.REM

IDENTIFICATION

PRODUCT ID: AC-T820A-MC

PRODUCT TITLE: CNTSDA0 TSV05 CTR T T4

DECO/DEPO: 1.0

DEPARTMENT: ISS/DIAGNOSTIC SERVICES

DATE: APRIL 09, 1984

TABLE OF CONTENTS

1.0 GENERAL INFORMATION

1.1 PROGRAM ABSTRACT

THIS IS A SBC-11/21+ RESIDENT DIAGNOSTIC WHICH CHECKS THE FUNCTIONALITY OF A TSV05 MAGTAPE SUBSYSTEM WHILE CONNECTED TO A SBC-11/21+ SYSTEM (Q-BUS). THE PROGRAM PROVIDES ERROR MESSAGES WHICH IDENTIFY FAILING FUNCTIONS THAT AID IN THE REPAIR OF THE DEVICE. THIS DIAGNOSTIC CONSIST OF EIGHT TEST WHICH ARE EXECUTED IN SEQUENCE.

THIS DIAGNOSTIC HAS BEEN WRITTEN FOR USE WITH THE DIAGNOSTIC RUNTIME SERVICES SOFTWARE (SUPERVISOR). THESE SERVICES PROVIDE THE INTERFACE TO THE OPERATOR AND TO THE SOFTWARE ENVIRONMENT. THIS PROGRAM CAN BE USED WITH XXDP+, ACT, APT, SLIDE AND PAPER TAPE. FOR A COMPLETE DESCRIPTION OF THE RUNTIME SERVICES, REFER TO THE XXDP+ USER'S MANUAL. THERE IS A BRIEF DESCRIPTION OF THE RUNTIME SERVICES IN SECTION 2 OF THIS DOCUMEN'.

1.2 SYSTEM REQUIREMENTS

SBC-11/21+ PROCESSOR AND MEMORY
CAUTION:DIAGNOSTIC REQUIRES 32K WORDS OF MEMORY
(28K USEABLE AND 4K RESERVED FOR I/O PAGE)
TSV05 MAGTAPE SUBSYSTEM (DRIVE AND CONTROLLER)
CONSOLE TERMINAL
PDP-11 DIAGNOSTIC SUPERVISOR (MSAAA.SYS VERSION 34 OR LATER)
PDP-11 DIAGNOSTIC LOADER/MONITOR (XXDP+)

1.3 RELATED DOCUMENTS AND STANDARDS

DIGITAL EQUIPMENT CORPORATION DOCUMENTS:

1. XXDP+ USERS MANUAL
2. TSV05 TRANSPORT SUBSYSTEM USER'S GUIDE
3. TSV05 TRANSPORT SUBSYSTEM TECHNICAL MANUAL
4. TSV05 TRANSPORT SUBSYSTEM INSTALLATION MANUAL

1.4 DIAGNOSTIC HIERARCY PREREQUISITES

FUNCTIONAL SBC-11/21+ CENTRAL PROCESSOR AND MEMORY
FUNCTIONAL CONSOLE TERMINAL
FUNCTIONAL STANDALONE DIAGNOSTIC SUPERVISOR
FUNCTIONAL DIAGNOSTIC LOADER/MONITOR (XXDP+)

1.5 ASSUMPTIONS

ALL HARDWARE EXCEPT THE HARDWARE UNDER TEST IS ASSUMED TO WORK

PROPERLY OR FALSE ERRORS CAN BE REPORTED.
THE TAPE BEING USED ON THE TSO5 TRANSPORT IS A KNOWN GOOD REEL
OF TAPE.
CNTSAA,CNTSBA AND CNTSCA HAVE SUCESSFULLY RUN.

2.0 OPERATING INSTRUCTIONS

THIS SECTION CONTAINS A BRIEF DESCRIPTION OF THE RUNTIME SERVICES.
FOR DETAILED INFORMATION, REFER TO THE XXDP+ USER'S MANUAL.

2.1 COMMANDS

THERE ARE ELEVEN LEGAL COMMANDS FOR THE DIAGNOSTIC RUNTIME SERVICES
(SUPERVISOR). THIS SECTION LISTS THE COMMANDS AND GIVES A VERY
BRIEF DESCRIPTION OF THEM. THE XXDP+ USER'S MANUAL HAS MORE DETAILS.

COMMAND	EFFECT
START	START THE DIAGNOSTIC FROM AN INITIAL STATE
RESTART	START THE DIAGNOSTIC WITHOUT INITIALIZING
CONTINUE	CONTINUE AT TEST THAT WAS INTERRUPTED (AFTER ^C)
PROCEED	CONTINUE FROM AN ERROR HALT
EXIT	RETURN TO XXDP+ MONITOR (.XXDP+ OPERATION ONLY!)
ADD	ACTIVATE A UNIT FOR TESTING (ALL UNITS ARE CONSIDERED TO BE ACTIVE AT START TIME
DROP	DEACTIVATE A UNIT
PRINT	PRINT STATISTICAL INFORMATION (IF IMPLEMENTED BY THE DIAGNOSTIC - SECTION 4.0)
DISPLAY	TYPE A LIST OF ALL DEVICE INFORMATION
FLAGS	TYPE THE STATE OF ALL FLAGS (SEE SECTION 2.3)
ZFLAGS	CLEAR ALL FLAGS (SEE SECTION 2.3)

A COMMAND CAN BE RECOGNIZED BY THE FIRST THREE CHARACTERS. SO
YOU MAY, FOR EXAMPLE, TYPE "STA" INSTEAD OF "START".

2.1.1 OPERATOR COMMANDS

THE TSV05 DIAGNOSTIC IS A SBC-11/21+ DIAGNOSTIC SUPERVISOR COMPATIBLE
PROGRAM. ALL LOADING AND RUNTIME INSTRUCTIONS CAN BE REFERENCED IN THE
XXDP+ USERS MANUAL. THE USER ENTRY IS IN QUOTES.

BOOT THE DIAGNOSTIC XXDP MEDIA

```
.R NTSD??
DIAG. RUN-TIME SERVICES REV D. APR 79
CNTSD-A-0
****TSV05 LOGIC DIAGNOSTIC****
UNIT IS TSV05
>DR
```

2.2 SWITCHES

THERE ARE SEVERAL SWITCHES WHICH ARE USED TO MODIFY SUPERVISOR OPERATION.

THESE SWITCHES ARE APPENDED TO THE LEGAL COMMANDS. ALL OF THE LEGAL SWITCHES ARE TABULATED BELOW WITH A BRIEF DESCRIPTION OF EACH.
IN THE DESCRIPTIONS BELOW, A DECIMAL NUMBER IS DESIGNATED BY "DDDDD".

SWITCH	EFFECT
/TESTS:LIST	EXECUTE ONLY THOSE TESTS SPECIFIED IN THE LIST. LIST IS A STRING OF TEST NUMBERS, FOR EXAMPLE - /TESTS:1:5:7-10. THIS LIST WILL CAUSE TESTS 1,5,7,8,9,10 TO BE RUN. ALL OTHER TESTS WILL NOT BE RUN.
/PASS:DDDDD	EXECUTE DDDDD PASSES (DDDDD = 1 TO 64000)
/FLAGS:FLGS	SET SPECIFIED FLAGS. FLAGS ARE DESCRIBED IN SECTION 2.3.
/EOP:DDDDD	REPORT END OF PASS MESSAGE AFTER EVERY DDDDD PASSES ONLY. (DDDDD = 1 TO 64000)
/UNITS:LIST	TEST/ADD/DROP ONLY THOSE UNITS SPECIFIED IN THE LIST. LIST EXAMPLE - /UNITS:0:5:10-12 USE UNITS 0,5,10,11,12 (UNIT NUMBERS = 0-63)

EXAMPLE OF SWITCH USAGE:

```
START/TESTS:1-5/PASS:1000/EOP:100
```

THE EFFECT OF THIS COMMAND WILL BE: 1) TESTS 1 THROUGH 5 WILL BE EXECUTED, 2) ALL UNITS WILL TESTED 1000 TIMES AND 3) THE END OF PASS MESSAGES WILL BE PRINTED AFTER EACH 100 PASSES ONLY. A SWITCH CAN BE RECOGNIZED BY THE FIRST THREE CHARACTERS. YOU MAY, FOR EXAMPLE, TYPE "/TES:1-5" INSTEAD OF "/TESTS:1-5".

BELOW IS A TABLE THAT SPECIFIES WHICH SWITCHES CAN BE USED BY EACH COMMAND.

	TESTS	PASS	FLAGS	EOP	UNITS
START	X	X	X	X	X
RESTART	X	X	X	X	X
CONTINUE		X	X	X	
PROCEED			X		
DROP					X
ADD					X
PRINT					
DISPLAY					X
FLAGS					
ZFLAGS					
EXIT					

2.3 FLAGS

FLAGS ARE USED TO SET UP CERTAIN OPERATIONAL PARAMETERS SUCH AS LOOPING ON ERROR. ALL FLAGS ARE CLEARED AT STARTUP AND REMAIN CLEARED UNTIL EXPLICITLY SET USING THE FLAGS SWITCH. FLAGS ARE ALSO CLEARED AFTER A START COMMAND UNLESS SET USING THE FLAG SWITCH. THE ZFLAGS COMMAND MAY ALSO BE USED TO CLEAR ALL FLAGS. WITH THE EXCEPTION OF THE START AND ZFLAGS COMMANDS, NO COMMANDS AFFECT THE STATE OF THE FLAGS; THEY REMAIN SET OR

CLEARED AS SPECIFIED BY THE LAST FLAG SWITCH.

FLAG	EFFECT
HOE	HALT ON ERROR - CONTROL IS RETURNED TO RUNTIME SERVICES COMMAND MODE
LOE	LOOP ON ERROR
IER*	INHIBIT ALL ERROR REPORTS
IBR*	INHIBIT ALL ERROR REPORTS EXCEPT FIRST LEVEL (FIRST LEVEL CONTAINS ERROR TYPE, NUMBER, PC, TEST AND UNIT)
IXE*	INHIBIT EXTENDED ERROR REPORTS (THOSE CALLED BY PRINTX MACRO'S)
PRI	DIRECT MESSAGES TO LINE PRINTER
PNT	PRINT TEST NUMBER AS TEST EXECUTES
BOE	BELL" ON ERROR
UAM	UNATTENDED MODE (NO MANUAL INTERVENTION)
ISR	INHIBIT STATISTICAL REPORTS (DOES NOT APPLY TO DIAGNOSTICS WHICH DO NOT SUPPORT STATISTICAL REPORTING)
IDR	INHIBIT PROGRAM DROPPING OF UNITS
ADR	EXECUTE AUTODROP CODE
LOT	LOOP ON TEST

*ERROR MESSAGES ARE DESCRIBED IN SECTION 3.1

SEE THE XXDP+ USER'S MANUAL FOR MORE DETAILS ON FLAGS. YOU MAY SPECIFY MORE THAN ONE FLAG WITH THE FLAG SWITCH. FOR EXAMPLE, TO CAUSE THE PROGRAM TO LOOP ON ERROR, INHIBIT ERROR REPORTS AND TYPE A "BELL" ON ERROR, YOU MAY USE THE FOLLOWING STRING:

```
/FLAGS:LOE:IER:BOE
```

2.4 HARDWARE QUESTIONS

WHEN A DIAGNOSTIC IS STARTED, THE RUNTIME SERVICES WILL PROMPT THE USER FOR HARDWARE INFORMATION BY TYPING "CHANGE HW (L) ?" YOU MUST ANSWER "Y" AFTER A START COMMAND UNLESS THE HARDWARE INFORMATION HAS BEEN "PRELOADED" USING THE SETUP UTILITY (SEE CHAPTER 14 OF THE XXDP+ USER'S MANUAL). WHEN YOU ANSWER THIS QUESTION WITH A "Y", THE RUNTIME SERVICES WILL ASK FOR THE NUMBER OF UNITS (IN DECIMAL).

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

ON A "N" (NO) RESPONSE TO THE "CHANGE HW?" QUESTION, THE DIACNOSTIC WILL RUN USING THE DEFAULT VALUES FOR ALL QUESTIONS. THE DEFAULT ADDRESS AND VECTOR ARE:

```
TSBA/TSDB = 176000, VECTOR = 224
```

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

```
# UNITS (D) ?  <ENTER THE NUMBER OF M7196 CONTROLLERS
                PRESENT TO BE TESTED>

UNIT 0

DEVICE ADDRESS  (O) 176000 ? <ENTER THE ADDRESS OF THE
                               TSBA/TSDB REGISTER>

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

THE ADDRESS AND VECTOR QUESTIONS WILL BE ASKED FOR EACH OF THE NUMBER OF UNITS (CONTROLLERS) SPECIFIED IN THE "# UNITS?" QUESTION. LOGICAL UNIT NUMBERS ARE ASSIGNED IN ORDER, BEGINNING AT 0. UP TO FOUR UNITS CAN BE SELECTED FOR TESTING AS FOLLOWS:
UP TO 4 TSV05 CONTROLLERS PER 11/21+ AND UP TO 2 DRIVES PER CONTROLLER

2.5 SOFTWARE QUESTIONS

AFTER YOU HAVE ANSWERED THE HARDWARE QUESTIONS OR AFTER A RESTART OR CONTINUE COMMAND, THE RUNTIME SERVICES WILL ASK FOR SOFTWARE PARAMETERS. THESE PARAMETERS WILL GOVERN SOME DIAGNOSTIC SPECIFIC OPERATION MODES. YOU WILL BE PROMPTED BY "CHANGE SW (L) ?" IF YOU WISH TO CHANGE ANY PARAMETERS, ANSWER BY TYPING "Y". THE SOFTWARE QUESTIONS AND THE DEFAULT VALUES ARE DESCRIBED IN THE NEXT PARAGRAPH(S).

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.>
```

2.6 EXTENDED P-TABLE DIALOGUE

WHEN YOU ANSWER THE HARDWARE QUESTIONS, YOU ARE BUILDING ENTRIES IN A TABLE THAT DESCRIBES THE DEVICES UNDER TEST. THE SIMPLEST WAY TO BUILD THIS TABLE IS TO ANSWER ALL QUESTIONS FOR EACH UNIT TO BE TESTED. IF YOU HAVE A MULTIPLEXED DEVICE SUCH AS A MASS STORAGE CONTROLLER WITH SEVERAL DRIVES OR A COMMUNICATION

DEVICE WITH SEVERAL LINES, THIS BECOMES TEDIOUS SINCE MOST OF
THE ANSWERS ARE REPETITIOUS.

TO ILLUSTRATE A MORE EFFICIENT METHOD, SUPPOSE YOU ARE TESTING
A DEVICE, THE XY11. SUPPOSE THIS DEVICE CONSISTS OF
A CONTROL MODULE WITH EIGHT UNITS (SUB-DEVICES) ATTACHED TO IT.
THESE UNITS ARE DESCRIBED BY THE OCTAL NUMBERS 0 THROUGH 7. THERE
IS ONE HARDWARE PARAMETER THAT CAN VARY AMONG UNITS CALLED THE
Q FACTOR. THIS Q-FACTOR MAY BE 0 OR 1. BELOW IS A SIMPLE WAY
TO BUILD A TABLE FOR ONE XY11 WITH EIGHT UNITS.

```
@ UNITS (D) ?  8<CR>

UNIT 1
CSR ADDRESS (G) ?  160000<CR>
SUB-DEVICE @ (O) ?  0<CR>
Q-FACTOR (O) 0 ?  1<CR>

UNIT 2
CSR ADDRESS (O) ?  160000<CR>
SUB-DEVICE @ (O) ?  1<CR>
Q-FACTOR (O) 1 ?  0<CR>

UNIT 3
CSR ADDRESS (O) ?  160000<CR>
SUB-DEVICE @ (O) ?  2<CR>
Q-FACTOR (O) 0 ?  <CR>

UNIT 4
CSR ADDRESS (O) ?  160000<CR>
SUB-DEVICE @ (O) ?  3<CR>
Q-FACTOR (O) 0 ?  <CR>

UNIT 5
CSR ADDRESS (O) ?  160000<CR>
SUB-DEVICE @ (O) ?  4<CR>
Q-FACTOR (O) 0 ?  <CR>

UNIT 6
CSR ADDRESS (O) ?  160000<CR>
SUB-DEVICE @ (O) ?  5<CR>
Q-FACTOR (O) 0 ?  <CR>

UNIT 7
CSR ADDRESS (O) ?  160000<CR>
SUB-DEVICE @ (O) ?  6<CR>
Q-FACTOR (O) 0 ?  1<CR>

UNIT 8
CSR ADDRESS (O)  160000<CR>
SUB-DEVICE @ (O) ?  7<CR>
Q-FACTOR (O) 1 ?  <CR>
```

NOTICE THAT THE DEFAULT VALUE FOR THE Q-FACTOR CHANGES WHEN A
NON-DEFAULT RESPONSE IS GIVEN. BE CAREFUL WHEN SPECIFYING
MULTIPLE UNITS!

