDSUB                               ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     042076                                                                       L10060:
     042076  104403                                                               TRAP    C$ESUB
7745 042100  023727  002170  000031          CMP     FATFLG,#25.                  ;IS ERROR COUNT AT 25
7746 042106  002402                          BLT     999$                         ;BR, IF LESS THAN 25
7747 042110  004737  020170                  JSR     PC,CKDROP                    ;TRY TO DROP THE UNIT
7748 042114                          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).
                                ;
                                ;
                                ;
                                ;-

042114                                  BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
042114                                                                                      T2.11:
042114  104402                                                                              TRAP    C$BSUB
042116  004737  050650                JSR     PC,T26REST              ;SET COMMAND PACKET
042122  004737  050742                JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
042126  004737  051004                JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET

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

042132  004737  016660                JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
042136  103407                        BCS     20$                     ;BR IF INIT WAS OK
042140  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
042144  010001                        MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
042146                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
042146  104455                                                                              TRAP    C$ERDF
042150  000455                                                                              .WORD   301
042152  003550                                                                              .WORD   SFIERR
042154  011676                                                                              .WORD   SFIMSG
042156                          20$:

042156  012704  045730                MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

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

042162  004737  010342                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
042166  103407                        BCS     26$                     ;BR, IF COMMAND ISSUED OK
042170  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
042174  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
042176                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
042176  104456                                                                              TRAP    C$ERHRD
042200  000456                                                                              .WORD   302
042202  004754                                                                              .WORD   WRTMSG
042204  011676                                                                              .WORD   SFIMSG
042206                          26$:    CKLOOP                          ;LOOP IF SELECTED
```

```
                042206  104406                                                  TRAP    C$CLP1
7803
7804                                    ;*****************************************************************
7805                                    ;
7806                                    ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
7807                                    ;
7808                                    ;*****************************************************************
7809
7810 042210    004737  010444                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
7811 042214    016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR
7812 042220    012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
7813 042224    103407                            BCS     30$                     ;BR, IF NO PROBLEM
7814 042226    010004                            MOV     R0,R4                   ;PACKET ADDRESS SET UP
7815 042230    004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7819 042234                                      ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
                042234  104456                                                  TRAP    C$ERHRD
                042236  000457                                                  .WORD   303
                042240  047414                                                  .WORD   T26RWN
                042242  011710                                                  .WORD   PKTSSR
7820 042244                             30$:    CKLOOP                          ;LOOP IF SELECTED
                042244  104406                                                  TRAP    C$CLP1
7821
7822                                    ;*****************************************************************
7823                                    ;
7824                                    ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
7825                                    ;
7826                                    ;*****************************************************************
7827
7828 042246    013701  045756                    MOV     T26BFR+6,R1             ;PICK UP XSTO
7829 042252    010102                            MOV     R1,R2                   ;SET UP EXPECTED
7830 042254    052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
7831 042260    020102                            CMP     R1,R2                   ;DOES EXP = REC'D
7832 042262    001406                            BEQ     40$                     ;BR, IF EQUAL (OK)
7833 042264    004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7837 042270                                      ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                042270  104456                                                  TRAP    C$ERHRD
                042272  000460                                                  .WORD   304
                042274  047125                                                  .WORD   T26BOT
                042276  016360                                                  .WORD   EXPREC
7838 042300                             40$:    CKLOOP                          ;LOOP IF SELECTED
                042300  104406                                                  TRAP    C$CLP1
7839 042302    012703  001000                    MOV     #512.,R3                ;RECORD SIZE
7840 042306    013737  003072  046062            MOV     FREE,T26RB              ;STARTING WRITE BUFFER ADDRESS
7841
7842                                    ;*****************************************************************
7843                                    ;
7844                                    ;WRITE DATA,CVC=1,ACK COMMAND
7845                                    ;
7846                                    ;*****************************************************************
7847
7848 042314    012737  140005  046060            MOV     #140005,T26PK3          ;WRITE DATA,CVC=1,ACK COMMAND
7849 042322    012704  046060                    MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
7850 042326                             65$:
7851 042326    010337  046066                    MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
7852 042332    010465  177776                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7853 042336    004737  017134                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7854 042342    016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
```

```
7855 042346  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED
7856 042352  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
7857 042354  001406                      BEQ     75$                     ;BR, IF OK
7858 042356  004737  020116              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7862                                                                     ;SOFT ERROR GENERATED BECAUSE THE
7863                                                                     ;WRITE COMMAND IS NOT BEING CHECKED
7864                                                                     ;HERE. IT WAS CHECKED IN LEAH2
7865 042362                              ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     042362  104457                                                                      TRAP    C$ERSOFT
     042364  000461                                                                      .WORD   305
     042366  005011                                                                      .WORD   WRTERR
     042370  011710                                                                      .WORD   PKTSSR
7866 042372                      75$:    CKLOOP                          ;LOOP IF SELECTED
     042372  104406                                                                      TRAP    C$CLP1
7867
7868                             ;*****************************************************************
7869                             ;
7870                             ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
7871                             ;
7872                             ;*****************************************************************
7873
7874 042374  004737  010444              JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
7875 042400  016501  000000              MOV     TSSR(R5),R1             ;GET TSSR
7876 042404  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
7877 042410  103407                      BCS     130$                    ;BR, IF NO PROBLEM
7878 042412  010004                      MOV     R0,R4                   ;PACKET ADDRESS SET UP
7879 042414  004737  020116              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7883 042420                              ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     042420  104456                                                                      TRAP    C$ERHRD
     042422  000462                                                                      .WORD   306
     042424  047414                                                                      .WORD   T26RWN
     042426  011710                                                                      .WORD   PKTSSR
7884 042430                      130$:   CKLOOP                          ;LOOP IF SELECTED
     042430  104406                                                                      TRAP    C$CLP1
7885
7886                             ;*****************************************************************
7887                             ;
7888                             ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
7889                             ;
7890                             ;*****************************************************************
7891
7892 042432  013701  045756              MOV     T26BFR+6,R1             ;PICK UP XSTO
7893 042436  010102                      MOV     R1,R2                   ;SET UP EXPECTED
7894 042440  052702  000002              BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
7895 042444  020102                      CMP     R1,R2                   ;DOES EXP = REC'D
7896 042446  001406                      BEQ     140$                    ;BR, IF EQUAL (OK)
7897 042450  004737  020116              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7901 042454                              ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     042454  104456                                                                      TRAP    C$ERHRD
     042456  000463                                                                      .WORD   307
     042460  047125                                                                      .WORD   T26BOT
     042462  016360                                                                      .WORD   EXPREC
7902 042464                      140$:   CKLOOP                          ;LOOP IF SELECTED
     042464  104406                                                                      TRAP    C$CLP1
7903 042466  005303                      DEC     R3                      ;SET RECORD SIZE TO 511.
7904 042470  013737  003072  046062      MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
7905
```

```
7906                                    ;*****************************************************************
7907                                    ;
7908                                    ;REREAD DATA,CVC=1,ACK,OPP=1 COMMAND
7909                                    ;
7910                                    ;*****************************************************************
7911
7912 042476  012737  161401  046060          MOV     #161401,T26PK3          ;REREAD DATA,CVC=1,ACK,OPP=1 COMMAND
7913 042504  012704  046060          165$:   MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
7914 042510  010337  046066                  MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
7915 042514  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7916 042520  004737  017134                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7917 042524  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7918 042530  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
7919 042534  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
7920 042536  001406                          BEQ     170$                    ;BR, IF OK
7921 042540  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7925 042544                                  ERRHRD  ERRNO,T26TRL,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
     042544  104456                                                                  TRAP    C$ERHRD
     042546  000464                                                                  .WORD   308
     042550  050472                                                                  .WORD   T26TRL
     042552  011710                                                                  .WORD   PKTSSR
7926 042554                          170$:   CKLOOP                          ;LOOP IF SELECTED
     042554  104406                                                                  TRAP    C$CLP1
7927
7928                                    ;*****************************************************************
7929                                    ;
7930                                    ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
7931                                    ;
7932                                    ;*****************************************************************
7933
7934 042556  013701  045756                  MOV     T26BFR+6,R1             ;GET MESSAGE BUFFER
7935 042562  010102                          MOV     R1,R2                   ;SET UP EXPECTED
7936 042564  052702  010000                  BIS     #BIT12,R2               ;SET THE RLL BIT IN EXPECTED
7937 042570  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
7938 042572  001406                          BEQ     180$                    ;BR, IF EQUAL (ALL IS WELL)
7939 042574  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
7943 042600                                  ERRHRD  ERRNO,T26LON,EXPREC     ;THE RLL BIT WAS NOT SET IN XST0
     042600  104456                                                                  TRAP    C$ERHRD
     042602  000465                                                                  .WORD   309
     042604  050240                                                                  .WORD   T26LON
     042606  016360                                                                  .WORD   EXPREC
7944 042610                          180$:
7945 042610  012703  000777                  MOV     #511.,R3                ;SET UP SIZE OF RECORD
7946 042614  013737  003072  046062          MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
7947
7948                                    ;*****************************************************************
7949                                    ;
7950                                    ;REREAD DATA,CVC=1,ACK COMMAND
7951                                    ;
7952                                    ;*****************************************************************
7953
7954 042622  012737  141401  046060          MOV     #141401,T26PK3          ;REREAD DATA,CVC=1,ACK COMMAND
7955 042630  012704  046060          365$:   MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
7956 042634  010337  046066                  MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
7957 042640  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7958 042644  004737  017134                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7959 042650  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
```

```
 7960 042654  012702  100204                MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
 7961 042660  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 7962 042662  001406                        BEQ     370$                    ;BR, IF OK
 7963 042664  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7967 042670                                ERRHRD  ERRNO,T26TRL,PKTSSR     ;TSSR INCORRECT AFTER REREAD DATA
      042670  104456                                                                TRAP    C$ERHRD
      042672  000466                                                                .WORD   310
      042674  050472                                                                .WORD   T26TRL
      042676  011710                                                                .WORD   PKTSSR
 7968 042700                        370$:   CKLOOP                          ;LOOP IF SELECTED
      042700  104406                                                                TRAP    C$CLP1
 7969
 7970                                ;*************************************************************************
 7971                                ;
 7972                                ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
 7973                                ;
 7974                                ;*************************************************************************
 7975
 7976 042702  013701  045756                MOV     T26BFR+6,R1             ;GET MESSAGE BUFFER
 7977 042706  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 7978 042710  052702  010000                BIS     #BIT12,R2               ;SET THE RLL BIT IN EXPECTED
 7979 042714  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 7980 042716  001406                        BEQ     380$                    ;BR, IF EQUAL (ALL IS WELL)
 7981 042720  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 7985 042724                                ERRHRD  ERRNO,T26LON,EXPREC     ;THE RLL BIT WAS NOT SET IN XSTO
      042724  104456                                                                TRAP    C$ERHRD
      042726  000467                                                                .WORD   311
      042730  050240                                                                .WORD   T26LON
      042732  016360                                                                .WORD   EXPREC
 7986 042734                        380$:
 7987 042734                                ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
      042734  104403                                                        L10061:
                                                                                 TRAP    C$ESUB
 7988 042736  023727  002170  000031            CMP     FATFLG,#25.             ;IS ERROR COUNT AT 25
 7989 042744  002402                            BLT     999$                    ;BR, IF LESS THAN 25
 7990 042746  004737  020170                    JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
 7991 042752                        999$:
```

```
 7993                                   ;+
 7994                                   ;
 7995                                   ;TEST 2, SUBTEST 12
 7996                                   ;
 7997                                   ;VERIFIES THAT A REREAD NEXT COMMAND READING A
 7998                                   ;RECORD SHORTER THAN THE SPECIFIED BYTE COUNT CAUSES
 7999                                   ;TAPE STATUS ALERT TERMINATION WITH THE RECORD LENGTH
 8000                                   ;SHORT (RLS) BIT SET. IT IS VERIFIED THAT THE
 8001                                   ;RESIDUAL BYTE COUNTER (RBPCR) IN THE MESSAGE BUFFER
 8002                                   ;CONTAINS THE PROPER NONZERO VALUE (E.G., THE
 8003                                   ;DIFFERENCE BETWEEN THE ORIGINAL BYTE COUNT AND THE
 8004                                   ;ACTUAL RECORD LENGTH). RESULTS ARE VERIFIED FOR BOTH
 8005                                   ;STATES OF OPP (0 AND 1).
 8006                                   ;
 8007                                   ;
 8008                                   ;
 8009                                   ;-
 8010 042752                                   BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
      042752                                                                                    T2.12:
      042752  104402                                                                                      TRAP    C$BSUB
 8011 042754  004737  050650                   JSR     PC,T26REST              ;SET COMMAND PACKET
 8012 042760  004737  050742                   JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
 8013 042764  004737  051004                   JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET
 8014
 8015                                   ;*************************************************************************
 8016                                   ;
 8017                                   ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
 8018                                   ;
 8019                                   ;*************************************************************************
 8020
 8021 042770  004737  016660                   JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 8022 042774  103407                           BCS     20$                     ;BR IF INIT WAS OK
 8023 042776  004737  020116                   JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 8027 043002  010001                           MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 8028 043004                                   ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      043004  104455                                                                            TRAP    C$ERDF
      043006  000470                                                                           .WORD   312
      043010  003550                                                                           .WORD   SFIERR
      043012  011676                                                                           .WORD   SFIMSG
 8029 043014                            20$:
 8030
 8031 043014  012704  045730                   MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 8032
 8033                                   ;*************************************************************************
 8034                                   ;
 8035                                   ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
 8036                                   ;
 8037                                   ;*************************************************************************
 8038
 8039 043020  004737  010342                   JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 8040 043024  103407                           BCS     26$                     ;BR, IF COMMAND ISSUED OK
 8041 043026  004737  020116                   JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 8045 043032  010001                           MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 8046 043034                                   ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      043034  104456                                                                            TRAP    C$ERHRD
      043036  000471                                                                           .WORD   313
      043040  004754                                                                           .WORD   WRTMSG
```

```
      043042  011676                                                        .WORD   SFIMSG
8047  043044                        26$:    CKLOOP                          ;LOOP IF SELECTED
      043044  104406                                                        TRAP    C$CLP1
8048
8049                                ;*************************************************************
8050                                ;
8051                                ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
8052                                ;
8053                                ;*************************************************************
8054
8055  043046  004737  010444               JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
8056  043052  016501  000000               MOV     TSSR(R5),R1             ;GET TSSR
8057  043056  012702  000200               MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
8058  043062  103407                       BCS     30$                     ;BR, IF NO PROBLEM
8059  043064  010004                       MOV     R0,R4                   ;PACKET ADDRESS SET UP
8060  043066  004737  020116               JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8064  043072                               ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
      043072  104456                                                        TRAP    C$ERHRD
      043074  000472                                                        .WORD   314
      043076  047414                                                        .WORD   T26RWN
      043100  011710                                                        .WORD   PKTSSR
8065  043102                        30$:    CKLOOP                          ;LOOP IF SELECTED
      043102  104406                                                        TRAP    C$CLP1
8066
8067                                ;*************************************************************
8068                                ;
8069                                ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
8070                                ;
8071                                ;*************************************************************
8072
8073  043104  013701  045756               MOV     T26BFR+6,R1             ;PICK UP XST0
8074  043110  010102                       MOV     R1,R2                   ;SET UP EXPECTED
8075  043112  052702  000002               BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
8076  043116  020102                       CMP     R1,R2                   ;DOES EXP = REC'D
8077  043120  001406                       BEQ     40$                     ;BR, IF EQUAL (OK)
8078  043122  004737  020116               JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8082  043126                               ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      043126  104456                                                        TRAP    C$ERHRD
      043130  000473                                                        .WORD   315
      043132  047125                                                        .WORD   T26BOT
      043134  016360                                                        .WORD   EXPREC
8083  043136                        40$:    CKLOOP                          ;LOOP IF SELECTED
      043136  104406                                                        TRAP    C$CLP1
8084  043140  012703  000400               MOV     #256.,R3                ;RECORD SIZE
8085  043144  013737  003072  046062       MOV     FREE,T26RB              ;STARTING WRITE BUFFER ADDRESS
8086
8087                                ;*************************************************************
8088                                ;
8089                                ;WRITE DATA,CVC=1,ACK COMMAND
8090                                ;
8091                                ;*************************************************************
8092
8093  043152  012737  140005  046060       MOV     #140005,T26PK3          ;WRITE DATA,CVC=1,ACK COMMAND
8094  043160  012704  046060               MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
8095  043164                        65$:
8096  043164  010337  046066               MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
8097  043170  010465  177776               MOV     R4,TSDB(R5)             ;ISSUE COMMAND
```

```
8098 043174  004737  017134                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
8099 043200  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
8100 043204  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
8101 043210  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
8102 043212  001406                        BEQ     75$                     ;BR, IF OK
8103 043214  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8107                                                                       ;SOFT ERROR GENERATED BECAUSE THE
8108                                                                       ;WRITE COMMAND IS NOT BEING CHECKED
8109                                                                       ;HERE. IT WAS CHECKED IN LEAH2
8110 043220                                ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     043220  104457                                                                TRAP    C$ERSOFT
     043222  000474                                                                .WORD   316
     043224  005011                                                                .WORD   WRTERR
     043226  011710                                                                .WORD   PKTSSR
8111 043230                        75$:    CKLOOP                          ;LOOP IF SELECTED
     043230  104406                                                                TRAP    C$CLP1
8112 043232                        120$:
8113
8114                               ;*************************************************************************
8115                               ;
8116                               ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
8117                               ;
8118                               ;*************************************************************************
8119
8120 043232  004737  010444                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
8121 043236  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR
8122 043242  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
8123 043246  103407                        BCS     130$                    ;BR, IF NO PROBLEM
8124 043250  010004                        MOV     R0,R4                   ;PACKET ADDRESS SET UP
8125 043252  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8129 043256                                ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     043256  104456                                                                TRAP    C$ERHRD
     043260  000475                                                                .WORD   317
     043262  047414                                                                .WORD   T26RWN
     043264  011710                                                                .WORD   PKTSSR
8130 043266                        130$:   CKLOOP                          ;LOOP IF SELECTED
     043266  104406                                                                TRAP    C$CLP1
8131
8132                               ;*************************************************************************
8133                               ;
8134                               ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
8135                               ;
8136                               ;*************************************************************************
8137
8138 043270  013701  045756                MOV     T26BFR+6,R1             ;PICK UP XST0
8139 043274  010102                        MOV     R1,R2                   ;SET UP EXPECTED
8140 043276  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
8141 043302  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
8142 043304  001406                        BEQ     135$                    ;BR, IF EQUAL (OK)
8143 043306  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8147 043312                                ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     043312  104456                                                                TRAP    C$ERHRD
     043314  000476                                                                .WORD   318
     043316  047125                                                                .WORD   T26BOT
     043320  016360                                                                .WORD   EXPREC
8148 043322                        135$:   CKLOOP                          ;LOOP IF SELECTED
     043322  104406                                                                TRAP    C$CLP1
```

```
8149 043324  012703  001000                MOV     #512.,R3                ;RECORD SIZE
8150 043330  013737  003072  046062        MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
8151
8152                                ;*************************************************************************
8153                                ;
8154                                ;REREAD NEXT,ACK,CVC=1,OPP=1
8155                                ;
8156                                ;*************************************************************************
8157
8158 043336  012737  161401  046060        MOV     #161401,T26PK3          ;REREAD NEXT,ACK,CVC=1,OPP=1
8159 043344  012704  046060        165$:   MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
8160 043350  010337  046066                MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
8161 043354  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
8162 043360  004737  017134                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
8163 043364  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
8164 043370  012702  100204                MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
8165 043374  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
8166 043376  001406                        BEQ     170$                    ;BR, IF OK
8167 043400  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8171 043404                                ERRHRD  ERRNO,T26TRL,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     043404  104456                                                                TRAP    C$ERHRD
     043406  000477                                                                .WORD   319
     043410  050472                                                                .WORD   T26TRL
     043412  011710                                                                .WORD   PKTSSR
8172 043414                        170$:   CKLOOP                          ;LOOP IF SELECTED
     043414  104406                                                                TRAP    C$CLP1
8173
8174                                ;*************************************************************************
8175                                ;
8176                                ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
8177                                ;
8178                                ;*************************************************************************
8179
8180 043416  013701  045756                MOV     T26BFR+6,R1             ;GET MESSAGE BUFFER
8181 043422  010102                        MOV     R1,R2                   ;SET UP EXPECTED
8182 043424  052702  040000                BIS     #BIT14,R2               ;SET THE RLS BIT IN EXPECTED
8183 043430  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
8184 043432  001406                        BEQ     180$                    ;BR, IF EQUAL (ALL IS WELL)
8185 043434  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8189 043440                                ERRHRD  ERRNO,T26LOP,EXPREC     ;THE RLL BIT WAS NOT SET IN XST0
     043440  104456                                                                TRAP    C$ERHRD
     043442  000500                                                                .WORD   320
     043444  050322                                                                .WORD   T26LOP
     043446  016360                                                                .WORD   EXPREC
8190 043450                        180$:
8191 043450  013701  045754                MOV     T26BFR+4,R1             ;PICK UP RESIDUAL BYTE COUNTER
8192 043454  012702  000400                MOV     #256.,R2                ;THIS SHOULD BE THE DIFFERENCE
8193 043460  020102                        CMP     R1,R2                   ;IS THE DIFFERENCE CORRECT
8194 043462  001405                        BEQ     190$                    ;BR, IF CORRECT
8198 043466                                ERRHRD  ERRNO,T26PBP,EXPREC     ;RBPCR NOT CORRECT
     043466  104456                                                                TRAP    C$ERHRD
     043470  000500                                                                .WORD   320
     043472  050404                                                                .WORD   T26PBP
     043474  016360                                                                .WORD   EXPREC
8199 043476                        190$:   CKLOOP                          ;LOOP IF SELECTED
     043476  104406                                                                TRAP    C$CLP1
8200 043500  012703  001000                MOV     #512.,R3                ;RECORD SIZE
```

```
8201 043504  013737  003072  046062          MOV     FREE,T26RB              ;STARTING READ BUFFER ADDRESS
8202
8203                                 ;*************************************************************************
8204                                 ;
8205                                 ;REREAD NEXT,ACK,CVC=1,OPP=0
8206                                 ;
8207                                 ;*************************************************************************
8208
8209 043512  012737  141401  046060          MOV     #141401,T26PK3          ;REREAD NEXT,ACK,CVC=1,OPP=0
8210 043520  012704  046060                  MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
8211 043524  010337  046066                  MOV     R3,T26SZ                ;SET UP RECORD SIZE IN PACKET
8212 043530  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
8213 043534  004737  017134                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
8214 043540  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
8215 043544  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
8216 043550  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
8217 043552  001406                          BEQ     270$                    ;BR, IF OK
8218 043554  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8222 043560                                  ERRHRD  ERRNO,T26TRL,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     043560  104456                                                                  TRAP    C$ERHRD
     043562  000501                                                                  .WORD   321
     043564  050472                                                                  .WORD   T26TRL
     043566  011710                                                                  .WORD   PKTSSR
8223 043570                          270$:   CKLOOP                          ;LOOP IF SELECTED
     043570  104406                                                                  TRAP    C$CLP1
8224
8225                                 ;*************************************************************************
8226                                 ;
8227                                 ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
8228                                 ;
8229                                 ;*************************************************************************
8230
8231 043572  013701  045756                  MOV     T26BFR+6,R1             ;GET MESSAGE BUFFER
8232 043576  010102                          MOV     R1,R2                   ;SET UP EXPECTED
8233 043600  052702  040000                  BIS     #BIT14,R2               ;SET THE RLS BIT IN EXPECTED
8234 043604  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
8235 043606  001406                          BEQ     280$                    ;BR, IF EQUAL (ALL IS WELL)
8236 043610  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8240 043614                                  ERRHRD  ERRNO,T26LOP,EXPREC     ;THE RLL BIT WAS NOT SET IN XST0
     043614  104456                                                                  TRAP    C$ERHRD
     043616  000502                                                                  .WORD   322
     043620  050322                                                                  .WORD   T26LOP
     043622  016360                                                                  .WORD   EXPREC
8241 043624                          280$:
8242 043624  013701  045754                  MOV     T26BFR+4,R1             ;PICK UP RESIDUAL BYTE COUNTER
8243 043630  012702  000400                  MOV     #256.,R2                ;THIS SHOULD BE THE DIFFERENCE
8244 043634  020102                          CMP     R1,R2                   ;IS THE DIFFERENCE CORRECT
8245 043636  001405                          BEQ     290$                    ;BR, IF CORRECT
8249 043642                                  ERRHRD  ERRNO,T26PBP,EXPREC     ;RBPCR NOT CORRECT
     043642  104456                                                                  TRAP    C$ERHRD
     043644  000502                                                                  .WORD   322
     043646  050404                                                                  .WORD   T26PBP
     043650  016360                                                                  .WORD   EXPREC
8250 043652                          290$:   CKLOOP                          ;LOOP IF SELECTED
     043652  104406                                                                  TRAP    C$CLP1
8251 043654                                  ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     043654                                                                  L10062:
```

```
     043654  104403                                          TRAP    C$ESUB
8252 043656  023727  002170  000031        CMP   FATFLG,#25.       ;IS ERROR COUNT AT 25
8253 043664  002402                        BLT   999$              ;BR, IF LESS THAN 25
8254 043666  004737  020170                JSR   PC,CKDROP         ;TRY TO DROP THE UNIT
8255 043672                         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.
                        ;
                        ;
                        ;
                        ;-

                                BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
043672                                                                          T2.13:
043672                                                                                  TRAP    C$BSUB
043672  104402
043674  005737  003100        9$:     TST     KTFLG           ;CHECK FOR KT11
                                :       BEQ     10$             ;BR, IF NO KT11
                                ;
                                ;       DIALOG NXM PATCH
                                ;
                                        NOP                     ;NXM PATCH
043700  000240
043702  000137  044652                  JMP     200$            ;SKIP TEST IF KT11
043706  004737  050650        10$:    JSR     PC,T26REST      ;SET COMMAND PACKET
043712  005037  046106                CLR     T26CNT          ;CLEAR TAPE RECORD COUNTER
043716  004737  050742                JSR     PC,T26RT2       ;SET UP OTHER COMMAND PACKET
043722  004737  051004                JSR     PC,T26RT3       ;SET UP OTHER COMMAND PACKET

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

043726  004737  016660                JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
043732  103407                        BCS     20$             ;BR IF INIT WAS OK
043734  004737  020116                JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
043740  010001                        MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
043742                                ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
043742  104455                                                                  TRAP    C$ERDF
043744  000503                                                                  .WORD   323
043746  003550                                                                  .WORD   SFIERR
043750  011676                                                                  .WORD   SFIMSG
043752                          20$:

043752  012704  045730                MOV     #T26PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS

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

043756  004737  010342                JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
043762  103407                        BCS     26$             ;BR, IF COMMAND ISSUED OK
```