AS YOU CAN SEE FROM THE ABOVE EXAMPLE, THE HARDWARE PARAMETERS DO NOT VARY SIGNIFICANTLY FROM UNIT TO UNIT. THE PROCEDURE SHOWN IS NOT VERY EFFICIENT.

THE RUNTIME SERVICES CAN TAKE MULTIPLE UNIT SPECIFICATIONS HOWEVER, LET'S BUILD THE SAME TABLE USING THE MULTIPLE SPECIFICATION FEATURE.

```
# UNITS (D) ?  8<CR>

UNIT 1
CSR ADDRESS (O) ?  160000<CR>
SUB-DEVICE # (O) ?  0,1<CR>
Q-FACTOR (O) 0 ?  1,0<CR>

UNIT 3
CSR ADDRESS (O) ?  160000<CR>
SUB-DEVICE # (O) ?  2-5<CR>
Q FACTOR (O) 0 ?  0<CR>

UNIT 7
CSR ADDRESS (O) ?  160000<CR>
SUB-DEVICE # (O) ?  6,7<CR>
Q-FACTOR (O) 0 ?  1<CR>
```

AS YOU CAN SEE IN THE ABOVE DIALOGUE, THE RUNTIME SERVICES WILL BUILD AS MANY ENTRIES AS IT CAN WITH THE INFORMATION GIVEN IN ANY ONE PASS THROUGH THE QUESTIONS. IN THE FIRST PASS, TWO ENTRIES ARE BUILT SINCE TWO SUB-DEVICES AND Q-FACTORS WERE SPECIFIED. THE SERVICES ASSUME THAT THE CSR ADDRESS IS 160000 FOR BOTH SINCE IT WAS SPECIFIED ONLY ONCE. IN THE SECOND PASS, FOUR ENTRIES WERE BUILT. THIS IS BECAUSE FOUR SUB-DEVICES WERE SPECIFIED. THE "-" CONSTRUCT TELLS THE RUNTIME SERVICES TO INCREMENT THE DATA FROM THE FIRST NUMBER TO THE SECOND. IN THIS CASE, SUB-DEVICES 2, 3, 4 AND 5 WERE SPECIFIED. (IF THE SUB-DEVICE WERE SPECIFIED BY ADDRESSES, THE INCREMENT WOULD BE BY 2 SINCE ADDRESSES MUST BE ON AN EVEN BOUNDARY.) THE CSR ADDRESSES AND Q-FACTORS FOR THE FOUR ENTRIES ARE ASSUMED TO BE 160000 AND 0 RESPECTIVELY SINCE THEY WERE ONLY SPECIFIED ONCE. THE LAST TWO UNITS ARE SPECIFIED IN THE THIRD PASS.

THE WHOLE PROCESS COULD HAVE BEEN ACCOMPLISHED IN ONE PASS AS SHOWN BELOW.

```
# UNITS (D) ?  8<CR>

UNIT 1
CSR ADDRESS (O) ?  160000<CR>
SUB-DEVICE # (O) ?  0-7<CR>
Q-FACTOR (O) 0 ?  0,1,0,,,,1,1<CR>
```

AS YOU CAN SEE FROM THIS EXAMPLE, NULL REPLIES (COMMAS ENCLOSING A NULL FIELD) TELL THE RUNTIME SERVICES TO REPEAT THE LAST REPLY.

2.7 QUICK START-UP PROCEDURE (XXDP+)

TO START-UP THIS PROGRAM;

1. BOOT XXDP+
2. GIVE THE DATE AND ANSWER THE LSI AND 50HZ (IF THERE IS A CLOCK) QUESTIONS
3. TYPE "R NAME", WHERE NAME IS THE NAME OF THE BIN OR BIC FILE FOR THIS PROGRAM
4. TYPE "START"
5. ANSWER THE "CHANGE HW" QUESTION WITH "Y"
6. ANSWER ALL THE HARDWARE QUESTIONS
7. ANSWER THE "CHANGE SW" QUESTION WITH "N"

WHEN YOU FOLLOW THIS PROCEDURE YOU WILL BE USING ONLY THE DEFAULTS FOR FLAGS AND SOFTWARE PARAMETERS. THESE DEFAULTS ARE DESCRIBED IN SECTIONS 2.3 AND 2.5.

3.0 ERROR INFORMATION

3.1 TYPES OF ERROR MESSAGES

THERE ARE THREE LEVELS OF ERROR MESSAGES THAT MAY BE ISSUED BY A DIAGNOSTIC: GENERAL, BASIC AND EXTENDED. GENERAL ERROR MESSAGES ARE ALWAYS PRINTED UNLESS THE "IER" FLAG IS SET (SECTION 2.3). THE GENERAL ERROR MESSAGE IS OF THE FORM:

```
NAME  TYPE  NUMBER  ON UNIT NUMBER  TST NUMBER PC:XXXXXX
ERROR MESSAGE
```

,WHERE; NAME = DIAGNOSTIC NAME
TYPE = ERROR TYPE (SYS FATAL, DEV FATAL, HARD OR SOFT)
NUMBER = ERROR NUMBER
UNIT NUMBER = 0 - N (N IS LAST UNIT IN PTABLE)
TST NUMBER = TEST AND SUBTEST WHERE ERROR OCCURRED
PC:XXXXXX = ADDRESS OF ERROR MESSAGE CALL

BASIC ERROR MESSAGES ARE MESSAGES THAT CONTAIN SOME ADDITIONAL INFORMATION ABOUT THE ERROR. THESE ARE ALWAYS PRINTED UNLESS THE "IER" OR "IBR" FLAGS ARE SET (SECTION 2.3). THESE MESSAGES ARE PRINTED AFTER THE ASSOCIATED GENERAL MESSAGE.

EXTENDED ERROR MESSAGES CONTAIN SUPPLEMENTARY ERROR INFORMATION SUCH AS REGISTER CONTENTS OR GOOD/BAD DATA. THESE ARE ALWAYS PRINTED UNLESS THE "IER", "IBR" OR "IXE" FLAGS ARE SET (SECTION 2.3). THESE MESSAGES ARE PRINTED AFTER THE ASSOCIATED GENERAL ERROR MESSAGE AND ANY ASSOCIATED BASIC ERROR MESSAGES.

3.2 SPECIFIC ERROR MESSAGES

BELOW ARE SAMPLE ERROR MESSAGES. EACH ERROR MESSAGE REPRESENTS DIFFERENT TYPES OF ERRORS DETECTED BY THIS DIAGNOSTIC.

ERROR MESSAGE EXAMPLE 1

THIS ERROR IS INDICATIVE OF AN INCORRECT REGISTER OR STATUS WORD RETURNED TO THE DIAGNOSTIC. THE FIRST PART DEFINES THE TEST FUNCTION AND UNIT THAT FAILED. THE SECOND PART PROVIDES THE REGISTER BITS AND THEIR MNEMONICS FOR THE INCORRECT REGISTER OR STATUS WORDS. THE THIRD PART IS THE EXPECTED AND RECEIVED DATA.

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

 TAPE BUS SIGNALS IN WORD #8: - DESIGNATOR <BIT #>
PARERR<15>  IEOT  <12>  IFMK  <9>  IRDY<6>  IRWD<2>
IRESV2<14>  IIDFNT<11>  IHER  <8>  IONL<5>  IFBY<1>
IRESV1<13>  ICER  <10>  ISPEED<7>  ILDP<4>  IFPT<0>
 TAPE BUS SIGNALS IN WORD #9:
DATMIS<7>  ILW<6>  OUTRDY<5>  INRDY<4>
 MESSAGE BUFFER ADDRESS = 047352
 MESSAGE BUFFER CONTENTS:
WORD #0 EXPD: 100020  RECV: 100020  XOR: 000000
WORD #1 EXPD: 000C12  RECV: 000012  XOR: 000000
WORD #2 EXPD: 000000  RECV: 000000  XOR: 000000
WORD #3 EXPD: 000010  RECV: 000010  XOR: 000000
WORD #4 EXPD: 000000  RECV: 000000  XOR: 000000
WORD #5 EXPD: 000000  RECV: 000000  XOR: 000000
WORD #6 EXPD: 000000  RECV: 000000  XOR: 000000
WORD #7 EXPD: 000000  RECV: 000000  XOR: 000000
WORD #8 EXPD: 070217  RECV: 070217  XOR: 000000
WORD #9 EXPD: 000074  RECV: 000034  XOR: 000040
```

ERROR MESSAGE EXAMPLE 2

THIS ERROR SHOWS A . AL FUNCTION ERROR FROM THE TAPE DRIVE.IN THIS INSTANCE A UNRECOVERABLE ERROR OCCURED WHICH INDICATES THAT THE CONTROLLER MAY BE DEFECTIVE.

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

ERROR MESSAGE EXAMPLE 3

THIS ERROR SHOWS THAT THE MOTION BIT DID NOT GET SET WHILE DOING A REWING WITH EXTENDED FEATURES MODE ENABLED.

```
CNTSD HRD ERR 00121 ON UNIT 00 TST 001 SUB 002 PC: 025306
MOT BIT (XSTO) NOT SET DURING REWIND (EXTENDED FEATURES MODE)
 EXPD: 000312 RECV: 000112 XOR: 000200
```

4.0 PERFORMANCE AND PROGRESS REPORTS

AT THE END OF EACH PASS, THE PASS COUNT IS GIVEN ALONG WITH THE TOTAL NUMBER OF ERRORS REPORTED SINCE THE DIAGNOSTIC WAS STARTED. THE "EOP" SWITCH CAN BE USED TO CONTROL HOW OFTEN THE END OF PASS MESSAGE IS PRINTED. SECTION 2.2 DESCRIBES SWITCHES.

SUCCESSFUL RUN EXAMPLE (SBC-11/21+)

```
DR>STA/FLA:PNT:HOE

UNITS (D) ?  1

UNIT 0

DEVICE ADDRESS  (O) 176000 ? <CR>

VECTOR (O) 224 ? <CR>

CHANGE SW (L) ? N<CR>
```

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".

```
TST: 001 SKIP TAPE MARKS TEST
TST: 002 NO-OP AND INITIALIZE TEST
TST: 003 ERASE AND OPERATION INCOMPLETE TEST
TST: 004 DATA PARITY TEST
TST: 005 TEST OF OPERATIONS AT EOT TEST
TST: 006 EXTENDED-MODE FUNCTIONS TEST
TST: 007 RECORD BUFFERING TEST
TST: 008 FUNCTION TIMING TEST

0 ERRORS
```

NOTE: THE DIAGNOSTIC WILL RUN CONTINUOUSLY UNLESS A PASS NUMBER LIMIT HAS BEEN SPECIFIED WITH THE "/PASS:" SWITCH.

PROGRAM RUN TIMES

THE AVERAGE RUN TIMES OF THE PROGRAM ARE LISTED BELOW. THESE FIGURES ARE TO BE USED AS A GUIDE. THE TIMING WAS DONE ON A FALCON PROCESSOR.

THE PROGRAM RUNS IN TWO MODES; NO ITERATIONS AND DEFAULT MODE. IN THE NO ITERATIONS MODE EACH TEST IS RUN ONCE, WITH NO ITERATIONS. IN THE DEFAULT MODE EACH TEST IS REPEATED BY THE NUMBER OF TIMES INDICATED BY THE ITERATION COUNT. NO ITERATIONS MODE IS SELECTED BY ANSWERING THE

INHIBIT ITERATIONS QUESTION WITH A "Y" (YES).

THE TIME REQUIRED TO RUN TESTS 1 THROUGH 9 IN ONE COMMAND IS 3 HOURS.

MORE EXHAUSTIVE CHECKS ARE AVAILABLE BY ALLOWING THE DIAGNOSTIC PROGRAMS TO RUN FOR MORE THAN ONE PASS. THE SECOND PASS OF THE PROGRAM IS MORE COMPREHENSIVE THAN THE FIRST PASS. ALL ITERATIONS AFTER THE FIRST PASS ARE THE SAME, HOWEVER, THEY ARE SUBSTANTIALLY LONGER.

5.0 DEVICE INFORMATION TABLES

WHENEVER THE PROGRAM IS STARTED, VIA THE STA(RT) COMMAND, THE SUPERVISOR REQUESTS THE FOLLOWING P-TABLES PARAMETER CHANGES:

```
CHANGE HW (L) ?

# UNITS (D) ?  <ENTER THE NUMBER OF M7196 CONTROLLERS
                PRESENT TO BE TESTED>

UNIT 0

DEVICE ADDRESS  (O) 176000 ? <ENTER THE ADDRESS OF THE
                              TSBA/TSDB REGISTER>

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

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

IN ADDITION, ON A START, RESTART OR CONTINUE THE SUPERVISOR REQUESTS CHANGES TO THE SOFTWARE OPERATING PARAMETERS, AS FOLLOWS:

```
CHANGE SW (L) ?

INHIBIT ITERATIONS (L) N ?
```

6.0 TEST SUMMARIES

TEST 1: WRITE TAPE MARK RETRY

THIS TEST VERIFIES PROPER OPERATION OF THE WRITE TAPE MARK RETRY COMMAND (SPACE REVERSE, ERASE, WRITE TAPE MARK).

TEST 2: SKIP TAPE MARKS

THIS TEST VERIFIES PROPER OPERATION OF THE SKIP TAPE MARKS FORWARD AND SKIP TAPE MARKS REVERSE COMMANDS. PROPER OPERATION UNDER CONTROL OF ALL COMBINATIONS OF THE ENABLE SKIP TAPE MARKS STOP (ESS) AND ENABLE TAPE MARKS STOP OFF BOT (ENB) BITS SPECIFIED BY THE WRITE CHARACTERISTICS COMMAND.

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

THIS TEST VERIFIES PROPER OPERATION OF THE NO-OP ("CLEAN TAPE") AND INITIALIZE COMMAND (SPACE REVERSE, ERASE, WRITE DATA)

TEST 4: ERASE AND OPERATION INCOMPLETE

VERIFIES THAT AN ERASE COMMAND ISSUED WHEN THE TAPE IS POSITIONED AT BOT OPERATES PROPERLY AND ACTUALLY ERASES TAPE.

TEST 5: DATA PARITY TEST

THIS TEST VERIFIES THAT THE DATA PARITY CIRCUITRY IN BOTH THE CONTROLLER AND THE TRANSPORT IS OPERATING PROPERLY BY FORCING DATA RECORDS WITH WRONG PARITY TO BE WRITTEN ONTO TAPE AND CHECKING THE RESULTS OBTAINED WHEN THE DATA IS READ.

TEST 6: OPERATIONS AT EOT

THIS TEST VERIFIES PROPER OPERATION OF THE WRITE DATA RETRY COMMAND (SPACE REVERSE, ERASE, WRITE DATA)

TEST 7: EXTENDED MODE FEATURES

THIS TEST VERIFIES THE OPERATION OF COMMANDS ONLY AVAILABLE WHEN THE CONTROLLER IS IN THE EXTENDED FEATURES MODE. THESE COMMANDS ARE:

REWIND WITH IMMEDIATE INTERRUPT

IF THE CONTROLLER IS NOT ALREADY IN EXTENDED FEATURES MODE, IT IS PLACED THERE VIA A WRITE SUBSYSTEM MEMORY COMMAND.

TEST 8: RECORD BUFFERING

THIS TEST VERIFIES THAT RECORD BUFFERING, USED FOR WRITE DATA AND READ NEXT COMMANDS, OPERATES PROPERLY AND IS PROPERLY CONTROLLED BY THE EXTENDED CHARACTERISTICS DATA WORD. IF THE M7196 CONTROLLER MODULE IS NOT ALREADY IN EXTENDED FEATURES MODE (AS CONTROLLED BY THE DIP SWITCH ON THE MODULE), IT IS PLACED INTO THAT MODE BY INVERTING THE SENSE OF THE SWITCH USING THE WRITE SUBSYSTEM MEMORY COMMAND. NOTE THAT RECORD BUFFERING HAS BEEN ENABLED IN PREVIOUS TESTS OF READ AND WRITE AND SO HAS BEEN PARTIALLY TESTED ALREADY. THIS TEST VERIFIES THAT BUFFERING IS ACTUALLY OPERATING.