```
8311 043764  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8315 043770  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
8316 043772                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     043772  104456                                                               TRAP    C$ERHRD
     043774  000504                                                               .WORD   324
     043776  004754                                                               .WORD   WRTMSG
     044000  011676                                                               .WORD   SFIMSG
8317 044002                        26$:    CKLOOP                          ;LOOP IF SELECTED
     044002  104406                                                               TRAP    C$CLP1
8318
8319                               ;*************************************************************************
8320                               ;
8321                               ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
8322                               ;
8323                               ;*************************************************************************
8324
8325 044004  004737  010444                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
8326 044010  103411                        BCS     30$                     ;BR, IF NO PROBLEM
8327 044012  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR
8328 044016  010004                        MOV     R0,R4                   ;PACKET ADDRESS SET UP
8329 044020  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8333 044024                                ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     044024  104456                                                               TRAP    C$ERHRD
     044026  000505                                                               .WORD   325
     044030  047414                                                               .WORD   T26RWN
     044032  011710                                                               .WORD   PKTSSR
8334 044034                        30$:    CKLOOP                          ;LOOP IF SELECTED
     044034  104406                                                               TRAP    C$CLP1
8335
8336                               ;*************************************************************************
8337                               ;
8338                               ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
8339                               ;
8340                               ;*************************************************************************
8341
8342 044036  013701  045756                MOV     T26BFR+6,R1             ;PICK UP XST0
8343 044042  010102                        MOV     R1,R2                   ;SET UP EXPECTED
8344 044044  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
8345 044050  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
8346 044052  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
8347 044054  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8351 044060                                ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     044060  104456                                                               TRAP    C$ERHRD
     044062  000506                                                               .WORD   326
     044064  047125                                                               .WORD   T26BOT
     044066  016360                                                               .WORD   EXPREC
8352 044070                        40$:    CKLOOP                          ;LOOP IF SELECTED
     044070  104406                                                               TRAP    C$CLP1
8353 044072  013737  003072  046062        MOV     FREE,T26RB              ;STARTING WRITE BUFFER ADDRESS
8354
8355                               ;*************************************************************************
8356                               ;
8357                               ;WRITE DATA,CVC=1,ACK COMMAND
8358                               ;
8359                               ;*************************************************************************
8360
8361 044100  012737  140005  046060        MOV     #140005,T26PKT          ;WRITE DATA,CVC=1,ACK COMMAND
```

```
8362 044106  012704  046060                    MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
8363 044112  012737  000400  046066  65$:      MOV     #256.,T26SZ             ;SET UP RECORD SIZE IN PACKET
8364 044120  013777  046106  136744            MOV     T26CNT,@FREE            ;MOVE TAPE RECORD NUMBER TO BUFFER
8365 044126  062737  000001  046106            ADD     #1,T26CNT               ;NUMBER READY FOR NEXT RECORD
8366 044134  010465  177776                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
8367 044140  004737  017134                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
8368 044144  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
8369 044150  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
8370 044154  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
8371 044156  001406                            BEQ     75$                     ;BR, IF OK
8372 044160  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8376                                                                           ;SOFT ERROR GENERATED BECAUSE THE
8377                                                                           ;WRITE COMMAND IS NOT BEING CHECKED
8378                                                                           ;HERE. IT WAS CHECKED IN LEAH2
8379 044164                                    ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     044164  104457                                                                    TRAP    C$ERSOFT
     044166  000507                                                                    .WORD   327
     044170  005011                                                                    .WORD   WRTERR
     044172  011710                                                                    .WORD   PKTSSR
8380 044174                            75$:    CKLOOP                          ;LOOP IF SELECTED
     044174  104406                                                                    TRAP    C$CLP1
8381 044176  022737  000013  046106              CMP     #11.,T26CNT             ;CHECK NUMBER OF RECORDS WRITTEN
8382 044204  001401                            BEQ     120$                    ;BR, IF AT END OF WRITE SEQUENCE
8383 044206  000741                            BR      65$                     ;WRITE MORE RECORDS
8384 044210                            120$:
8385 044210  005037  046106                    CLR     T26CNT                  ;SET RECORD COUNTER BACK TO ZERO
8386
8387                                           ;*****************************************************************
8388                                           ;
8389                                           ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
8390                                           ;
8391                                           ;*****************************************************************
8392
8393 044214  004737  010444                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
8394 044220  103411                            BCS     130$                    ;BR, IF NO PROBLEM
8395 044222  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR
8396 044226  010004                            MOV     R0,R4                   ;PACKET ADDRESS SET UP
8397 044230  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8401 044234                                    ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     044234  104456                                                                    TRAP    C$ERHRD
     044236  000510                                                                    .WORD   328
     044240  047414                                                                    .WORD   T26RWN
     044242  011710                                                                    .WORD   PKTSSR
8402 044244                            130$:   CKLOOP                          ;LOOP IF SELECTED
     044244  104406                                                                    TRAP    C$CLP1
8403
8404                                           ;*****************************************************************
8405                                           ;
8406                                           ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
8407                                           ;
8408                                           ;*****************************************************************
8409
8410 044246  013701  045756                    MOV     T26BFR+6,R1             ;PICK UP XST0
8411 044252  010102                            MOV     R1,R2                   ;SET UP EXPECTED
8412 044254  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
8413 044260  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
8414 044262  001406                            BEQ     140$                    ;BR, IF EQUAL (OK)
```

```
8415 044264  004737  020116                JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
8419 044270                                ERRHRD  ERRNO,T26BOT,EXPREC      ;TAPE NOT AT BOT AFTER REWIND
     044270  104456                                                                TRAP    C$ERHRD
     044272  000511                                                                .WORD   329
     044274  047125                                                                .WORD   T26BOT
     044276  016360                                                                .WORD   EXPREC
8420 044300                         140$:   CKLOOP                           ;LOOP IF SELECTED
     044300  104406                                                                TRAP    C$CLP1
8421 044302  012703  046076                MOV     #T26RN,R3                ;COMMAND BUFFER ADDRESS
8422 044306  012737  177376  046062  150$:  MOV     #177376,T26RB            ;STARTING READ BUFFER ADDRESS
8423 044314  012737  000077  046064        MOV     #000077,T26RB+2          ;SET UP HIGH ORDER ADDRESS BITS
8424
8425                                ;*************************************************************************
8426                                ;
8427                                ;REREAD DATA,IE,ACK, OPP COMMAND
8428                                ;
8429                                ;*************************************************************************
8430
8431 044322  011337  046060                MOV     (R3),T26PK3              ;REREAD DATA,IE,ACK, OPP COMMAND
8432 044326  012704  046060        165$:   MOV     #T26PK3,R4               ;SET UP R4 WITH PACKET ADDRESS
8433 044332  012737  000400  046066        MOV     #256.,T26SZ              ;SET UP RECORD SIZE IN PACKET
8434 044340  010465  177776                MOV     R4,TSDB(R5)              ;ISSUE COMMAND
8435 044344  004737  017134                JSR     PC,WAITF                 ;WAIT FOR SSR TO SET
8436 044350  016501  000000                MOV     TSSR(R5),R1              ;GET TSSR CONTENTS
8437 044354  012702  104210                MOV     #SSR!NXM!SC!BIT3,R2      ;SET UP EXPECTED
8438 044360  020102                        CMP     R1,R2                    ;ARE THEY EQUAL
8439 044362  001414                        BEQ     170$                     ;BR, IF OK
8440 044364  031327  001000                BIT     (R3),#BIT9               ;CHECK FOR A READ COMMAND
8441 044370  001403                        BEQ     168$                     ;BR, IF IT WAS A READ COMMAND
8442 044372  030127  000002                BIT     R1,#BIT1                 ;WAS BIT1 SET
8443 044376  001006                        BNE     170$                     ;BR, IF REREAD AND BIT1 SET
8444 044400                         168$:
8445 044400  004737  020116                JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
8449 044404                                ERRHRD  ERRNO,T26RRF,PKTSSR      ;TSSR INCORRECT AFTER REREAD DATA
     044404  104456                                                                TRAP    C$ERHRD
     044406  000512                                                                .WORD   330
     044410  046335                                                                .WORD   T26RRF
     044412  011710                                                                .WORD   PKTSSR
8450 044414                         170$:   CKLOOP                           ;LOOP IF SELECTED
     044414  104406                                                                TRAP    C$CLP1
8451
8452                                ;*************************************************************************
8453                                ;
8454                                ;READ DATA, ACK,CVC=1 COMMAND
8455                                ;
8456                                ;*************************************************************************
8457
8458 044416  012737  140001  046060        MOV     #140001,T26PK3           ;READ DATA, ACK,CVC=1 COMMAND
8459 044424  012737  000400  046066        MOV     #256.,T26SZ              ;SET SIZE INTO PACKET
8460 044432  005037  046064                CLR     T26RB+2                  ;CLEAR OUT HIGH ADDRESS BITS
8461 044436  013737  003072  046062        MOV     FREE,T26RB               ;GIVE READ A GOOD BUFFER
8462 044444  010465  177776                MOV     R4,TSDB(R5)              ;ISSUE READ DATA COMMAND
8463 044450  004737  017134                JSR     PC,WAITF                 ;WAIT FOR SSR
8464 044454  016501  000000                MOV     TSSR(R5),R1              ;PICK UP THE TSSR
8465 044460  012702  000200                MOV     #SSR,R2                  ;SET UP EXPECTED
8466 044464  020102                        CMP     R1,R2                    ;IS THE TSSR OK
8467 044466  001406                        BEQ     180$                     ;BR, IF TSSR OK (GOOD)
```

```
8468 044470  004737  020116                JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
8472 044474                                ERRHRD  ERRNO,RDERR,PKTSSR       ;READ DATA COMMAND FAILED
     044474  104456                                                          TRAP    C$ERHRD
     044476  000513                                                          .WORD   331
     044500  005104                                                          .WORD   RDERR
     044502  011710                                                          .WORD   PKTSSR
8473 044504                        180$:   CKLOOP                           ;LOOP IF SELECTED
     044504  104406                                                          TRAP    C$CLP1
8474 044506  017701  136360                MOV     @FREE,R1                 ;FIRST WORD FROM READ BUFFER
8475 044512  012702  000001                MOV     #1,R2                    ;SET UP EXPECTED
8476 044516  020102                        CMP     R1,R2                    ;IS TAPE POSITION CORRECT
8477 044520  001406                        BEQ     190$                     ;KEEP GOING POSITION OK
8478 044522  004737  020116                JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
8482 044526                                ERRHRD  ERRNO,T26WNG,EXPREC      ;TAPE POSITION INCORRECT
     044526  104456                                                          TRAP    C$ERHRD
     044530  000514                                                          .WORD   332
     044532  046116                                                          .WORD   T26WNG
     044534  016360                                                          .WORD   EXPREC
8483 044536                        190$:   CKLOOP
     044536  104406                                                          TRAP    C$CLP1
8484
8485                               ;*************************************************************************
8486                               ;
8487                               ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
8488                               ;
8489                               ;*************************************************************************
8490
8491 044540  004737  010444                JSR     PC,REWIND                ;CALL TAPE REWIND COMMAND
8492 044544  103411                        BCS     194$                     ;BR, IF NO PROBLEM
8493 044546  016501  000000                MOV     TSSR(R5),R1              ;GET TSSR
8494 044552  010004                        MOV     R0,R4                    ;PACKET ADDRESS SET UP
8495 044554  004737  020116                JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
8499 044560                                ERRHRD  ERRNO,T26RWN,PKTSSR      ;REWIND NOT ACCEPTED
     044560  104456                                                          TRAP    C$ERHRD
     044562  000515                                                          .WORD   333
     044564  047414                                                          .WORD   T26RWN
     044566  011710                                                          .WORD   PKTSSR
8500 044570                        194$:   CKLOOP                           ;LOOP IF SELECTED
     044570  104406                                                          TRAP    C$CLP1
8501
8502                               ;*************************************************************************
8503                               ;
8504                               ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
8505                               ;
8506                               ;*************************************************************************
8507
8508 044572  013701  045756                MOV     T26BFR+6,R1              ;PICK UP XST0
8509 044576  010102                        MOV     R1,R2                    ;SET UP EXPECTED
8510 044600  052702  000002                BIS     #BIT1,R2                 ;SET BOT BIT IN EXPECTED
8511 044604  020102                        CMP     R1,R2                    ;DOES EXP = REC'D
8512 044606  001406                        BEQ     196$                     ;BR, IF EQUAL (OK)
8513 044610  004737  020116                JSR     PC,FATCHK                ;INC AND CHECK FOR MORE THAN 25 ERRORS
8517 044614                                ERRHRD  ERRNO,T26BOT,EXPREC      ;TAPE NOT AT BOT AFTER REWIND
     044614  104456                                                          TRAP    C$ERHRD
     044616  000516                                                          .WORD   334
     044620  047125                                                          .WORD   T26BOT
     044622  016360                                                          .WORD   EXPREC
```

```
8518 044624                          196$:   CKLOOP                          ;LOOP IF SELECTED
     044624  104406                                                                  TRAP    C$CLP1
8519 044626  010302                          MOV     R3,R2                   ;SAVE R3 FOR A MOMENT
8520
8521                                 ;*************************************************************
8522                                 ;
8523                                 ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
8524                                 ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
8525                                 ;
8526                                 ;*************************************************************
8527
8528 044630  012703  000001                MOV     #1,R3                   ;SPACE ONE RECORD
8529 044634  004737  010144                JSR     PC,SPACE                        ;CALL SPACE ROUTINE
8530 044640  010203                        MOV     R2,R3                   ;RESTORE R3
8531 044642  005723                        TST     (R3)+                   ;BUMP COUNTER
8532 044644  021327  177777                CMP     (R3),#177777            ;END OF COMMAND BUFFER YET
8533 044650  001216                        BNE     150$                    ;MORE COMMANDS KEEP GOING
8534 044652                          200$:
8535 044652                                ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     044652                                                                     L10063:
     044652  104403                                                                  TRAP    C$ESUB
8536 044654  023727  002170  000031        CMP     FATFLG,#25.                     ;IS ERROR COUNT AT 25
8537 044662  002402                        BLT     999$                    ;BR, IF LESS THAN 25
8538 044664  004737  020170                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
8539 044670                          999$:
```

```
                                ;*
                                ;
                                ;TEST 2, SUBTEST 14
                                ;
                                ;VERIFIES THAT REREAD PREVIOUS WITH OPP=0 (SPACE
                                ;REVERSE, READ FORWARD) AND REREAD PREVIOUS WITH OPP=1
                                ;(READ REVERSE, SPACE FORWARD) ISSUED WHEN THE TAPE
                                ;POSITIONED AT BOT CAUSE FUNCTION REJECT TERMINATION
                                ;WITH THE NONEXECUTABLE FUNCTION (NEF) ERROR BIT SET.
                                ;
                                ;
                                ;
                                ;-
8554 044670                             BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     044670                                                                     T2.14:
     044670  104402                                                                TRAP    C$BSUB
8555 044672  005003                     CLR     R3                      ;CLEAR TEST COUNTER
8556 044674  004737  050650           JSR     PC,T26REST              ;SET COMMAND PACKET
8557 044700  004737  050742           JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
8558 044704  004737  051004           JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET
8559
8560                                ;*************************************************************************
8561                                ;
8562                                ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
8563                                ;
8564                                ;*************************************************************************
8565
8566 044710  004737  016660           JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
8567 044714  103407                     BCS     20$                     ;BR IF INIT WAS OK
8568 044716  004737  020116           JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8572 044722  010001                     MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
8573 044724                             ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     044724  104455                                                                TRAP    C$ERDF
     044726  000517                                                                .WORD   335
     044730  003550                                                                .WORD   SFIERR
     044732  011676                                                                .WORD   SFIMSG
8574 044734                     20$:
8575
8576 044734  012704  045730           MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
8577
8578                                ;*************************************************************************
8579                                ;
8580                                ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
8581                                ;
8582                                ;*************************************************************************
8583
8584 044740  004737  010342           JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
8585 044744  103407                     BCS     25$                     ;BR, IF COMMAND ISSUED OK
8586 044746  004737  020116           JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8590 044752  010001                     MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
8591 044754                             ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     044754  104456                                                                TRAP    C$ERHRD
     044756  000520                                                                .WORD   336
     044760  004754                                                                .WORD   WRTMSG
     044762  011676                                                                .WORD   SFIMSG
8592 044764                     25$:    CKLOOP                          ;LOOP IF SELECTED
     044764  104406                                                                TRAP    C$CLP1
```

```
8593
8594                                    ;*****************************************************************
8595                                    ;
8596                                    ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
8597                                    ;
8598                                    ;*****************************************************************
8599
8600 044766  004737  010444      26$:    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
8601 044772  016501  000000              MOV     TSSR(R5),R1             ;GET TSSR
8602 044776  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
8603 045002  103407                      BCS     30$                     ;BR, IF NO PROBLEM
8604 045004  010004                      MOV     R0,R4                   ;PACKET ADDRESS SET UP
8605 045006  004737  020116              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8609 045012                              ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     045012  104456                                                              TRAP    C$ERHRD
     045014  000521                                                              .WORD   337
     045016  047414                                                              .WORD   T26RWN
     045020  011710                                                              .WORD   PKTSSR
8610 045022                      30$:    CKLOOP                          ;LOOP IF SELECTED
     045022  104406                                                              TRAP    C$CLP1
8611
8612                                    ;*****************************************************************
8613                                    ;
8614                                    ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
8615                                    ;
8616                                    ;*****************************************************************
8617
8618 045024  013701  045756              MOV     T26BFR+6,R1             ;PICK UP XST0
8619 045030  010102                      MOV     R1,R2                   ;SET UP EXPECTED
8620 045032  052702  000002              BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
8621 045036  020102                      CMP     R1,R2                   ;DOES EXP = REC'D
8622 045040  001406                      BEQ     40$                     ;BR, IF EQUAL (OK)
8623 045042  004737  020116              JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8627 045046                              ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     045046  104456                                                              TRAP    C$ERHRD
     045050  000522                                                              .WORD   338
     045052  047125                                                              .WORD   T26BOT
     045054  016360                                                              .WORD   EXPREC
8628 045056                      40$:    CKLOOP                          ;LOOP IF SELECTED
     045056  104406                                                              TRAP    C$CLP1
8629 045060  012737  000400  046066      MOV     #256.,T26SZ             ;SET UP RECORD SIZE IN PACKET
8630 045066  013737  003072  046062      MOV     FREE,T26RB              ;ADDRESS OF READ BUFFER
8631 045074  005703                      TST     R3                      ;CHECK NUMBER OF TIMES THROUGH HERE
8632 045076  001404                      BEQ     50$                     ;BR, IF FIRST TIME THROUGH HERE
8633
8634                                    ;*****************************************************************
8635                                    ;
8636                                    ;REREAD,CVC=1,ACK COMMAND
8637                                    ;
8638                                    ;*****************************************************************
8639
8640 045100  012737  161001  046060      MOV     #161001,T26PK3          ;REREAD,CVC=1,ACK COMMAND
8641 045106  000403                      BR      55$                     ;SKIP NEXT COMMAND
8642
8643                                    ;*****************************************************************
8644                                    ;
8645                                    ;REREAD,ACK COMMAND
```

```
8646                                    ;
8647                                    ;*************************************************************************
8648
8649 045110  012737  141001  046060  50$:    MOV     #141001,T26PK3          ;REREAD,ACK COMMAND
8650 045116                             55$:
8651 045116  012704  046060                    MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
8652 045122                             65$:
8653 045122  010465  177776                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
8654 045126  004737  017134                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
8655 045132  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
8656 045136  012702  100206                    MOV     #SSR!SC!BIT1!BIT2,R2    ;SET UP EXPECTED
8657 045142  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
8658 045144  001406                            BEQ     75$                     ;BR, IF OK
8659 045146  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8663 045152                                    ERRHRD  ERRNO,T26WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     045152  104456                                                                    TRAP    C$ERHRD
     045154  000523                                                                    .WORD   339
     045156  047053                                                                    .WORD   T26WDE
     045160  011710                                                                    .WORD   PKTSSR
8664 045162                             75$:    CKLOOP                          ;LOOP IF SELECTED
     045162  104406                                                                    TRAP    C$CLP1
8665
8666                                    ;*************************************************************************
8667                                    ;
8668                                    ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
8669                                    ;
8670                                    ;*************************************************************************
8671
8672 045164  013701  045756                    MOV     T26BFR+6,R1             ;GET XST0 STATUS WORD
8673 045170  010102                            MOV     R1,R2                   ;SET UP EXPECTED
8674 045172  052702  002000                    BIS     #BIT10,R2               ;SET THE NEF BIT
8675 045176  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
8676 045200  001406                            BEQ     170$                    ;BR, IF EQUAL (GOOD)
8677 045202  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8681 045206                                    ERRHRD  ERRNO,T26NEF,EXPREC     ;NEF SHOULD BE SET
     045206  104456                                                                    TRAP    C$ERHRD
     045210  000524                                                                    .WORD   340
     045212  046204                                                                    .WORD   T26NEF
     045214  016360                                                                    .WORD   EXPREC
8682 045216                             170$:
8683 045216  005103                            COM     R3                      ;RESET THE SWITCH
8684 045220  001262                            BNE     26$                     ;BR, IF FIRST TIME THROUGH HERE
8685 045222                                    ENDSUB
     045222                                                                         L10064:
     045222  104403                                                                    TRAP    C$ESUB
8686 045224  023727  002170  000031            CMP     FATFLG,#25.                     ;IS ERROR COUNT AT 25
8687 045232  002402                            BLT     999$                            ;BR, IF LESS THAN 25
8688 045234  004737  020170                    JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
8689 045240                             999$:
```

```
                                ;*
                                ;
                                ;TEST 2, SUBTEST 15
                                ;
                                ;VERIFIES THAT REREAD PREVIOUS WITH OPP=1 (SPACE
                                ;REVERSE, READ FORWARD) AND REREAD PREVIOUS WITH OPP=1
                                ;(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.
                                ;
                                ;
                                ;
                                ;-
045240                                  BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
045240                                                                                  T2.15:
045240  104402                                                                                  TRAP    C$BSUB
045242  005037  046110                    CLR     T26CNU                  ;CLEAR OUT COUNTER
045246  004737  050650                    JSR     PC,T26REST              ;SET COMMAND PACKET
045252  004737  050742                    JSR     PC,T26RT2               ;SET UP OTHER COMMAND PACKET
045256  004737  051004                    JSR     PC,T26RT3               ;SET UP OTHER COMMAND PACKET

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

045262  004737  016660                    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
045266  103407                            BCS     20$                     ;BR IF INIT WAS OK
045270  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
045274  010001                            MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
045276                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
045276  104455                                                                          TRAP    C$ERDF
045300  000525                                                                          .WORD   341
045302  003550                                                                          .WORD   SFIERR
045304  011676                                                                          .WORD   SFIMSG
045306                          20$:

045306  012704  045730                    MOV     #T26PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

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

045312  004737  010342                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
045316  103407                            BCS     25$                     ;BR, IF COMMAND ISSUED OK
045320  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
045324  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
045326                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
045326  104456                                                                          TRAP    C$ERHRD
045330  000526                                                                          .WORD   342
045332  004754                                                                          .WORD   WRTMSG
045334  011676                                                                          .WORD   SFIMSG
045336                          25$:    CKLOOP                          ;LOOP IF SELECTED
```

```
     045336  104406                                                                    TRAP    C$CLP1
8744
8745                           ;*****************************************************************
8746                           ;
8747                           ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
8748                           ;
8749                           ;*****************************************************************
8750
8751 045340  004737  010444    26$:    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
8752 045344  016501  000000            MOV     TSSR(R5),R1             ;GET TSSR
8753 045350  012702  000200            MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
8754 045354  103407                    BCS     30$                     ;BR, IF NO PROBLEM
8755 045356  010004                    MOV     R0,R4                   ;PACKET ADDRESS SET UP
8756 045360  004737  020116            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8760 045364                            ERRHRD  ERRNO,T26RWN,PKTSSR     ;REWIND NOT ACCEPTED
     045364  104456                                                    TRAP    C$ERHRD
     045366  000527                                                    .WORD   343
     045370  047414                                                    .WORD   T26RWN
     045372  011710                                                    .WORD   PKTSSR
8761 045374                    30$:    CKLOOP                          ;LOOP IF SELECTED
     045374  104406                                                    TRAP    C$CLP1
8762
8763                           ;*****************************************************************
8764                           ;
8765                           ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
8766                           ;
8767                           ;*****************************************************************
8768
8769 045376  013701  045756            MOV     T26BFR+6,R1             ;PICK UP XSTO
8770 045402  010102                    MOV     R1,R2                   ;SET UP EXPECTED
8771 045404  052702  000002            BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
8772 045410  020102                    CMP     R1,R2                   ;DOES EXP = REC'D
8773 045412  001406                    BEQ     40$                     ;BR, IF EQUAL (OK)
8774 045414  004737  020116            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8778 045420                            ERRHRD  ERRNO,T26BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     045420  104456                                                    TRAP    C$ERHRD
     045422  000530                                                    .WORD   344
     045424  047125                                                    .WORD   T26BOT
     045426  016360                                                    .WORD   EXPREC
8779 045430                    40$:
8780
8781                           ;*****************************************************************
8782                           ;
8783                           ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
8784                           ;BIT 15 SETS DIRECTION - 0=FORWARD     1=REVERSE
8785                           ;
8786                           ;*****************************************************************
8787
8788 045430  012703  000001            MOV     #000001,R3              ;SET UP SPACE FORWARD 1 RECORD
8789 045434  004737  010144            JSR     PC,SPACE                ;ISSUE SPACE COMMAND
8790 045440  103411                    BCS     75$                     ;BR, IF OK
8791 045442  016501  000000            MOV     TSSR(R5),R1             ;GET STATUS DATA
8792 045446  010004                    MOV     R0,R4                   ;GET PACKET ADDRESS
8793 045450  004737  020116            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
8797 045454                            ERRHRD  ERRNO,T26WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     045454  104456                                                    TRAP    C$ERHRD
     045456  000531                                                    .WORD   345
```

```
      045460  047053                                                        .WORD   T26WDE
      045462  011710                                                        .WORD   PKTSSR
 8798 045464                  75$:    CKLOOP                  ;LOOP IF SELECTED
      045464  104406                                                        TRAP    C$CLP1
 8799
 8800                         ;*************************************************************************
 8801                         ;
 8802                         ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
 8803                         ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
 8804                         ;
 8805                         ;*************************************************************************
 8806
 8807 045466  012703  100001         MOV     #100001,R3              ;SET SPACE REVERSE 1 RECORD
 8808 045472  004737  010144         JSR     PC,SPACE                ;ISSUE COMMAND
 8809 045476  103411                 BCS     175$                    ;GO ON IF ALL IS WELL
 8810 045500  016501  000000         MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 8811 045504  010004                 MOV     R0,R4                   ;SET UP EXPECTED (PACKET CONTENTS)
 8812 045506  004737  020116         JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 8816 045512                         ERRHRD  ERRNO,T26WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      045512  104456                                                        TRAP    C$ERHRD
      045514  000532                                                        .WORD   346
      045516  047053                                                        .WORD   T26WDE
      045520  011710                                                        .WORD   PKTSSR
 8817 045522                  175$:   CKLOOP                  ;LOOP IF SELECTED
      045522  104406                                                        TRAP    C$CLP1
 8818 045524  013737  003072  046062         MOV     FREE,T26RB              ;ADDRESS OF BUFFER
 8819 045532  005737  046110         TST     T26CNU                  ;CHECK FOR TIMES THROUGH HERE
 8820 045536  001404                 BEQ     176$                    ;BR, IF FIRST TIME THROUGH
 8821
 8822                         ;*************************************************************************
 8823                         ;
 8824                         ;REREAD (PREVIOUS),IE,ACK,OPP=1 CMD.
 8825                         ;
 8826                         ;*************************************************************************
 8827
 8828 045540  012737  161001  046060         MOV     #161001,T26PK3          ;REREAD (PREVIOUS),IE,ACK,OPP=1 CMD.
 8829 045546  000403                 BR      178$                    ;SKIP NEXT COMMAND
 8830
 8831                         ;*************************************************************************
 8832                         ;
 8833                         ;REREAD ,ACK,OPP=1 COMMAND
 8834                         ;
 8835                         ;*************************************************************************
 8836
 8837 045550  012737  141001  046060  176$:   MOV     #141001,T26PK3          ;REREAD ,ACK,OPP=1 COMMAND
 8838 045556                         178$:
 8839 045556  012704  046060         MOV     #T26PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 8840 045562  010465  177776         MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 8841 045566  004737  017134         JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 8842 045572  016501  000000         MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 8843 045576  012702  100204         MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
 8844 045602  020102                 CMP     R1,R2                   ;ARE THEY EQUAL
 8845 045604  001406                 BEQ     180$                    ;BR, IF OK
 8846 045606  004737  020116         JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 8850 045612                         ERRHRD  ERRNO,T26WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      045612  104456                                                        TRAP    C$ERHRD
      045614  000533                                                        .WORD   347
```