TEST 9; FUNCTION TIMING

THIS TEST VERIFIES THAT THE TAPE TRANSPORT SEEMS TO BE WRITING RECORDS, GAPS, AND EXTENDED GAPS OF THE PROPER LENGTH, BOTH LOW AND HIGH SPEED MODES ARE TESTED. IT IS ALSO VERIFIED THAT A SKIP TAPE MARKS COMMAND WITH A COUNT OF 6 OF MORE, OPERATE THE TAPE IN HIGH-SPEED MODE. THIS TEST CAN ONLY BE RUN IF A REAL-TIME CLOCK IS AVAILIABLE ON THE SYSTEM. THE TEST OPERATES BY TIMING VARIOUS TAPE-MOTION OPERATIONS, USING A NUMBER OF DIFFERENT TEST RECORD LENGTHS.

7.0 MAINTENANCE HISTORY

REVISION A - MARCH 1982

REVISION B - APRIL 1983

- FIXED TWO PROBLEMS, ONE IN TEST 1 AND THE OTHER IN TEST 8.
REF. DOYLE TO GRASKY "TSV05 CVTSDA DIAGNOSTIC PATCH"; 23-DEC-82.

CVTSDB0 => CNTSDA0 JAKI BERG 9-APR-1984

CHANGES WERE MADE TO CVTSDB0 TO PRODUCE CNTSDA0 FOR THE FALCON-PLUS PROJECT (SBC-11/21+). CHANGES, MARKED BY ";JB REV A-0", ARE:

- SET THE ODT BREAK VECTOR (LOCATION 140) TO THE STARTING ADDRESS OF FALCON'S ODT ROM (170000-OCTAL).
- LOWER THE GENERAL INTERRUPT PRIORITY FROM 7 TO 6.
- CHANGE DEFAULT CSR ADDRESS FROM 172540 TO 176000.

```
                                        .TITLE  TSV2 - PROGRAM HEADER
                                        .SBTTL  PROGRAM HEADER

                                        .MCALL  SVC
000000                                  SVC                     ; INITIALIZE SUPERVISOR MACROS
                                        .ENABLE LC
                                        .NLIST  BEX,CND
000000                                  .ENABL  ABS,AMA
        002000                          .=2000
002000                                  BGNMOD  TSV2
002000                          TSV2::

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


002000                                  POINTER BGNSW,BGNSFT,BGNAU,BGNDU,BGNRPT
002000                                  HEADER  CNTSD,A,0,655.,0
002000                          L$NAME::                ;DIAGNOSTIC NAME
002000  103                             .ASCII /C/
002001  116                             .ASCII /N/
002002  124                             .ASCII /T/
002003  123                             .ASCII /S/
002004  104                             .ASCII /D/
002005  000                             .BYTE   0
002006  000                             .BYTE   0
002007  000                     L$REV::                 ;REVISION LEVEL
002010                                  .ASCII  /A/
002010  101                     L$DEPO::                ;0
002011                                  .ASCII  /0/
002011  060                     L$UNIT::                ;NUMBER OF UNITS
002012                                  .WORD   0
002012  000000                  L$TIML::                ;LONGEST TEST TIME
002014                                  .WORD   655.
002014  001217                  L$HPCP::                ;POINTER TO H.W. QUES.
002016                                  .WORD   L$HARD
002016  105576                  L$SPCP::                ;POINTER TO S.W. QUES.
002020                                  .WORD   L$SOFT
002020  105730                  L$HPTP::                ;PTR. TO DEF. H.W. PTABLE
002022                                  .WORD   L$HW
002022  002150                  L$SPTP::                ;PTR. TO S.W. PTABLE
002024                                  .WORD   L$SW
002024  002160                  L$LADP::                ;DIAG. END ADDRESS
002026                                  .WORD   L$LAST
002026  106404                  L$STA::                 ;RESERVED FOR APT STATS
002030                                  .WORD   0
002030  000000                  L$CO::
002032                                  .WORD   0
002032  000000                  L$DTYP::                ;DIAGNOSTIC TYPE
002034                                  .WORD   0
002034  000000                  L$APT::                 ;APT EXPANSION
002036                                  .WORD   0
002036  000000                  L$DTP::                 ;PTR. TO DISPATCH TABLE
002040                                  .WORD   L$DISPATCH
002040  002124
```

PROGRAM HEADER


```
002042                          L$PRIO::                ;DIAGNOSTIC RUN PRIORITY
002042  000000                          .WORD   0
002044                          L$ENVI::                ;FLAGS DESCRIBE HOW IT WAS SETUP
002044  000000                          .WORD   0
002046                          L$EXP1::                ;EXPANSION WORD
002046  000000                          .WORD   0
002050                          L$MREV::                ;SVC REV AND EDIT #
002050     003                          .BYTE   C$REVISION
002051     003                          .BYTE   C$EDIT
002052                          L$EF::                  ;DIAG. EVENT FLAGS
002052  000000                          .WORD   0
002054  000000                          .WORD   0
002056                          L$SPC::
002056  000000                          .WORD   0
002060                          L$DEVP::                ; POINTER TO DEVICE TYPE LIST
002060  003374                          .WORD   L$DVTYP
002062                          L$REPP::                ;PTR. TO REPORT CODE
002062  022772                          .WORD   L$RPT
002064                          L$EXP4::
002064  000000                          .WORD   0
002066                          L$EXP5::
002066  000000                          .WORD   0
002070                          L$AUT::                 ;PTR. TO ADD UNIT CODE
002070  022460                          .WORD   L$AU
002072                          L$DUT::                 ;PTR. TO DROP UNIT CODE
002072  022556                          .WORD   L$DU
002074                          L$LUN::                 ;LUN FOR EXERCISERS TO FILL
002074  000000                          .WORD   0
002076                          L$DESP::                ;POINTER TO DIAG. DESCRIPTION
002076  003402                          .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$ICP::                 ;PTR. TO INIT CODE
002104  021636                          .WORD   L$INIT
002106                          L$CCP::                 ;PTR. TO CLEAN-UP CODE
002106  022744                          .WORD   L$CLEAN
002110                          L$ACP::                 ;PTR. TO AUTO CODE
002110  022664                          .WORD   L$AUTO
002112                          L$PRT::                 ;PTR. TO PROTECT TABLE
002112  021626                          .WORD   L$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
```

DISPATCH TABLE

```
                                        .SBTTL  DISPATCH TABLE

                                ;++
                                ; THE DISPATCH TABLE CONTAINS THE STARTING ADDRESS OF EACH TEST.
                                ; IT IS USED BY THE SUPERVISOR TO DISPATCH TO EACH TEST.
                                ;--

002122                                  DISPATCH 9
002122  000011                         .WORD   9
002124                          L$DISPATCH::
002124  023554                          .WORD   T1
002126  032364                          .WORD   T2
002130  041462                          .WORD   T3
002132  047020                          .WOPD   T4
002134  053076                          .WORD   T5
002136  056072                          .WORD   T6
002140  063444                          .WORD   T7
002142  073374                          .WORD   T8
002144  101150                          .WORD   T9
```

DEFAULT HARDWARE P-TABLE

```
                                        .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.
                                ;--
002146                                  BGNHW   DFPTBL          ;DEFAULT HARD-P-TABLE
002146  000003                          .WORD   L10000-L$HW/2
002150                          L$HW::
002150                          DFPTBL::

002150  176000                          .WORD   176000          ; 1ST (OF 2) REGISTERS.
002152  000224                          .WORD   224             ; INTERRUPT VECTOR
002154  000200                          .WORD   PR104           ; INTERRUPT PRIORITY.
002156                                  ENDHW
002156                          L10000:
```

```
                                        .SBTTL  SOFTWARE P-TABLE

                                ;**
                                ; THE SOFTWARE P-TABLE CONTAINS THE VALUES OF THE PROGRAM
                                ; PARAMETERS THAT CAN BE CHANGED BY THE OPERATOR.
                                ;--
002156                                  BGNSW   SFPTBL
002156  000004                          .WORD   L10001-L$SW/2
002160                          L$SW::
002160                          SFPTBL::
002160  000000                  TRANSTST::      .WORD   0       ; ENABLE TEST OF TRANSPORT(S) IF =1
002162  000000                  NOITS::         .WORD   0       ; INHIBIT ITERATION OPTION.
                                                                ; ... 0 = ITERATE.
                                                                ; ...NZ = INHIBIT ITERATE.
002164  000017                  LERRMAX::       .WORD   15.     ; LOCAL (PER TEST) ERROR LIMIT
002166  000310                  GERRMAX::       .WORD   200.    ; GLOBAL (PER UNIT) ERROR LIMIT
002170                                  ENDSW
002170                          L10001:

                                        ENDMOD
```

```
                                        .TITLE  TSV3 - GLOBAL AREAS
                                        .SBTTL  GLOBAL EQUATES SECTION


002170                                  BGNMOD  TSV3
002170                          TSV3::

                                        .SBTTL  GLOBAL EQUATES SECTION

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

002170                                  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
                                ;
                                ;                                ;  BIT POSITION IN SECOND STATUS WORD
000040                          EF.START==      32.              ; (100000) START COMMAND WAS ISSUED
000037                          EF.RESTART==    31.              ; (040000) RESTART COMMAND WAS ISSUED
000036                          EF.CONTINUE==   30.              ; (020000) CONTINUE COMMAND WAS ISSUED
000035                          EF.NEW==        29.              ; (010000) A NEW PASS HAS BEEN STARTED
000034                          EF.PWR==        28.              ; (004000) A POWER-FAIL/POWER-UP OCCURRED
                                ;
                                ;
```

GLOBAL EQUATES SECTION

SEQ 0022

```
                        ; PRIORITY LEVEL DEFINITIONS
                        ;
000340                  PRI07== 340
000300                   RI06== 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
33
34 002170                       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
```

MEMORY MANAGEMENT DEFINITIONS

```
.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
```

TSV05 REGISTER AND PACKET DEFINITIONS

```
                        .SBTTL  TSV05 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
177520          BDVPCR==        177520          ; BDV11 PAGE CONTROL REGISTER

                ;+
                ;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=    6            ;TRANSPORT ON LINE
000040          XSOIE=  BIT5            ;INTERRUPT ENABLE
000020          XSOVCK= BIT4            ;VOLUME CHECK BIT
000010          XSOPED= BIT3            ;PHASE ENCODED DRIVE
000004          XSOWLK= BIT2            ;WRITE LOCKED
000002          XSOBOT= BIT1            ;BEGINNING OF TAPE
000001          XSOEOT= BIT0            ;END OF TAPE

                ;+
                ;BIT DEFINITIONS FOR EXTENDED STATUS REGISTER 1
                ;(XST1)
                ;-
100000          X1.DLT  = BIT15         ;DATA LATE
```

TSV05 REGISTER AND PACKET DEFINITIONS

```
                        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 TSV05 (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  = '00077         ;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 TSV05
                        X3.OPI  = BIT6           ;OPERATION INCOMPLETE
                        X3.REV  = BIT5           ;REVERSE
                        X3.TRF  = BIT4           ;TRANSPORT RESPONSE FAILURE
                        X3.DCK  = BIT3           ;DENSITY CHECK
                        X3.MBZ  =BIT2+BIT1       ;NOT USED ALWAYS 0
                        X3.RIB  = BIT0           ;REVERSE INTO BOT

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

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

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

                        ;+
                        ;
                        ;DEVICE REGISTER OFFSETS
                        ;
                        ;-
```

TSV05 REGISTER AND PACKET DEFINITIONS

```
                        TSBA=:  0
                        TSDB=:  0               ;TSDB/TSBA REGISTER
                        TSBAH=: 1
                        TSDBH=: 1               ;TSDB/TSBA REGISTER HIGH BYTE
                        TSSR=:  2               ;TSSR REGISTER
                        TSSRH=: 3               ;TSSR REGISTER HIGH BYTE

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

                        ;+
                        ; COMMAND DEFINITIONS
                        ;-
                        P.GETSTAT       = 17    ;GET STATUS
                        P.INIT          = 13    ;INITIALIZE
                        P.CONTROL       = 12    ;CONTROL COMMANDS
                        P.FORMAT        = 11    ;FORMAT
                        P.POSITION      = 10    ;POSITION
                        P.WRTSUB        = 6     ;SUBSYSTEM WRITE
                        P.WRITE         = 5     ;WRITE
                        P.WRTCHAR       = 4     ;WRITE CHARACTERISTICS
                        P.READ          = 1     ;READ

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

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

                        ;+
                        ; CONTROLLER RAM DEFINITIONS
                        ;-
                        RMCHBEG = 167           ;CHARACTERISTICS IO DATA BEGIN RAM ADDRESS
                        RMCHEND = 200           ;CHARACTERISTICS IO DATA END RAM ADDRESS
                        RMPKTBEG= 201           ;COMMAND PACKET BEGIN RAM ADDRESS
                        RMPKTEND= 210           ;COMMAND PACKET END RAM ADDRESS
                        RMMSGBEG= 215           ;MESSAGE BUFFER BEGIN RAM ADDRESS
                        RMMSGEND= 234           ;MESSAGE BUFFER END RAM ADDRESS
                        ;+
                        ;
                        ;REGISTER DEFINITIONS IN THE MESSAGE BUFFER
```

TSV05 REGISTER AND PACKET DEFINITIONS

```
                        ;+
                        ;-

000006                  XST0==  6               ;EXTENDED STATUS REGISTER 0 (WORD 4)
000010                  XST1==  8.              ;EXTENDED STATUS REGISTER 1 (WORD 5)
000012                  XST2==  10.             ;EXTENDED STATUS REGISTER 2 (WORD 6)
000014                  XST3==  12.             ;EXTENDED STATUS REGISTER 3 (WORD 7)
000016                  XST4==  14.             ;EXTENDED STATUS REGISTER 4 (WORD 8)

                        ;+
                        ;OFFSETS TO WORD LOCATIONS IN PACKET DEFINITIONS
                        ;-

000002                          PKLOW   = 2             ;LOW ORDER CHARACTERISTIC DATA POINTER
000004                          PKHI    = 4             ;HIGH ORDER CHARACTERISTIC DATA POINTER
000006                          PKBCNT  = 6             ;NUMBER OF BYTES IN DATA PACKET

000010                          EXBCNT=10               ;NUMBER OF BYTES IN EXTENDED DATA PACKET

                        ;+
                        ;DATA PACKET OFFSETS FOR WRITE SUBSYSTEM COMMAND
                        ;-
000000                          BSEL0   = 0             ;BYTE 0
000001                          BSEL1   = 1             ;BYTE 1
000002                          SEL2    = 2             ;WORD 2
000004                          SELDATA = 4             ;WORD 3

                        ;+
                        ;BSEL0 SELECT CODES FOR WRITE SUBSYSTEM COMMAND
                        ;-
000000                  PW.NOP          = 0             ;NO-OP
000001                  PW.RDRAM        = 1             ;READ RAM
000002                  PW.WTRAM        = 2             ;WRITE RAM
000003                  PW.RFIFO        = 3             ;READ FIFO
000004                  PW.WFIFO        = 4             ;WRITE FIFO
000005                  PW.RDSTAT       = 5             ;READ STATUS
000006                  PW.WCTL         = 6             ;WRITE TAPE CONTROL
000007                  PW.WFMT         = 7             ;WRITE TAPE FORMAT
000010                  PW.WMISC        = 10            ;WRITE MISCELLANEOUS
000011                  PW.WNPR         = 11            ;WRITE NPR CONTROL
000020                  PW.D22          = 20            ;DO MICROTEST 22
000021                  PW.D11          = 21            ;DO MICROTEST 11
000022                  PW.D13          = 22            ;DO MICROTEST 13
000023                  PW.NO1311       = 23            ;DISABLE MICROTEST 11 AND 13
000024                  PW.RDEXT        = 24            ;READ EXT. TAPE STATUS (NOT SUPPORTED BY ALL TRANSPORTS

                        ;+
                        ;BSEL1 CODES FOR WRITE TAPE CONTROL
                        ;-
000200                  WC.IFAD         = BIT7          ;IFAD - FORMATTER ADDRESS
000100                  WC.IOTAD        = BIT6          ;ITAD0  - TRANSPORT ADDRESS BIT 0
000040                  WC.I1TAD        = BIT5          ;ITAD1  - TRANSPORT ADDRESS BIT 1
000020                  WC.I5RESV       = BIT4          ;IRESV5 - RESERVED #5
000010                  WC.IREW         = BIT3          ;IREW   - REWIND
000004                  WC.IRWU         = BIT2          ;IRWU   - REWIND AND UNLOAD
```

TSV05 REGISTER AND PACKET DEFINITIONS

```
000002          WC.IFEN         = BIT1          ;IFEN   - FORMATTER ENABLE
000001          WC.IGO          = BIT0          ;GO

                ;+
                ;BSEL1 CODES FOR WRITE FORMAT
                ;-
000200          WF.IHISP        = BIT7          ;IHISP  - HIGH SPEED
000100          WF.IWRT         = BIT6          ;IWRT   - WRITE
000040          WF.IREV         = BIT5          ;IREV   - REVERSE
000020          WF.IWFM         = BIT4          ;IWFM   - WRITE FILE MARK
000010          WF.IEDIT        = BIT3          ;IEDIT  - EDIT
000004          WF.IERASE       = BIT2          ;IERASE - ERASE
000002          WF.I3RESV       = BIT1          ;IRESV3 - RESERVED #3
000001          WF.I4RESV       = BIT0          ;IRESV4 - RESERVED #4

                ;+
                ;BSEL1 CODES FOR WRITE MISCELLANEOUS SUBCOMMAND
                ;-
000200          MS.EXT          = BIT7          ;INVERT SENSE OF EXTENDED FEATURES SWITCH
000020          MS.RSFIFO       = BIT4          ;RESET FIFO AND INPUT PARITY ERRORR
000010          MS.RSTAPE       = BIT3          ;RESET TAPE STATUS IN 2 FLIP-FLOPS
000006          MS.ATTN         = BIT2!BIT1     ;ATTENTION TRIGGER FIELD
000001          MS.RSD          = BIT0          ;RESET TIMER A,B THEN DELAY TIMES IN SEL2
                ;+
                ; MS.ATTN SUBCODES
                ;-
000000                  MSA.NOP = 0*2           ;NO-OP (NOTHING TRIGGERED)
000002                  MSA.VOL = 1*2           ;SIMULATE ON-LINE/OFF-LINE TRANSISTION
000004                  MSA.NRAM= 2*2           ;FORCE NON-FATAL RAM ERROR (FORCES ERRCODE 54)
000006                  MSA.FRAM= 3*2           ;FORCE FATAL RAM ERROR (CAUSES SCE TO SET)
                ;+
                ; WRITE SUBSYSTEM WRITE NPR BSEL1 BIT DEFINITIONS
                ;-
000200          NP.IR           = BIT7          ;INTERRUPT REQUEST (0-1 TRANSITION)
000100          NP.OUT          = BIT6          ;TAPE DATA DIRECTION OUT (0= IN)
000040          NP.LOOP         = BIT5          ;ENABLE TRANSPORT LOOPBACK
000020          NP.WRP          = BIT4          ;WRITE CORRECT PARITY (SET=0 TO WRITE WRONG)
                ;+
                ; READ STATUS MESSAGE BUFFER BIT DEFINITIONS
                ;-

000200          S2.DIM          = BIT7          ;WORD #9 BYTE 2 DATA IN MISS
000100          S2.ILW          = BIT6          ;               ILW H
000040          S2.OUTRDY       = BIT5          ;               OUT RDY H
000020          S2.INRDY        = BIT4          ;               IN RDY H
000010          S2.ATIMR        = BIT3          ;               TIMER A FLAG H
000004          S2.BTIMR        = BIT2          ;               TIMER B FLAG H
000003          S2.UNDEF        = BIT1+BIT0     ;(UNDEFINED)
100000          S1.PARIN        = BIT15         ;WORD #8 BYTE 1 PARIN H
040000          S1.I2RESV       = BIT14         ;               IRESV2
020000          S1.I1RESV       = BIT13         ;               IRESV1
010000          S1.IEOT         = BIT12         ;               IEOT L
004000          S1.IIDENT       = BIT11         ;               IIDENT H
002000          S1.ICER         = BIT10         ;               ICER H
001000          S1.IFMK         = BIT9          ;               IFMK H
000400          S1.IHER         = BIT8          ;               IHER H
000200          S0.ISPEED       = BIT7          ;WORD #8 BYTE 0 ISPEED H
```

TSV05 REGISTER AND PACKET DEFINITIONS

```
000100                  SO.IRDY         = BIT6          ;               IRDY L
000040                  SO.IONL         = BIT5          ;               IONL L
000020                  SO.ILDP         = BIT4          ;               ILDP L
000010                  SO.IDBY         = BIT3          ;               IDBY L
000004                  SO.IRWD         = BIT2          ;               IRWD L
000002                  SO.IFBY         = BIT1          ;               IFBY L
000001                  SO.IFPT         = BIT0          ;               IFPT L
                                .SBTTL  SPECIAL MACROS AND OPDEFS.

                        ;+
                        ;SAVE GENERAL REGS 1 TO 5
                        ;-

                                .MACRO  SAVREG
                                JSR     R5,REGSAV
                                .ENDM

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

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

SPECIAL MACROS AND OPDEFS.

```
                                        ERRNO=ERRNO+1
                                ;;;.IIF NDF LISTALL, .LIST
                                .LIST
                                .ENDM

                                ;+
                                ;MACRO TO PERFORM XOR
                                ;-

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

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

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

002170  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.
                                ;
002172  000000                  EPRTSW::        .WORD   0       ;PRINT SWITCH
002174  000000                  UNITN::         .WORD   0       ;UNIT # UNDER TEST.
002176  000000                  QVP::           .WORD   0       ;QUICK VERIFY FLAG.
002200  000000                  CSRADDR::       .WORD   0       ;ADDRESS OF CSR FOR CURRENT DEVICE
002202  000224                  IVEC::          .WORD   224     ;INTERRUPT VECTOR
002204  000200                  IPRI::          .WORD   PRIO4   ;INTERRUPT PRIORITY.
002206  000000                  TSTCNT::        .WORD   0       ;NUMBER OF TESTS RUN IN THIS PASS
002210  000000                  LOOPCNT::       .WORD   0       ;REMAINING ITERATION COUNT FOR TEST
002212  000000                  DEVCNT::        .WORD   0       ;NUMBER OF DEVICE UNDER TEST
002214  000000                  FATFLG::        .WORD   0       ;SET IF FATAL ERROR IS DETECTED IN TEST
002216  000000                  INTRECV::       .WORD   0       ;SET IF TAPE INTERRUPT WAS RECEIVED
002220  000000                  EXTFEA::        .WORD   0       ;EXTENDED FEATURES SOFTWARE SW 0=OFF;1=ON
002222  000000                  BENBSW::        .WORD   0       ;BUFFER ENABLE SWITCH SW 0=OFF;1=ON
002224  000000                  EXPD::          .WORD   0       ;EXPECTED RAM DATA FOR PRAMPKT ROUTINE
002226  000000                  RECV::          .WORD   0       ;RECEIVED RAM DATA FOR PRAMPKT ROUTINE
002230  000000                  ERRHI::         .WORD   0       ;HIGH ADDRESS MEMORY ERROR
002232  000000                  ERRLO::         .WORD   0       ;LOW ADDRESS MEMORY ERROR
002234                          RAMDATA::       .BLKW   16.     ;DATA READ FROM RAM PACKET OR MESSAGE BUF AREA
002274  000000                  RAMSIZ::        .WORD   0       ;RAM DATA SIZE FOR PRAMPKT ROUTINE
```

GLOBAL DATA SECTION

```
 438 002276  000000                RCVHIADD::      .WORD   0       ;RECEIVED BUFFER HIGH ADDRESS
 439 002300  000000                RCVLOADD::      .WORD   0       ;RECEIVED BUFFER LOW ADDRESS
 440 002302  000000                COUNT::         .WORD   0       ;TEST COUNT PATTERN
 441 002304  000000                DATA::          .WORD   0       ;TEST DATA
 442 002306  000000                TSTFLAG::       .WORD   0       ;TEST FLAG WORD
 443 002310  000000                TSTPTR::        .WORD   0       ;TSTBLK POINTER
 444 002312  000000                PRMNO::         .WORD   0       ;PRINT ROUTINE TEMP
 445 002314                        EXPMSG:.        .BLKB   100.    ;EXPECTED MESSAGE BUFFER DATA
 446 002460                        RECMSG::        .BLKB   100.    ;RECEIVED MESSAGE BUFFER DATA
 447 002624                        TMPBFR::        .BLKB   80.     ;TEMPORARY STORAGE FOR PRINT
 448                                       .SBTTL  TSTBLK  - TEST DATA TABLE
 449
 450                                ;+
 451                                ;
 452                                ;THIS TABLE CONTAINS TEST DATA USED IN SEVERAL TESTS
 453                                ;
 454                                ;IN SEQUENCE THE DATA IS:
 455                                ;
 456                                ;       ALL ZEROS
 457                                ;       ALL ONES
 458                                ;       WALKING ONES
 459                                ;       WALKING ZEROS
 460                                ;       ALTERNATING ONES AND ZEROS
 461                                ;
 462                                ;-
 463
 464 002744                        TSTBLK::
 465 002744  000000                        .WORD   0               ;ALL ZEROS
 466 002746  177777                        .WORD   177777          ;ALL ONES
 467 002750  000001                        .WORD   BIT0            ;DATA FOR WALKING ONES
 468 002752  000002                        .WORD   BIT1
 469 002754  000004                        .WORD   BIT2
 470 002756  000010                        .WORD   BIT3
 471 002760  000020                        .WORD   BIT4
 472 002762  000040                        .WORD   BIT5
 473 002764  000100                        .WORD   BIT6
 474 002766  000200                        .WORD   BIT7
 475 002770  000400                        .WORD   BIT8
 476 002772  001000                        .WORD   BIT9
 477 002774  002000                        .WORD   BIT10
 478 002776  004000                        .WORD   BIT11
 479 003000  010000                        .WORD   BIT12
 480 003002  020000                        .WORD   BIT13
 481 003004  040000                        .WORD   BIT14
 482 003006  100000                        .WORD   BIT15
 483 003010  177776                        .WORD   ^CBIT0          ;DATA FOR WALKING ZEROS
 484 003012  177775                        .WORD   ^CBIT1
 485 003014  177773                        .WORD   ^CBIT2
 486 003016  177767                        .WORD   ^CBIT3
 487 003020  177757                        .WORD   ^CBIT4
 488 003022  177737                        .WORD   ^CBIT5
 489 003024  177677                        .WORD   ^CBIT6
 490 003026  177577                        .WORD   ^CBIT7
 491 003030  177377                        .WORD   ^CBIT8
 492 003032  176777                        .WORD   ^CBIT9
 493 003034  175777                        .WORD   ^CBIT10
 494 003036  173777                        .WORD   ^CBIT11
```

```
                                        .WORD   +CBIT12
                                        .WORD   +CBIT13
                                        .WORD   +CBIT14
                                        .WORD   +CBIT15
                                        .WORD   125252          ;ALTERNATING ONES, ZEROS
                                        .WORD   052525          ;ALTERNATING ONES, ZERO OPPOSITE FROM ABOVE
003054                          TBLEND::.
                                        .SBTTL  GLOBAL ENVIRONMENT STORAGE
                                ;
                                ;STORAGE FOR DEVICE REGISTERS
                                ;
003054  000000  100000  000000  DUMMY:  0,100000,0,0     ;DUMMY DEVICE REGISTERS...
003064  000000  000000  000000          0,0,0,0,0,0,0,0
                                                        ;...FOR MULTI-UNIT CHECKOUT.
003104  000000                  DUFLG::         .WORD   0               ;"DROPPED UNIT" FLAG.
                                                                        ;INHIBITS CODE IN "CLEAN-UP".
003106  000000                  NCDEV::         .WORD   0               ;FLAG TO SAY NO DEVICE.
003110  000000                  TEMP1::         .WORD   0               ;SOME TEMP LOCATIONS.
003112  000000                  TEMP2::         .WORD   0
003114  000000                  XXCOMM::        .WORD   0               ;XXDP+ COMM BLOCK POINTER.
003116  000000                  FREE::          .WORD   0               ;1ST FREE MEMORY ADDRESS...
003120  000000                  FRESIZ::        .WORD   0               ;...AND SIZE (IN WORDS).
003122  000000                  FREEHI: .WORD   0               ;LAST WORD IN FREE SPACE
003124  000000                  KTFLG::         .WORD   0               ;KT11, MEM AVAIL FLAG -
                                                                        ;- .WORD        0 = <24K OR NO KT -
                                                                        ;- NZ = >24K AND KT.
003126  000000                  KTENABLE::      .WORD   0               ;SET BY TEST ROUTINES TO FLAG >28K UNDER TEST
003130  000000                  NXMFLG::        .WORD   0               ;SET IF WE CAN TEST CLEARED OTHERWISE
003132  000000                  NXMLO::         .WORD   0               ;NXM LO ADDRESS BITS
003134  000000                  NXMHI::         .WORD   0               ;NXM HI ADDRESS BITS FOR DAL'S 16-21
003136  000000                  T23A::          .WORD   0               ;11/23A FLAG
003140  000000                  T23B::          .WORD   0               ;11/23B FLAG
003142  000000                  T3BFLG::        .WORD   0               ;TEST 3B FLAG +0
003144  002000                  PST32W::        .WORD   2000            ;32W BLOCK ADDRESS FOR 32K START
003146  000000                  SIFLAG::        .WORD   0               ;
003150  000000                  BADDAT::        .WORD   0               ;ACTUAL DATA
003152  000000                  GDDAT::         .WORD   0               ;EXPECTED DATA
003154  000000                  LOOPFL::        .WORD   0
003156                          CTAB::                                  ;CONFIGURATION TABLES.
003156  000000                  CTABM::         .WORD   0               ;CONFIG WORK.
003160  000000                                  .WORD   0
003162  000000                                  .WORD   0
003164  000000                                  .WORD   0
003166  177777                                  .WORD   -1              ;END OF MEM TABLE.
003170                          CTABE::
                                ;ERROR STATISTICS TABLE (1 WORD PER UNIT), 64 UNITS MAX:
                                ;
                                ;       0       =       UNIT NOT TESTED
                                ;       100000  =       UNIT ONLINE, NO ERRORS
                                ;       10XXXX  =       UNIT ONLINE, ENCOUNTERED XXXX ERRORS
                                ;       160000  =       UNIT DROPPED, NON-EXISTENT DEVICE REGISTER
                                ;       160001  =       UNIT DROPPED, NOT IDLE AT START
                                ;       14XXXX  =       UNIT DROPPED, ENCOUNTERED XXXX ERRORS
                                ;
003170                          ERTABL:         .BLKW   64.
```

GLOBAL ENVIRONMENT STORAGE

```
552 003370  000000                    ERTABE:         .WORD   0
553
554 003372  000000                    SKIPT:  .WORD   0               ;1=SKIP SUBTEST 0=NO SKIP OF SUBTEST
```

GLOBAL TEXT MESSAGES

```
                                        .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
                                ;-

003374                                  DEVTYP  <TSV05>
003374                          L$DVTYP::
003374  124  123  126                    .ASCIZ  #TSV05#
                                        .EVEN

                                ;+
                                ;TEST DESCRIPTION
                                ;-
003402                                  DESCRIPT <#### TSV05 LOGIC DIAGNOSTIC - CHECK TRANSPORT IF ERROR ####>
003402                          L$DESC::
003402  052  052  052                    .ASCIZ  /#### TSV05 LOGIC DIAGNOSTIC - CHECK TRANSPORT IF ERROR ####/
                                        .EVEN