```
     045616  047053                                                                   .WORD   T26WDE
     045620  011710                                                                   .WORD   PKTSSR
     045622                          180$:   CKLOOP                       ;LOOP IF SELECTED
     045622  104406                                                                   TRAP    C$CLP1
     045624  013701  045764                  MOV     T26BFR+14,R1         ;GET XST3 STATUS WORD
     045630  010102                          MOV     R1,R2                ;SET UP EXPECTED
     045632  052702  000001                  BIS     #BIT0,R2             ;SET THE NEF BIT
     045636  020102                          CMP     R1,R2                ;ARE THEY EQUAL
     045640  001406                          BEQ     190$                 ;BR, IF EQUAL (GOOD)
     045642  004737  020116                  JSR     PC,FATCHK            ;INC AND CHECK FOR MORE THAN 25 ERRORS
     045646                                  ERRHRD  ERRNO,T26NEF,EXPREC  ;NEF SHOULD BE SET
     045646  104456                                                                   TRAP    C$ERHRD
     045650  000534                                                                   .WORD   348
     045652  046204                                                                   .WORD   T26NEF
     045654  016360                                                                   .WORD   EXPREC
     045656                          190$:
     045656  005137  046110                  COM     T26CNU               ;SET SWITCH THE OTHER WAY
     045662  001226                          BNE     26$                  ;BR, IF FIRST TIME THROUGH
     045664                                  ENDSUB                       ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
     045664                                                                       L10065:
     045664  104403                                                                   TRAP    C$ESUB
     045666  023727  002170  000031          CMP     FATFLG,#25.                  ;IS ERROR COUNT AT 25
     045674  002402                          BLT     999$                         ;BR, IF LESS THAN 25
     045676  004737  020170                  JSR     PC,CKDROP                    ;TRY TO DROP THE UNIT
     045702                          999$:
                                     ;
                                     ;
                                     ;
     045702  004737  017372                  JSR     PC,TSTLOOP           ;DO WE NEED TO ITERATE TEST
     045706  103002                          BCC     163$                 ;BR, IF NO LOOP REQUIRED
     045710  000137  031732                  JMP     T26LOOP              ;EXECUTE AGAIN
     045714                          163$:
     045714                                  EXIT    TST                  ;ALL DONE THIS TEST
     045714  104432                                                                   TRAP    C$EXIT
     045716  003116                                                                   .WORD   L10046-.
```

```
8879
8880
8881
8883 045720                             ;*
8885 045730                             ;LOCAL STORAGE FOR THIS TEST
8886 045730  014004                     ;*
8887 045732  045740             T26PACKET:      .BLKB   10-<.-TUV2A&7>
8888 045734  000000                             .WORD   14004           ;COMMAND PACKET FOR TEST
8889 045736  000012                             .WORD   T26DATA         ;WRITE CHARACTERISTICS COMMAND, WITH CVC=1, ACK
8890 045740                                     .WORD   0               ;ADDRESS OF CHARACTERISTICS BLOCK
8891 045740  045750                             .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
8892 045742  000000             T26DATA:                                ;CHARACTERISTICS DATA BLOCK
8893 045744  000024                             .WORD   T26BFR          ;ADDRESS OF MESSAGE BUFFER
8894 045746  000000                             .WORD   0
8895 045750                                     .WORD   20.             ;LENGTH OF MESSAGE BUFFER
8896                                            .WORD   0
8897                            T26BFR: .BLKW   25.                     ;MESSAGE BUFFER
8898                                    ;
8900 046032                             ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
8902 046040                             ;
8903 046040  100006             T26PK2:         .BLKB   10-<.-TUV2A&7>
8904 046042  046070                             .WORD   100006          ;WRITE SUB SYS MEM COMMAND, AND ACK
8905 046044  000000                             .WORD   T26BF2          ;ADDRESS OF SELECT BLOCK DATA
8906 046046  000006                             .WORD   0
8908 046050                                     .WORD   6.              ;SIZE OF DATA PACKET
8910 046060                                     .BLKB   10-<.-TUV2A&7>
8911 046060  140005             T26PK3:
8912 046062                                     .WORD   140005          ;REREAD COMMAND, CVC=1 AND ACK
8913 046062  003072             T26RB:
8914 046064  000000             T26WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
8915 046066  000000                             .WORD   0
8916                            T26SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
8917                                            .EVEN
8918 046070                                     ;
8919 046070     010             T26BF2:
8920 046071     200             T26BS0: .BYTE   10                      ;BSEL0 AREA
8921 046072  000000             T26BS1: .BYTE   200                     ;BSEL1 AREA
8922 046074  000000             T26S2:  .WORD   0                       ;SEL 2 AREA
8923                            T26S3:  .WORD   0                       ;DATA AREA
8924                                    ;
8925                                            .EVEN
8926                                    ;TAPE MOTION PACKET COMMAND VALUES
8927 046076  140001                     ;
8928 046100  141401             T26RN:  .WORD   140001                  ;READ DATA
8929 046102  161401                             .WORD   141401          ;REREAD NEXT OPP=0
8930 046104  177777                             .WORD   161401          ;REREAD NEXT OPP=1
8931                                            .WORD   177777          ;END OF DATA
8932 046106  000000                     ;
8933 046110  000000             T26CNT: .WORD   0                       ;TAPE RECORD COUNTER STORAGE AREA
8934 046112  000000             T26CNU: .WORD   0                       ;TAPE RECORD COUNTER STORAGE AREA
8935 046114  000000             T26RSZ: .WORD   0                       ;RECORD STORAGE SIZE  AREA
                                T26DLY: .WORD   0                       ;DELAY COUNTER AREA
```

```
8937
8938                                    ;+
8939                                    ;LOCAL TEXT MESSAGES FOR TEST
8940                                    ;-
8941
8942
8943 046116  124  141  160  T26WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
8944 046204  122  105  122  T26NEF: .ASCIZ  'REREAD PREVIOUS, At BOT, Failed To Set NEF (XSTO)'
8945 046266  124  123  123  T26RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
8946 046335  122  105  122  T26RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
8947 046432  122  105  122  T26RRG: .ASCIZ  'REREAD Previous (Read Reverse, Space Forward) Command Failed'
8948 046527  120  117  123  T26SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
8949 046611  122  111  102  T26LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
8950 046661  124  123  123  T26WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
8951 046736  111  154  154  T26LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
8952 047017  122  105  122  T26SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
8953 047053  124  123  123  T26WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA Command'
8954 047125  124  141  160  T26BOT: .ASCIZ  'Tape Not At BOT After REWIND Command'
8955 047172  104  141  164  T26DTA: .ASCIZ  'Data Written To Tape Not Equal To Data Read From Tape'
8956 047260  122  105  122  T26EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
8957 047337  124  123  123  T26TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
8958 047414  122  145  167  T26RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
8959 047463  122  101  115  T26RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
8960 047536  124  123  123  T26AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
8961 047605  104  162  151  T26OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
8962 047660  124  123  123  T26WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
8963 047750  124  123  123  T26WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
8964 050023  103  126  103  T26VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
8965 050076  124  123  102  T26BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
8966 050151  127  122  111  T26WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
8967 050240  122  145  141  T26LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XSTO'
8968 050322  122  145  141  T26LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
8969 050404  122  145  163  T26PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
8970 050472  122  145  141  T26TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
8971 050560  104  141  164  T26NEQ: .ASCIZ  'Data REREAD From Tape Not Correct, After SWB=1'
8972 050637  122  145  162  TST26ID:        .ASCIZ  'Rereads'
8973                              .EVEN
8974                                    ;+
8975                                    ;
8976                                    ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
8977                                    ;WRITE SUBSYSTEM MEMORY COMMAND
8978                                    ;
8979                                    ;-
8980
8981 050650                             T26REST:
8982 050650                                     SAVREG                          ;SAVE THE REGISTERS
8983 050654  012701  045730                     MOV     #T26PACKET,R1           ;START OF THE PACKET
8984 050660  012721  140004                     MOV     #140004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK, CVC=1
8985 050664  012721  045740                     MOV     #T26DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
8986 050670  005021                             CLR     (R1)+                   ;EXTENDED ADDRESS
8987 050672  012721  000012                     MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
8988 050676  012721  045750                     MOV     #T26BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
8989 050702  005021                             CLR     (R1)+
8990 050704  012721  000024                     MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
8991 050710  005021                             CLR     (R1)+
8992 050712  012711  000000                     MOV     #0,(R1)                 ;SELECT DRIVE ZERO (0)
8993 050716  012702  000030                     MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
```

```
 8994 050722  012762  177777  045750  64$:    MOV     #177777,T26BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
 8995 050730  005742                          TST     -(R2)                   ;NEXT LOCATION
 8996 050732  020227  000000                  CMP     R2,#0                   ;CHECK FOR END OF LOOP
 8997 050736  001371                          BNE     64$                     ;KEEP GOING UNTIL DONE
 8998 050740  000207                          RTS     PC                      ;RETURN
 8999
 9000
 9001 050742                          T26RT2:
 9002 050742                                  SAVREG                          ;SAVE THE REGISTERS
 9003 050746  012701  046040                  MOV     #T26PK2,R1              ;START OF THE PACKET
 9004 050752  012721  140006                  MOV     #140006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,CVC=1,
 9005 050756  012721  046070                  MOV     #T26BF2,(R1)+           ;ADDRESS OF DATA BLOCK
 9006 050762  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
 9007 050764  012721  000006                  MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
 9008 050770  005021                          CLR     (R1)+
 9009 050772  012701  046070                  MOV     #T26BF2,R1              ;POINT TO DATA SEL AREA
 9010 050776  005021                          CLR     (R1)+
 9011 051000  005011                          CLR     (R1)
 9012 051002  000207                          RTS     PC                      ;RETURN
 9013 051004                          T26RT3:
 9014 051004                                  SAVREG                          ;SAVE THE REGISTERS
 9015 051010  012701  046060                  MOV     #T26PK3,R1              ;START OF THE PACKET
 9016 051014  012721  000000                  MOV     #0,(R1)+                ;WRITE SUBSYSTEM MEM. WITH ACK,
 9017 051020  012721  000000                  MOV     #0,(R1)+                ;ADDRESS OF DATA BLOCK
 9018 051024  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
 9019 051026  012711  000000                  MOV     #0,(R1)         ;SIZE OF DATA BLOCK IN BYTES
 9020 051032  000207                          RTS     PC                      ;RETURN
 9021 051034                                  ENDTST
      051034                                                          L10046:
      051034  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
                                ;
                                ;
                                ;
                                ;-
                                        BGNTST
                                                                                T3::
                                        CLR     FATFLG                  ;CLEAR FATAL ERROR FLAG
                                        CLR     KTFLG           ;HOLD OFF KT11
                                        MOV     #EPRT2,EPRTSW           ;SECONDARY ERROR MESSAGE
                                        CLR     KTENABLE                ;TURN OFF KT11
                                        JSR     PC,KTOFF                ;TURN KT11 BACK OFF IF THERE
                                        MOV     #TST27ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
                                        JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
                                        MOV     #1,LOOPCNT              ;PERFORM 1 ITERATIONS
                                        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:
                                        BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
                                                                                        T3.1:
                                                                                                TRAP    C$BSUB
                                        JSR     PC,T27REST              ;SET COMMAND PACKET
                                        JSR     PC,T27RT2               ;SET UP OTHER COMMAND PACKET
                                        JSR     PC,T27RT3               ;SET UP OTHER COMMAND PACKET
                                        MOV     #65000.,T27DLY          ;SET UP DELAY COUNTER
                                        CLR     T27CNT                  ;CLEAR COUNTER

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

                                10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
                                        BCS     20$                     ;BR IF INIT WAS OK
                                        DELAY   250                     ;DELAY ABOUT .25 SEC
                                                                                MOV     #250.,(PC)+
                                                                                .WORD   0
```

```
        051152  013727  002116                                                  MOV     L$DLY,(PC)+
        051156  000000                                                          .WORD   0
        051160  005367  177772                                                  DEC     -6(PC)
        051164  001375                                                          BNE     .-4
        051166  005367  177756                                                  DEC     -22(PC)
        051172  001367                                                          BNE     .-20
 9079   051174  005337  055702          DEC     T27DLY                  ;BUMP COUNTER
 9080   051200  001356                  BNE     10$                     ;BR, IF COUNTER NOT DONE
 9081   051202  004737  020116          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9085   051206  010001                  MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 9086   051210                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
        051210  104455                                                          TRAP    C$ERDF
        051212  000455                                                          .WORD   301
        051214  003550                                                          .WORD   SFIERR
        051216  011676                                                          .WORD   SFIMSG
 9087   051220                  20$:
 9088   051220  012704  055520          MOV     #T27PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 9089
 9090                           ;*************************************************************************
 9091                           ;
 9092                           ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
 9093                           ;
 9094                           ;*************************************************************************
 9095
 9096   051224  004737  010342          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 9097   051230  103407                  BCS     25$                     ;BR, IF COMMAND ISSUED OK
 9098   051232  004737  020116          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9102   051236  010001                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 9103   051240                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        051240  104456                                                          TRAP    C$ERHRD
        051242  000456                                                          .WORD   302
        051244  004754                                                          .WORD   WRTMSG
        051246  011676                                                          .WORD   SFIMSG
 9104   051250                  25$:    CKLOOP                          ;LOOP IF SELECTED
        051250  104406                                                          TRAP    C$CLP1
 9105
 9106                           ;*************************************************************************
 9107                           ;
 9108                           ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
 9109                           ;
 9110                           ;*************************************************************************
 9111
 9112   051252  004737  010444          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 9113   051256  103407                  BCS     30$                     ;BR, IF NO PROBLEM
 9114   051260  010004                  MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
 9115   051262  004737  020116          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9119   051266                          ERRHRD  ERRNO,T27RWN,PKTSSR     ;REWIND NOT ACCEPTED
        051266  104456                                                          TRAP    C$ERHRD
        051270  000457                                                          .WORD   303
        051272  057055                                                          .WORD   T27RWN
        051274  011710                                                          .WORD   PKTSSR
 9120   051276                  30$:    CKLOOP                          ;LOOP IF SELECTED
        051276  104406                                                          TRAP    C$CLP1
 9121
 9122                           ;*************************************************************************
 9123                           ;
 9124                           ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (xSTO)
```

```
9125                                    ;
9126                                    ;*****************************************************************************
9127
9128 051300  013701  055546                    MOV     T27BFR+6,R1             ;PICK UP XSTO
9129 051304  010102                            MOV     R1,R2                   ;SET UP EXPECTED
9130 051306  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
9131 051312  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
9132 051314  001406                            BEQ     10$                     ;BR, IF EQUAL (OK)
9133 051316  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
9137 051322                                    ERRHRD  ERRNO,T27BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     051322  104456                                                                    TRAP    C$ERHRD
     051324  000460                                                                    .WORD   304
     051326  056551                                                                    .WORD   T27BOT
     051330  016360                                                                    .WORD   EXPREC
9138 051332                            40$:    CKLOOP                          ;LOOP IF SELECTED
     051332  104406                                                                    TRAP    C$CLP1
9139 051334  012737  000400  055656              MOV     #256.,T27SZ             ;SET UP RECORD SIZE
9140 051342  013737  003072  055652              MOV     FREE,T27WB              ;ADDRESS OF WRITE BUFFER
9141
9142                                    ;*****************************************************************************
9143                                    ;
9144                                    ;WRITE DATA RETRY,ACK,CVC=1 COMMAND
9145                                    ;
9146                                    ;*****************************************************************************
9147
9148 051350  012737  141005  055650              MOV     #141005,T27PK3          ;WRITE DATA RETRY,ACK,CVC=1 COMMAND
9149 051356  012704  055650                    MOV     #T27PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
9150 051362  010465  177776                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
9151 051366  004737  017134                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
9152 051372  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
9153 051376  012702  100206                    MOV     #SSR!SC!BIT1!BIT2,R2    ;SET UP EXPECTED
9154 051402  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
9155 051404  001406                            BEQ     75$                     ;BR, IF OK
9156 051406  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
9160 051412                                    ERRHRD  ERRNO,T27WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     051412  104456                                                                    TRAP    C$ERHRD
     051414  000461                                                                    .WORD   305
     051416  056462                                                                    .WORD   T27WDE
     051420  011710                                                                    .WORD   PKTSSR
9161 051422                            75$:    CKLOOP                          ;LOOP IF SELECTED
     051422  104406                                                                    TRAP    C$CLP1
9162
9163                                    ;*****************************************************************************
9164                                    ;
9165                                    ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
9166                                    ;
9167                                    ;*****************************************************************************
9168
9169 051424  013701  055546                    MOV     T27BFR+6,R1             ;GET XSTO STATUS WORD
9170 051430  010102                            MOV     R1,R2                   ;SET UP EXPECTED
9171 051432  052702  002000                    BIS     #BIT10,R2               ;SET THE NEF BIT
9172 051436  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
9173 051440  001406                            BEQ     170$                    ;BR, IF EQUAL (GOOD)
9174 051442  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
9178 051446                                    ERRHRD  ERRNO,T27NEF,EXPREC     ;NEF SHOULD BE SET
     051446  104456                                                                    TRAP    C$ERHRD
     051450  000462                                                                    .WORD   306
```

```
                051452  060221                                                          .WORD   T27NEF
                051454  016360                                                          .WORD   EXPREC
        9179    051456                          170$:
        9180    051456                                  ENDSUB
                051456                                                          L10067:
                051456  104403                                                          TRAP    C$ESUB
        9181    051460  023727  002170  000031          CMP     FATFLG,#25.     ;IS ERROR COUNT AT 25
        9182    051466  002402                          BLT     999$            ;BR, IF LESS THAN 25
        9183    051470  004737  020170                  JSR     PC,CKDROP       ;TRY TO DROP THE UNIT
        9184    051474                          999$:
```

```
                                ;+
                                ;
                                ;TEST 3, SUBTEST 2
                                ;
                                ;VERIFIES THAT WRITE DATA RETRY COMMAND ISSUED WHILE
                                ;THE TAPE IS POSITIONED BEFORE THE FIRST RECORD ON
                                ;TAPE (BUT NOT AT BOT) RESULTS IN TAPE STATUS ALERT
                                ;TERMINATION, WITH THE REVERSE INTO BOT (RIB) STATUS
                                ;ERROR BIT SET.
                                ;
                                ;
                                ;
                                ;-
051474                                  BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
051474                                                                                      T3.2:
051474  104402                                                                              TRAP    C$BSUB
051476  004737  060654                    JSR     PC,T27REST              ;SET COMMAND PACKET
051502  004737  060746                    JSR     PC,T27RT2               ;SET UP OTHER COMMAND PACKET
051506  004737  061010                    JSR     PC,T27RT3               ;SET UP OTHER COMMAND PACKET

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

051512  004737  016660                    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
051516  103407                            BCS     20$                     ;BR IF INIT WAS OK
051520  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
051524  010001                            MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
051526                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
051526  104455                                                                              TRAP    C$ERDF
051530  000463                                                                              .WORD   307
051532  003550                                                                              .WORD   SFIERR
051534  011676                                                                              .WORD   SFIMSG
051536                          20$:
051536  012704  055520                    MOV     #T27PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

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

051542  004737  010342                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
051546  103407                            BCS     25$                     ;BR, IF COMMAND ISSUED OK
051550  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
051554  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
051556                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
051556  104456                                                                              TRAP    C$ERHRD
051560  000464                                                                              .WORD   308
051562  004754                                                                              .WORD   WRTMSG
051564  011676                                                                              .WORD   SFIMSG
051566                          25$:    CKLOOP                          ;LOOP IF SELECTED
051566  104406                                                                              TRAP    C$CLP1

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

```
                                        ;
                                        ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
                                        ;
                                        ;*************************************************************************
                                
051570  004737  010444                          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
051574  103411                                  BCS     26$                     ;BR, IF NO PROBLEM
051576  010004                                  MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
051600  016501  000000                          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
051604  004737  020116                          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
051610                                          ERRHRD  ERRNO,T27RWN,PKTSSR     ;REWIND NOT ACCEPTED
051610  104456                                                                          TRAP    C$ERHRD
051612  000465                                                                          .WORD   309
051614  057055                                                                          .WORD   T27RWN
051616  011710                                                                          .WORD   PKTSSR
051620                                  26$:    CKLOOP                          ;LOOP IF SELECTED
051620  104406                                                                          TRAP    C$CLP1
051622  012703  000400                          MOV     #256.,R3                        ;STARTING RECORD SIZE
051626  013737  003072  055652                  MOV     FREE,T27WB              ;STARTING WRITE BUFFER ADDRESS
                                
                                        ;*************************************************************************
                                        ;
                                        ;WRITE DATA,CVC=1,ACK COMMAND
                                        ;
                                        ;*************************************************************************
                                
051634  012737  140005  055650                  MOV     #140005,T27PK3          ;WRITE DATA,CVC=1,ACK COMMAND
051642  012704  055650                          MOV     #T27PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
051646  010337  055656                          MOV     R3,T27SZ                ;SET UP RECORD SIZE IN PACKET
051652  010465  177776                          MOV     R4,TSDB(R5)             ;ISSUE COMMAND
051656  004737  017134                          JSR     PC,WAITF                ;WAIT FOR SSR TO SET
051662  016501  000000                          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
051666  012702  000200                          MOV     #SSR,R2                 ;SET UP EXPECTED
051672  020102                                  CMP     R1,R2                   ;ARE THEY EQUAL
051674  001406                                  BEQ     28$                     ;BR, IF OK
051676  004737  020116                          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 LEAH2
051702                                          ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
051702  104457                                                                          TRAP    C$ERSOFT
051704  000466                                                                          .WORD   310
051706  005011                                                                          .WORD   WRTERR
051710  011710                                                                          .WORD   PKTSSR
051712                                  28$:    CKLOOP                          ;LOOP IF SELECTED
051712  104406                                                                          TRAP    C$CLP1
                                
                                        ;*************************************************************************
                                        ;
                                        ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
                                        ;
                                        ;*************************************************************************
                                
051714  004737  010444                          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
051720  103411                                  BCS     30$                     ;BR, IF NO PROBLEM
051722  016501  000000                          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
051726  010004                                  MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
```

```
 9291 051730  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9295 051734                                ERRHRD  ERRNO,T27RWN,PKTSSR     ;REWIND NOT ACCEPTED
      051734  104456                                                            TRAP    C$ERHRD
      051736  000467                                                            .WORD   311
      051740  057055                                                            .WORD   T27RWN
      051742  011710                                                            .WORD   PKTSSR
 9296 051744                          30$:    CKLOOP                          ;LOOP IF SELECTED
      051744  104406                                                            TRAP    C$CLP1
 9297
 9298                                ;*************************************************************************
 9299                                ;
 9300                                ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
 9301                                ;
 9302                                ;*************************************************************************
 9303
 9304 051746  013701  055546                MOV     T27BFR+6,R1             ;PICK UP XSTO
 9305 051752  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 9306 051754  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 9307 051760  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 9308 051762  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
 9309 051764  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9313 051770                                ERRHRD  ERRNO,T27BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      051770  104456                                                            TRAP    C$ERHRD
      051772  000470                                                            .WORD   312
      051774  056551                                                            .WORD   T27BOT
      051776  016360                                                            .WORD   EXPREC
 9314 052000                          40$:    CKLOOP                          ;LOOP IF SELECTED
      052000  104406                                                            TRAP    C$CLP1
 9315
 9316                                ;*************************************************************************
 9317                                ;
 9318                                ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
 9319                                ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
 9320                                ;
 9321                                ;*************************************************************************
 9322
 9323 052002  012703  000001                MOV     #1,R3                   ;PARAMETER SPACE FORWARD 1 RECORD
 9324 052006  004737  010144                JSR     PC,SPACE                ;CALL SPACE RECORDS ROUTINE
 9325 052012  103413                        BCS     50$                     ;BR, IF NO ERRORS
 9326 052014  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9327 052020  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 9328 052024  010004                        MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
 9329 052026  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9333 052032                                ERRHRD  ERRNO,T27SCF,PKTSSR     ;SPACE RECORDS COMMAND FAILED
      052032  104456                                                            TRAP    C$ERHRD
      052034  000471                                                            .WORD   313
      052036  060317                                                            .WORD   T27SCF
      052040  011710                                                            .WORD   PKTSSR
 9334 052042                          50$:    CKLOOP                          ;LOOP IF SELECTED
      052042  104406                                                            TRAP    C$CLP1
```

```
 9336                                   ;*************************************************************************
 9337                                   ;
 9338                                   ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
 9339                                   ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
 9340                                   ;
 9341                                   ;*************************************************************************
 9342
 9343 052044  012703  100001                    MOV     #100001,R3              ;PARAMETER SPACE REVERSE 1 RECORD
 9344 052050  004737  010144                    JSR     PC,SPACE                ;CALL SPACE RECORDS ROUTINE
 9345 052054  103413                            BCS     60$                     ;BR, IF NO ERRORS
 9346 052056  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9347 052062  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
 9348 052066  010004                            MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
 9349 052070  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9353 052074                                    ERRHRD  ERRNO,T27SCF,PKTSSR     ;SPACE RECORDS COMMAND FAILED
      052074  104456                                                                    TRAP    C$ERHRD
      052076  000472                                                                    .WORD   314
      052100  060317                                                                    .WORD   T27SCF
      052102  011710                                                                    .WORD   PKTSSR
 9354 052104                            60$:    CKLOOP                          ;LOOP IF SELECTED
      052104  104406                                                                    TRAP    C$CLP1
 9355 052106  013737  003072  055652            MOV     FREE,T27RB              ;ADDRESS OF BUFFER
```

```
 9357                                   ;*************************************************************************
 9358                                   ;
 9359                                   ;WRITE DATA RETRY,ACK,CVC=1 COMMAND
 9360                                   ;
 9361                                   ;*************************************************************************
 9362
 9363 052114  012737  141005  055650          MOV     #141005,T27PK3          ;WRITE DATA RETRY,ACK,CVC=1 COMMAND
 9364 052122  012737  000400  055656          MOV     #256.,T27SZ             ;SET UP THE SIZE OF RECORD
 9365 052130  012704  055650                  MOV     #T27PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 9366 052134  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 9367 052140  004737  017134                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 9368 052144  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9369 052150  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED TAPE STATUS ALERT
 9370 052154  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 9371 052156  001406                          BEQ     180$                    ;BR, IF OK
 9372 052160  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9376 052164                                  ERRHRD  ERRNO,T27TSA,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      052164  104456                                                                  TRAP    C$ERHRD
      052166  000473                                                                  .WORD   315
      052170  060374                                                                  .WORD   T27TSA
      052172  011710                                                                  .WORD   PKTSSR
 9377 052174                          180$:   CKLOOP                          ;LOOP IF SELECTED
      052174  104406                                                                  TRAP    C$CLP1
 9378 052176  013701  055554                  MOV     T27BFR+14,R1            ;GET XST3 STATUS WORD
 9379 052202  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 9380 052204  052702  000001                  BIS     #BIT0,R2                ;SET THE RIB BIT
 9381 052210  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 9382 052212  001406                          BEQ     190$                    ;BR, IF EQUAL (GOOD)
 9383 052214  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9387 052220                                  ERRHRD  ERRNO,T27NEF,EXPREC     ;NEF SHOULD BE SET
      052220  104456                                                                  TRAP    C$ERHRD
      052222  000474                                                                  .WORD   316
      052224  060221                                                                  .WORD   T27NEF
      052226  016360                                                                  .WORD   EXPREC
 9388 052230                          190$:
 9389 052230                                  ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
      052230                                                                       L10070:
      052230  104403                                                                  TRAP    C$ESUB
 9390 052232  023727  002170  000031          CMP     FATFLG,#25.             ;IS ERROR COUNT AT 25
 9391 052240  002402                          BLT     999$                    ;BR, IF LESS THAN 25
 9392 052242  004737  020170                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
 9393 052246                          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.
                                ;
                                ;
                                ;
                                ;-
052246                                  BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
052246                                                                                  T3.3:
052246  104402                                                                          TRAP    C$BSUB
052250  004737  060654                JSR     PC,T27REST              ;SET COMMAND PACKET
052254  004737  060746                JSR     PC,T27RT2               ;SET UP OTHER COMMAND PACKET
052260  004737  061010                JSR     PC,T27RT3               ;SET UP OTHER COMMAND PACKET

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

052264  004737  016660                JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
052270  103407                        BCS     20$                     ;BR IF INIT WAS OK
052272  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
052276  010001                        MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
052300                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
052300  104455                                                                          TRAP    C$ERDF
052302  000475                                                                          .WORD   317
052304  003550                                                                          .WORD   SFIERR
052306  011676                                                                          .WORD   SFIMSG
052310                          20$:
052310  012704  055520                  MOV     #T27PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

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

052314  004737  010342                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
052320  103407                        BCS     23$                     ;BR, IF COMMAND ISSUED OK
052322  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
052326  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
052330                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
052330  104456                                                                          TRAP    C$ERHRD
052332  000476                                                                          .WORD   318
052334  004754                                                                          .WORD   WRTMSG
052336  011676                                                                          .WORD   SFIMSG
052340                          23$:    CKLOOP                          ;LOOP IF SELECTED
052340  104406                                                                          TRAP    C$CLP1

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

```
9447                                    ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
9448                                    ;
9449                                    ;*************************************************************************
9450
9451 052342  004737  010444                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
9452 052346  103407                            BCS     30$                     ;BR, IF NO PROBLEM
9453 052350  010004                            MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
9454 052352  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
9458 052356                                    ERRHRD  ERRNO,T27RWN,PKTSSR     ;REWIND NOT ACCEPTED
     052356  104456                                                                    TRAP    C$ERHRD
     052360  000477                                                                    .WORD   319
     052362  057055                                                                    .WORD   T27RWN
     052364  011710                                                                    .WORD   PKTSSR
9459 052366                            30$:    CKLOOP                          ;LOOP IF SELECTED
     052366  104406                                                                    TRAP    C$CLP1
9460
9461                                    ;*************************************************************************
9462                                    ;
9463                                    ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
9464                                    ;
9465                                    ;*************************************************************************
9466
9467 052370  013701  055546                    MOV     T27BFR+6,R1             ;PICK UP XST0
9468 052374  010102                            MOV     R1,R2                   ;SET UP EXPECTED
9469 052376  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
9470 052402  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
9471 052404  001406                            BEQ     40$                     ;BR, IF EQUAL (OK)
9472 052406  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
9476 052412                                    ERRHRD  ERRNO,T27BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     052412  104456                                                                    TRAP    C$ERHRD
     052414  000500                                                                    .WORD   320
     052416  056551                                                                    .WORD   T27BOT
     052420  016360                                                                    .WORD   EXPREC
9477 052422                            40$:    CKLOOP                          ;LOOP IF SELECTED
     052422  104406                                                                    TRAP    C$CLP1
9478 052424  012703  000024                    MOV     #20.,R3                 ;STARTING RECORD SIZE
9479 052430  013737  003072  055652            MOV     FREE,T27WB              ;STARTING WRITE BUFFER ADDRESS
9480
9481                                    ;*************************************************************************
9482                                    ;
9483                                    ;WRITE DATA,CVC=1,ACK COMMAND
9484                                    ;
9485                                    ;*************************************************************************
9486
9487 052436  012737  140005  055650  65$:    MOV     #140005,T27PK3          ;WRITE DATA,CVC=1,ACK COMMAND
9488 052444  012704  055650                    MOV     #T27PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
9489 052450  010300                            MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
9490 052452  004737  020410                    JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
9491 052456  010337  055656                    MOV     R3,T27SZ                ;SET UP RECORD SIZE IN PACKET
9492 052462  010465  177776                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
9493 052466  004737  017134                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
9494 052472  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
9495 052476  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
9496 052502  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
9497 052504  001406                            BEQ     80$                     ;BR, IF OK
9498 052506  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
9502                                                                            ;SOFT ERROR GENERATED BECAUSE THE
```