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

003476  003536  003541  003545   TSSRBIT::       .WORD   1$,2$,3$,4$,5$,6$,7$,8$
003516  003577  003603  003607                   .WORD   9$,10$,11$,12$,13$,14$,15$,16$
003536     123     103     000   1$:     .ASCIZ  'SC'
003541     102     111     105   2$:     .ASCIZ  'BIE'
003545     123     103     105   3$:     .ASCIZ  'SCE'
003551     122     115     122   4$:     .ASCIZ  'RMR'
003555     116     130     115   5$:     .ASCIZ  'NXM'
003561     116     102     101   6$:     .ASCIZ  'NBA'
003565     102     111     124   7$:     .ASCIZ  'BIT9'
003572     102     111     124   8$:     .ASCIZ  'BIT8'
003577     123     123     122   9$:     .ASCIZ  'SSR'
003603     117     106     114   10$:    .ASCIZ  'OFL'
003607     102     111     124   11$:    .ASCIZ  'BIT5'
003614     102     111     124   12$:    .ASCIZ  'BIT4'
003621     102     111     124   13$:    .ASCIZ  'BIT3'
003626     102     111     124   14$:    .ASCIZ  'BIT2'
003633     102     111     124   15$:    .ASCIZ  'BIT1'
003640     102     111     124   16$:    .ASCIZ  'BIT0'
                                .EVEN
003646     124     123     123   SFIERR: .ASCIZ  'TSSR ERROR AFTER SOFT INIT'
003701     124     123     123   SFHERR: .ASCIZ  'TSSR ERROR AFTER BUS RESET'
003734     040     040     116   NXR:    .ASCIZ  /  NON-EXISTANT DEVICE REGISTER/
003773     045     101     040   NXRX:   .ASCIZ  /#A  ADDRESS: #06/
004014     045     101     040   TSSX:   .ASCII  /#A  TSBA,TSSR EXP'D: #06#A,#06#N/
004054     045     101     040           .ASCIZ  /#A  TSBA,TSSR REC'D: #06#A,#06/
004113     045     116     045   FUSI:   .ASCII  /#N#A/
004117     040     040     125   USI:    .ASCIZ  /  UNEXPECTED INTERRUPT/
004146     040     040     111   NSI:    .ASCIZ  /  INTERRUPT EXPECTED, NOT RECEIVED/
004211     045     116     045   FNOINTR:        .ASCII  /#N#A/
```

GLOBAL TEXT MESSAGES

```
                628 004215  040  040  116  NOINTR: .ASCIZ  /  NO INTERRUPT WAS GENERATED/
                629 004252  040  040  111  IFAULT: .ASCIZ  /  INTERRUPT FAULT/
                630 004274  045  101  040  INTX:   .ASCIZ  /%A  CPU PC: %O6%A  TSBA: %O6/
                631 004331  040  040  042  NOINIT: .ASCIZ  /  "BUS-INIT" DIDN'T INITIALIZE CONTROLLER/
                632 004403  040  040  042  NSINIT: .ASCIZ  /  "SOFT-INIT" DIDN'T INITIALIZE THE DPU/
                633 004453  040  040  042  BRINIT: .ASCIZ  /  "BUS-RESET" DIDN'T INITIALIZE THE DPU/
                634
                635 004523  000       000  NUL:    .ASCIZ  //
                636 004524  045  116  000  NULCR:  .ASCIZ  /%N/
                637 004527  045  101  040  EXPGOT: .ASCIZ  /%A EXP'D: %O6%A, REC'D: %O6/
                638 004563  045  116  045  EXPGT2: .ASCIZ  /%N%A EXP'D: %O6%A, %O6%N%A REC'D: %O%A, %O6/
                639 004637  045  101  040  DUAD12: .ASCIZ  /%A REG(W) WRITTEN TO: %O6%A REG(R) READ; EXP'D: %O6%A, REC'D: %O6/
                640 004741  122  101  115  PKTRAM:: .ASCIZ  'RAM Contents Do Not Match Packet Sent'
                641 005007  040  040  103  SCME:   .ASCIZ  /  CONFIG DOESN'T MATCH MFG. MASTEP/
                642 005052  127  122  111  WRTMSG: .ASCIZ  'WRITE CHARACTERISTICS Failed'
                643 005107  124  123  123  WRTERR: .ASCIZ  'TSSR Incorrect After WRITE Command, More Bits Set Than SSR'
                644 005202  124  123  123  RDERR:  .ASCIZ  'TSSR Incorrect After READ Command, More Bits Set Than SSR'
                645 005274  106  101  124  SCHERR: .ASCIZ  'FATAL ERROR IN SUBTEST - CHECK TAPE,CABLES,TRANSPORT etc.'
                646 005366  105  122  122  RETERR: .ASCIZ  'ERROR IN SUBTEST - WRITE DATA RETRY FIVE TIMES FAILED'
                647 005454  045  116  045  NOMEM:  .ASCIZ  '%N%A ***** NO NXM ADDRESS--CANNOT TEST NXM TIMEOUT. /*****%N'
                648 005550  045  116  045  M8186:  .ASCIZ  '%N%A ****************** 11/23A SYSTEM ******************%N'
                649 005641  045  116  045  M8189:  .ASCIZ  '%N%A ****************** 11/23B SYSTEM ******************%N'
                650                       .EVEN
                651                       .SBTTL  GLOBAL ERROR REPORT SECTION
                652
                653                     ;++
                654                     ; THE GLOBAL ERROR REPORT SECTION CONTAINS THE PRINTB AND PRINTX
                655                     ; CALLS THAT ARE USED IN MORE THAN ONE TEST.
                656                     ; ASCII TEXT STRINGS ARE FOUND IN THE GLOBAL TEXT SECTION.
                657                     ;--
                658
                659 005732              NXRERR: BGNMSG  NXRERR          ;NON-EXISTANT DEVICE REGISTER.
                    005732
                660 005732              NXRERR::
                    005732  013746  003106          PRINTX  #NXRX,NODEV      ;NODEV = NEXM ADDRESS.
                    005736  012746  003773          MOV     NODEV,-(SP)
                    005742  012746  000002          MOV     #NXRX,-(SP)
                    005746  010600                  MOV     #2,-(SP)
                    005750  104415                  MOV     SP,R0
                    005752  062706  000006          TRAP    C$PNTX
                661 005756  004737  005764          ADD     #6,SP
                662 005762                          JSR     PC,EXTEND       ; PRINT EXTENSION IF REQUIRED.
                    005762                          ENDMSG
                    005762              L10002:
                    005762  104423                  TRAP    C$MSG
                663
                664                     ;
                665                     ; THIS ROUTINE APPENDS A UNIQUE EXTENSION (IF REQUIRED)
                666                     ; TO ANY OF THE ABOVE ERROR SIGNATURES.
                667                     ;
                668 005764  005727      EXTEND: TST     (PC)+
                669 005766  000000      EXTA:   0                       ; 0 = NO EXTENSION.
                670 005770  001402              BEQ     1$
                671 005772  004777  177770      JSR     PC,@EXTA        ; APPEND EXTENSION TEXT.
                672 005776              1$:     PRINTX  #NULCR          ; PRINT A BLANK LINE
                    005776  012746  004524          MOV     #NULCR,-(SP)
                    006002  012746  000001          MOV     #1,-(SP)
                    006006  010600                  MOV     SP,R0
```

GLOBAL ERROR REPORT SECTION

```
        006010  104415                          TRAP    C$PNTX
        006012  062706  000004                  ADD     #4,SP
    673 006016  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
                ;
                ;-

006020          PRITSSR:
006020                  SAVREG                          ;SAVE GENERAL REGISTERS
006024  010104          MOV     R1,R4                   ;SAVE THE TSSR CONTENTS
006026                  PRINTB  #TSSRFOR,R4             ;PRINT THE CONTENTS OF TSSR
006026  010446          MOV     R4,-(SP)
006030  012746  006473  MOV     #TSSRFOR,-(SP)
006034  012746  000002  MOV     #2,-(SP)
006040  010600          MOV     SP,R0
006042  104414          TRAP    C$PNTB
006044  062706  000006  ADD     #6,SP
006050  010400          MOV     R4,R0                   ;GET TSSR BACK FOR CHKAMB
006052  004737  016124  JSR     PC,CHKAMB               ;ARE CONTENTS AMBIGUOUS ?
006056  103410          BCS     5$                      ;BRANCH IF NOT
006060                  PRINTX  #AMBTSSR                ;SHOW CONTENTS ARE AMBIGUOUS
006060  012746  006713  MOV     #AMBTSSR,-(SP)
006064  012746  000001  MOV     #1,-(SP)
006070  010600          MOV     SP,R0
006072  104415          TRAP    C$PNTX
006074  062706  000004  ADD     #4,SP
006100  010403          5$:     MOV     R4,R3                   ;CONTENTS OF TSSR
006102  042703  001476          BIC     #HIADDR!FATERR!TERCLS,R3        ;CLEAR ALL MULTIPLE BIT FIELDS
006106  001434          BEQ     20$                     ;NO BITS ARE SET
006110  012702  002624  MOV     #TMPBFR,R2              ;TEMPORARY ASCII BUFFER
006114  012701  003476  MOV     #TSSRBIT,R1             ;ASCII EQUIVALENT OF BITS
006120  005703          10$:    TST     R3              ;REMAINING BITS TO CONVERT
006122  001413          BEQ     15$                     ;BRANCH WHEN ALL ARE DONE
006124  000241          CLC                             ;CLEAR CARRY FOR SHIFT
006126  006103          ROL     R3                      ;SHIFT NEXT BIT TO CARRY
006130  103006          BCC     13$                     ;BRANCH IF BIT NOT SET
006132  011100          MOV     (R1),R0                 ;POINTER TO BIT DESCRIPTION
006134  112022          11$:    MOVB    (R0)+,(R2)+     ;MOVE ASCIZ TO BUFFER
006136  001376          BNE     11$                     ;MOVE
006140  112762  000054  177777  MOVB    #',,-1(R2)      ;INSERT A COMMA TO TERMINATE
006146  005721          13$:    TST     (R1)+           ;POINT TO NEXT DESCRIPTION
006150  000763          BR      10$                     ;GET THE REMAINING BIT
006152  105042          15$:    CLRB    -(R2)           ;TERMINATE THE LINE
006154                  PRINTX  #TSSDEF,#TMPBFR         ;PRINT THE BIT DEFINITION
006154  012746  002624  MOV     #TMPBFR,-(SP)
006160  012746  006664  MOV     #TSSDEF,-(SP)
```

```
        006164  012746  000002                  MOV     #2,-(SP)
        006170  010600                           MOV     SP,R0
        006172  104415                           TRAP    C$PNTX
        006174  062706  000006                  ADD     #6,SP
    719
    720 006200  010403                   20$:    MOV     R4,R3           ;GET THE TSSR CONTENTS
    721 006202  042703  177761                   BIC     #^CTERCLS,R3    ;CLEAR ALL BUT TERMINATION
    722 006206  016303  006754                   MOV     TCOCOD(R3),R3   ;GET THE TERMINATION CODE MEANING
    723 006212                                   PRINTX  #TCOASC,R3      ;PRINT THE TERMINATION CODE
        006212  010346                           MOV     R3,-(SP)
        006214  012746  006554                   MOV     #TCOASC,-(SP)
        006220  012746  000002                   MOV     #2,-(SP)
        006224  010600                           MOV     SP,R0
        006226  104415                           TRAP    C$PNTX
        006230  062706  000006                   ADD     #6,SP
    724 006234  010403                           MOV     R4,R3           ;TSSR CONTENTS AGAIN
    725 006236  042703  177717                   BIC     #^CFATERR,R3    ;CLEAR ALL BUT FATAL TERMINATION
    726 006242  001416                           BEQ     25$             ;DON'T PRINT IF ZERO
    727 006244  006203                           ASR     R3
    728 006246  006203                           ASR     R3
    729 006250  006203                           ASR     R3              ;ALINE TERMINATION CODE FOR INDEX
    730 006252  016303  007314                   MOV     TSFCOD(R3),R3   ;GET THE FATAL TERMINATION CODE
    731 006256                                   PRINTX  #TFCASC,R3      ;PRINT THE FATAL TERMINATION CODE
        006256  010346                           MOV     R3,-(SP)
        006260  012746  006615                   MOV     #TFCASC,-(SP)
        006264  012746  000002                   MOV     #2,-(SP)
        006270  010600                           MOV     SP,R0
        006272  104415                           TRAP    C$PNTX
        006274  062706  000006                   ADD     #6,SP
    732 006300  042704  176377           25$:    BIC     #^CHIADDR,R4    ;CLEAR ALL BUT EXTENDED ADDRESS
    733 006304  001411                           BEQ     30$             ;DON'T PRINT IF ZERO
    734 006306                                   PRINTX  #TEXASC,R4      ;PRINT THE EXTENDED ADDRESS BITS
        006306  010446                           MOV     R4,-(SP)
        006310  012746  006513                   MOV     #TEXASC,-(SP)
        006314  012746  000002                   MOV     #2,(SP)
        006320  010600                           MOV     SP,R0
        006322  104415                           TRAP    C$PNTX
        006324  062706  000006                   ADD     #6,SP
    735 006330  013703  002172           30$:    MOV     EPRTSW,R3               ;PRINT MEAASGE BUFFER ADDRESS
    736 006334                                   PRINTX  R3                      ;PRINT PROPER MESSAGE
        006334  010346                           MOV     R3,-(SP)
        006336  012746  000001                   MOV     #1,-(SP)
        006342  010600                           MOV     SP,R0
        006344  104415                           TRAP    C$PNTX
        006346  062706  000004                   ADD     #4,SP
    737 006352  000207                           RTS     PC              ;RETURN TO CALLER
    738
    753 006354      045     116     045  EPRT1:  .ASCIZ  '<N><A *****CHECK TRANSPORT*****'
    754 006413      045     116     045  EPRT2:   ASCIZ  '<N><A *****CHECK PARITY SWITCH IN TRANSPORT*****'
    756 006473      045     116     045  TSSRFOR:         .ASCIZ  '<N><A TSSR = <06>'
    757 006513      045     116     045  TEXASC:          .ASCIZ  '<N><A Extended Address Bits = <06>'
    758 006554      045     116     045  TCOASC:          .ASCIZ  '<N><A Termination Class Code = <T>'
    759 006615      045     116     045  TFCASC:          .ASCIZ  '<N><A Fatal Termination Class Code = <T>'
    760 006664      045     116     045  TSSRBIT:         .ASCIZ  '<N><A TSSR Bits Set: <T>'
    761 006713      045     116     045  AMBTSSR:         .ASCIZ  '<N><A TSSR Contents Are Ambiguous'
    762                                          .EVEN
    763    5754 006774  007017  007045  TCOCOD: .WORD   1$,2$,3$,4$,5$,6$,7$,8$
```

```
006774     116     157     162   1$:      .ASCIZ   'Normal Termination'
007017     124     145     162   2$:      .ASCIZ   'Termination Condition'
007045     124     141     160   3$:      .ASCIZ   'Tape Status Alert'
007067     106     165     156   4$:      .ASCIZ   'Function Reject'
007107     122     145     143   5$:      .ASCIZ   'Recoverable Error - Tape Position One Record Down'
007171     122     145     143   6$:      .ASCIZ   'Recoverable Error - Tape Was Not Moved'
007240     125     156     162   7$:      .ASCIZ   'Unrecoverable Error'
007264     106     141     164   8$:      .ASCIZ   'Fatal Controller Error'
                                          .EVEN

007314  007324  007360  007371   TSFCOD:  .WORD    1$,2$,3$,4$
007324     111     156     164   1$:      .ASCIZ   'Internal Diagnostic Failure'
007360     122     145     163   2$:      .ASCIZ   'Reserved'
007371     102     165     163   3$:      .ASCIZ   'Bus Interface or Sanity Check Error'
007435     122     145     163   4$:      .ASCIZ   'Reserved'
                                          .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.
                                 ;-

007446                           PRIPKT::
007446                                    SAVREG                    ;SAVE THE REGISTERS
007452  010005                            MOV      R0,R5            ;SAVE NO. OF WORDS IN PACKET
007454  005737  003126                    TST      KTENABLE         ;ABOVE 28K UNDER TEST?
007460  001001                            BNE      10$              ;BR IF YES
007462  005003                            CLR      R3               ;SET HIGH ORDER ADDRESS TO 0
007464  010301                   10$:     MOV      R3,R1            ;COPY HIGH ORDER ADDRESS
007466  010400                            MOV      R4,R0            ;GET LOWER ADDRESS
007470  006100                            ROL      R0               ;SHIFT BIT 15 INTO C BIT
007472  006101                            ROL      R1               ;AND INTO HIGH ORDER.
007474                                    PRINTB   #PKTADD,R1,R4    ;PRINT PACKET ADDRESS
007474  010446                            MOV      R4,-(SP)
007476  010146                            MOV      R1,-(SP)
007500  012746  007632                    MOV      #PKTADD,-(SP)
007504  012746  000003                    MOV      #3,-(SP)
007510  010600                            MOV      SP,R0
007512  104414                            TRAP     C$PNTB
007514  062706  000010                    ADD      #10,SP
007520  010300                   15$:     MOV      R3,R0            ;GET HIGH ORDER ADDRESS
007522  001404                            BEQ      20$              ;BR IF NOT ABOVE 28K.
007524  010401                            MOV      R4,R1            ;GET LOW ORDER ADDRESS
007526  004737  017376                    JSR      PC,SETMAP        ;SETUP PAR6 MAPPING FOR 18 BIT ADDRESS
007532  010004                            MOV      R0,R4            ;GET RETURNED PAR6 ADDRESS BIAS
007534  005001                   20$:     CLR      R1               ;SAVE WORD NUMBER
007536  012402                   25$:     MOV      (R4)+,R2         ;GET PACKET CONTENTS
007540                                    PRINTB   #PKTFRM,R1,R2    ;PRINT THE DATA
```