```
9503
9504                                                    ;WRITE COMMAND IS NOT BEING CHECKED
9505 052512                                             ;HERE. IT WAS CHECKED IN LEAM2
                                ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     052512  104457                                                     TRAP    C$ERSOFT
     052514  000501                                                     .WORD   321
     052516  005011                                                     .WORD   WRTERR
     052520  011710                                                     .WORD   PKTSSR
9506 052522                     80$:    CKLOOP                  ;LOOP IF SELECTED
     052522  104406                                                     TRAP    C$CLP1
9507
9508                            ;*****************************************************************
9509                            ;
9510                            ;WRITE DATA RETRY,CVC=1,ACK COMMAND
9511                            ;
9512                            ;*****************************************************************
9513
9514 052524  012737  141005  055650        MOV     #141005,T27PK3          ;WRITE DATA RETRY,CVC=1,ACK COMMAND
9515 052532  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
9516 052536  004737  017134                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
9517 052542  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
9518 052546  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
9519 052552  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
9520 052554  001406                        BEQ     90$                     ;BR. IF OK
9521 052556  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
9525 052562                                ERRHRD  ERRNO,T27WRF,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA RETRY
     052562  104456                                                     TRAP    C$ERHRD
     052564  000502                                                     .WORD   322
     052566  060456                                                     .WORD   T27WRF
     052570  011710                                                     .WORD   PKTSSR
9526 052572                     90$:    CKLOOP                  ;LOOP IF SELECTED
     052572  104406                                                     TRAP    C$CLP1
9527 052574  005723                        TST     (R3)+                   ;BUMP RECORD SIZE COUNTER
9528 052576  020327  000050                CMP     R3,#40.                 ;AT 40 SIZE YET
9529 052602  001315                        BNE     65$                     ;BR. IF MORE RECORDS TO WRITE
9530
9531                            ;*****************************************************************
9532                            ;
9533                            ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
9534                            ;
9535                            ;*****************************************************************
9536
9537 052604  004737  010444                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
9538 052610  103407                        BCS     230$                    ;BR. IF NO PROBLEM
9539 052612  010001                        MOV     R0,R1                   ;SAVE TSSR
9540 052614  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
9544 052620                                ERRHRD  ERRNO,T27RWN,EXPREC     ;REWIND NOT ACCEPTED
     052620  104456                                                     TRAP    C$ERHRD
     052622  000503                                                     .WORD   323
     052624  057055                                                     .WORD   T27RWN
     052626  016360                                                     .WORD   EXPREC
9545 052630                     230$:   CKLOOP                  ;LOOP IF SELECTED
     052630  104406                                                     TRAP    C$CLP1
9546
9547                            ;*****************************************************************
9548                            ;
9549                            ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
9550                            ;
```

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

052632  013701  055546                 MOV     T27BFR+6,R1             ;PICK UP XSTO
052636  010102                         MOV     R1,R2                   ;SET UP EXPECTED
052640  052702  000002                 BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
052644  020102                         CMP     R1,R2                   ;DOES EXP = REC'D
052646  001406                         BEQ     240$                    ;BR, IF EQUAL (OK)
052650  004737  020116                 JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
052654                                 ERRHRD  ERRNO,T27BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
052654  104456                                                                 TRAP    C$ERHRD
052656  000504                                                                 .WORD   324
052660  056551                                                                 .WORD   T27BOT
052662  016360                                                                 .WORD   EXPREC
052664                         240$:   CKLOOP                          ;LOOP IF SELECTED
052664  104406                                                                 TRAP    C$CLP1
052666  012703  000024                 MOV     #20.,R3                 ;STARTING RECORD SIZE
052672  013737  003072  055652         MOV     FREE,T27RB              ;STARTING READ BUFFER ADDRESS


                               ;*****************************************************************
                               ;
                               ;READ DATA,ACK COMMAND
                               ;
                               ;*****************************************************************

052700  012737  100001  055650 265$:   MOV     #100001,T27PK3          ;READ DATA,ACK COMMAND
052706  012704  055650                 MOV     #T27PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
052712  010337  055656                 MOV     R3,T27SZ                ;SET UP RECORD SIZE IN PACKET
052716  010465  177776                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
052722  004737  017134                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
052726  016501  000000                 MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
052732  012702  000200                 MOV     #SSR,R2                 ;SET UP EXPECTED
052736  020102                         CMP     R1,R2                   ;ARE THEY EQUAL
052740  001406                         BEQ     280$                    ;BR, IF OK
052742  004737  020116                 JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
052746                                 ERRHRD  ERRNO,RDERR,PKTSSR      ;TSSR INCORRECT AFTER READ DATA
052746  104456                                                                 TRAP    C$ERHRD
052750  000505                                                                 .WORD   325
052752  005104                                                                 .WORD   RDERR
052754  011710                                                                 .WORD   PKTSSR
052756                         280$:   CKLOOP                          ;LOOP IF SELECTED
052756  104406                                                                 TRAP    C$CLP1
052760  013702  003072                 MOV     FREE,R2                 ;GET BUFFER ADDRESS
052764  010304                         MOV     R3,R4                   ;GET RECORD SIZE
052766  162704  000024                 SUB     #20.,R4                 ;POINT BACK TO 1ST RECORD
052772  060204                 285$:   ADD     R2,R4                   ;POINT TO 1ST LOC IN BUFFER
052774  021403                         CMP     (R4),R3                 ;DATA WRITTEN = READ
052776  001410                         BEQ     290$                    ;BR, IF DATA OK (GOOD)
053000  011401                         MOV     (R4),R1                 ;PICK UP BAD DATA
053002  010302                         MOV     R3,R2                   ;SET UP EXPECTED
053004  004737  020116                 JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
053010                                 ERRHRD  ERRNO,T27DTA,EXPREC     ;DATA IN BUFFER NOT CORRECT
053010  104456                                                                 TRAP    C$ERHRD
053012  000506                                                                 .WORD   326
053014  060536                                                                 .WORD   T27DTA
053016  016360                                                                 .WORD   EXPREC
053020                         290$:   CKLOOP                          ;LOOP IF SELECTED
053020  104406                                                                 TRAP    C$CLP1
```

```
 9602 053022  005724                          TST     (R4)+           ;BUMP TO NEXT ADDRESS
 9603 053024  160204                          SUB     R2,R4           ;BACK TO RECORD SIZE
 9604 053026  020403                          CMP     R4,R3           ;AT END OF RECORD YET
 9605 053030  001360                          BNE     285$            ;BR, IF MORE DATA TO CHECK
 9606 053032  005723                          TST     (R3)+           ;BUMP RECORD SIZE
 9607 053034  020327  000050                  CMP     R3,#40.         ;DONE YET
 9608 053040  001317                          BNE     265$            ;BR, IF NOT DONE YET (MORE READS)
 9609 053042                          300$:   CKLOOP                  ;LOOP IF SELECTED
      053042  104406                                                          TRAP    C$CLP1
 9610 053044                          330$:
 9611 053044                          ENDSUB                  ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
      053044                                                          L10071:
      053044  104403                                                  TRAP    C$ESUB
 9612 053046  023727  002170  000031          CMP     FATFLG,#25.             ;IS ERROR COUNT AT 25
 9613 053054  002402                          BLT     999$                    ;BR, IF LESS THAN 25
 9614 053056  004737  020170                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
 9615 053062                          999$:
```

```
                                        ;+
                                        ;
                                        ;TEST 3, SUBTEST 4
                                        ;
                                        ;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.
                                        ;
                                        ;
                                        ;
                                        ;-
053062                                          BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
053062                                                                                  T3.4:
053062  104402                                                                          TRAP    C$BSUB
053064  004737  060654                         JSR     PC,T27REST              ;SET COMMAND PACKET
053070  004737  060746                         JSR     PC,T27RT2               ;SET UP OTHER COMMAND PACKET
053074  004737  061010                         JSR     PC,T27RT3               ;SET UP OTHER COMMAND PACKET
053100  012737  176750  055702                MOV     #65000.,T27DLY          ;SET UP DELAY COUNTER

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

053106  004737  016660                 10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
053112  103426                                  BCS     20$                     ;BR IF INIT WAS OK
053114                                          DELAY   250                     ;DELAY ABOUT .25 SEC
053114  012727  000250                                                                  MOV     #250.,(PC)+
053120  000000                                                                          .WORD   0
053122  013727  002116                                                                  MOV     L$DLY,(PC)+
053126  000000                                                                          .WORD   0
053130  005367  177772                                                                  DEC     -6(PC)
053134  001375                                                                          BNE     .-4
053136  005367  177756                                                                  DEC     -22(PC)
053142  001367                                                                          BNE     .-20
053144  005337  055702                         DEC     T27DLY                  ;BUMP COUNTER
053150  001356                                 BNE     10$                     ;BR, IF COUNTER NOT DONE
053152  004737  020116                         JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
053156  010001                                 MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
053160                                         ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
053160  104455                                                                          TRAP    C$ERDF
053162  000507                                                                          .WORD   327
053164  003550                                                                          .WORD   SFIERR
053166  011676                                                                          .WORD   SFIMSG
053170                                  20$:
053170  012704  055520                         MOV     #T27PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

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

053174  004737  010342                         JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
053200  103407                                 BCS     23$                     ;BR, IF COMMAND ISSUED OK
```

```
 9663 053202  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9667 053206  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 9668 053210                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      053210  104456                                                                TRAP    C$ERHRD
      053212  000510                                                                .WORD   328
      053214  004754                                                                .WORD   WRTMSG
      053216  011676                                                                .WORD   SFIMSG
 9669 053220                        23$:    CKLOOP                          ;LOOP IF SELECTED
      053220  104406                                                                TRAP    C$CLP1
 9670
 9671                               ;*************************************************************************
 9672                               ;
 9673                               ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
 9674                               ;
 9675                               ;*************************************************************************
 9676
 9677 053222  004737  010444                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 9678 053226  103411                        BCS     30$                     ;BR, IF NO PROBLEM
 9679 053230  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9680 053234  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
 9681 053236  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9685 053242                                ERRHRD  ERRNO,T27RWN,PKTSSR     ;REWIND NOT ACCEPTED
      053242  104456                                                                TRAP    C$ERHRD
      053244  000511                                                                .WORD   329
      053246  057055                                                                .WORD   T27RWN
      053250  011710                                                                .WORD   PKTSSR
 9686 053252                        30$:    CKLOOP                          ;LOOP IF SELECTED
      053252  104406                                                                TRAP    C$CLP1
 9687
 9688                               ;*************************************************************************
 9689                               ;
 9690                               ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 9691                               ;
 9692                               ;*************************************************************************
 9693
 9694 053254  013701  055546                MOV     T27BFR+6,R1             ;PICK UP XST0
 9695 053260  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 9696 053262  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 9697 053266  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 9698 053270  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
 9699 053272  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9703 053276                                ERRHRD  ERRNO,T27BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      053276  104456                                                                TRAP    C$ERHRD
      053300  000512                                                                .WORD   330
      053302  056551                                                                .WORD   T27BOT
      053304  016360                                                                .WORD   EXPREC
 9704 053306                        40$:    CKLOOP                          ;LOOP IF SELECTED
      053306  104406                                                                TRAP    C$CLP1
 9705 053310  012703  000024                MOV     #20.,R3                 ;STARTING RECORD SIZE
 9706 053314  013737  003072  055652        MOV     FREE,T27WB              ;STARTING WRITE BUFFER ADDRESS
 9707
 9708                               ;*************************************************************************
 9709                               ;
 9710                               ;WRITE DATA,CVC=1,ACK COMMAND
 9711                               ;
 9712                               ;*************************************************************************
 9713
```

```
 9714 053322  012737  140005  055650  65$:    MOV     #140005,T27PK3          ;WRITE DATA,CVC=1,ACK COMMAND
 9715 053330  012704  055650                  MOV     #T27PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 9716 053334  010300                          MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
 9717 053336  004737  020410                  JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
 9718 053342  010337  055656                  MOV     R3,T27SZ                ;SET UP RECORD SIZE IN PACKET
 9719 053346  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 9720 053352  004737  017134                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 9721 053356  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9722 053362  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 9723 053366  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 9724 053370  001406                          BEQ     80$                     ;BR, IF OK
 9725 053372  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9729                                                                         ;SOFT ERROR GENERATED BECAUSE THE
 9730                                                                         ;WRITE COMMAND IS NOT BEING CHECKED
 9731                                                                         ;HERE. IT WAS CHECKED IN LEAH2
 9732 053376                                  ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      053376  104457                                                                 TRAP    C$ERSOFT
      053400  000513                                                                 .WORD   331
      053402  005011                                                                 .WORD   WRTERR
      053404  011710                                                                 .WORD   PKTSSR
 9733 053406                          80$:    CKLOOP                          ;LOOP IF SELECTED
      053406  104406                                                                 TRAP    C$CLP1
 9734
 9735                         ;*************************************************************************
 9736                         ;
 9737                         ;WRITE DATA RETRY,ACK,SWB=1 COMMAND
 9738                         ;
 9739                         ;*************************************************************************
 9740
 9741 053410  012737  111005  055650          MOV     #111005,T27PK3          ;WRITE DATA RETRY,ACK,SWB=1 COMMAND
 9742 053416  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 9743 053422  004737  017134                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 9744 053426  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9745 053432  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 9746 053436  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 9747 053440  001406                          BEQ     90$                     ;BR, IF OK
 9748 053442  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9752 053446                                  ERRHRD  ERRNO,T27WRF,EXPREC     ;TSSR INCORRECT AFTER WRITE DATA RETRY
      053446  104456                                                                 TRAP    C$ERHRD
      053450  000514                                                                 .WORD   332
      053452  060456                                                                 .WORD   T27WRF
      053454  016360                                                                 .WORD   EXPREC
 9753 053456                          90$:    CKLOOP                          ;LOOP IF SELECTED
      053456  104406                                                                 TRAP    C$CLP1
 9754 053460  005723                          TST     (R3)+                   ;BUMP RECORD SIZE COUNTER
 9755 053462  020327  000050                  CMP     R3,#40.                 ;AT 40 SIZE YET
 9756 053466  001315                          BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
 9757
 9758                         ;*************************************************************************
 9759                         ;
 9760                         ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
 9761                         ;
 9762                         ;*************************************************************************
 9763
 9764 053470  004737  010444                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 9765 053474  103411                          BCS     230$                    ;BR, IF NO PROBLEM
 9766 053476  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
```

```
 9767 053502  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
 9768 053504  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9772 053510                                ERRHRD  ERRNO,T27RWN,PKTSSR     ;REWIND NOT ACCEPTED
      053510  104456                                                        TRAP    C$ERHRD
      053512  000515                                                        .WORD   333
      053514  057055                                                        .WORD   T27RWN
      053516  011710                                                        .WORD   PKTSSR
 9773 053520                        230$:   CKLOOP                          ;LOOP IF SELECTED
      053520  104406                                                        TRAP    C$CLP1
 9774
 9775                               ;*************************************************************************
 9776                               ;
 9777                               ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
 9778                               ;
 9779                               ;*************************************************************************
 9780
 9781 053522  013701  055546                MOV     T27BFR+6,R1             ;PICK UP XST0
 9782 053526  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 9783 053530  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 9784 053534  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 9785 053536  001406                        BEQ     240$                    ;BR, IF EQUAL (OK)
 9786 053540  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9790 053544                                ERRHRD  ERRNO,T27BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      053544  104456                                                        TRAP    C$ERHRD
      053546  000516                                                        .WORD   334
      053550  056551                                                        .WORD   T27BOT
      053552  016360                                                        .WORD   EXPREC
 9791 053554                        240$:   CKLOOP                          ;LOOP IF SELECTED
      053554  104406                                                        TRAP    C$CLP1
 9792 053556  012703  000024                MOV     #20.,R3                 ;STARTING RECORD SIZE
 9793 053562  013737  003072  055652        MOV     FREE,T27RB              ;STARTING READ BUFFER ADDRESS
 9794
 9795                               ;*************************************************************************
 9796                               ;
 9797                               ;READ DATA,ACK COMMAND
 9798                               ;
 9799                               ;*************************************************************************
 9800
 9801 053570  012737  100001  055650  265$:   MOV     #100001,T27PK3          ;READ DATA,ACK COMMAND
 9802 053576  012704  055650                MOV     #T27PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 9803 053602  010337  055656                MOV     R3,T27SZ                ;SET UP RECORD SIZE IN PACKET
 9804 053606  010465  177776                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 9805 053612  004737  017134                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 9806 053616  016501  000000                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9807 053622  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 9808 053626  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 9809 053630  001406                        BEQ     280$                    ;BR, IF OK
 9810 053632  004737  020116                JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9814 053636                                ERRHRD  ERRNO,RDERR,PKTSSR      ;TSSR INCORRECT AFTER READ DATA
      053636  104456                                                        TRAP    C$ERHRD
      053640  000517                                                        .WORD   335
      053642  005104                                                        .WORD   RDERR
      053644  011710                                                        .WORD   PKTSSR
 9815 053646                        280$:   CKLOOP                          ;LOOP IF SELECTED
      053646  104406                                                        TRAP    C$CLP1
 9816 053650  013702  003072                MOV     FREE,R2                 ;GET BUFFER ADDRESS
 9817 053654  010304                        MOV     R3,R4                   ;GET RECORD SIZE
```

```
 9818 053656  162704  000024            SUB     #20.,R4                 ;POINT BACK TO 1ST RECORD
 9819 053662  060204              285$:  ADD     R2,R4                   ;POINT TO 1ST LOC IN BUFFER
 9820 053664  000303                     SWAB    R3                      ;SWAP BYTES SWB=1 ETC.
 9821 053666  021403                     CMP     (R4),R3                 ;DATA WRITTEN = READ
 9822 053670  001410                     BEQ     290$                    ;BR, IF DATA OK (GOOD)
 9823 053672  011401                     MOV     (R4),R1                 ;PICK UP BAD DATA
 9824 053674  010302                     MOV     R3,R2                   ;SET UP EXPECTED
 9825 053676  004737  020116             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9829 053702                             ERRHRD  ERRNO,T27DTA,EXPREC     ;DATA IN BUFFER NOT CORRECT
      053702  104456                                                                TRAP    C$ERHRD
      053704  000520                                                                .WORD   336
      053706  060536                                                                .WORD   T27DTA
      053710  016360                                                                .WORD   EXPREC
 9830 053712              290$:  CKLOOP                                  ;LOOP IF SELECTED
      053712  104406                                                                TRAP    C$CLP1
 9831 053714  005724                     TST     (R4)+                   ;BUMP TO NEXT ADDRESS
 9832 053716  160204                     SUB     R2,R4                   ;BACK TO RECORD SIZE
 9833 053720  000303                     SWAB    R3                      ;PUT R3 BACK INTO SHAPE
 9834 053722  020403                     CMP     R4,R3                   ;AT END OF RECORD YET
 9835 053724  001356                     BNE     285$                    ;BR, IF MORE DATA TO CHECK
 9836 053726  005723                     TST     (R3)+                   ;BUMP RECORD SIZE
 9837 053730  020327  000046             CMP     R3,#38.                 ;DONE YET
 9838 053734  001315                     BNE     265$                    ;BR, IF NOT DONE YET (MORE READS)
 9839 053736              300$:  CKLOOP                                  ;LOOP IF SELECTED
      053736  104406                                                                TRAP    C$CLP1
 9840 053740                             ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      053740                                                                     L10072:
      053740  104403                                                                TRAP    C$ESUB
 9841 053742  023727  002170  000031            CMP     FATFLG,#25.             ;IS ERROR COUNT AT 25
 9842 053750  002402                            BLT     999$                    ;BR, IF LESS THAN 25
 9843 053752  004737  020170                    JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
 9844 053756              999$:
 9845
```

```
9847                                    ;
9848                                    ;TEST 3, SUBTEST 5
9849                                    ;
9850                                    ;VERIFIES THAT A WRITE DATA RETRY COMMAND IS
9851                                    ;PERFORMING THE "ERASE" PART OF THE OPERATION BY
9852                                    ;PERFORMING THE FOLLOWING SERIES OF STEPS.
9853                                    ;
9854                                    ;1.     THE TAPE IS REWOUND AND A SERIES OF RECORDS ARE
9855                                    ;       WRITTEN WITH THE NORMAL WRITE DATA COMMAND. THIS
9856                                    ;       SHOULD RESULT IN RECORDS SEPARATED BY THE
9857                                    ;       STANDARD INTERRECORD GAP.
9858                                    ;
9859                                    ;2.     A PROGRAM TIMING VALUE IS CALIBRATED BY REWINDING
9860                                    ;       THE TAPE AND THEN CONUTING THE NUMBER OF CYCLES
9861                                    ;       THROUGH A PROGRAMMED LOOP REQUIRED TO SPACE OVER
9862                                    ;       THE SERIES OF RECORDS WRITTEN IN PREVIOUS
9863                                    ;       STEP
9864                                    ;
9865                                    ;3.     THE TAPE IS AGAIN REWOUND AND THE SAME SERIES OF
9866                                    ;       RECORDS WRITTEN AGAIN, THIS TIME USING THE WRITE
9867                                    ;       DATA RETRY COMMAND. THIS SHOULD RESULT IN
9868                                    ;       RECORDS SEPARATED BY A LONG INTERRECORD GAP.
9869                                    ;
9870                                    ;4.     THE TAPE IS AGAIN REWOUND, THE SPACING COMMAND
9871                                    ;       ISSUED, AND THE NUMBER OF TIMMING LOOP CYCLES
9872                                    ;       COUNTED TO COMPLETE THE OPERATION.
9873                                    ;
9874                                    ;5.     THE TWO LOOP COUNTS ARE COMPARED, CHECKING TO SEE
9875                                    ;       THAT THEY DIFFER BY A SIGNIFICANT AMOUNT.
9876                                    ;
9877                                    ;
9878                                    ;
9879                                    ;
9880                                    ;
9881                                    ;-
9882 053756                                    BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
      053756                                                                                    T3.5:
      053756  104402                                                                                    TRAP    C$BSUB
9883 053760  005037  002172                    CLR     INTRECV                 ;INTERRUPT INDICATOR
9884 053764  005037  055676                    CLR     T27CNT                  ;TIMER FOR WRITE DATA SPACING
9885 053770  005037  055700                    CLR     T27CNU                  ;TIMER FOR WRITE DATA RETRY SPACING
9886 053774  004737  060654                    JSR     PC,T27REST              ;SET COMMAND PACKET
9887 054000  004737  060746                    JSR     PC,T27RT2               ;SET UP OTHER COMMAND PACKET
9888 054004  004737  061010                    JSR     PC,T27RT3               ;SET UP OTHER COMMAND PACKET
9889 054010  012737  176750  055702            MOV     #65000.,T27DLY          ;SET UP DELAY COUNTER
9890
9891                                    ;*****************************************************************************
9892                                    ;
9893                                    ;ISSUE CONTROLLER "SOFT" INITIALIZE - CARRY BIT CLEAR IF ERROR
9894                                    ;
9895                                    ;*****************************************************************************
9896
9897 054016  004737  016660            10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
9898 054022  103426                            BCS     20$                     ;BR IF INIT WAS OK
9899 054024                                    DELAY   250                     ;DELAY ABOUT .25 SEC
      054024  012727  000250                                                                    MOV     #250.,(PC)+
      054030  000000                                                                            .WORD   0
```

```
        054032  013727  002116                                                  MOV     L$DLY,(PC)+
        054036  000000                                                          .WORD   0
        054040  005367  177772                                                  DEC     -6(PC)
        054044  001375                                                          BNE     .-4
        054046  005367  177756                                                  DEC     -22(PC)
        054052  001367                                                          BNE     .-20
  9900  054054  005337  055702          DEC     T27DLY                  ;BUMP COUNTER
  9901  054060  001356                  BNE     10$                     ;BR, IF COUNTER NOT DONE
  9902  054062  004737  020116          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
  9906  054066  010001                  MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
  9907  054070                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
        054070  104455                                                          TRAP    C$ERDF
        054072  000521                                                          .WORD   337
        054074  003550                                                          .WORD   SFIERR
        054076  011676                                                          .WORD   SFIMSG
  9908  054100                  20$:
  9909
  9910  054100  012704  055520          MOV     #T27PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
  9911
  9912                          ;*************************************************************************
  9913                          ;
  9914                          ;WRITE CHARACTERISTICS COMMAND (CALL TO WRTCHR)
  9915                          ;
  9916                          ;*************************************************************************
  9917
  9918  054104  004737  010342          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
  9919  054110  103407                  BCS     23$                     ;BR, IF COMMAND ISSUED OK
  9920  054112  004737  020116          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
  9924  054116  010001                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
  9925  054120                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        054120  104456                                                          TRAP    C$ERHRD
        054122  000522                                                          .WORD   338
        054124  004754                                                          .WORD   WRTMSG
        054126  011676                                                          .WORD   SFIMSG
  9926  054130                  23$:    CKLOOP                          ;LOOP IF SELECTED
        054130  104406                                                          TRAP    C$CLP1
  9927
  9928                          ;*************************************************************************
  9929                          ;
  9930                          ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
  9931                          ;
  9932                          ;*************************************************************************
  9933
  9934  054132  004737  010444          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
  9935  054136  103411                  BCS     30$                     ;BR, IF NO PROBLEM
  9936  054140  016501  000000          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
  9937  054144  010004                  MOV     R0,R4                   ;GET PACKET ADDRESS
  9938  054146  004737  020116          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
  9942  054152                          ERRHRD  ERRNO,T27RWN,PKTSSR     ;REWIND NOT ACCEPTED
        054152  104456                                                          TRAP    C$ERHRD
        054154  000523                                                          .WORD   339
        054156  057055                                                          .WORD   T27RWN
        054160  011710                                                          .WORD   PKTSSR
  9943  054162                  30$:    CKLOOP                          ;LOOP IF SELECTED
        054162  104406                                                          TRAP    C$CLP1
  9944
  9945                          ;*************************************************************************
```

```
 9946                                   ;
 9947                                   ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
 9948                                   ;
 9949                                   ;*************************************************************************
 9950
 9951 054164  013701  055546                    MOV     T27BFR+6,R1             ;PICK UP XSTO
 9952 054170  010102                            MOV     R1,R2                   ;SET UP EXPECTED
 9953 054172  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 9954 054176  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
 9955 054200  001406                            BEQ     40$                     ;BR, IF EQUAL (OK)
 9956 054202  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9960 054206                                    ERRHRD  ERRNO,T27BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      054206  104456                                                                    TRAP    C$ERHRD
      054210  000524                                                                    .WORD   340
      054212  056551                                                                    .WORD   T27BOT
      054214  016360                                                                    .WORD   EXPREC
 9961 054216                            40$:    CKLOOP                          ;LOOP IF SELECTED
      054216  104406                                                                    TRAP    C$CLP1
 9962 054220  012703  000144                    MOV     #100.,R3                ;NUMBER OF RECORDS TO BE WRITTEN
 9963 054224  013737  003072  055652            MOV     FREE,T27WB              ;STARTING WRITE BUFFER ADDRESS
 9964
 9965                                   ;*************************************************************************
 9966                                   ;
 9967                                   ;WRITE DATA,ACK,CVC=1 COMMAND
 9968                                   ;
 9969                                   ;*************************************************************************
 9970
 9971 054232  012737  140005  055650  65$:    MOV     #140005,T27PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
 9972 054240  012704  055650                    MOV     #T27PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 9973 054244  012737  000024  055656            MOV     #20.,T27SZ              ;SET UP RECORD SIZE IN PACKET
 9974 054252  010465  177776                    MOV     R4,TSD8(R5)             ;ISSUE COMMAND
 9975 054256  004737  017134                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 9976 054262  016501  000000                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9977 054266  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
 9978 054272  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
 9979 054274  001406                            BEQ     70$                     ;BR, IF OK
 9980 054276  004737  020116                    JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
 9984                                                                           ;SOFT ERROR GENERATED BECAUSE THE
 9985                                                                           ;WRITE COMMAND IS NOT BEING CHECKED
 9986                                                                           ;HERE. IT WAS CHECKED IN LEAH2
 9987 054302                                    ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      054302  104457                                                                    TRAP    C$ERSOFT
      054304  000525                                                                    .WORD   341
      054306  005011                                                                    .WORD   WRTERR
      054310  01'710                                                                    .WORD   PKTSSR
 9988 054312                            70$:    CKLOOP                          ;LOOP IF SELECTED
      054312  104406                                                                    TRAP    C$CLP1
 9989 054314  005303                            DEC     R3                      ;DEC RECORD COUNTER
 9990 054316  001345                            BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
 9991
 9992                                   ;*************************************************************************
 9993                                   ;
 9994                                   ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
 9995                                   ;
 9996                                   ;*************************************************************************
 9997
 9998 054320  004737  010444                    JSR     PC,REWIND               ;CALL TAPE REWIND CO' ND
```

```
 9999 054324  103411                    BCS     130$                    ;BR, IF NO PROBLEM
10000 054326  016501  000000            MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
10001 054332  010004                    MOV     R0,R4                   ;GET PACKET ADDRESS
10002 054334  004737  020116            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10006 054340                            ERRHRD  ERRNO,T27RWN,PKTSSR     ;REWIND NOT ACCEPTED
      054340  104456                                                            TRAP    C$ERHRD
      054342  000526                                                            .WORD   342
      054344  057055                                                            .WORD   T27RWN
      054346  011710                                                            .WORD   PKTSSR
10007 054350                    130$:   CKLOOP                          ;LOOP IF SELECTED
      054350  104406                                                            TRAP    C$CLP1
10008
10009                           ;*************************************************************************
10010                           ;
10011                           ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XST0)
10012                           ;
10013                           ;*************************************************************************
10014
10015 054352  013701  055546            MOV     T27BFR+6,R1             ;PICK UP XST0
10016 054356  010102                    MOV     R1,R2                   ;SET UP EXPECTED
10017 054360  052702  000002            BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
10018 054364  020102                    CMP     R1,R2                   ;DOES EXP = REC'D
10019 054366  001406                    BEQ     140$                    ;BR, IF EQUAL (OK)
10020 054370  004737  020116            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10024 054374                            ERRHRD  ERRNO,T27BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      054374  104456                                                            TRAP    C$ERHRD
      054376  000527                                                            .WORD   343
      054400  056551                                                            .WORD   T27BOT
      054402  016360                                                            .WORD   EXPREC
10025 054404                    140$:   CKLOOP                          ;LOOP IF SELECTED
      054404  104406                                                            TRAP    C$CLP1
10026 054406  012704  055650            MOV     #T27PK3,R4              ;SET UP PACKET ADDRESS
10027 054412  012737  000010  055652    MOV     #10,T27R8               ;SET UP RECORDS TO SPACE OVER
10028
10029                           ;*************************************************************************
10030                           ;
10031                           ;ACK,CVC=1,SPACE FORWARD COMMAND
10032                           ;
10033                           ;*************************************************************************
10034
10035 054420  012737  140010  055650    MOV     #140010,T27PK3          ;ACK,CVC=1,SPACE FORWARD COMMAND
10036 054426  010465  177776    150$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
10037 054432  005237  055676    152$:   INC     T27CNT                  ;BUMP TIMER
10038 054436                            DELAY   1                       ;DELAY ABOUT 100US
      054436  012727  000001                                                  MOV     #1,(PC)+
      054442  000000                                                          .WORD   0
      054444  013727  002116                                                  MOV     L$DLY,(PC)+
      054450  000000                                                          .WORD   0
      054452  005367  177772                                                  DEC     -6(PC)
      054456  001375                                                          BNE     .-4
      054460  005367  177756                                                  DEC     -22(PC)
      054464  001367                                                          BNE     .-20
10039 054466  016501  000000            MOV     TSSR(R5),R1             ;GET TSSR
10040 054472  032701  000200            BIT     #BIT7,R1                ;CHECK FOR TSSR'S SSR SET
10041 054476  001755                    BEQ     152$                    ;KEEP COUNTING UNTIL SET
10042 054500  016501  000000            MOV     TSSR(R5),R1             ;GET STATUS FROM TSSR
10043 054504  012702  000200            MOV     #SSR,R2                 ;SET UP EXPECTED
```

```
10044 054510  020201                    CMP     R2,R1                   ;WAS EVERYTHING OK
10045 054512  001406                    BEQ     160$                    ;BR, IF ALL IS WELL
10046 054514  004737  020116            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10050 054520                            ERRHRD  ERRNO,T27SCF,PKTSSR     ;SPACE FORWARD DIDN'T WORK OUT
      054520  104456                                                            TRAP    C$ERHRD
      054522  000530                                                            .WORD   344
      054524  060317                                                            .WORD   T27SCF
      054526  011710                                                            .WORD   PKTSSR
10051 054530                    160$:   CKLOOP                          ;LOOP IF SELECTED
      054530  104406                                                            TRAP    C$CLP1
10052
10053                           ;*************************************************************
10054                           ;
10055                           ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
10056                           ;
10057                           ;*************************************************************
10058
10059 054532  004737  010444            JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
10060 054536  004737  017252            JSR     PC,CHKTSSR              ;SEE HOW TSSR IS
10061 054542  103407                    BCS     170$                    ;BR, IF NO PROBLEM
10062 054544  010001                    MOV     R0,R1                   ;SAVE TSSR
10063 054546  004737  020116            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10067 054552                            ERRHRD  ERRNO,T27RWN,PKTSSR     ;REWIND NOT ACCEPTED
      054552  104456                                                            TRAP    C$ERHRD
      054554  000531                                                            .WORD   345
      054556  057055                                                            .WORD   T27RWN
      054560  011710                                                            .WORD   PKTSSR
10068 054562                    170$:   CKLOOP                          ;LOOP IF SELECTED
      054562  104406                                                            TRAP    C$CLP1
10069
10070                           ;*************************************************************
10071                           ;
10072                           ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
10073                           ;
10074                           ;*************************************************************
10075
10076 054564  013701  055546            MOV     T27BFR+6,R1             ;PICK UP XSTO
10077 054570  010102                    MOV     R1,R2                   ;SET UP EXPECTED
10078 054572  052702  000002            BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
10079 054576  020102                    CMP     R1,R2                   ;DOES EXP = REC'D
10080 054600  001406                    BEQ     175$                    ;BR, IF EQUAL (OK)
10081 054602  004737  020116            JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10085 054606                            ERRHRD  ERRNO,T27BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      054606  104456                                                            TRAP    C$ERHRD
      054610  000532                                                            .WORD   346
      054612  056551                                                            .WORD   T27BOT
      054614  016360                                                            .WORD   EXPREC
10086 054616                    175$:   CKLOOP                          ;LOOP IF SELECTED
      054616  104406                                                            TRAP    C$CLP1
10087 054620  012703  000144            MOV     #100.,R3                ;STARTING RECORD SIZE
10088 054624  013737  003072  055652    MOV     FREE,T27WB              ;STARTING WRITE BUFFER ADDRESS
10089
10090                           ;*************************************************************
10091                           ;
10092                           ;WRITE DATA,CVC=1,ACK COMMAND
10093                           ;
10094                           ;*************************************************************
```

```
10095
10096 054632  012737  140005  055650          MOV     #140005,T27PK3          ;WRITE DATA,CVC=1,ACK COMMAND
10097 054640  012704  055650                  MOV     #T27PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
10098 054644  012737  000024  055656          MOV     #20.,T27SZ              ;SET UP RECORD SIZE IN PACKET
10099 054652  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
10100 054656  004737  017134                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
10101 054662  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
10102 054666  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
10103 054672  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
10104 054674  001406                          BEQ     180$                    ;BR, IF OK
10105 054676  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10109                                                                         ;SOFT ERROR GENERATED BECAUSE THE
10110                                                                         ;WRITE COMMAND IS NOT BEING CHECKED
10111                                                                         ;HERE. IT WAS CHECKED IN LEAH2
10112 054702                                  ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      054702  104457                                                                  TRAP    C$ERSOFT
      054704  000533                                                                  .WORD   347
      054706  005011                                                                  .WORD   WRTERR
      054710  011710                                                                  .WORD   PKTSSR
10113 054712                          180$:   CKLOOP                          ;LOOP IF SELECTED
      054712  104406                                                                  TRAP    C$CLP1
10114 054714  005303                          DEC     R3                      ;COUNT NUMBER OF RECORDS
10115 054716  001342                          BNE     177$                    ;BR, IF MORE RECORDS TO WRITE
10116
10117                                 ;*****************************************************************
10118                                 ;
10119                                 ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
10120                                 ;
10121                                 ;*****************************************************************
10122
10123 054720  004737  010444                  JSR     PC,REWIND               ;ISSUE REWIND
10124 054724  103411                          BCS     182$                    ;BR, IF ALL IS WELL
10125 054726  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
10126 054730  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
10127 054734  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10131 054740                                  ERRHRD  ERRNO,T27RWN,PKTSSR     ;REWIND FAILED
      054740  104456                                                                  TRAP    C$ERHRD
      054742  000534                                                                  .WORD   348
      054744  057055                                                                  .WORD   T27RWN
      054746  011710                                                                  .WORD   PKTSSR
10132 054750                          182$:   CKLOOP                          ;SELECT LOOP MAYBE
      054750  104406                                                                  TRAP    C$CLP1
10133
10134                                 ;*****************************************************************
10135                                 ;
10136                                 ;ISSUE SPACE RECORDS COMMAND - VALUE IN R3 SETS NUMBER OF RECORDS
10137                                 ;BIT 15 SETS DIRECTION - 0=FORWARD    1=REVERSE
10138                                 ;
10139                                 ;*****************************************************************
10140
10141 054752  012703  000001                  MOV     #1.,R3                  ;SPACE 1 RECORD FORWARD
10142 054756  004737  010144                  JSR     PC,SPACE                ;ISSUE SPACE COMMAND
10143 054762  103411                          BCS     185$                    ;BR, IF COMMAND OK
10144 054764  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
10145 054766  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR STATUS
10146 054772  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10150 054776                                  ERRHRD  ERRNO,T27SCF,PKTSSR     ;SPACE FORWARD COMMAND FAILED
```

```
        054776  104456                                                          TRAP    C$ERHRD
        055000  000535                                                          .WORD   349
        055002  060317                                                          .WORD   T27SCF
        055004  011710                                                          .WORD   PKTSSR
10151   055006                          185$:   CKLOOP                          ;LOOP IF SELECTED
        055006  104406                                                          TRAP    C$CLP1
10152   055010  012703  000144                  MOV     #100.,R3                ;NUMBER OF RECORDS TO BE WRITTEN
10153   055014  013737  003072  055652          MOV     FREE,T27WB              ;STARTING WRITE BUFFER ADDRESS
10154
10155                           ;*************************************************************************
10156                           ;
10157                           ;WRITE DATA RETRY,ACK COMMAND
10158                           ;
10159                           ;*************************************************************************
10160
10161   055022  012737  101005  055650  190$:   MOV     #101005,T27PK3          ;WRITE DATA RETRY,ACK COMMAND
10162   055030  012704  055650                  MOV     #T27PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
10163   055034  012737  000024  055656          MOV     #20.,T27SZ              ;SET UP RECORD SIZE IN PACKET
10164   055042  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
10165   055046  004737  017134                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
10166   055052  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
10167   055056  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
10168   055062  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
10169   055064  001406                          BEQ     200$                    ;BR, IF OK
10170   055066  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10174   055072                                  ERRHRD  ERRNO,T27WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        055072  104456                                                          TRAP    C$ERHRD
        055074  000536                                                          .WORD   350
        055076  057411                                                          .WORD   T27WDC
        055100  011710                                                          .WORD   PKTSSR
10175   055102                          200$:   CKLOOP                          ;LOOP IF SELECTED
        055102  104406                                                          TRAP    C$CLP1
10176   055104  013737  003072  055652          MOV     FREE,T27WB              ;STARTING WRITE BUFFER ADDRESS
10177
10178                           ;*************************************************************************
10179                           ;
10180                           ;WRITE DATA,CVC=1,ACK COMMAND
10181                           ;
10182                           ;*************************************************************************
10183
10184   055112  012737  140005  055650          MOV     #140005,T27PK3          ;WRITE DATA,CVC=1,ACK COMMAND
10185   055120  012704  055650                  MOV     #T27PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
10186   055124  012737  000024  055656          MOV     #20.,T27SZ              ;SET UP RECORD SIZE IN PACKET
10187   055132  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
10188   055136  004737  017134                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
10189   055142  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
10190   055146  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
10191   055152  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
10192   055154  001406                          BEQ     210$                    ;BR, IF OK
10193   055156  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10197                                                                           ;SOFT ERROR GENERATED BECAUSE THE
10198                                                                           ;WRITE COMMAND IS NOT BEING CHECKED
10199                                                                           ;HERE. IT WAS CHECKED IN LEAH2
10200   055162                                  ERRSOFT ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        055162  104457                                                          TRAP    C$ERSOFT
        055164  000537                                                          .WORD   351
        055166  005011                                                          .WORD   WRTERR
```

```
                055170  011710                                                          .WORD   PKTSSR
10201           055172                  210$:   CKLOOP                          ;LOOP IF SELECTED
                055172  104406                                                          TRAP    C$CLP1
10202           055174  005303                  DEC     R3                      ;BUMP DOWN RECORD COUNTER
10203           055176  001311                  BNE     190$                    ;BR, IF MORE RECORDS TO WRITE RETRY
10204
10205                                   ;*************************************************************************
10206                                   ;
10207                                   ;ISSUE REWIND COMMAND TO SELECTED TAPE DRIVE
10208                                   ;
10209                                   ;*************************************************************************
10210
10211           055200  004737  010444          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
10212           055204  103411                  BCS     230$                    ;BR, IF NO PROBLEM
10213           055206  016501  000000          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
10214           055212  010004                  MOV     R0,R4                   ;GET PACKET ADDRESS
10215           055214  004737  020116          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10219           055220                  ERRHRD  ERRNO,T27RWN,PKTSSR             ;REWIND NOT ACCEPTED
                055220  104456                                                          TRAP    C$ERHRD
                055222  000540                                                          .WORD   352
                055224  057055                                                          .WORD   T27RWN
                055226  011710                                                          .WORD   PKTSSR
10220           055230  104406          230$:   CKLOOP                          ;LOOP IF SELECTED
                055230                                                                  TRAP    C$CLP1
10221
10222                                   ;*************************************************************************
10223                                   ;
10224                                   ;READ MESSAGE BUFFER EXTENDED STATUS REGISTER ZERO (XSTO)
10225                                   ;
10226                                   ;*************************************************************************
10227
10228           055232  013701  055546          MOV     T27BFR+6,R1             ;PICK UP XSTO
10229           055236  010102                  MOV     R1,R2                   ;SET UP EXPECTED
10230           055240  052702  000002          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
10231           055244  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
10232           055246  001406                  BEQ     240$                    ;BR, IF EQUAL (OK)
10233           055250  004737  020116          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10237           055254                  ERRHRD  ERRNO,T27BOT,EXPREC             ;TAPE NOT AT BOT AFTER REWIND
                055254  104456                                                          TRAP    C$ERHRD
                055256  000541                                                          .WORD   353
                055260  056551                                                          .WORD   T27BOT
                055262  016360                                                          .WORD   EXPREC
10238           055264          240$:   CKLOOP                          ;LOOP IF SELECTED
                055264  104406                                                          TRAP    C$CLP1
10239           055266  012704  055650          MOV     #T27PK3,R4              ;SET UP PACKET ADDRESS
10240           055272  012737  000010  055652  MOV     #10,T27RB               ;SET UP RECORDS TO SPACE OVER
10241
10242                                   ;*************************************************************************
10243                                   ;
10244                                   ;ACK,CVC=1,SPACE FORWARD COMMAND
10245                                   ;
10246                                   ;*************************************************************************
10247
10248           055300  012737  140010  055650  MOV     #140010,T27PK3          ;ACK,CVC=1,SPACE FORWARD COMMAND
10249           055306  010465  177776  250$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
10250           055312  005237  055700  252$:   INC     T27CNU                  ;BUMP TIMER
10251           055316                  DELAY   1                               ;DELAY ABOUT 100US
```

```
        055316  012727  000001                                                  MOV     #1,(PC)+
        055322  000000                                                          .WORD   0
        055324  013727  002116                                                  MOV     L$DLY,(PC)+
        055330  000000                                                          .WORD   0
        055332  005367  177772                                                  DEC     -6(PC)
        055336  001375                                                          BNE     .-4
        055340  005367  177756                                                  DEC     -22(PC)
        055344  001367                                                          BNE     .-20
10252   055346  016501  000000          MOV     TSSR(R5),R1             ;GET TSSR
10253   055352  032701  000200          BIT     #BIT7,R1                ;CHECK FOR TSSR'S SSR SET
10254   055356  001755                  BEQ     252$                    ;KEEP COUNTING UNTIL SET
10255   055360  016501  000000          MOV     TSSR(R5),R1             ;GET STATUS FROM TSSR
10256   055364  012702  000200          MOV     #SSR,R2                 ;SET UP EXPECTED
10257   055370  020201                  CMP     R2,R1                   ;WAS EVERYTHING OK
10258   055372  001406                  BEQ     260$                    ;BR. IF ALL IS WELL
10259   055374  004737  020116          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10263   055400                          ERRHRD  ERRNO,T27SCF,PKTSSR     ;SPACE FORWARD DIDN'T WORK OUT
        055400  104456                                                          TRAP    C$ERHRD
        055402  000542                                                          .WORD   354
        055404  060317                                                          .WORD   T27SCF
        055406  011710                                                          .WORD   PKTSSR
10264   055410                  260$:   CKLOOP                          ;LOOP IF SELECTED
        055410  104406                                                          TRAP    C$CLP1
10265   055412  013701  055676          MOV     T27CNT,R1               ;TIME FOR WRITE SPACING
10266   055416  013702  055700          MOV     T27CNU,R2               ;TIME FOR WRITE RETRY SPACING
10267   055422  160102                  SUB     R1,R2                   ;GET'EM PRETTY CLOSE
10268   055424  160102                  SUB     R1,R2                   ;GET'EM PRETTY CLOSE
10269   055426  042702  007777          BIC     #7777,R2                ;CLEAR LOW 12 BITS
10270   055432  005702                  TST     R2                      ;R2 SHOULD BE ZERO
10271   055434  001407                  BEQ     300$                    ;BR. IF GOOD   CHECK
10272   055436  004737  020116          JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10273   055442  005001                  CLR     R1                      ;READY FOR PRINTOUT
10277   055444                          ERRHRD  ERRNO,T27TIM,EXPREC     ;TIME WAS NOT DIFFERENT ENOUGH
        055444  104456                                                          TRAP    C$ERHRD
        055446  000543                                                          .WORD   355
        055450  056644                                                          .WORD   T27TIM
        055452  016360                                                          .WORD   EXPREC
10278   055454                  300$:   CKLOOP                          ;LOOP IF SELECTED
        055454  104406                                                          TRAP    C$CLP1
10279   055456                          ENDSUB                          ;<<<<<<<<<<<< END SUBTEST >>>>>>>>>>>>
        055456                                                                  L10073:
        055456  104403                                                          TRAP    C$ESUB
10280   055460  023727  002170  000031          CMP     FATFLG,#25.             ;IS ERROR COUNT AT 25
10281   055466  002402                          BLT     999$                    ;BR. IF LESS THAN 25
10282   055470  004737  020170                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
10283   055474                  999$:
10284   055474  004737  017372          JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
10285   055500  103002                  BCC     163$                    ;BR. IF NO LOOP REQUIRED
10286   055502  000137  051106          JMP     T27LOOP                 ;EXECUTE AGAIN
10287   055506                  163$:
10288   055506                          EXIT    TST                     ;ALL DONE THIS TEST
        055506  104432                                                          TRAP    C$EXIT
        055510  003322                                                          .WORD   L10066-.
```

```
10290
10291
10292
10294 055512                            ;+
10296 055520                            ;LOCAL STORAGE FOR THIS TEST
10297 055520  100004                    ;-
10298 055522  055530                            .BLKB   10-<.-TUV2A&7>
10299 055524  000000            T27PACKET:
10300 055526  000012                    .WORD   100004          ;COMMAND PACKET FOR TEST
10301 055530                            .WORD   T27DATA         ;WRITE CHARACTERISTICS COMMAND, WITH . ACK
10302 055530  055540                    .WORD   0               ;ADDRESS OF CHARACTERISTICS BLOCK
10303 055532  000000                    .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
10304 055534  000024            T27DATA:                        ;CHARACTERISTICS DATA BLOCK
10305 055536  000000                    .WORD   T27BFR          ;ADDRESS OF MESSAGE BUFFER
10306 055540                            .WORD   0
10307                                   .WORD   20.             ;LENGTH OF MESSAGE BUFFER
10308                                   .WORD   0
10309                           T27BFR: .BLKW   25.             ;MESSAGE BUFFER
10311 055622                            ;
10313 055630                            ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
10314 055630  100006                    ;
10315 055632  055660                            .BLKB   10-<.-TUV2A&7>
10316 055634  000000            T27PK2:
10317 055636  000006                    .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
10318                                   .WORD   T27BF2          ;ADDRESS OF SELECT BLOCK DATA
10320 055640                            .WORD   0
10322 055650                            .WORD   6.              ;SIZE OF DATA PACKET
10323 055650  100005
10324 055652                                    .BLKB   10-<.-TUV2A&7>
10325 055652  003072            T27PK3:
10326 055654  000000                    .WORD   100005          ;REREAD COMMAND, AND ACK
10327 055656  000000            T27RB:
10328                           T27WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
10329 055660                            .WORD   0
10330 055660     010            T27SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
10331 055661     200                    .EVEN
10332 055662  000000            T27BF2:
10333 055664  000000            T27BS0: .BYTE   10              ;BSEL0 AREA
10334                           T27BS1: .BYTE   200             ;BSEL1 AREA
10335                           T27S2:  .WORD   0               ;SEL 2 AREA
10336                           T27S3:  .WORD   0               ;DATA AREA
10337 055666  100205                    .EVEN
10338 055670  100605            ;TAPE MOTION PACKET COMMAND VALUES
10339 055672  102205
10340 055674  177777            T27RN:  .WORD   100205          ;REREAD DATA (NEXT)
10341 055676  000000            T27WDR: .WORD   100605          ;REREAD DATA RETRY
10342 055700  000000            T27CON: .WORD   102205          ;WRITE CONTINOUS
10343 055702  000000                    .WORD   177777          ;END OF DATA
                                T27CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
                                T27CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
                                T27DLY: .WORD   0               ;DELAY COUNTER
```

```
10345
10346                                   ;+
10347                                   ;LOCAL TEXT MESSAGES FOR TEST
10348                                   ;-
10349
10350
10351 055704     124     141     160   T27WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
10352 055772     124     123     123   T27RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
10353 056041     122     105     122   T27RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
10354 056136     120     117     123   T27SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
10355 056220     122     111     102   T27LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
10356 056270     124     123     123   T27WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
10357 056345     111     154     154   T27LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
10358 056426     122     105     122   T27SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
10359 056462     124     123     123   T27WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command,At BOT'
10360 056551     124     141     160   T27BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XSTO)'
10361 056644     127     122     111   T27TIM: .ASCIZ  'WRITE DATA RETRY''S Erase Tape Not Long Enough'
10362 056721     122     105     122   T27EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
10363 057000     124     123     123   T27TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
10364 057055     122     145     167   T27RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
10365 057124     122     101     115   T27RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
10366 057177     124     123     123   T27AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
10367 057246     104     162     151   T27OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
10368 057321     124     123     123   T27WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
10369 057411     124     123     123   T27WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
10370 057464     103     126     103   T27VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
10371 057537     124     123     102   T27BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
10372 057612     127     122     111   T27WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
10373 057701     122     145     141   T27LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XSTO'
10374 057763     122     145     141   T27LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
10375 060045     122     145     163   T27PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
10376 060133     122     145     141   T27TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
10377 060221     127     122     111   T27NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
10378 060317     124     123     123   T27SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
10379 060374     124     123     123   T27TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
10380 060456     124     123     123   T27WRF: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command'
10381 060536     104     141     164   T27DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
10382 060633     127     162     151   TST27ID:        .ASCIZ  'Write Data Retry'
10383                                           .EVEN
10384                                   ;+
10385                                   ;
10386                                   ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
10387                                   ;WRITE SUBSYSTEM MEMORY COMMAND
10388                                   ;
10389                                   ;-
10390
10391 060654                             T27REST:
10392 060654                                     SAVREG                          ;SAVE THE REGISTERS
10393 060660     012701  055520                  MOV     #T27PACKET,R1           ;START OF THE PACKET
10394 060664     012721  100004                  MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
10395 060670     012721  055530                  MOV     #T27DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
10396 060674     005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
10397 060676     012721  000012                  MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
10398 060702     012721  055540                  MOV     #T27BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
10399 060706     005021                          CLR     (R1)+
10400 060710     012721  000024                  MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
10401 060714     005021                          CLR     (R1)+
```

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10402 060716  012711  000000                    MOV     #0,(R1)                 ;SELECT DRIVE ZERO
10403 060722  012702  000030                    MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
10404 060726  012762  177777  055540  64$:      MOV     #177777,T27BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
10405 060734  005742                           TST     -(R2)                   ;NEXT LOCATION
10406 060736  022702  000000                    CMP     #0,R2                   ;AT END OF LOOP YET
10407 060742  001371                           BNE     64$                     ;KEEP GOING UNTIL DONE
10408 060744  000207                           RTS     PC                      ;RETURN
10409
10410
10411 060746                          T27RT2:
10412 060746                                  SAVREG                          ;SAVE THE REGISTERS
10413 060752  012701  055630                    MOV     #T27PK2,R1              ;START OF THE PACKET
10414 060756  012721  100006                    MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
10415 060762  012721  055660                    MOV     #T27BF2,(R1)+           ;ADDRESS OF DATA BLOCK
10416 060766  005021                           CLR     (R1)+                   ;EXTENDED ADDRESS
10417 060770  012721  000006                    MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
10418 060774  005021                           CLR     (R1)+
10419 060776  012701  055660                    MOV     #T27BF2,R1              ;POINT TO DATA SEL AREA
10420 061002  005021                           CLR     (R1)+
10421 061004  005011                           CLR     (R1)
10422 061006  000207                           RTS     PC                      ;RETURN
10423 061010                          T27RT3:
10424 061010                                  SAVREG                          ;SAVE REGISTERS
10425 061014  012701  055650                    MOV     #T27PK3,R1              ;SET UP POINTER ADDRESS
10426 061020  005021                           CLR     (R1)+                   ;COMMAND SPACE
10427 061022  005021                           CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
10428 061024  005021                           CLR     (R1)+                   ;EXTENDED ADDRESS
10429 061026  005011                           CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
10430 061030  000207                           RTS     PC                      ;RETURN
10431 061032                                  ENDTST
061032
061032  104401                        L10066:
                                              TRAP    C$ETST
```

```
                                        .SBTTL  TEST  4: WRITE/READ TAPE MARK
                                ;+
                                ;
                                ;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.
                                ;
                                ;
                                ;THE TEST CONSISTS OF THE FOLLOWING 3 SUBTESTS
                                ;
                                ;
                                ;
                                ;-
061034                                  BGNTST
061034                                                                  T4::
061034  005037  002170                        CLR     FATFLG                  ;CLEAR FATAL ERROR FLAG
061040  005037  003100                        CLR     KTFLG           ;HOLD OFF KT11
061044  012737  005771  002146                MOV     #EPRT2,EPRTSW           ;SECONDARY ERROR MESSAGE
061052  005037  003102                        CLR     KTENABLE                ;TURN KT11 OFF
061056  004737  020262                        JSR     PC,KTOFF                ;TURN KT11 BACK OFF IF THERE
061062  012700  065251                        MOV     #TST28ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
061066  004737  017424                        JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
061072  012737  000001  002164                MOV     #1,LOOPCNT              ;PERFORM 1 ITERATIONS
061100                                  T28LOOP:
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10465                           ;*
10466                           ;
10467                           ;TEST 4, SUBTEST 1
10468                           ;
10469                           ;VERIFIES THAT WRITE TAPE MARK COMMANDS OPERATE
10470                           ;PROPERLY, AND THAT READ COMMANDS SUBSEQUENTLY ISSUED
10471                           ;TO DETECT THE WRITTEN TAPE MARKS TERMINATE WITH TAPE
10472                           ;STATUS ALERT WITH THE TAPE MARK DETECTED (TMK) STATUS
10473                           ;BIT SET. THE FOLLOWING SEQUENCE IS EXECUTED.
10474                           ;
10475                           ;1.     THE CONTROLLER IS INITIALIZED AND TAPE REWOUND.
10476                           ;       THIS SETS THE VOLUME CHECK (VCK) STATUS BIT.
10477                           ;
10478                           ;2.     A WRITE TAPE MARK COMMAND WITH CVC=1 IS ISSUED
10479                           ;       AND PROPER TERMINATION AND STATUS IS VERIFIED
10480                           ;       (I.E. VCK=0 AND TMK=1).
10481                           ;
10482                           ;3.     SEVERAL MORE WRITE TAPE MARK COMMANDS, THESE WITH
10483                           ;       CVC=0 ARE ISSUED AND PROPER TERMINATION (NORMAL)
10484                           ;       AND STATUS (TMK) VERIFIED.
10485                           ;
10486                           ;4.     A READ REVERSE COMMAND IS ISSUED AND PROPER
10487                           ;       TERMINATION (TAPE STATUS ALERT) AND STATUS (TMK)
10488                           ;       VERIFIED. IT IS ALSO VERIFIED THAT NO DATA IS
10489                           ;       TRANSFERRED INTO MEMORY.
10490                           ;
10491                           ;5.     A SPACE RECORDS REVERSE COMMAND IS ISSUED AND
10492                           ;       PROPER TERMINATION (TAPE STATUS ALERT) AND STATUS
10493                           ;       (TMK) VERIFIED.
10494                           ;
10495                           ;6.     THE TAPE IS REWOUND AND A READ FORWARD COMMAND IS
10496                           ;       ISSUED AND PROPER TERMINATION (TAPE STATUS ALERT)
10497                           ;       AND STATUS (TMK) VERIFIED. IT IS ALSO VERIFIED
10498                           ;       THAT NO DATA IS TRANSFERRED INTO MEMORY.
10499                           ;
10500                           ;7.     A SPACE RECORDS REVERSE COMMAND THAT CONTAINS A
10501                           ;       RECORD COUNT GREATER THAN 1 IS ISSUED AND IT IS
10502                           ;       VERIFIED THAT TAPE STATUS ALERT TERMINATION
10503                           ;       OCCURED, TMK=1 AND THAT RBPCR (RESIDUAL
10504                           ;       BYTE/RECORD COUNTER) CONTAINS THE PROPER NONZERO
10505                           ;       VALUE. THIS OPERATION VERIFIES THAT DETECTION OF
10506                           ;       THE TAPE MARK CAUSES THE SPACE RECORDS OPERATION
10507                           ;       TO BE PREMATURELY TERMINATED. THIS SHOULD LEAVE
10508                           ;       THE POSITION JUST BEFORE THE FIRST RECORD ON
10509                           ;       TAPE.
10510                           ;
10511                           ;8.     TAPE POSITION IS VERIFIED BY ISSUING ANOTHER
10512                           ;       SPACE RECORDS REVERSE COMMAND AND VERIFYING THAT
10513                           ;       TAPE STATUS ALERT TERMINATION OCCURS, WITH THE
10514                           ;       REVERSE INTO BOT (RIB) STATUS ERROR BIT SET.
10515                           ;
10516                           ;9.     A SPACE RECORDS FORWARD COMMAND THAT CONTAINS A
10517                           ;       RECORD COUNT GREATER THAN 1 IS ISSUED AND IT IS
10518                           ;       VERIFIED THAT TAPE STATUS ALERT TERMINATION
10519                           ;       OCCURED, TMK=1, AND THAT RBPCR (RESIDUAL
10520                           ;       BYTE/RECORD COUNTER) CONTAINS THE PROPER NONZERO
10521                           ;       VALUE. THIS OPERATION VERIFIES THAT DETECTION OF
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10522                                   ;       THE TAPE MARK CAUSES THE SPACE RECORDS OPERATION
10523                                   ;       TO BE PREMATURELY TERMINATED.
10524                                   ;
10525                                   ;
10526                                   ;
10527                                   ;
10528                                   ;
10529                                   ;
10530                                   ;-
10531 061100                                    BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
       061100                                                                                    T4.1:
       061100  104402                                                                              TRAP    C$BSUB
10532 061102  004737  065276                     JSR     PC,T28REST              ;SET COMMAND PACKET
10533 061106  004737  065370                     JSR     PC,T28RT2               ;SET UP OTHER COMMAND PACKET
10534 061112  004737  065432                     JSR     PC,T28RT3               ;SET UP OTHER COMMAND PACKET
10535 061116  012737  023420  063402             MOV     #10000.,T28DLY          ;SET UP DELAY ROUTINE
10536 061124  004737  016660           10$:      JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
10537 061130  103426                             BCS     20$                     ;BR IF INIT WAS OK
10538 061132                                     DELAY   250                     ;DELAY ABOUT .25 SECONDS
       061132  012727  000250                                                          MOV     #250.,(PC)+
       061136  000000                                                                   .WORD   0
       061140  013727  002116                                                          MOV     L$DLY,(PC)+
       061144  000000                                                                   .WORD   0
       061146  005367  177772                                                          DEC     -6(PC)
       061152  001375                                                                   BNE     .-4
       061154  005367  177756                                                          DEC     -22(PC)
       061160  001367                                                                   BNE     .-20
10539 061162  005337  063402                     DEC     T28DLY                  ;BUMP DELAY ROUTINE DOWN
10540 061166  001356                             BNE     10$                     ;BR, IF MORE DELAY TIME LEFT
10541 061170  004737  020116                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10545 061174  010001                             MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
10546 061176                                     ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
       061176  104455                                                                   TRAP    C$ERDF
       061200  000621                                                                   .WORD   401
       061202  003550                                                                   .WORD   SFIERR
       061204  011676                                                                   .WORD   SFIMSG
10547 061206                             20$:
10548 061206  012704  063210                     MOV     #T28PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
10549 061212  004737  010342                     JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
10550 061216  103407                             BCS     23$                     ;BR, IF COMMAND ISSUED OK
10551 061220  004737  020116                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10555 061224  010001                             MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
10556 061226                                     ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
       061226  104456                                                                   TRAP    C$ERHRD
       061230  000622                                                                   .WORD   402
       061232  004754                                                                   .WORD   WRTMSG
       061234  011676                                                                   .WORD   SFIMSG
10557 061236                             23$:    CKLOOP                          ;LOOP IF SELECTED
       061236  104406                                                                   TRAP    C$CLP1
10558 061240  004737  010444                     JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
10559 061244  103411                             BCS     30$                     ;BR, IF NO PROBLEM
10560 061246  016501  000000                     MOV     TSSR(R5),R1             ;GET TSSR
10561 061252  010004                             MOV     R0,R4                   ;SAVE PACKET ADDRESS
10562 061254  004737  020116                     JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10566 061260                                     ERRHRD  ERRNO,T28RWN,PKTSSR     ;REWIND NOT ACCEPTED
       061260  104456                                                                   TRAP    C$ERHRD
       061262  000623                                                                   .WORD   403
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        061264  064331                                                  .WORD   T28RWN
        061266  011710                                                  .WORD   PKTSSR
10567   061270                          30$:    CKLOOP                  ;LOOP IF SELECTED
        061270  104406                                                  TRAP    C$CLP1
10568   061272  013701  063236                  MOV     T28BFR+6,R1     ;PICK UP XSTO
10569   061276  010102                          MOV     R1,R2           ;SET UP EXPECTED
10570   061300  052702  000002                  BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
10571   061304  020102                          CMP     R1,R2           ;DOES EXP = REC'D
10572   061306  001406                          BEQ     40$             ;BR, IF EQUAL (OK)
10573   061310  004737  020116                  JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
10577   061314                                  ERRHRD  ERRNO,T28BOT,EXPREC ;TAPE NOT AT BOT AFTER REWIND
        061314  104456                                                  TRAP    C$ERHRD
        061316  000624                                                  .WORD   404
        061320  064207                                                  .WORD   T28BOT
        061322  016360                                                  .WORD   EXPREC
10578   061324                          40$:    CKLOOP                  ;LOOP IF SELECTED
        061324  104406                                                  TRAP    C$CLP1
10579   061326  012704  063210                  MOV     #T28PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
10580   061332  004737  010342                  JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
10581   061336  103407                          BCS     68$             ;BR, IF COMMAND ISSUED OK
10582   061340  004737  020116                  JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
10586   061344  010001                          MOV     R0,R1           ;SAVE CONTENTS OF TSSR
10587   061346                                  ERRHRD  ERRNO,WRTMSG,SFIMSG ;WRITE CHARACTERISTISC FAILED
        061346  104456                                                  TRAP    C$ERHRD
        061350  000625                                                  .WORD   405
        061352  004754                                                  .WORD   WRTMSG
        061354  011676                                                  .WORD   SFIMSG
10588   061356                          68$:    CKLOOP                  ;LOOP IF SELECTED
        061356  104406                                                  TRAP    C$CLP1
10589   061360  012737  140011  063340          MOV     #140011,T28PK3  ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
10590   061366  012704  063340                  MOV     #T28PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
10591   061372  010465  177776                  MOV     R4,TSDB(R5)     ;ISSUE COMMAND
10592   061376  004737  017134                  JSR     PC,WAITF        ;WAIT FOR SSR TO SET
10593   061402  016501  000000                  MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
10594   061406  012702  000200                  MOV     #SSR,R2         ;SET UP EXPECTED
10595   061412  020102                          CMP     R1,R2           ;ARE THEY EQUAL
10596   061414  001406                          BEQ     70$             ;BR, IF OK
10597   061416  004737  020116                  JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
10601   061422                                  ERRHRD  ERRNO,T28WDC,PKTSSR ;TSSR INCORRECT AFTER WRITE TAPE MARK
        061422  104456                                                  TRAP    C$ERHRD
        061424  000626                                                  .WORD   406
        061426  064453                                                  .WORD   T28WDC
        061430  011710                                                  .WORD   PKTSSR
10602   061432                          70$:    CKLOOP                  ;LOOP IF SELECTED
        061432  104406                                                  TRAP    C$CLP1
10603   061434  013701  063236                  MOV     T28BFR+6,R1     ;PICK UP XSTO (VCK CHECK)
10604   061440  010102                          MOV     R1,R2           ;SET UP EXPECTED
10605   061442  042702  000020                  BIC     #BIT4,R2        ;VCK SHOULD BE 0
10606   061446  020102                          CMP     R1,R2           ;IS VCK SET CORRECTLY
10607   061450  001406                          BEQ     80$             ;BR, IF VCK IS CLEAR
10608   061452  004737  020116                  JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
10612   061456                                  ERRHRD  ERRNO,T28VCK,EXPREC ;VCK WAS NOT CLEAR AFTER CVC=1
        061456  104456                                                  TRAP    C$ERHRD
        061460  000627                                                  .WORD   407
        061462  064532                                                  .WORD   T28VCK
        061464  016360                                                  .WORD   EXPREC
10613   061466                          80$:    CKLOOP                  ;LOOP IF SELECTED
```

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                061466  104406                                                          TRAP    C$CLP1
10614           061470  013701  063236          MOV     T28BFR+6,R1     ;PICK UP XSTO (CHECK TMK)
10615           061474  010102                  MOV     R1,R2           ;SET UP EXPECTED
10616           061476  052702  100000          BIS     #BIT15,R2       ;TMK SHOULD BE SET
10617           061502  020102                  CMP     R1,R2           ;WAS TMK SET
10618           061504  001406                  BEQ     90$             ;BR, IF TMK WAS SET
10619           061506  004737  020116          JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
10623           061512                          ERRHRD  ERRNO,T28TMK,EXPREC ;TMK WAS NOT SET AFTER WRT TAPE MARK
                061512  104456                                                          TRAP    C$ERHRD
                061514  000630                                                          .WORD   408
                061516  064605                                                          .WORD   T28TMK
                061520  016360                                                          .WORD   EXPREC
10624           061522                  90$:    CKLOOP                  ;LOOP IF SELECTED
                061522  104406                                                          TRAP    C$CLP1
10625           061524  004737  010444          JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
10626           061530  103411                  BCS     130$            ;BR, IF NO PROBLEM
10627           061532  010004                  MOV     R0,R4           ;SAVE PACKET ADDRESS
10628           061534  016501  000000          MOV     TSSR(R5),R1     ;GET TSSR STATUS
10629           061540  004737  020116          JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
10633           061544                          ERRHRD  ERRNO,T28RWN,PKTSSR ;REWIND NOT ACCEPTED
                061544  104456                                                          TRAP    C$ERHRD
                061546  000631                                                          .WORD   409
                061550  064331                                                          .WORD   T28RWN
                061552  011710                                                          .WORD   PKTSSR
10634           061554                  130$:   CKLOOP                  ;LOOP IF SELECTED
                061554  104406                                                          TRAP    C$CLP1
10635           061556  013701  063236          MOV     T28BFR+6,R1     ;PICK UP XSTO
10636           061562  010102                  MOV     R1,R2           ;SET UP EXPECTED
10637           061564  052702  000002          BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
10638           061570  020102                  CMP     R1,R2           ;DOES EXP = REC'D
10639           061572  001406                  BEQ     140$            ;BR, IF EQUAL (OK)
10640           061574  004737  020116          JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
10644           061600                          ERRHRD  ERRNO,T28BOT,EXPREC ;TAPE NOT AT BOT AFTER REWIND
                061600  104456                                                          TRAP    C$ERHRD
                061602  000632                                                          .WORD   410
                061604  064207                                                          .WORD   T28BOT
                061606  016360                                                          .WORD   EXPREC
10645           061610                  140$:   CKLOOP                  ;LOOP IF SELECTED
                061610  104406                                                          TRAP    C$CLP1
10646           061612  012703  000012  150$:   MOV     #10.,R3         ;NUMBER OF RECORDS TO WRITE TM
10647           061616  012737  140011  063340  MOV     #140011,T28PK3  ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
10648           061624  012704  063340          MOV     #T28PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
10649           061630  010465  177776  155$:   MOV     R4,TSDB(R5)     ;ISSUE COMMAND
10650           061634  004737  017134          JSR     PC,WAITF        ;WAIT FOR SSR TO SET
10651           061640  016501  000000          MOV     TSSR(R5),R1     ;PICK UP TSSR
10652           061644  012702  000200          MOV     #SSR,R2         ;SET UP EXPECTED (SSR ONLY)
10653           061650  020102                  CMP     R1,R2           ;WAS STATUS GOOD
10654           061652  001406                  BEQ     165$            ;BR, IF TERMINATION WAS GOOD
10655           061654  004737  020116          JSR     PC,FATCHK       ;INC AND CHECK FOR MORE THAN 25 ERRORS
10659           061660                          ERRHRD  ERRNO,T28WDC,PKTSSR ;TSSR NOT CORRECT AFTER WRT TAPE M.
                061660  104456                                                          TRAP    C$ERHRD
                061662  000633                                                          .WORD   411
                061664  064453                                                          .WORD   T28WDC
                061666  011710                                                          .WORD   PKTSSR
10660           061670                  165$:   CKLOOP                  ;LOOP IF SELECTED
                061670  104406                                                          TRAP    C$CLP1
10661           061672  013701  063236          MOV     T28BFR+6,R1     ;PICK UP XSTO
```

```
10662 061676 010102                    MOV     R1,R2                   ;SET UP EXPECTED
10663 061700 052702 100000             BIS     #BIT15,R2               ;SET TMK BIT IN EXPECTED
10664 061704 020102                    CMP     R1,R2                   ;DOES EXP = REC'D
10665 061706 001406                    BEQ     180$                    ;BR, IF EQUAL (OK)
10666 061710 004737 020116             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10670 061714                           ERRHRD  ERRNO,T28TMK,EXPREC     ;TMK NOT SET AFTER WRT TAPE MARK
      061714 104456                                                            TRAP    C$ERHRD
      061716 000634                                                            .WORD   412
      061720 064605                                                            .WORD   T28TMK
      061722 016360                                                            .WORD   EXPREC
10671 061724                    180$:  CKLOOP                          ;LOOP IF SELECTED
      061724 104406                                                            TRAP    C$CLP1
10672 061726 005303                    DEC     R3                      ;BUMP COUNTER DOWN
10673 061730 001337                    BNE     155$                    ;BR, IF LESS THAN 10 TAPE MARKS
10674 061732 012700 177777             MOV     #177777,R0              ;VALUE TO WRITTEN TO MEMORY
10675 061736 004737 020410             JSR     PC,FILLMEM              ;FILL MEM WITH ALL ONES
10676 061742 013737 003072 063342      MOV     FREE,T28WB              ;STARTING READ BUFFER ADDRESS
10677 061750 012737 140401 063340      MOV     #140401,T28PK3          ;READ REVERSE,ACK, COMMAND
10678 061756 012704 063340             MOV     #T28PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
10679 061762 013737 000024 063346      MOV     20.,T28SZ               ;SET UP RECORD SIZE IN PACKET
10680 061770 010465 177776             MOV     R4,TSDB(R5)             ;ISSUE COMMAND
10681 061774 004737 017134             JSR     PC,WAITF                ;WAIT FOR SSR TO SET
10682 062000 016501 000000             MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
10683 062004 012702 100204             MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
10684 062010 020102                    CMP     R1,R2                   ;ARE THEY EQUAL
10685 062012 001406                    BEQ     200$                    ;BR, IF OK
10686 062014 004737 020116             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10690 062020                           ERRHRD  ERRNO,T28RDF,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      062020 104456                                                            TRAP    C$ERHRD
      062022 000635                                                            .WORD   413
      062024 063544                                                            .WORD   T28RDF
      062026 011710                                                            .WORD   PKTSSR
10691 062030                    200$:  CKLOOP                          ;LOOP IF SELECTED
      062030 104406                                                            TRAP    C$CLP1
10692 062032 013701 063236             MOV     T28BFR+6,R1             ;PICK UP XSTO
10693 062036 010102                    MOV     R1,R2                   ;SET UP EXPECTED
10694 062040 052702 100000             BIS     #BIT15,R2               ;TMK SHOULD BE SET
10695 062044 020102                    CMP     R1,R2                   ;IS TMK SET
10696 062046 001406                    BEQ     210$                    ;BR, IF TMK WAS SET (GOOD)
10697 062050 004737 020116             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10701 062054                           ERRHRD  ERRNO,T28RRM,EXPREC     ;TMK NOT SET AFYER READ REV
      062054 104456                                                            TRAP    C$ERHRD
      062056 000636                                                            .WORD   414
      062060 064657                                                            .WORD   T28RRM
      062062 016360                                                            .WORD   EXPREC
10702 062064                    210$:  CKLOOP                          ;LOOP IF SELECTED
      062064 104406                                                            TRAP    C$CLP1
10703 062066 017701 121000             MOV     @FREE,R1                ;FIRST LOC IN READ BUFFER
10704 062072 012702 177777             MOV     #177777,R2              ;EXPECTED IF NO DATA TRANS.
10705 062076 020102                    CMP     R1,R2                   ;DID ANY DATA GET TRANSFERRED
10706 062100 001406                    BEQ     220$                    ;BR, IF NO DATA TRANS (GOOD)
10707 062102 004737 020116             JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10711 062106                           ERRHRD  ERRNO,T28DTR,EXPREC     ;DATA TRANSFERRED ON READ TAPE MARK
      062106 104456                                                            TRAP    C$ERHRD
      062110 000637                                                            .WORD   415
      062112 065072                                                            .WORD   T28DTR
      062114 016360                                                            .WORD   EXPREC
```