```
PRIPKT    PRINT THE ADDRESS/CONTENTS OF COMMAND PACKET

        007540  010246                          MOV     R2,-(SP)
        007542  010146                          MOV     R1,-(SP)
        007544  012746  007574                  MOV     #PKTFRM,-(SP)
        007550  012746  000003                  MOV     #3,(SP)
        007554  010600                          MOV     SP,R0
        007556  104414                          TRAP    C$PNTB
        007560  062706  000010                  ADD     #10,SP
   814  007564  005201                          INC     R1              ;NEXT WORD NUMBER
   815  007566  020105                          CMP     R1,R5           ;DONE ALL PACKET WORDS?
   816  007570  002762                          BLT     25$             ;LOOP TILL ALL DONE
   817  007572  000207                          RTS     PC              ;RETURN
   818
   819  007574      045     116     045  PKTFRM: .ASCIZ  '<N><A Packet Word #<D1><A - <06>'
   820  007632      045     116     045  PKTADD: .ASCIZ  '<N><A Packet Address - <01><05>'
   821                                          .EVEN
   822                                          .SBTTL  PRIBXOR - PRINT EXPD, RECV AND XOR BYTE
   823
   824                                  ;+
   825                                  ;
   826                                  ;PRINT EXPECTED DATA, RECEIVED DATA, AND XOR OF THE DATA BYTE
   827                                  ;THIS ROUTINE IS NORMALLY CALLED ONLY FOR PRINT ROUTINES.
   828                                  ;
   829                                  ;INPUTS:
   830                                  ;
   831                                  ;       R1      RECEIVED DATA
   832                                  ;       R2      EXPECTED DATA
   833                                  ;
   834                                  ;OUTPUT:
   835                                  ;
   836                                  ;       R0      XOR OF EXPECTED/RECEIVED DATA
   837                                  ;
   838                                  ;-
   839
   840  007670                          PRIBXOR::
   841  007670                                  SAVREG                  ;SAVE THE REGISTERS
   842  007674  010203                          MOV     R2,R3           ;EXPECTED DATA
   843  007676                                  XOR     R1,R3           ;FORM THE EXCLUSIVE OR
   844  007706  012700  177400                  MOV     #^C<377>,R0     ;BYTE MASK
   845  007712  040001                          BIC     R0,R1           ;SAVE LOW BYTE RECV
   846  007714  040002                          BIC     R0,R2           ;SAVE LOW BYTE EXPD
   847  007716  040003                          BIC     R0,R3           ;SAVE LOW BYTE XOR
   848  007720                                  PRINTB  #XORBFOR,R2,R1,R3 ;PRINT THE MESSAGE
        007720  010346                          MOV     R3,-(SP)
        007722  010146                          MOV     R1,-(SP)
        007724  010246                          MOV     R2,-(SP)
        007726  012746  007752                  MOV     #XORBFOR,-(SP)
        007732  012746  000004                  MOV     #4,-(SP)
        007736  010600                          MOV     SP,R0
        007740  104414                          TRAP    C$PNTB
        007742  062706  000012                  ADD     #12,SP
   849  007746  010300                          MOV     R3,R0           ;R0 HAS XOR ON RETURN
   850  007750  000207                          RTS     PC              ;RETURN TO CALLER
   851
   852  007752      045     116     045  XORBFOR:        .ASCIZ  '<N><A EXPD: <03><A RECV: <03><A XOR: <03>'
   853                                          .EVEN
   854                                          .SBTTL  PRIXOR  - PRINT EXPD, RECV AND XOR
   855
```

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
                                        ;
                                        ;-

010020                                  PRIXOR::
010020                                          SAVREG                          ;SAVE THE REGISTERS
010024  010203                                  MOV     R2,R3                   ;EXPECTED DATA
010026                                          XOR     R1,R3                   ;FORM THE EXCLUSIVE OR
010036                                          PRINTB  #XORFOR,R2,R1,R3 ;PRINT THE MESSAGE
010036  010346                                  MOV     R3,-(SP)
010040  010146                                  MOV     R1,-(SP)
010042  010246                                  MOV     R2,-(SP)
010044  012746  010070                         MOV     #XORFOR,-(SP)
010050  012746  000004                         MOV     #4,-(SP)
010054  010600                                  MOV     SP,R0
010056  104414                                  TRAP    C$PNTB
010060  062706  000012                         ADD     #12,SP
010064  010300                                  MOV     R3,R0                   ;R0 HAS XOR ON RETURN
010066  000207                                  RTS     PC                      ;RETURN TO CALLER

010070      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
                                        ;
                                        ;-

010136                                  PRIEQU:
010136                                          SAVREG                                  ;SAVE THE REGISTERS
010142  000207                                  RTS     PC                              ;RETURN TO CALLER

                                                .SBTTL  PRIRAM  - PRINT RAM ADDRESS
                                        ;*
                                        ;
                                        ;PRINT CONTROLLER RAM ADDRESS.
                                        ;THIS ROUTINE IS NORMALLY CALLED ONLY FROM PRINT ROUTINES.
```

PRIRAM - PRINT RAM ADDRESS

```
905                                     ;
906                                     ;INPUTS:
907                                     ;
908                                     ;       R4      RAM ADDRESS
909                                     ;
910                                     ;-
911 010144                              PRIRAM:
912 010144                                      SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
913 010150                                      PRINTB  #RAMFOR,R4      ;PRINT RAM ADDRESS IN ERROR
    010150  010446                              MOV     R4,-(SP)
    010152  012716  010174                      MOV     #RAMFOR,-(SP)
    010156  012746  000002                      MOV     #2,-(SP)
    010162  010600                              MOV     SP,R0
    010164  104414                              TRAP    C$PNTB
    010166  062706  000006                      ADD     #6,SP
914 010172  000207                              RTS     PC              ;RETURN
915
916 010174     045     116     045  RAMFOR: .ASCIZ  '%N%A CONTROLLER RAM ADDRESS = %O6'
917                                     .EVEN
918
919                                     .SBTTL  PRIADD  - PRINT MEMORY ERROR ADDRESS
920                                     ;*
921                                     ;
922                                     ;PRINT MEMORY ADDRESS
923                                     ;THIS ROUTINE IS NORMALLY CALLED ONLY FROM PRINT ROUTINES.
924                                     ;
925                                     ; IMPLICIT INPUTS
926                                     ;
927                                     ;       ERRHI   - HIGH ORDER ADDRESS
928                                     ;       ERRLO   - LOW ORDER ADDRESS
929                                     ;
930                                     ;-
931 010236                              PRIADD:
932 010236                                      SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
933 010242  013700  002230                      MOV     ERRHI,R0        ;GET HIGH ADDRESSS
934 010246  013701  002232                      MOV     ERRLO,R1        ;GET LOW ADDRESS
935 010252  010102                              MOV     R1,R2           ;COPY LOW ADDRESS
936 010254  006101                              ROL     R1              ;SHIFT BIT 15 TO C BIT
937 010256  006100                              ROL     R0              ;SHIFT INTO HIGH ORDER
938 010260                                      PRINTB  #PRIA0,R0,R2    ;PRINT MEMORY ADDRESS IN ERROR
    010260  010246                              MOV     R2,-(SP)
    010262  010046                              MOV     R0,-(SP)
    010264  012746  010306                      MOV     #PRIA0,-(SP)
    010270  012746  000003                      MOV     #3,-(SP)
    010274  010600                              MOV     SP,R0
    010276  104414                              TRAP    C$PNTB
    010300  062706  000010                      ADD     #10,SP
939 010304  000207                              RTS     PC              ;RETURN
940
941 010306     045     116     045  PRIA0:  .ASCIZ  '%N%A MEMORY ERROR ADDRESS = %O1%O5'
942                                     .EVEN
943
944                                     .SBTTL  PRITADD - PRINT MEMORY TEST ADDRESS
945                                     ;*
946                                     ;
947                                     ;PRINT MEMORY ADDRESS
948                                     ;THIS ROUTINE IS NORMALLY CALLED ONLY FROM PRINT ROUTINES.
```

```
                                ;
                                ; IMPLICIT INPUTS
                                ;
                                ;       ERRHI   - HIGH ORDER ADDRESS
                                ;       ERRLO   - LOW ORDER ADDRESS
                                ;
                                ;-
010352                          PRITADD:
010352                                  SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
010356  013702  002230                  MOV     ERRHI,R2        ;GET HIGH ADDRESSS
010362  013701  002232                  MOV     ERRLO,R1        ;GET LOW ADDRESS
                                        ;MOV    R1,R2           ;COPY LOW ADDRESS
                                        ;ROL    R1              ;SHIFT BIT 15 TO C BIT
                                        ;ROL    R0              ;SHIFT INTO HIGH ORDER
010366                                  PRINTB  #PRIT0,R1       ;PRINT MEMORY ADDRESS LOW IN ERROR
010366  010146                          MOV     R1,-(SP)
010370  012746  010434                  MOV     #PRIT0,-(SP)
010374  012746  000002                  MOV     #2,-(SP)
010400  010600                          MOV     SP,R0
010402  104414                          TRAP    C$PNTB
010404  062706  000006                  ADD     #6,SP
010410                                  PRINTB  #PRIT1,R2       ;PRINT MEMORY ADDRESS HIGH IN ERROR
010410  010246                          MOV     R2,-(SP)
010412  012746  010477                  MOV     #PRIT1,-(SP)
010416  012746  000002                  MOV     #2,-(SP)
010422  010600                          MOV     SP,R0
010424  104414                          TRAP    C$PNTB
010426  062706  000006                  ADD     #6,SP
010432  000207                          RTS     PC              ;RETURN
                                ;
010434  045  116  045           PRIT0:  .ASCIZ  '%N%A MEMORY TEST ADDRESS LOW = %06'
010477  045  116  045           PRIT1:  .ASCIZ  '%N%A MEMORY TEST ADDRESS HIGH = %06'
                                        .EVEN
                                        .SBTTL  SPACE   - SPACE RECORDS (FORWARD AND REVERSE) COMMAND
                                ;
                                ;+
                                ;
                                ;ROUTINE TO ISSUE A SPACE RECORDS
                                ;COMMAND (FORWARD OR REVERSE)
                                ;
                                ;INPUT:
                                ;
                                ;       R3      NUMBER OF RECORDS TO BE SPACED OVER
                                ;               BIT15 CONTROLS DIRECTION
                                ;               BIT15 = 0 IS FORWARD
                                ;               BIT15 = 1 IS REVERSE
                                ;       R5      FIRST DEVICE UNIBUS ADDRESS
                                ;
                                ;       REQUIRES A WRITE CHARACTERISTICS DONE PREVIOUSLY
                                ;
                                ;OUTPUT:
                                ;
                                ;       CARRY   SET - SPACE RECORDS COMMAND OK
                                ;               CLR - SPACE RECORDS FAILED
                                ;
                                ;
                                ;       R0      THE CONTENTS OF R4 IS MOVED TO R0
```

SPACE SPACE RECORDS (FORWARD AND REVERSE) COMMAND

```
                                        ;
                                        ;
                                        ;IMPLICIT OUTPUT:
                                        ;
                                        ;       TAPE HAS BEEN MOVED
                                        ;
                                        ;SIDE EFFECTS:
                                        ;
                                        ;
                                        ;-

010544                                  SPACE::
                                                SAVREG                  ;SAVE THE GENERAL REGISTERS
010550  012737  000764  010740                  MOV     #500.,SDELAY    ;SET UP DELAY
010556  012737  140010  010730                  MOV     #140010,80$     ;SET UP COMMAND, SPACE FORWARD
010564  005703                                  TST     R3              ;CHECK FOR DIRECTION
010566  100403                                  BMI     5$              ;BR, IF REVERSE INDICATED
010570  010337  010732                          MOV     R3,90$          ;LOAD UP NUMBER OF RECORDS TO SPACE
010574  000407                                  BR      10$             ;GO DO COMMAND
010576  042703  100000          5$:             BIC     #BIT15,R3       ;CLEAR DIRECTION BIT
010602  010337  010732                          MOV     R3,90$          ;LOAD UP NUMBER OF RECORDS TO SPACE
010606  052737  000400  010730                  BIS     #BIT8,80$       ;SET REVERSE BIT IN COMMAND PACKET
010614  012704  010730          10$:            MOV     #80$,R4         ;SET UP R4 WITH PACKET ADDRESS
010620  010465  000000                          MOV     R4,TSDB(R5)     ;SEND OUT COMMAND
010624  004737  016330          15$:            JSR     PC,WAITF        ;WAIT FOR SSR
010630  103420                                  BCS     20$             ;BR, IF SSR IS SET AND OK
010632                                          DELAY   250         ;DELAY ABOUT .25 SECONDS
010632  012727  000250                          MOV     #250,(PC)+
010636  000000                                  .WORD   0
010640  013727  002116                          MOV     L$DLY,(PC)+
010644  000000                                  .WORD   0
010646  005367  177772                          DEC     -6(PC)
010652  001375                                  BNE     .-4
010654  005367  177756                          DEC     -22(PC)
010660  001367                                  BNE     .-20
010662  005337  010740                          DEC     SDELAY          ;BUMP DELAY COUNTER DOWN
010666  001356                                  BNE     15$             ;BR, IF MORE DELAY
010670  000411                                  BR      60$             ;BR IF TROUBLE CARRY = CLEAR
010672  016501  000002          20$:            MOV     TSSR(R5),R1     ;READ TSSR
010676  012702  000200                          MOV     #SSR,R2         ;SET UP EXPECTED
010702  020201                  25$:            CMP     R2,R1           ;ARE THEY OK
010704  001401                                  BEQ     40$             ;BR, IF EQUAL = OK
010706  000402                                  BR      60$             ;TROUBLE EXIT
010710  000261                  40$:            SEC                     ;SET CARRY NO TROUBLE
010712  000401                                  BR      70$             ;EXIT
010714  000241                  60$:            CLC                     ;CARRY CLEAR = ERROR
010716                          70$:
010716  010400                                  MOV     R4,R0           ;PASS PACKET ADDRESS
010720  000207                                  RTS     PC              ;RETURN
```

SPACE - SPACE RECORDS (FORWARD AND REVERSE) COMMAND

```
                                        ;
                                        ;
                                        ;
                                        ;PACKET FOR SPACE COMMAND
                                        ;
010730                                          .=<.+10>&177770
                                        ;
                                        ;COMMAND WORD
010730  000000                          80$:    .WORD
                                        ;NUMBER OF RECORDS TO BE SPACED OVER WORD
010732  000000                          90$:    .WORD
010734  000000                                  .WORD
010736  000000                                  .WORD
010740  000000                          SDELAY: .WORD   0                       ;DELAY COUNTER
                                                .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:
                                        ;               EXTFEA = EXTENDED FEATURES PRESENT
                                        ;               BENBSW = BUFFER ENABLE SWITCH ON OR OFF
                                        ;
                                        ;
                                        ;SIDE EFFECTS:
                                        ;
                                        ;
                                        ;-

010742                                  WRTCHR::
010742                                          SAVREG                          ;SAVE THE GENERAL REGISTERS
010746  005037  002220                          CLR     BENBSW          ;CLEAR BUFFER ENABLE SWITCH
010752  005037  002220                          CLR     EXTFEA                  ;CLEAR EXTENDED FEATURES SW SWITCH
010756  010465  000000                  10$:    MOV     R4,TSDB(R5)             ;SEND OUT COMMAND
010762  004737  016416                          JSR     PC,CHKTSSR              ;WAIT FOR SSR
010766  103401                                  BCS     20$                     ;BR, IF SSR IS SET AND OK
010770  000435                                  BR      60$                     ;67 IF TROUBLE CARRY = CLEAR
010772  016501  000000                  20$:    MOV     TSSR(R5),R1             ;READ TSSR
010776  012702  000200                          MOV     #SSR,R2                 ;SET UP EXPECTED
```