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10712 062116                          220$:   CKLOOP                          ;LOOP IF SELECTED
      062116  104406                                                                  TRAP    C$CLP1
10713 062120  012737  100410  063340          MOV     #100410,T28PK3          ;SPACE REVERSE,ACK, COMMAND
10714 062126  012737  000001  063342          MOV     #1,T28RB                ;NUMBER OF RECORDS TO SPACE BACK
10715 062134  012704  063340                  MOV     #T28PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
10716 062140  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
10717 062144  004737  017134                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
10718 062150  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
10719 062154  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
10720 062160  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
10721 062162  001406                          BEQ     222$                    ;BR, IF OK
10722 062164  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10726 062170                                  ERRHRD  ERRNO,T28RDG,PKTSSR     ;TSSR INCORRECT AFTER SPACE CMD.
      062170  104456                                                                  TRAP    C$ERHRD
      062172  000640                                                                  .WORD   416
      062174  063625                                                                  .WORD   T28RDG
      062176  011710                                                                  .WORD   PKTSSR
10727 062200                          222$:   CKLOOP                          ;LOOP IF SELECTED
      062200  104406                                                                  TRAP    C$CLP1
10728 062202  013701  063236                  MOV     T28BFR+6,R1             ;PICK UP XSTO
10729 062206  010102                          MOV     R1,R2                   ;SET UP EXPECTED
10730 062210  052702  100000                  BIS     #BIT15,R2               ;TMK SHOULD BE SET
10731 062214  020102                          CMP     R1,R2                   ;IS TMK SET
10732 062216  001406                          BEQ     226$                    ;BR, IF TMK WAS SET (GOOD)
10733 062220  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10737 062224                                  ERRHRD  ERRNO,T28RRN,EXPREC     ;TMK NOT SET AFTER SPACE REV
      062224  104456                                                                  TRAP    C$ERHRD
      062226  000641                                                                  .WORD   417
      062230  064735                                                                  .WORD   T28RRN
      062232  016360                                                                  .WORD   EXPREC
10738 062234                          226$:   CKLOOP                          ;LOOP IF SELECTED
      062234  104406                                                                  TRAP    C$CLP1
10739 062236  004737  010444                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
10740 062242  103411                          BCS     230$                    ;BR, IF NO PROBLEM
10741 062244  010004                          MOV     R0,R4                   ;SAVE PACKET ADDRESS
10742 062246  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR
10743 062252  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10747 062256                                  ERRHRD  ERRNO,T28RWN,PKTSSR     ;REWIND NOT ACCEPTED
      062256  104456                                                                  TRAP    C$ERHRD
      062260  000642                                                                  .WORD   418
      062262  064331                                                                  .WORD   T28RWN
      062264  011710                                                                  .WORD   PKTSSR
10748 062266                          230$:   CKLOOP                          ;LOOP IF SELECTED
      062266  104406                                                                  TRAP    C$CLP1
10749 062270  013701  063236                  MOV     T28BFR+6,R1             ;PICK UP XSTO
10750 062274  010102                          MOV     R1,R2                   ;SET UP EXPECTED
10751 062276  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
10752 062302  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
10753 062304  001406                          BEQ     240$                    ;BR, IF EQUAL (OK)
10754 062306  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10758 062312                                  ERRHRD  ERRNO,T28BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      062312  104456                                                                  TRAP    C$ERHRD
      062314  000643                                                                  .WORD   419
      062316  064207                                                                  .WORD   T28BOT
      062320  016360                                                                  .WORD   EXPREC
10759 062322                          240$:   CKLOOP                          ;LOOP IF SELECTED
      062322  104406                                                                  TRAP    C$CLP1
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10760 062324  012700  177777                MOV     #177777,R0          ;VALUE TO WRITTEN TO MEMORY
10761 062330  004737  020410                JSR     PC,FILLMEM          ;FILL MEM WITH ALL ONES
10762 062334  013737  003072  063342        MOV     FREE,T28RB          ;STARTING READ BUFFER ADDRESS
10763 062342  012737  100001  063340        MOV     #100001,T28PK3      ;READ FORWARD,ACK, COMMAND
10764 062350  012704  063340                MOV     #T28PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
10765 062354  013737  000024  063346        MOV     20.,T28SZ           ;SET UP RECORD SIZE IN PACKET
10766 062362  010465  177776                MOV     R4,TSDB(R5)         ;ISSUE COMMAND
10767 062366  004737  017134                JSR     PC,WAITF            ;WAIT FOR SSR TO SET
10768 062372  016501  000000                MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
10769 062376  012702  100204                MOV     #SSR!SC!BIT2,R2     ;SET UP EXPECTED
10770 062402  020102                       CMP     R1,R2               ;ARE THEY EQUAL
10771 062404  001406                       BEQ     245$                ;BR, IF OK
10772 062406  004737  020116                JSR     PC,FATCHK           ;INC AND CHECK FOR MORE THAN 25 ERRORS
10776 062412                               ERRHRD  ERRNO,T28WDE,PKTSSR ;TSSR INCORRECT AFTER WRITE DATA
      062412  104456                                                           TRAP    C$ERHRD
      062414  000644                                                           .WORD   420
      062416  064116                                                           .WORD   T28WDE
      062420  011710                                                           .WORD   PKTSSR
10777 062422                        245$:  CKLOOP                      ;LOOP IF SELECTED
      062422  104406                                                           TRAP    C$CLP1
1077A 062424  013701  063236                MOV     T28BFR+6,R1         ;PICK UP XSTO
10779 062430  010102                       MOV     R1,R2               ;SET UP EXPECTED
10780 062432  052702  100000                BIS     #BIT15,R2           ;TMK SHOULD BE SET
10781 062436  020102                       CMP     R1,R2               ;IS TMK SET
10782 062440  001406                       BEQ     247$                ;BR, IF TMK WAS SET (GOOD)
10783 062442  004737  020116                JSR     PC,FATCHK           ;INC AND CHECK FOR MORE THAN 25 ERRORS
10787 062446                               ERRHRD  ERRNO,T28RRP,EXPREC ;TMK NOT SET AFTER READ REV
      062446  104456                                                           TRAP    C$ERHRD
      062450  000645                                                           .WORD   421
      062452  065014                                                           .WORD   T28RRP
      062454  016360                                                           .WORD   EXPREC
10788 062456                        247$:  CKLOOP                      ;LOOP IF SELECTED
      062456  104406                                                           TRAP    C$CLP1
10789 062460  017701  120406                MOV     @FREE,R1                    ;FIRST LOC IN READ BUFFER
10790 062464  012702  177777                MOV     #177777,R2          ;EXPECTED IF NO DATA TRANS.
10791 062470  020102                       CMP     R1,R2               ;DID ANY DATA GET TRANSFERRED
10792 062472  001406                       BEQ     250$                ;BR, IF NO DATA TRANS (GOOD)
10793 062474  004737  020116                JSR     PC,FATCHK           ;INC AND CHECK FOR MORE THAN 25 ERRORS
10797 062500                               ERRHRD  ERRNO,T28DTR,EXPREC ;DATA TRANSFERRED ON READ TAPE MARK
      062500  104456                                                           TRAP    C$ERHRD
      062502  000646                                                           .WORD   422
      062504  065072                                                           .WORD   T28DTR
      062506  016360                                                           .WORD   EXPREC
10798 062510                        250$:  CKLOOP                      ;LOOP IF SELECTED
      062510  104406                                                           TRAP    C$CLP1
10799 062512  012737  100410  063340        MOV     #100410,T28PK3      ;SPACE REVERSE,ACK, COMMAND
10800 062520  012737  000005  063342        MOV     #5,T28RB            ;NUMBER OF RECORDS TO SPACE BACK
10801 062526  012704  063340                MOV     #T28PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
10802 062532  010465  177776                MOV     R4,TSDB(R5)         ;ISSUE COMMAND
10803 062536  004737  017134                JSR     PC,WAITF            ;WAIT FOR SSR TO SET
10804 062542  016501  000000                MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
10805 062546  012702  100204                MOV     #SSR!SC!BIT2,R2     ;SET UP EXPECTED
10806 062552  020102                       CMP     R1,R2               ;ARE THEY EQUAL
10807 062554  001406                       BEQ     260$                ;BR, IF OK
10808 062556  004737  020116                JSR     PC,FATCHK           ;INC AND CHECK FOR MORE THAN 25 ERRORS
10812 062562                               ERRHRD  ERRNO,T28RDG,PKTSSR ;TSSR INCORRECT AFTER SPACE REV CMD.
      062562  104456                                                           TRAP    C$ERHRD
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        062564  000647                                                          .WORD   423
        062566  063625                                                          .WORD   T28RDG
        062570  011710                                                          .WORD   PKTSSR
10813   062572                          260$:   CKLOOP                          ;LOOP IF SELECTED
        062572  104406                                                          TRAP    C$CLP1
10814   062574  013701  063236                  MOV     T28BFR+6,R1             ;PICK UP XSTO
10815   062600  010102                          MOV     R1,R2                   ;SET UP EXPECTED
10816   062602  052702  100000                  BIS     #BIT15,R2               ;TMK SHOULD BE SET
10817   062606  020102                          CMP     R1,R2                   ;IS TMK SET
10818   062610  001406                          BEQ     270$                    ;BR, IF TMK WAS SET (GOOD)
10819   062612  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10823   062616                                  ERRHRD  ERRNO,T28RRN,EXPREC     ;TMK NOT SET AFTER READ REV
        062616  104456                                                          TRAP    C$ERHRD
        062620  000650                                                          .WORD   424
        062622  064735                                                          .WORD   T28RRN
        062624  016360                                                          .WORD   EXPREC
10824   062626                          270$:   CKLOOP                          ;LOOP IF SELECTED
        062626  104406                                                          TRAP    C$CLP1
10825   062630  013701  063234                  MOV     T28BFR+4,R1             ;PICK UP RESIDUAL BYTE COUNTER
10826   062634  012702  000004                  MOV     #4.,R2                  ;SHOULD BE THE DIFFERENCE
10827   062640  020102                          CMP     R1,R2                   ;IS COUNTER CORRECT
10828   062642  001406                          BEQ     280$                    ;BR, IF COUNTER CORRECT
10829   062644  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10833   062650                                  ERRHRD  ERRNO,T28PBP,EXPREC     ;RESIDUAL BYTE COUNTER NOT CORRECT
        062650  104456                                                          TRAP    C$ERHRD
        062652  000651                                                          .WORD   425
        062654  063461                                                          .WORD   T28PBP
        062656  016360                                                          .WORD   EXPREC
10834   062660                          280$:   CKLOOP                          ;LOOP IF SELECTED
        062660  104406                                                          TRAP    C$CLP1
10835   062662  012737  100410  063340          MOV     #100410,T28PK3          ;SPACE REVERSE,ACK, COMMAND
10836   062670  012737  000001  063342          MOV     #1,T28RB                ;NUMBER OF RECORDS TO SPACE BACK
10837   062676  012704  063340                  MOV     #T28PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
10838   062702  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
10839   062706  004737  017134                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
10840   062712  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
10841   062716  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
10842   062722  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
10843   062724  001406                          BEQ     290$                    ;BR, IF OK
10844   062726  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10848   062732                                  ERRHRD  ERRNO,T28RDG,PKTSSR     ;TSSR INCORRECT AFTER SPACE CMD.
        062732  104456                                                          TRAP    C$ERHRD
        062734  000652                                                          .WORD   426
        062736  063625                                                          .WORD   T28RDG
        062740  011710                                                          .WORD   PKTSSR
10849   062742                          290$:   CKLOOP                          ;LOOP IF SELECTED
        062742  104406                                                          TRAP    C$CLP1
10850   062744  013701  063244                  MOV     T28BFR+14,R1            ;PICK UP XST3
10851   062750  010102                          MOV     R1,R2                   ;SET UP EXPECTED
10852   062752  052702  000001                  BIS     #BIT0,R2                ;RIB SHOULD BE SET
10853   062756  020102                          CMP     R1,R2                   ;IS RIB SET
10854   062760  001406                          BEQ     300$                    ;BR, IF RIB WAS SET (GOOD)
10855   062762  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10859   062766                                  ERRHRD  ERRNO,T28RIB,EXPREC     ;RIB NOT SET AFTER READ REV
        062766  104456                                                          TRAP    C$ERHRD
        062770  000653                                                          .WORD   427
        062772  063404                                                          .WORD   T28RIB
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        062774  016360                                                          .WORD   EXPREC
10860   062776                          300$:   CKLOOP                          ;LOOP IF SELECTED
        062776  104406                                                          TRAP    C$CLP1
10861   063000  012737  100010  063340          MOV     #100010,T28PK3          ;SPACE FORWARD,ACK, COMMAND
10862   063006  012737  000005  063342          MOV     #5,T28RB                ;NUMBER OF RECORDS TO SPACE FORW.
10863   063014  012704  063340                  MOV     #T28PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
10864   063020  010465  177776                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
10865   063024  004737  017134                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
10866   063030  016501  000000                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
10867   063034  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
10868   063040  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
10869   063042  001406                          BEQ     310$                    ;BR, IF OK
10870   063044  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10874   063050                                  ERRHRD  ERRNO,T28RDF,EXPREC     ;TSSR INCORRECT AFTER SPACE CMD.
        063050  104456                                                          TRAP    C$ERHRD
        063052  000654                                                          .WORD   428
        063054  063544                                                          .WORD   T28RDF
        063056  016360                                                          .WORD   EXPREC
10875   063060                          310$:   CKLOOP                          ;LOOP IF SELECTED
        063060  104406                                                          TRAP    C$CLP1
10876   063062  013701  063236                  MOV     T28BFR+6,R1             ;PICK UP XSTO
10877   063066  010102                          MOV     R1,R2                   ;SET UP EXPECTED
10878   063070  052702  100000                  BIS     #BIT15,R2               ;TMK SHOULD BE SET
10879   063074  020102                          CMP     R1,R2                   ;IS TMK SET
10880   063076  001406                          BEQ     320$                    ;BR, IF TMK WAS SET (GOOD)
10881   063100  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10885   063104                                  ERRHRD  ERRNO,T28RRP,EXPREC     ;TMK NOT SET AFTER READ REV
        063104  104456                                                          TRAP    C$ERHRD
        063106  000655                                                          .WORD   429
        063110  065014                                                          .WORD   T28RRP
        063112  016360                                                          .WORD   EXPREC
10886   063114                          320$:   CKLOOP                          ;LOOP IF SELECTED
        063114  104406                                                          TRAP    C$CLP1
10887   063116  013701  063234                  MOV     T28BFR+4,R1             ;PICK UP RESIDUAL BYTE COUNTER
10888   063122  012702  000004                  MOV     #4.,R2                  ;SHOULD BE THE DIFFERENCE
10889   063126  020102                          CMP     R1,R2                   ;IS COUNTER CORRECT
10890   063130  001406                          BEQ     330$                    ;BR, IF COUNTER CORRECT
10891   063132  004737  020116                  JSR     PC,FATCHK               ;INC AND CHECK FOR MORE THAN 25 ERRORS
10895   063136                                  ERRHRD  ERRNO,T28PBP,EXPREC     ;RESIDUAL BYTE COUNTER NOT CORRECT
        063136  104456                                                          TRAP    C$ERHRD
        063140  000656                                                          .WORD   430
        063142  063461                                                          .WORD   T28PBP
        063144  016360                                                          .WORD   EXPREC
10896   063146                          330$:   CKLOOP                          ;LOOP IF SELECTED
        063146  104406                                                          TRAP    C$CLP1
10897   063150                                  ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
        063150                                                                  L10075:
        063150  104403                                                          TRAP    C$ESUB
10898   063152  023727  002170  000031          CMP     FATFLG,#25.                     ;IS ERROR COUNT AT 25
10899   063160  002402                          BLT     999$                            ;BR, IF LESS THAN 25
10900   063162  004737  020170                  JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
10901   063166                          999$:
10902                                   ;
10903                                   ;
10904                                   ;
10905   063166  004737  017372                  JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
10906   063172  103002                          BCC     163$                    ;BR, IF NO LOOP REQUIRED
```

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10907 063174  000137  061100          163$:   JMP     T28LOOP         ;EXECUTE AGAIN
10908 063200                                  
10909 063200                                  EXIT    TST             ;ALL DONE THIS TEST
      063200  104432                                                   TRAP    C$EXIT
      063202  002252                                                   .WORD   L10074-.
```

```
10911                                   ;*
10912                                   ;LOCAL STORAGE FOR THIS TEST
10913                                   ;-
10915 063204                                    .BLKB   10-<.-TUV2A&7>
10917 063210                            T28PACKET:
10918 063210  100004                              .WORD   100004          ;COMMAND PACKET FOR TEST
10919 063212  063220                              .WORD   T28DATA         ;WRITE CHARACTERISTICS COMMAND, WITH IE, ACK
10920 063214  000000                              .WORD   0               ;ADDRESS OF CHARACTERISTICS BLOCK
10921 063216  000012                              .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
10922 063220                            T28DATA:                          ;CHARACTERISTICS DATA BLOCK
10923 063220  063230                              .WORD   T28BFR          ;ADDRESS OF MESSAGE BUFFER
10924 063222  000000                              .WORD   0
10925 063224  000024                              .WORD   20.             ;LENGTH OF MESSAGE BUFFER
10926 063226  000000                              .WORD   0
10927 063230                            T28BFR: .BLKW   25.               ;MESSAGE BUFFER
10928                                   ;
10929                                   ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
10930                                   ;
10932 063312                                    .BLKB   10-<.-TUV2A&7>
10934 063320                            T28PK2:
10935 063320  100006                              .WORD   100006          ;WRITE SUB SYS MEM COMMAND, IE AND ACK
10936 063322  063350                              .WORD   T28BF2          ;ADDRESS OF SELECT BLOCK DATA
10937 063324  000000                              .WORD   0
10938 063326  000006                              .WORD   6.              ;SIZE OF DATA PACKET
10939
10941 063330                                    .BLKB   10-<.-TUV2A&7>
10943 063340                            T28PK3:
10944 063340  100005                              .WORD   100005          ;REREAD COMMAND,  AND ACK
10945 063342                            T28RB:
10946 063342  003072                    T28WB:    .WORD   FREE            ;ADDRESS OF WRITE BUFFER
10947 063344  000000                              .WORD   0
10948 063346  000000                    T28SZ:    .WORD   0               ;SIZE OF BUFFER (EXTENT)
10949                                             .EVEN
10950                                   ;
10951                                   ;
10952                                   ;
10953 063350                            T28BF2:
10954 063350      010                   T28BS0: .BYTE   10                ;BSEL0 AREA
10955 063351      200                   T28BS1: .BYTE   200               ;BSEL1 AREA
10956 063352  000000                    T28S2:  .WORD   0                 ;SEL 2 AREA
10957 063354  000000                    T28S3:  .WORD   0                 ;DATA AREA
10958                                   ;
10959                                   ;
10960                                             .EVEN
10961                                   ;TAPE MOTION PACKET COMMAND VALUES
10962
10963 063356                            T28IMV:
10964 063356  101411                              .WORD   101411          ;ILLEGAL MODE BITS TEST DATA
10965 063360  102011                              .WORD   102011
10966 063362  103411                              .WORD   103411
10967 063364  177777                              .WORD   177777
10968 063366  100011                    T28RN:    .WORD   100011          ;WRITE TAPE MARK COMMAND
10969 063370  100411                    T28WDR:   .WORD   100411          ;ERASE COMMAND
10970 063372  101011                    T28CON:   .WORD   101011          ;WRITE TAPE MARK RETRY
10971 063374  177777                              .WORD   177777          ;END OF DATA
10972
10973                                   ;
```

```
10974 063376  000000                T28CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
10975 063400  000000                T28CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
10976 063402  000000                T28DLY: .WORD   0               ;DELAY COUNTER
10977                                       .EVEN
10978
```

```
10980                                   ;*
10981                                   ;LOCAL TEXT MESSAGES FOR TEST
10982                                   ;-
10983
10984
10985 063404      124     141     160   T28RIB: .ASCIZ  'Tape Position Not Correct, RIB Should Be Set'
10986 063461      122     145     163   T28PBP: .ASCIZ  'Residual Byte Counter Register (RBPCR) Not Correct'
10987 063544      124     123     123   T28RDF: .ASCIZ  'TSSR Incorrect After READ REVERSE Into TAPE MARK'
10988 063625      124     123     123   T28RDG: .ASCIZ  'TSSR Incorrect After SPACE Command Into TAPE MARK'
10989 063707      124     123     123   T28WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
10990 063764      111     154     154   T28LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
10991 064045      127     122     111   T28SSR: .ASCIZ  'WRITE MISCELLANEOUS Command Not Accepted'
10992 064116      124     123     123   T28WDE: .ASCIZ  'TSSR Not Correct After READ DATA Command, Into TAPE MARK'
10993 064207      124     141     160   T28BOT: .ASCIZ  'Tape Not At BOT After REWIND Command'
10994 064254      124     123     123   T28TM:  .ASCIZ  'TSSR Not Correct After FORMAT Command Reject'
10995 064331      122     145     167   T28RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
10996 064400      104     162     151   T28OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
10997 064453      124     123     123   T28WDC: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK Command'
10998 064532      103     126     103   T28VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
10999 064605      124     115     113   T28TMK: .ASCIZ  'TMK Not Set After WRITE TAPE MARK Command'
11000 064657      124     115     113   T28RRM: .ASCIZ  'TMK Not Set After READ REVERSE Into TAPE MARK'
11001 064735      124     115     113   T28RRN: .ASCIZ  'TMK Not Set After SPACE REVERSE Into TAPE MARK'
11002 065014      124     115     113   T28RRP: .ASCIZ  'TMK Not Set After READ FORWARD Into TAPE MARK'
11003 065072      104     141     164   T28DTR: .ASCIZ  'Data Transferred On READ REVERSE Into A TAPE MARK'
11004 065154      104     141     164   T28DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
11005 065251      127     162     151   TST28ID:        .ASCIZ  'Write/Read Tape Mark'
11006                                           .EVEN
11007                                   ;*
11008                                   ;
11009                                   ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
11010                                   ;WRITE SUBSYSTEM MEMORY COMMAND
11011                                   ;
11012                                   ;-
11013
11014 065276                            T28REST:
11015 065276                                    SAVREG                          ;SAVE THE REGISTERS
11016 065302  012701  063210                     MOV     #T28PACKET,R1           ;START OF THE PACKET
11017 065306  012721  100004                     MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
11018 065312  012721  063220                     MOV     #T28DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
11019 065316  005021                             CLR     (R1)+                   ;EXTENDED ADDRESS
11020 065320  012721  000012                     MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
11021 065324  012721  063230                     MOV     #T28BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
11022 065330  005021                             CLR     (R1)+
11023 065332  012721  000024                     MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
11024 065336  005021                             CLR     (R1)+
11025 065340  012711  000000                     MOV     #0,(R1)                 ;SELECT DRIVE ZERO
11026 065344  012702  000030                     MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
11027 065350  012762  177777  063230  64$:      MOV     #177777,T28BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
11028 065356  005742                             TST     -(R2)                   ;NEXT LOCATION
11029 065360  020227  000000                     CMP     R2,#0                   ;CHECK FOR END
11030 065364  001371                             BNE     64$                     ;KEEP GOING UNTIL DONE
11031 065366  000207                             RTS     PC                      ;RETURN
11032
11033
11034 065370                            T28RT2:
11035 065370                                    SAVREG                          ;SAVE THE REGISTERS
11036 065374  012701  063320                     MOV     #T28PK2,R1              ;START OF THE PACKET
```

```
11037 065400  012721  100006                MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
11038 065404  012721  063350                MOV     #T28BF2,(R1)+           ;ADDRESS OF DATA BLOCK
11039 065410  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
11040 065412  012721  000006                MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
11041 065416  005021                        CLR     (R1)+
11042 065420  012701  063350                MOV     #T28BF2,R1              ;POINT TO DATA SEL AREA
11043 065424  005021                        CLR     (R1)+
11044 065426  005011                        CLR     (R1)
11045 065430  000207                        RTS     PC                      ;RETURN
11046 065432                        T28RT3:
11047 065432                                SAVREG
11048 065436  012701  063340                MOV     #T28PK3,R1              ;GET PACKET ADDRESS
11049 065442  005021                        CLR     (R1)+                   ;CLEAR COMMAND AREA
11050 065444  005021                        CLR     (R1)+                   ;CLEAR ADDRESS AREA
11051 065446  005021                        CLR     (R1)+                   ;CLEAR EXTENDED ADDRESS AREA
11052 065450  005011                        CLR     (R1)                    ;SIZE OF DATA TRANSFER
11053 065452  000207                        RTS     PC                              ;RETURN
11054 065454                                ENDTST
      065454                                                          L10074:
      065454  104401                                                          TRAP    C$ETST
11060
11065
11071
11072
11073
11074                                               .SBTTL  HARDWARE PARAMETER CODING SECTION
11075
11076                                               ;++
11077                                               ; THE HARDWARE PARAMETER CODING SECTION CONTAINS MACROS
11078                                               ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
11079                                               ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
11080                                               ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
11081                                               ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
11082                                               ; WITH THE OPERATOR.
11083                                               ;--
11084 065456                                                BGNHRD
      065456  000015                                       .WORD L10076-L$HARD/2
      065460                                      L$HARD::
11085
11086 065460                                                GPRMA   HPM1,0,0,160000,177776,YES      ;GET TSBA/TSDB REGISTER ADDRESS.
      065460  000031                                        .WORD   T$CODE
      065462  065512                                        .WORD   HPM1
      065464  160000                                        .WORD   T$LOLIM
      065466  177776                                        .WORD   T$HILIM
11087 065470                                                GPRMA   HPM2,2,0,0,776,YES              ;GET VECTOR ADDRESS.
      065470  001031                                        .WORD   T$CODE
      065472  065541                                        .WORD   HPM2
      065474  000000                                        .WORD   T$LOLIM
      065476  000776                                        .WORD   T$HILIM
11088 065500                                                GPRMD   HPM3,4,0,340,0,7,YES            ;GET INTERRUPT PRIORITY.
      065500  002032                                        .WORD   T$CODE
      065502  065565                                        .WORD   HPM3
      065504  000340                                        .WORD   340
      065506  000000                                        .WORD   T$LOLIM
      065510  000007                                        .WORD   T$HILIM
11089 065512                                                ENDHRD
                                                            .EVEN
```

```
                065512                          L10076:
11090           065512          104     105     126     HPM1:   .ASCIZ  'DEVICE ADDRESS (TSSR) '
11091           065541          111     116     124     HPM2:   .ASCIZ  'INTERRUPT VECTOR    '
11092           065565          111     116     124     HPM3:   .ASCIZ  'INTERRUPT PRIORITY     '
11093                                                   .EVEN
11094
```

```
                                        .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.
                                ;--
065616                                  BGNSFT
065616  000006                          .WORD L10077-L$SOFT/2
065620                          L$SOFT::
065620                                  GPRML   SPM1,0,-1,YES                   ;GET RAM DUMP FLAG
065620  000130                          .WORD   T$CODE
065622  065634                          .WORD   SPM1
065624  177777                          .WORD   -1
065626                                  GPRML   SPM4,2,-1,YES                   ; GET ITERATION CONTROL.
065626  001130                          .WORD   T$CODE
065630  065700                          .WORD   SPM4
065632  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
065634                                  ENDSFT
                                        .EVEN
065634                          L10077:

065634  105  116  101  SPM1:    .ASCIZ  'ENABLE CONTROLLER RAM DUMP ON ERROR'
065700  111  116  110  SPM4:    .ASCIZ  'INHIBIT ITERATIONS     '
065730  120  105  122  SPM6:    .ASCIZ  'PER TEST ERROR LIMIT   '
065760  120  105  122  SPM7:    .ASCIZ  'PER UNIT ERROR LIMIT   '
                                .EVEN
                                .SBTTL  PATCH AREA
                        ;+
                        ;DISPATCH TABLE
                        ;
                        ; *** MOVE TO FRONT OF PROGRAM FOR RELEASE ***
                        ;-

066010                          DISPATCH        TESTNO
066010  000004                  .WORD   4
066012                  L$DISPATCH::
066012  023650                  .WORD   T1
066014  031666                  .WORD   T2
066016  051036                  .WORD   T3
066020  061034                  .WORD   T4

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

066022                  PATCH::
```

```
11137                                   ;       .IF     NZ,.&377
11138                                   ;       .*.!377+1
11139                                   ;       .ENDC
11140 066022                                    LASTAD          ;SET LAST USED ADDRESS.
                                                .EVEN
      066022  066040                            .WORD T$FREE
      066024  000005                            .WORD T$SIZE
      066026                            L$LAST::
11141                                           .SBTTL  HARD CODED P-TABLE
11142                                   ;**
11143                                   ;       DIAGNOSTIC IS PRE-PARAMETERIZED PER THIS TABLE
11144                                   ;--
11145 066026                                    BGNSETUP        1
11146 066026                                    BGNPTAB
      066026  000000                            .WORD   0
      066030  000003                            .WORD   L10102-./2-1
      066032                            L10100:
11147 066032  172522                            .WORD           172522
11148 066034  000224                            .WORD           224
11149 066036  000240                            .WORD           PRI05
11150 066040                                    ENDPTAB
      066040                            L10102:
11151 066040                                    ENDSETUP
11152
11153           000001                          .END
```