WRTCHR - WRITE CHARACTERISTICS COMMAND

```
1095 011002  032701  000100              BIT     #OFL,R1                 ;WAS OFF LINE SET IN TSSR
1096 011006  001402                      BEQ     25$                     ;BR, IF NO OFL SET
1097 011010  052702  000100              BIS     #OFL,R2                 ;MAKE THEM LOOK ALIKE
1098 011014  020201                25$:   CMP     R2,R1                   ;ARE THEY OK
1099 011016  001401                      BEQ     40$                     ;BR, IF EQUAL = OK
1100 011020  000421                      BR      60$                     ;TROUBLE EXIT
1101 011022  062704  000010        40$:   ADD     #8.,R4                  ;POINT TO WRT CHARA DATA PACKET
1102 011026  011403                      MOV     (R4),R3                 ;GET ADDRESS OF MESSAGE BUFFER
1103 011030  032763  000200  000012       BIT     #X2.EXTF,XST2(R3)       ;EXTENDED FEATURES BIT SET?
1104 011036  001402                      BEQ     45$                     ;BR IF NO
1105 011040  005237  002220              INC     EXTFEA                  ;SET EXTENDED FEATURES SW SWITCH
1106 011044                        45$:
1107 011044  032763  000100  000012       BIT     #X2.BUFE,XST2(R3)                       ;BUFFER ENABLE SWITCH SET
1108 011052  001402                      BEQ     50$                     ;BR, IF SWITCH NOT SET
1109 011054  005237  002222              INC     BENBSW                  ;SET SOFTWARE SWITCH FOR ENABLED
1110 011060                        50$:
1111 011060  000261                      SEC                             ;SET CARRY NO TROUBLE
1112 011062  000401                      BR      70$                     ;EXIT
1113 011064  000241                60$:   CLC                             ;CARRY CLEAR = ERROR
1114 011066  016500  000002        70$:   MOV     TSSR(R5),R0             ;RETURN TSSR CONTENTS
1115 011072  000207                      RTS     PC                      ;RETURN
1116                                     .SBTTL  REWIND  - POSITION TAPE (REWIND) COMMAND
1117
1118                               ;+
1119                               ;
1120                               ;THIS ROUTINE WILL REWIND THE SELECTED TAPE.
1121                               ;
1122                               ;       CAUTION: THE ROU[illegible] DOES NOT WAIT FOR BOT
1123                               ;                TO ARR[illegible] SO THE CALLER MUST CHECK FOR
1124                               ;                SSR T[illegible] IN THE TSSR
1125                               ;
1126                               ;
1127                               ;CALLING SEQUENCE:
1128                               ;
1129                               ;       DO A SOFT INIT
1130                               ;       DO A WRITE CHARACTERISTICS
1131                               ;       JSR     PC,REWIND
1132                               ;
1133                               ;INPUT:
1134                               ;
1135                               ;       R5      FIRST DEVICE UNIBUS ADDRESS
1136                               ;
1137                               ;
1138                               ;OUTPUT
1139                               ;
1140                               ;       R0      THE CONTENTS OF R4 IS PASSED TO R0
1141                               ;
1142                               ;
1143                               ;-
1144 011074                       REWIND::
1145 011074                              SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
1146 011100  012704  011170              MOV     #RWPACK,R4              ;GET PACKET ADDRESS
1147 011104  010465  000000              MOV     R4,TSDB(R5)             ;SEND PACKET ADDRESS TO EXECUTE
1148 011110  012703  000552              MOV     #360.,R3                ;ENOUGH TIME FOR 2400' REEL TO REWIND
1149 011114  004737  016330        10$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1150 011120  103417                      BCS     20$                     ;LEAVE WHEN SSR IS SET
1151 011122                              DELAY   250.                    ;WAIT FOR .25 SECONDS
```

REWIND POSITION TAPE (REWIND) COMMAND

```
        011122  012727  (000772                MOV     #250.,(PC)+
        011126  000000                          .WORD   0
        011130  013727  002116                  MOV     L$DLY,(PC)+
        011134  000000                          .WORD   0
        011136  005367  177772                  DEC     -6(PC)
        011142  001375                          BNE     .-4
        011144  005367  177756                  DEC     -22(PC)
        011150  001367                          BNE     .-20
1152    011152  005303                          DEC     R3                      ;BUMP COUNTER DOWN
1153    011154  001357                          BNE     10$                     ;KEEP GOING
1154    011156  000241                          CLC                             ;CLEAR CARRY TO SET ERROR
1155    011160  010400                  20$:    MOV     R4,R0                   ;PASS THE PACKET ADDRESS
1156    011162  000207                          RTS     PC                      ;RETURN
1157
1159            011170                          .=<.+10>&177770
1161    011170                          RWPACK:
1162    011170  102010                          .WORD   102010                  ;POSTION COMMAND (REWIND)
1163    011172  000000                          .WORD   0                       ;NOT USED
1164                                            .SBTTL  CKRAM   - COMPARE RAM TO I/O PACKET
1165
1166                                    ;*
1167                                    ;
1168                                    ;ROUTINE TO READ THE FIRST 8 BYTES FROM RAM
1169                                    ;MEMORY AND COMPARE THIS DATA TO A COMMAND PACKET.
1170                                    ;
1171                                    ;INPUT:
1172                                    ;
1173                                    ;       R4      ADDRESS OF THE COMMAND PACKET
1174                                    ;       R5      FIRST DEVICE UNIBUS ADDRESS
1175                                    ;
1176                                    ;OUTPUT:
1177                                    ;
1178                                    ;       CARRY   SET - RAM MATCHES PACKET
1179                                    ;               CLR - RAM DOES NOT MATCH PACKET
1180                                    ;
1181                                    ;IMPLICIT OUTPUT.
1182                                    ;
1183                                    ;       THE TABLE RAMDATA IS FILLED WITH THE
1184                                    ;       DATA HELD IN RAM.
1185                                    ;       RAMSIZ IS SET TO 8. FOR PRAMPKT ROUTINE
1186                                    ;
1187                                    ;SIDE EFFECTS:
1188                                    ;
1189                                    ;       THE SUBSYSTEM IS LEFT IN MAINTENANCE MODE
1190                                    ;
1191                                    ;-
1192
1193    011174                          CKRAM::
1194    011174                                  SAVREG                          ;SAVE THE GENERAL REGISTERS
1195    011200  012701  002234                  MOV     #RAMDATA,R1             ;ADDRESS TO SAVE THE RAM DATA
1196    011204  012702  000201                  MOV     #RMPKTBEG,R2            ;BYTE ADDRESS OF FIRST RAM DATA
1197    011210  005003                          CLR     R3                      ;CLEAR THE ERROR FLAG
1198    011212  004737  016416                  JSR     PC,CHKTSSR              ;WAIT FOR SSR
1199    011216  112765  000000  000000          MOVB    #0,TSDB(R5)             ;SET MAINTENANCE MODE
1200    011224  004737  016416          10$:    JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
1201    011230  010265  000000                  MOV     R2,TSDB(R5)             ;SELECT NEXT RAM ADDRESS
1202    011234  004737  016416                  JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
```

```
1203 011240  116511  000000                 MOVB    TSBA(R5),(R1)           ;READ THE RAM DATA
1204 011244  122124                         CMPB    (R1)+,(R4)+             ;COMPARE TO EXPECTED
1205 011246  001401                         BEQ     20$                     ;BRANCH IF OK
1206 011250  005203                         INC     R3                      ;SET ERROR FLAG
1207 011252  005202                 20$:    INC     R2                      ;ADDRESS OF NEXT RAM LOCATION
1208 011254  020227  000210                 CMP     R2,#RMPKTEND            ;REACHED END YET ?
1209 011260  003761                         BLE     10$                     ;BRANCH TILL ALL READ
1210 011262  005703                         TST     R3                      ;WAS AN ERROR FOUND ?
1211 011264  001402                         BEQ     30$                     ;BRANCH IF NOT
1212 011266  000241                         CLC                             ;CLEAR CARRY TO SHOW ERROR
1213 011270  000401                         BR      50$                     ;AND EXIT
1214 011272  000261                 30$:    SEC                             ;SHOW GOOD COMPARE
1215 011274  012737  000010  002274  50$:    MOV     #8.,RAMSIZ              ;SETUP RAMSIZ FOR PRAMPKT ROUTINE
1216 011302  000207                         RTS     PC                      ;RETURN
1217                                         .SBTTL  CKRAM2  - COMPARE RAM TO I/O CHARACTERISTICS DATA
1218                                 ;+
1219                                 ;
1220                                 ;ROUTINE TO READ THE FIRST 8 OR 10 BYTES FROM RAM
1221                                 ;MEMORY AND COMPARE THIS DATA TO A CHARACTERISTICS DATA BLOCK.
1222                                 ;
1223                                 ;INPUT:
1224                                 ;
1225                                 ;       R4      ADDRESS OF THE CHARACTERISTICS DATA
1226                                 ;       R5      FIRST DEVICE UNIBUS ADDRESS
1227                                 ;
1228                                 ;OUTPUT:
1229                                 ;
1230                                 ;       CARRY   SET - RAM MATCHES PACKET
1231                                 ;               CLR - RAM DOES NOT MATCH PACKET
1232                                 ;
1233                                 ;IMPLICIT OUTPUT:
1234                                 ;
1235                                 ;       THE TABLE RAMDATA IS FILLED WITH THE
1236                                 ;       DATA HELD IN RAM.
1237                                 ;       RAMSIZ IS SET TO 8. OR 10. FOR PRAMPKT ROUTINE
1238                                 ;
1239                                 ;SIDE EFFECTS:
1240                                 ;
1241                                 ;       THE SUBSYSTEM IS LEFT IN MAINTENANCE MODE
1242                                 ;
1243                                 ;-
1244
1245 011304                         CKRAM2::
1246 011304                                 SAVREG                          ;SAVE THE GENERAL REGISTERS
1247 011310  012701  002234                 MOV     #RAMDATA,R1             ;ADDRESS TO SAVE THE RAM DATA
1248 011314  012702  000167                 MOV     #RMCHBEG,R2             ;BYTE ADDRESS OF FIRST RAM DATA
1249 011320  005003                         CLR     R3                      ;CLEAR THE ERROR FLAG
1250 011322  004737  016416                 JSR     PC,CHKTSSR              ;WAIT FOR SSR
1251 011326  112765  000000  000000         MOVB    #0,TSDB(R5)             ;SET MAINTENANCE MODE
1252 011334  004737  016416         10$:    JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
1253 011340  010265  000000                 MOV     R2,TSDB(R5)             ;SELECT NEXT RAM ADDRESS
1254 011344  004737  016416                 JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
1255 011350  116511  000000                 MOVB    TSBA(R5),(R1)           ;READ THE RAM DATA
1256 011354  122124                         CMPB    (R1)+,(R4)+             ;COMPARE TO EXPECTED
1257 011356  001401                         BEQ     20$                     ;BRANCH IF OK
1258 011360  005203                         INC     R3                      ;SET ERROR FLAG
1259 011362  005202                 20$:    INC     R2                      ;ADDRESS OF NEXT RAM LOCATION
```

```
1260 011364  012737  000010  002274          MOV     #8.,RAMSIZ              ;ASSUME EXTFEA NOT SET
1261 011372  005737  002220                  TST     EXTFEA                  ;IS THE SOFTWARE EXTENDED FEATURES SET
1262 011376  001407                          BEQ     25$                     ;BR, IF NOT SET
1263 011400  012737  000012  002274          MOV     #10.,RAMSIZ             ;SET RAMSIZ FOR EXTEND FEATURES
1264 011406  020227  000200                  CMP     R2,#RMCHEND             ;AT END OF EXTENDED BUFFER
1265 011412  003750                          BLE     10$                     ;BR, IF NOT AT END YET
1266 011414  000403                          BR      27$                     ;AT END BRANCH
1267 011416  020227  000176          25$:    CMP     R2,#RMCHEND-2           ;REACHED END YET ?
1268 011422  003744                          BLE     10$                     ;BRANCH TILL ALL READ
1269 011424  005703                  27$:    TST     R3                      ;WAS AN ERROR FOUND ?
1270 011426  001402                          BEQ     30$                     ;BRANCH IF NOT
1271 011430  000241                          CLC                             ;CLEAR CARRY TO SHOW ERROR
1272 011432  000401                          BR      50$                     ;AND EXIT
1273 011434  000261                  30$:    SEC                             ;SHOW GOOD COMPARE
1274 011436  000207                  50$:    RTS     PC                      ;RETURN
1275                                         .SBTTL  CKMSG   - COMPARE WRITE CHAR. MESSAGE BUFFERS
1276                                 ;+
1277                                 ;
1278                                 ;ROUTINE TO COMPARE A WRITE CHARACTERISTICS EXPD AND RECV
1279                                 ;BUFFER. THE EXPECTED AND RECEIVED BUFFERS ARE STORED FOR
1280                                 ;ERROR PRINT ROUTINES.
1281                                 ;
1282                                 ;INPUT:
1283                                 ;
1284                                 ;       R0      RECV MESSAGE BUFFER HIGH ORDER ADDRESS
1285                                 ;       R1      RECV MESSAGE BUFFER LOW ORDER ADDRESS
1286                                 ;       R2      EXPD MESSAGE BUFFER ADDRESS
1287                                 ;OUTPUT:
1288                                 ;
1289                                 ;       CARRY   SET - MESSAGE BUFFERS MATCH
1290                                 ;               CLR -MESSAGE BUFFERS DON'T MATCH
1291                                 ;
1292                                 ;IMPLICIT OUTPUT:
1293                                 ;
1294                                 ;       EXPMSG          BUFFER IS SET TO EXPD DATA
1295                                 ;       RECMSG          BUFFER IS SET TO RECV DATA
1296                                 ;       RCVHIADD        SET TO HIGH ORDER ADDRESS OF RECV
1297                                 ;       RCVLOADD        SET TO LOW ORDER ADDRESS OF RECV
1298                                 ;
1299                                 ;-
1300 011440                         CKMSG::
1301 011440                                 SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
1302 011444  010037  002276                 MOV     R0,RCVHIADD             ;SAVE RECV HIGH ADDRESS
1303 011450  010137  002300                 MOV     R1,RCVLOAD              ;SAVE RECV LOW ADDRESS
1304 011454  005737  003126                 TST     KTENABLE                ;TESTING ABOVE 28K?
1305 011460  001403                         BEQ     10$                     ;BR IF NO
1306 011462  004737  017376                 JSR     PC,SETMAP               ;RETURN ADDRESS BIASED TO PAR6 IN R0
1307 011466  010001                         MOV     R0,R1                   ;GET RETURNED ADDRESS BIASED TO PAR6
1308 011470  005004          10$:    CLR     R4                      ;WORD IN BUFFER
1309 011472  005003                  CLR     R3                      ;CLEAR ERROR SEEN FLAG
1310 011474  010205                  MOV     R2,R5                   ;GET EXPD BUFFER ADDRESS
1311 011476  011264  002314  15$:    MOV     (R2),EXPMSG(R4)         ;SAVE EXPD FOR ERROR REPORT
1312 011502  011164  002460          MOV     (R1),RECMSG(R4)         ;SAVE RECV FOR ERROR REPORT
1313 011506  022221                  CMP     (R2)+,(R1)+             ;EXPD EQUAL RECV?
1314 011510  001401                  BEQ     25$                     ;BR IF YES
1315 011512  005203                  INC     R3                      ;SET ERROR SEEN FLAG
1316 011514  062704  000002  25$:    ADD     #2,R4                   ;POINT TO NEXT WORD ADDRESS
```

```
1317 011520  020427  000014                  CMP     R4,#14          ;DONE FIRST 7 WORDS?
1318 011524  003764                          BLE     15$             ;BR IF NO
1319 011526  032765  000200  000012          BIT     #X2.EX1F,XST2(R5);IS EXTENDED FEATURES SET IN EXPD?
1320 011534  001403                          BEQ     50$             ;BR IF NO
1321 011536  020427  000016                  CMP     R4,#16          ;DONE EXTENDED FEATURES WORD?
1322 011542  003755                          BLE     15$             ;BR IF NO
1323 011544  005703                  50$:    TST     R3              ;ANY ERRORS SEEN?
1324 011546  001402                          BEQ     55$             ;BR IF NO
1325 011550  000241                          CLC                     ;SET FAILURE
1326 011552  000401                          BR      60$             ;
1327 011554  000261                  55$:    SEC                     ;SET SUCCESS
1328 011556  000207                  60$:    RTS     PC              ;RETURN
1329                                          .SBTTL  CKMSG2  - COMPARE EXPD RECV MESSAGE BUFFERS
1330                                 ;+
1331                                 ;
1332                                 ;ROUTINE TO COMPARE AN EXPECTED AND RECEIVED MESSAGE
1333                                 ;BUFFER. THE EXPECTED AND RECEIVED BUFFERS ARE STORED FOR
1334                                 ;ERROR PRINT ROUTINES.
1335                                 ;
1336                                 ;INPUT:
1337                                 ;
1338                                 ;       R0      RECV MESSAGE BUFFER HIGH ORDER ADDRESS
1339                                 ;       R1      RECV MESSAGE BUFFER LOW ORDER ADDRESS
1340                                 ;       R2      EXPD MESSAGE BUFFER ADDRESS
1341                                 ;       R3      NUMBER OF BYTES TO COMPARE
1342                                 ;
1343                                 ;OUTPUT:
1344                                 ;
1345                                 ;       CARRY   SET - MESSAGE BUFFERS MATCH
1346                                 ;               CLR - MESSAGE BUFFERS DON'T MATCH
1347                                 ;
1348                                 ;IMPLICIT OUTPUT:
1349                                 ;
1350                                 ;       EXPMSG          BUFFER IS SET TO EXPD DATA
1351                                 ;       RECMSG          BUFFER IS SET TO RECV DATA
1352                                 ;       RCVHIADD        SET TO HIGH ORDER ADDRESS OF RECV
1353                                 ;       RCVLOADD        SET TO LOW ORDER ADDRESS OF RECV
1354                                 ;
1355                                 ;-
1356 011560                         CKMSG2::
1357 011560                                  SAVREG                         ;SAVE R1-R5 UNTIL NEXT RETURN
1358 011564  020327  000144                  CMP     R3,#RECMSG-EXPMSG;@@D IS COUNT ABOVE MAX ALLOWED?
1359 011570  003412                          BLE     5$                     ;@@D BR IF NO
1360 011572  012703  000144                  MOV     #RECMSG-EXPMSG,R3;@@D
1361 011576                                  PRINTF  #DEBUGMSG              ;@@D
     011576  012746  011712                  MOV     #DEBUGMSG,-(SP)
     011602  012746  000001                  MOV     #1,-(SP)
     011606  010600                          MOV     SP,R0
     011610  104417                          TRAP    C$PNTF
     011612  062706  000004                  ADD     #4,SP
1362 011616  010037  002276          5$:     MOV     R0,RCVHIADD            ;SAVE RECV HIGH ADDRESS
1363 011622  010137  002300                  MOV     R1,RCVLOAD             ;SAVE RECV LOW ADDRESS
1364 011626  005737  003126                  TST     KTENABLE               ;TESTING ABOVE 28K?
1365 011632  001403                          BEQ     10$                    ;BR IF NO
1366 011634  004737  017376                  JSR     PC,SETMAP              ;RETURN ADDRESS BIASED TO PAR6 IN R0
1367 011640  010001                          MOV     R0,R1                  ;GET RETURNED ADDRESS BIASED TO PAR6
1368 011642  005004                  10$:    CLR     R4                     ;WORD IN BUFFER
```

```
1369 011644  005005                        CLR     R5                  ;CLEAR ERROR SEEN FLAG
1370 011646  111264  002314          15$:   MOVB    (R2),EXPMSG(R4)     ;SAVE EXPD FOR ERROR REPORT
1371 011652  111164  002460                 MOVB    (R1),RECMSG(R4)     ;SAVE RECV FOR ERROR REPORT
1372 011656  122221                        CMPB    (R2)+,(R1)+         ;EXPD EQUAL RECV?
1373 011660  001401                        BEQ     25$                 ;BR IF YES
1374 011662  005205                        INC     R5                  ;SET ERROR SEEN FLAG
1375 011664  062704  000001          25$:   ADD     #1,R4               ;POINT TO NEXT BYTE
1376 011670  020403                        CMP     R4,R3               ;DONE ALL BYTES?
1377 011672  002001                        BGE     50$                 ;BR IF YES
1378 011674  000764                        BR      15$                 ;DO NEXT BYTE
1379 011676  005705                  50$:  TST     R5                  ;ANY ERRORS SEEN?
1380 011700  001402                        BEQ     55$                 ;BR IF NO
1381 011702  000241                        CLC                         ;SET FAILURE
1382 011704  000401                        BR      60$                 ;
1383 011706  000261                  55$:  SEC                         ;SET SUCCESS
1384 011710  000207                  60$:  RTS     PC                  ;RETURN
1385
1386 011712      120      122      117  DEBUGMSG:       .ASCIZ  'PROGRAM INTERNAL ERROR -CKMSG2 MESSAGE BUFFER EXCEEDED-';@@0
1387 012002      045      116      045  FERCM:  .ASCII  /%N%A  %%%/
1388 012013      040      040      124  ERCM:   .ASCIZ  /  TSSR ERROR CODE REC'D = /
1389 012046      056      056      056  SIMSG:  .ASCIZ  /.... AFTER DOING SOFT INIT/
1390 012101      124      105      123  TINERR: .ASCIZ  /TEST: .../
1391                                      .EVEN
1392
1393                                  ;+
1394                                  ;
1395                                  ;PRINT ROUTINE TO FATAL SOFT INIT ERRORS
1396                                  ;
1397                                  ;INPUT:
1398                                  ;
1399                                  ;       R1      CONTENTS OF TSSR AT ERROR
1400                                  ;
1401                                  ;SIDE EFFECTS:
1402                                  ;
1403                                  ;       EXECUTES DROP UNIT TO CEASE TESTING
1404                                  ;
1405                                  ;-
1406
1407 012114                                      BGNMSG  SFIMSG
      012114
1408 012114  004737  006020          SFIMSG::
1409 012120  004737  017262                 JSR     PC,PRITSSR          ;PRINT CONTENTS OF TSSR REGISTER
1410 012124                                 JSR     PC,CKDROP           ;DROP UNIT, IF ALLOWED
      012124                                ENDMSG
      012124  104423                  L.10003:
                                            TRAP    C$MSG
1411
1412                                  ;+
1413                                  ;PRINT ROUTINE TO PRINT THE CONTENTS OF
1414                                  ;TSSR AND A COMMAND PACKET OTHER THAN GET STATUS COMMAND PACKET.
1415                                  ;
1416                                  ;INPUTS:
1417                                  ;
1418                                  ;       R1      TSSR CONTENTS
1419                                  ;       R4      ADDRESS OF COMMAND PACKET
1420                                  ;
1421                                  ;-
1422
```