SYMBOL TABLE

```
ADDSSR  012002 G      C$AU   = 000052      DEBUGM  011474        FATFLG  002170 G      MIMEM = 007776
ADR    = 000020 G      C$AUTO= 000061      DEVCNT  002166 G      FERCM   011564        MOE    = 100000 G
AMBTSS  006343         C$BRK  = 000022      DEVDRO  023600        FIFEXP  012032 G      MPM1     065512
ASSEMB= 000010         C$BSEG= 000004      DEVNRD  023517        FIF1MS  012104        MPM2     065541
A1716  = 000003         C$BSUB= 000002      DEVNXR  023435        FIF2MS  012153        MPM3     065565
BADDAT  003110 G       C$CEFG= 000045      DEVONL  023365        FILLME  020410        IBE    = 010000 G
BADSSR  016564 G       C$CLCK= 000062      DEVSUM  023330        FNOINT  004113        IDU    = 000040 G
BAR    = 174402         C$CLEA= 000012      DFPTBL  002124 G      FORCER  002144 G      IER    = 020000 G
BENBSW  002174 G       C$CLOS= 000035      DIAGMC= 000000        FREE    003072 G      IFAULT   004154
BIE    = 040000         C$CLP1= 000006      DLCYL  = 000177        FREEMI  003076        INCERR   017760
BIT0   = 000001 G       C$CVEC= 000036      DLDNER= 100200        FRESIZ  003074 G      INTCPC   017034
BIT00  = 000001 G       C$DCLN= 000044      DLERR  = 177730        FUSI    004015        INTFLA   017031
BIT01  = 000002 G       C$DODU= 000051      DLGETS= 000004        F$AU   = 000015        INTMAS   017030
BIT02  = 000004 G       C$DRPT= 000024      DLRDHD= 000010        F$AUTO= 000020        INTR     017102 G
BIT03  = 000010 G       C$DU   = 000053      DLRDNH= 000016        F$BGN  = 000040        INTREC   002172 G
BIT04  = 000020 G       C$EDIT= 000003      DLSR   = 000013        F$CLEA= 000007        INTVEC   017032
BIT05  = 000040 G       C$ERDF= 000055      DLUN   = 000006        F$DU   = 000016        INTX     004176
BIT06  = 000100 G       C$ERHR= 000056      DSBINT  017070        F$END  = 000041        IOKCKI= 000200
BIT07  = 000200 G       C$ERRO= 000060      DUAD12  004541        F$HARD= 000004        IOKSTP= 000001
BIT08  = 000400 G       C$ERSF= 000054      DUFLG   003060 G      F$HW   = 000013        IPRI     002160 G
BIT09  = 001000 G       C$ERSO= 000057      DUMMY   003030        F$INIT= 000006        ISR    = 000100 G
BIT1   = 000002 G       C$ESCA= 000010      EF.CON= 000036 G      F$JMP  = 000050        IVEC     002156 G
BIT10  = 002000 G       C$ESEG= 000005      EF.NEW= 000035 G      F$MOD  = 000000        IXE    = 004000 G
BIT11  = 004000 G       C$ESUB= 000003      EF.PWR= 000034 G      F$MSG  = 000011        I$AU   = 000041
BIT12  = 010000 G       C$ETST= 000001      EF.RES= 000037 G      F$PROT= 000021        I$AUTO= 000041
BIT13  = 020000 G       C$EXIT= 000032      EF.STA= 000040 G      F$PWR  = 000017        I$CLN  = 000041
BIT14  = 040000 G       C$GETB= 000026      EMAXDU  017713        F$RPT  = 000012        I$DU   = 000041
BIT15  = 100000 G       C$GETW= 000027      EN     = 000000        F$SEG  = 000003        I$HRD  = 000041
BIT2   = 000004 G       C$GMAN= 000043      ENAINT  017036        F$SOFT= 000005        I$INIT= 000041
BIT3   = 000010 G       C$GPHR= 000042      ENVIRN  021550        F$SRV  = 000010        I$MOD  = 000040
BIT4   = 000020 G       C$GPLO= 000030      EPRTSW  002146 G      F$SUB  = 000002        I$MSG  = 000041
BIT5   = 000040 G       C$GPRI= 000040      EPRT1   005672        F$SW   = 000014        I$PROT= 000040
BIT6   = 000100 G       C$INIT= 000011      EPRT2   005771        F$TEST= 000001        I$PTAB= 000041
BIT7   = 000200 G       C$INLP= 000020      EPRT3   006032        GDDAT   003112 G      I$PWR  = 000041
BIT8   = 000400 G       C$MANI= 000050      ERCM    011575        GERRMA  002142 G      I$RPT  = 000041
BIT9   = 001000 G       C$MEM  = 000031      ERRHI   002202 G      GETPAT  021114 G      I$SEG  = 000041
BOE    = 000400 G       C$MSG  = 000023      ERRK    017672        GETSEL  021176 G      I$SETU= 000041
BRINIT  004355         C$OPEN= 000034      ERRLO   002204 G      G$CNTO= 000200        I$SFT  = 000041
BSEL0  = 000000         C$PNTB= 000014      ERRNO  = 000656        G$DELM= 000372        I$SRV  = 000041
BSEL1  = 000001         C$PNTF= 000017      ERRVEC= 000004 G      G$DISP= 000003        I$SUB  = 000041
CHKAMB  016730         C$PNTS= 000016      ERTABE  003330        G$EXCP= 000400        I$TST  = 000041
CHKMAN  021420 G       C$PNTX= 000015      ERTABL  003130        G$HILI= 000002        J$JMP  = 000167
CHKTSS  017252         C$QIO  = 000377      ESUM    017674        G$LOLI= 000001        KIPAR0= 172340
CKDROP  020170         C$RDBU= 000007      EVL    = 000004 G      G$NO   = 000000        KIPAR1= 172342
CKEMAX  020016         C$REFG= 000047      EXBCNT= 000010        G$OFFS= 000400        KIPAR2= 172344
CKMSG   011222 G       C$RESE= 000033      EXPBRE  016366 G      G$OFSI= 000376        KIPAR3= 172346
CKMSG2  011342 G       C$REVI= 000003      EXPD    002176 G      G$PRMA= 000001        KIPAR4= 172350
CKRAM   010544 G       C$RFLA= 000021      EXPGOT  004431        G$PRMD= 000002        KIPAR5= 172352
CKRAM2  011120 G       C$RPT  = 000025      EXPGT2  004465        G$PRML= 000000        KIPAR6= 172354
CMPMEM  020574         C$SEFG= 000046      EXPMSG  002266 G      G$RADA= 000140        KIPAR7= 172356
CONFIG  020236         C$SPRI= 000041      EXPREC  016360 G      G$RAD8= 000000        KIPDR0= 172300
COUNT   002254 G       C$SVEC= 000037      EXTA    005232        G$RADD= 000040        KIPDR1= 172302
CSR    = 174400         C$TPRI= 000013      EXTEND  005230        G$RADL= 000120        KIPDR2= 172304
CSRADD  002154 G       DAR    = 174404      E$END  = 002100        G$RADO= 000020        KIPDR3= 172306
CTAB    003116 G       DATA    002256 G      E$LOAD= 000035        G$XFER= 000004        KIPDR4= 172310
CTABE   003130 G       DATAFL  015100        FATCHK  020116        G$YES  = 000010        KIPDR5= 172312
CTABM   003116 G       DATASC  021152        FATERR= 000060        HIADDR= 001400        KIPDR6= 172314
```

SYMBOL TABLE

```
KIPDR7= 172316
KTENAB  003102 G
KTFLG   003100 G
KTINIT  021636
KTOFF   020262
KTON    020244
LERRMA  002140 G
LISTAL= 000001
LOE   = 040000 G
LOOPCN  002164 G
LOOPCO  012770
LOOPFL  003114 G
LOT   = 000010 G
L$ACP   002110 G
L$APT   002036 G
L$AU    022560 G
L$AUT   002070 G
L$AUTO  022764 G
L$CCP   002106 G
L$CLEA  023040 G
L$CO    002032 G
L$DEPO  002011 G
L$DESC  003342 G
L$DESP  002076 G
L$DEVP  002060 G
L$DISP  066012 G
L$DLY   002116 G
L$DTP   002040 G
L$DTYP  002034 G
L$DU    022656 G
L$DUT   002072 G
L$DVTY  003334 G
L$EF    002052 G
L$ENVI  002044 G
L$ETP   002102 G
L$EXP1  002046 G
L$EXP4  002064 G
L$EXP5  002066 G
L$HARD  065460 G
L$HIME  002120 G
L$HPCP  002016 G
L$HPTP  002022 G
L$HW    002124 G
L$ICP   002104 G
L$INIT  022000 G
L$LADP  002026 G
L$LAST  066026 G
L$LOAD  002100 G
L$LUN   002074 G
L$MREV  002050 G
L$NAME  002000 G
L$PRIO  002042 G
L$PROT  021770 G
L$PRT   002112 G
L$REPP  002062 G
L$REV   002010 G
L$RPT   023066 G
L$SOFT  065620 G
L$SPC   002056 G
L$SPCP  002020 G
L$SPTP  002024 G
L$STA   002030 G
L$SW    002134 G
L$TEST  002114 G
L$TIML  002014 G
L$UNIT  002012 G
L10000  002132
L10001  002144
L10002  005226
L10003  011706
L10004  011736
L10005  011754
L10006  011762
L10007  012000
L10010  012016
L10011  012030
L10012  012102
L10013  012252
L10014  012766
L10015  013614
L10016  013636
L10017  016364
L10020  016372
L10021  016400
L10022  016412
L10023  016434
L10024  016462
L10025  016622
L10026  017132
L10030  022510
L10031  022654
L10032  022762
L10033  023036
L10034  023064
L10035  023326
L10036  031664
L10037  024372
L10040  025032
L10041  025466
L10042  026216
L10043  027144
L10044  027454
L10045  030044
L10046  051034
L10047  032616
L10050  033454
L10051  034340
L10052  035260
L10053  036026
L10054  036656
L10055  037520
L10056  040362
L10057  041230
L10060  042076
L10061  042734
L10062  043654
L10063  044652
L10064  045222
L10065  045664
L10066  061032
L10067  051456
L10070  052230
L10071  053044
L10072  053740
L10073  055456
L10074  065454
L10075  063150
L10076  065512
L10077  065634
L10100  066032
L10102  066040
MEMADD  013616 G
MENASC  021367
MENERR  021314
MENRES  021416
MESBFA  002716 G
MESBFN  014650
MESHEA  015033
MMVEC = 000250
MPR   = 174406
MSA.FR= 000006
MSA.NO= 000000
MSA.NR= 000004
MSA.VO= 000002
MSGEXP  012020 G
MSGLOO  012726 G
MSGSTA  012212 G
MSGSUB  013604 G
MS.ATT= 000006
MS.EXT= 000200
MS.RSD= 000001
MS.RSF= 000020
MS.RST= 000010
NBA   = 002000
NEWPAS  022212
NODEV   003062 G
NOINIT  004233
NOINTR  004117
NOITS   002136 G
NOMAN   021454
NP.IR = 000200
NP.LOO= 000040
NP.OUT= 000100
NP.WRP= 000020
NSI     004050
NSINIT  004305
NUL     004425
NULCR   004426
NXM   = 004000
NXR     003636
NXRERR  005176 G
NXRX    003675
NXTU    022224
OFL   = 000100
ONEFIL= 000000
O$APTS= 000000
O$AU  = 000001
O$BGNR= 000001
O$BGNS= 000001
O$DU  = 000001
O$ERRT= 000000
O$GNSW= 000001
O$POIN= 000001
O$SETU= 000001
PASRPT  022256
PATCH   066022 G
PATDAT  021150
PC.ERA= 002400
PC.IER= 002000
PC.NOO= 001000
PC.REL= 000000
PC.REW= 000400
PKBCNT= 000006
PKHI  = 000004
PKLOW = 000002
PKTADD  007302
PKTFRM  007244
PKTGET  011740 G
PKTMES  011764 G
PKTNEW  007337
PKTRAM  004643 G
PKTSSR  011710 G
PNT   = 001000 G
PRAMPK  013640
PRBEXP  016354
PRBMSG  016222
PRBREC  016356
PRBTOT  016307
PRBYTE  016006 G
PRI   = 002000 G
PRIADD  007716
PRIAO   007766
PRIBXO  007350 G
PRIEQU  007616
PRIPKT  007076 G
PRIRAM  007624
PRITAD  010032
PRITSS  005264
PRITO   010102
PRIXOR  007500 G
PRIO0 = 000000 G
PRIO1 = 000040 G
PRIO2 = 000100 G
PRIO3 = 000140 G
PRIO4 = 000200 G
PRIO5 = 000240 G
PRIO6 = 000300 G
PRIO7 = 000340 G
PRMESS  014072
PRMNO   002264 G
PRMSGE  015436 G
PRMSG0  015616
PRMSG1  015663
PRMSG2  015721
PROASC  014730
PR1ASC  014775
PST32W  003104 G
PUNIT   022512
PW.D11= 000021
PW.D13= 000022
PW.D22= 000020
PW.NOP= 000000
PW.NO1= 000023
PW.RDE= 000024
PW.RDR= 000001
PW.RDS= 000005
PW.RFI= 000003
PW.WCT= 000006
PW.WFI= 000004
PW.WFM= 000007
PW.WMI= 000010
PW.WNP= 000011
PW.WTR= 000002
P.ACK = 100000
P.CMD = 000037
P.CONT= 000012
P.CVC = 040000
P.FMT = 000140
P.FORM= 000011
P.GETS= 000017
P.IE  = 000200
P.INIT= 000013
P.MODE= 007400
P.OPP = 020000
P.POSI= 000010
P.READ= 000001
P.SWB = 010000
P.WRIT= 000005
P.WRTC= 000004
P.WRTS= 000006
QVP     002152 G
RAMASC  014006
RAMDAT  002206 G
RAMER   010646 G
RAMERR  016374 G
RAMEXP  016414 G
RAMFHR  014552
RAMFOR  007654
RAMHLD  011030
RAMIOP  011034
RAMPD   011105
RAMR5H  011032
RAMSIZ  002246 G
RAMTAD  016402 G
RBPCRA  015145
```

SYMBOL TABLE

```
RCVHIA  002250 G      S0.ION= 000040        TSTPTR  002262 G      T$$SUB= 010075        T25TM   030524
RCVLOA  002252 G      S0.IRD= 000100        TSTSET  017424 G      T$$SW = 010001        T25WB   030242
RDERR   005104        S0.IRW= 000004        TST25I  031462        T$$TES= 010074        T25WDC  031411
READ  = 000014        S0.ISP= 000200        TST26I  050637        T1      023650 G      T25WDE  030377
READY = 000001        S1.ICE= 002000        TST27I  060633        T1.1    023710        T25WDR  030260
RECMSG  002432 G      S1.IEO= 010000        TST28I  065251        T1.2    024410        T25WNG  030667
RECV    002200 G      S1.IFM= 001000        TTIBFR= 177562 G      T1.3    025050        T25WNH  031042
REGSAV  021054        S1.IHE= 000400        TTICSR= 177560 G      T1.4    025504        T26AM3  047536
REWIND  010444 G      S1.IID= 004000        TTIVEC= 000060 G      T1.5    026234        T26BA   050076
RMCHBE= 000167        S1.I1R= 020000        TTOBFR= 177566        T1.6    027162        T26BFR  045750
RMCHEN= 000200        S1.I2R= 040000        TTOCSR= 177564        T1.7    027472        T26BF2  046070
RMMSGB= 000104        S1.PAR= 100000        TUV2A   002000 G      T2      031666 G      T26BOT  047125
RMMSGE= 000117        S2.ATI= 000010        T$ARGC= 000003        T2.1    031732        T26BS0  046070
RMPKTB= 000020        S2.BTI= 000004        T$CODE= 001130        T2.10   041246        T26BS1  046071
RMPKTE= 000027        S2.DIM= 000200        T$ERRN= 000656        T2.11   042114        T26CNT  046106
RMR   = 010000        S2.ILW= 000100        T$EXCP= 000000        T2.12   042752        T26CNU  046110
RWPACK  010540        S2.INR= 000020        T$FLAG= 000040        T2.13   043672        T26DAT  045740
SC    = 100000        S2.OUT= 000040        T$FREE= 066040        T2.14   044670        T26DLY  046114
SCE   = 020000        S2.UND= 000003        T$GMAN= 000000        T2.15   045240        T26DTA  047172
SCME    004711        TBLEND= 003030 G      T$HILI= 000007        T2.2    032634        T26EOT  047260
SDELAY  010340        TCOASC  006204        T$LAST= 000001        T2.3    033472        T26LON  050240
SEEK  = 000006        TCOCOD  006404        T$LOLI= 000000        T2.4    034356        T26LOO  031732
SELASC  021362        TEMP1   003064 G      T$LSYM= 010000        T2.5    035276        T26LOP  050322
SELDAT= 000004        TEMP2   003066 G      T$LTNO= 000004        T2.6    036044        T26LOQ  046736
SEL2  = 000002        TERCLS= 000016        T$NEST= 000000        T2.7    036674        T26LOR  046611
SETMAP  020304        TESTNO= 000004        T$NSO = 000000        T2.8    037536        T26NEF  046204
SETU    022310        TEXASC  006143        T$NS1 = 000005        T2.9    040400        T26NEQ  050560
SFFMSG  011756 G      TFCASC  006245        T$NS2 = 000002        T210FL  030274        T26OFL  047605
SFHERR  003603        TIMEXP  016436 (      T$PCNT= 000000        T25BFR  030130        T26PAC  045730
SFIERR  003550        TIMSGO  016464        T$PTAB= 010101        T25BF2  030250        T26PBP  050404
SFIMSG  011676 G      TINERR  011663        T$PTHV= 000001        T25BNC  030752        T26PK2  046040
SFPTBL  002134 G      TKB   = 177562        T$PTNU= 000001        T25BOT  030457        T26PK3  046060
SIFLAG  003106 G      TKS   = 177560        T$SAVL= 177777        T25BS0  030250        T26RB   046062
SIMSG   011630        TMPBFR  002576 G      T$SEGL= 177777        T25BS1  030251        T26RDF  046266
SKIPT   003332        TNAM    017620        T$SIZE= 000005        T25CNT  030270        T26RES  050650
SOFINI  016660 G      TPB   = 177566        T$SUBN= 000001        T25CN2  030266        T26RN   046076
SPACE   010144 G      TPS   = 177564        T$TAGL= 177777        T25CON  030262        T26RNC  047463
SPM1    065634        TRANST  002134 G      T$TAGN= 010103        T25DAT  030120        T26RRF  046335
SPM4    065700        TSBA  = 177776 G      T$TEMP= 000005        T25DLY  030272        T26RRG  046432
SPM6    065730        TSBAH = 177777 G      T$TEST= 000004        T25LOO  023710        T26RSZ  046112
SPM7    065760        TSBAL = 177776 G      T$TSTM= 177777        T25NEF  031125        T26RT2  050742
SR0   = 177572        TSDB  = 177776 G      T$TSTS= 000001        T25NET  030613        T26RT3  051004
SR1   = 177574        TSDBH = 177777 G      T$$AU = 010031        T25OFL  031336        T26RWN  047414
SR2   = 177576        TSDBL = 177776 G      T$$AUT= 010033        T25PAC  030110        T26SC   046527
SR3   = 172516        TSFCOD  006744        T$$CLE= 010034        T25PK2  030220        T26SSR  047017
SSR   = 000200        TSREJ = 000006        T$$DAT= 010102        T25PK3  030240        T26SZ   046066
STATCO  012254        TSSDEF  006314        T$$DU = 010032        T25RB   030242        T26S2   046072
SVCGBL= 000000        TSSR  = 000000 G      T$$HAR= 010076        T25RES  031500        T26S3   046074
SVCINS= 000000        TSSRBI  003400 G      T$$HW = 010000        T25RIB  031205        T26TM   047337
SVCSUB= 000001        TSSRFO  006123        T$$INI= 010030        T25RN   030256        T26TRL  050472
SVCTAG= 000000        TSSRH = 000001 G      T$$MSG= 010025        T25RT2  031572        T26VCK  050023
SVCTST= 000001        TSSX    003716        T$$PC = 000001        T25RT3  031634        T26WB   046062
S$LSYM= 010000        TSTBLK  002720 G      T$$PRO= 010027        T25RWN  031267        T26WDC  047750
S0.IDB= 000010        TSTCNT  002162 G      T$$PTA= 010101        T25SSR  030316        T26WDD  047660
S0.IFB= 000002        TSTEND  017634        T$$RPT= 010035        T25SZ   030246        T26WDE  047053
S0.IFP= 000001        TSTFLA  002260 G      T$$SOF= 010077        T25S2   030252        T26WDF  046661
S0.ILD= 000020        TSTLOO  017372 G      T$$SRV= 010026        T25S3   030254        T26WNG  046116
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SYMBOL TABLE

```
T26WSS  050151        T27S2   055662        T28RES  065276        WC.IRW= 000004        XSOVCK= 000020
T27AM3  057177        T27S3   055664        T28RIB  063404        WC.IOT= 000100        XSOWLE= 004000
T27BA   057537        T27TIM  056644        T28RN   063366        WC.I1T= 000040        XSOWLK= 000004
T27BFR  055540        T27TM   057000        T28RRM  064657        WC.I5R= 000020        XS1CON  015257
T27BF2  055660        T27TRL  060133        T28RRN  064735        WF.IED= 000010        XS2CON  015324
T27BOT  056551        T27TSA  060374        T28RRP  065014        WF.IER= 000004        XS3CON  015371
T27BS0  055660        T27VCK  057464        T28RT2  065370        WF.IHI= 000200        XXCOMM  003070 G
T27BS1  055661        T27WB   055652        T28RT3  065432        WF.IRE= 000040        X$ALWA= 000000
T27CNT  055676        T27WDC  057411        T28RWN  064331        WF.IWF= 000020        X$FALS= 000040
T27CNU  055700        T27WDD  057321        T28SSR  064045        WF.IWR= 000100        X$OFFS= 000400
T27CON  055672        T27WDE  056462        T28SZ   063346        WF.I3R= 000002        X$TRUE= 000020
T27DAT  055530        T27WDF  056270        T28S2   063352        WF.I4R= 000001        X1.COR= 020000
T27DLY  055702        T27WDR  055670        T28S3   063354        WRTCHR  010342 G      X1.DLT= 100000
T27DTA  060536        T27WNG  055704        T28TM   064254        WRTERR  005011        X1.MBZ= 017375
T27EOT  056721        T27WRF  060456        T28TMK  064605        WRTMSG  004754        X1.RBP= 000400
T27LON  057701        T27WSS  057612        T28VCK  064532        XFERAS  016624        X1.SPA= 040000
T27LOO  051106        T288FR  063230        T28WB   063342        XNXM    017312        X1.UNC= 000002
T27LOP  057763        T288F2  063350        T28WDC  064453        XORBFO  007432        X2.BUF= 000100
T27LOQ  056345        T288OT  064207        T28WDE  064116        XORFOR  007550        X2.EXT= 000200
T27LOR  056220        T288S0  063350        T28WDF  063707        XST0  = 000006 G      X2.OPM= 100000
T27NEF  060221        T288S1  063351        T28WDR  063370        XST1  = 000010 G      X2.RCE= 040000
T27OFL  057246        T28CNT  063376        T3      051036 G      XST2  = 000012 G      X2.REV= 000077
T27PAC  055520        T28CNU  063400        T3.1    051106        XST3  = 000014 G      X2.SPA= 035400
T27PBP  060045        T28CON  063372        T3.2    051474        XST4  = 000016 G      X2.UNI= 000007
T27PK2  055630        T28DAT  063220        T3.3    052246        XSOBOT= 000002        X2.WCF= 002000
T27PK3  055650        T28DLY  063402        T3.4    053062        XSOCON  015212        X3.DCK= 000010
T27RB   055652        T28DTA  065154        T3.5    053756        XSOEOT= 000001        X3.MBZ= 000006
T27RDF  055772        T28DTR  065072        T4      061034 G      XSOIE = 000040        X3.MDE= 177400
T27RES  060654        T28IMV  063356        T4.1    061100        XSOILA= 000400        X3.OPI= 000100
T27RN   055666        T28LOO  061100        UAM   = 000200 G      XSOILC= 001000        X3.REV= 000040
T27RNC  057124        T28LOQ  063764        UNITN   002150 G      XSOLET= 020000        X3.RIB= 000001
T27RRF  056041        T28OFL  064400        UNREC = 000006        XSOMOT= 000200        X3.SPA= 000200
T27RT2  060746        T28PAC  063210        USI     004021        XSONEF= 002000        X3.TRF= 000020
T27RT3  061010        T28PBP  063461        WAITF   017134 G      XSOONL= 000100        X4.HSP= 100000
T27RWN  057055        T28PK2  063320        WC.IFA= 000200        XSOPED= 000010        X4.MBZ= 017400
T27SC   056136        T28PK3  063340        WC.IFE= 000002        XSORLL= 010000        X4.RCE= 040000
T27SCF  060317        T28RB   063342        WC.IGO= 000001        XSORLS= 040000        X4.TSM= 020000
T27SSR  056426        T28RDF  063544        WC.IRE= 000010        XSOTMK= 100000        X4.WRC= 000377
T27SZ   055656        T28RDG  063625

. ABS.  066040      000
        000000      001
ERRORS DETECTED:  0

VIRTUAL MEMORY USED:  29424 WORDS  ( 115 PAGES)
DYNAMIC MEMORY:  20060 WORDS  ( 77 PAGES)
ELAPSED TIME:  00:37:17
CZTKGA.BIC,CZTKGA/-SP=SVC/ML,CZTKGA
.
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