CKMSG2 COMPARE EXPD RECV MESSAGE BUFFERS

```
 1 23 012126                            BGNMSG  PKTSSR
      012126                      PKTSSR::
1424  012126  004737  006020              JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
1425  012132  012700  000004              MOV     #4,R0           ;NO. OF WORDS IN PACKET
1426  012136  004737  007446              JSR     PC,PRIPKT       ;PRINT THE CONTENTS OF COMMAND PACKET
1427  012142                              ENDMSG
      012142                      L10004:
      012142  104423                      TRAP    C$MSG
1428
1429                                      ;+
1430                                      ;PRINT ROUTINE TO PRINT THE CONTENTS OF
1431                                      ;TSSR AND A GET STATUS COMMAND PACKET.
1432                                      ;
1433                                      ;INPUTS:
1434                                      ;
1435                                      ;       R1      TSSR CONTENTS
1436                                      ;       R4      ADDRESS OF COMMAND PACKET
1437                                      ;
1438                                      ;-
1439
1440  012144                              BGNMSG  PKTGETS
      012144                      PKTGETS::
1441  012144  004737  006020              JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
1442  012150  012700  000002              MOV     #2,R0           ;NO. OF WORDS IN GET STATUS PACKET
1443  012154  004737  007446              JSR     PC,PRIPKT       ;PRINT THE CONTENTS OF COMMAND PACKET
1444  012160                              ENDMSG
      012160                      L10005:
      012160  104423                      TRAP    C$MSG
1445
1446                                      ;+
1447                                      ;PRINT TSSR ERRORS FOR INITIALIZATION TESTS
1448                                      ;
1449                                      ;INPUTS:
1450                                      ;
1451                                      ;       R1      TSSR CONTENTS
1452                                      ;       R4      ADDRESS OF COMMAND PACKET
1453                                      ;-
1454
1455  012162                              BGNMSG  SFFMSG
      012162                      SFFMSG::
1456  012162  004737  006020              JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
1457  012166                              ENDMSG
      012166                      L10006:
      012166  104423                      TRAP    C$MSG
1458
1459                                      .SBTTL  PKTMES  - PRINT TSSR AND MESSAGE BUFFER
1460                                      ;+
1461                                      ;
1462                                      ;PRINT ROUTINE TO PRINT THE CONTENTS OF TSSR AND MESSAGE
1463                                      ;BUFFER FOR ERROR REPORTS
1464                                      ;
1465                                      ;INPUTS:
1466                                      ;
1467                                      ;       R1      CONTENTS OF TSSR
1468                                      ;       R2      LOW ORDER MESSAGE BUFFER
1469                                      ;       R3      HIGH ORDER MESSAGE BUFFER ADDRESS
1470                                      ;       NOTE: R3 IS IGNORED IF KTENABLE FLAG IS CLEAR
```

PKTMES PRINT TSSR AND MESSAGE BUFFER

```
1471
1472 012170                                ;
     012170                                        BGNMSG  PKTMES
1473 012170  004737  006020                PKTMES::
1474 012174  010200                               JSR     PC,PRITSSR              ;PRINT CONTENTS OF TSSR
1475 012176  010301                               MOV     R2,R0                   ;LOW ORDER ADDRESS
1476 012200  004737  014322                       MOV     R3,R1                   ;HIGH ORDER ADDRESS
1477 012204                                       JSR     PC,PRMESS               ;PRINT THE MESSAGE BUFFER
     012204                                       ENDMSG
     012204  104423                        L10007:
1478                                               TRAP    C$MSG
1479                                               .SBTTL  ADDSSR  - PRINT TEST ADDRESS AND TSSR
1480                                       ;+
1481                                       ;PRINT ROUTINE TO PRINT THE CONTENTS OF
1482                                       ;TSSR AND A MEMORY TEST ADDRESS
1483                                       ;
1484                                       ;INPUTS:
1485                                       ;
1486                                       ;       R5      FIRST DEVICE UNIBUS ADDRESS
1487                                       ;       ERR     HIGH ORDER MEMORY TEST ADDRESS
1488                                       ;       ERR     LOW ORDER MEMORY TEST ADDRESS
1489                                       ;-
1490 012206                                ;
     012206                                        BGNMSG  ADDSSR
1491 012206  004737  010352                ADDSSR::
1492 012212  016501  000002                       JSR     PC,PRITADD      ;PRINT MEMORY TEST ADDRESS
1493 012216  004737  006020                       MOV     TSSR(R5),R1     ;GET CURRENT TSSR
1494 012222                                       JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
     012222                                       ENDMSG
     012222  104423                        L10010:
1495                                               TRAP    C$MSG
1496                                               .SBTTL  MSGEXP - PRINT WRITE CHAR. EXPD/RECV MESSAGE BUFFERS
1497                                       ;+
1498                                       ;
1499                                       ;PRINT ROUTINE TO PRINT WRITE CHARACTERISTIC MESSAGE BUFFER
1500                                       ;
1501                                       ;IMPLICIT INPUTS:
1502                                       ;
1503                                       ;       EXPMSG  - EXPECTED MESSAGE BUFFER
1504                                       ;       RECMSG  - RECEIVED MESSAGE BUFFER
1505                                       ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
1506                                       ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
1507                                       ;-
1508 012224                                ;
     012224                                        BGNMSG  MSGEXP
1509 012224  012700  000007                MSGEXP::
1510 012230  005737  002220                       MOV     #7,R0           ;ASSUME NO EXT FEATURES
1511 012234  001402                               TST     EXTFEA          ;EXT FEATURES SET?
1512 012236  012700  000010                       BEQ     5$              ;BR IF NO
1513 012242  004737  014632                       MOV     #8.,R0          ;EXT FEATURE BUFFER IS 8 WORDS
1514 012246                                5$:     JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
     012246                                       ENDMSG
     012246  104423                        L10011:
1515                                               TRAP    C$MSG
1516                                               .SBTTL  FIFEXP  - PRINT FIFO EXP/RECV DATA
1517                                       ;+
1518                                       ;
                                           ;PRINT ROUTINE TO PRINT FIFO EXP/RECV DATA
```

```
1519                                    ;
1520                                    ;       R1      - BYTE COUNT
1521                                    ;
1522                                    ;IMPLICIT INPUTS:
1523                                    ;
1524                                    ;       EXPMSG  - EXPECTED MESSAGE BUFFER (CONTAINS FIFO DATA ONLY
1525                                    ;       RECMSG  - RECEIVED MESSAGE BUFFER (CONTAINS FIFO DATA ONLY)
1526                                    ;-
1527 012250                            BGNMSG  FIFEXP
     012250                            FIFEXP::
1528 012250                            PRINTX  #FIF1MSG,R1     ;PRINT BYTES TRANSFERRED
     012250  010146                    MOV     R1,-(SP)
     012252  012746  012322            MOV     #FIF1MSG,-(SP)
     012256  012746  000002            MOV     #2,-(SP)
     012262  010600                    MOV     SP,R0
     012264  104415                    TRAP    C$PNTX
     012266  062706  000006            ADD     #6,SP
1529 012272                            PRINTX  #FIF2MSG        ;PRINT HEADER MSG
     012272  012746  012371            MOV     #FIF2MSG,-(SP)
     012276  012746  000001            MOV     #1,-(SP)
     012302  010600                    MOV     SP,R0
     012304  104415                    TRAP    C$PNTX
     012306  062706  000004            ADD     #4,SP
1530 012312  010100                    MOV     R1,R0           ;GET BYTE COUNT
1531 012314  004737  015202            JSR     PC,PRBYTEXP     ;PRINT FIFO BYTES IN ERROR
1532 012320                            ENDMSG
     012320                            L10012:
     012320  104423                    TRAP    C$MSG
1533 012322     045     116     045    FIF1MSG:        .ASCIZ  '#N#A NUMBER OF BYTES TRANSFERRED = #D2'
1534 012371     045     116     045    FIF2MSG:        .ASCIZ  '#N#A FIFO DATA BYTES IN ERROR:'
1535                                            .EVEN
1536                                            .SBTTL  MSGSTAT - PRINT STATUS HEADER AND MESSAGE BUFFERS
1537                                    ;+
1538                                    ;
1539                                    ;PRINT ROUTINE TO PRINT MESSAGE BUFFER EXPD/RECV
1540                                    ;
1541                                    ;
1542                                    ;IMPLICIT INPUTS:
1543                                    ;
1544                                    ;       EXPMSG  - EXPECTED MESSAGE BUFFER
1545                                    ;       RECMSG  - RECEIVED MESSAGE BUFFER
1546                                    ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
1547                                    ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
1548                                    ;-
1549 012430                            BGNMSG  MSGSTAT
     012430                            MSGSTAT::
1550 012430  012701  012472            MOV     #STATCOD,R1     ;ASCII ADDRESS TABLE
1551 012434  012100                    10$:    MOV     (R1)+,R0        ;DONE ALL MSG LINES?
1552 012436  001410                    BEQ     20$             ;BR IF YES
1553 012440                            PRINTX  R0              ;PRINT STATUS BIT NAMES
     012440  010046                    MOV     R0,-(SP)
     012442  012746  000001            MOV     #1,-(SP)
     012446  010600                    MOV     SP,R0
     012450  104415                    TRAP    C$PNTX
     012452  062706  000004            ADD     #4,SP
1554 012456  000766                    BR      10$             ;DO ANOTHER MSG LINE
1555 012460  012700  000012            20$:    MOV     #10.,R0         ;NUMBER OF WORDS IN A READ STATUS BUFFER
```

```
                                        JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
                                        ENDMSG
                                L10013:
                                        TRAP    C$MSG

                                STATCOD:        .WORD   1$,2$,3$,4$,5$,6$,0
                                1$:.ASCIZ  '%N%A Tape Bus Signals in Word #8:'
                                2$:.ASCIZ  '%N%A        PARERR<15>  IEOT  <12>  IFMK  <9>  IRDY<6>  IRWD<2>'
                                3$:.ASCIZ  '%N%A        IRESV2<14>  IIDENT<11>  IHER  <8>  IONL<5>  IFBY<1>'
                                4$:.ASCIZ  '%N%A        IRESV1<13>  ICER  <10>  ISPEED<7>  ILDP<4>  IFPT<0>'
                                5$:.ASCIZ  '%N%A Tape Bus Signals in Word #9:'
                                6$:.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
                                MSGLOOP::
                                        MOV     #LOOPCOD,R1     ;ASCII ADDRESS TABLE
                                10$:    MOV     (R1)+,R0        ;DONE ALL MSG LINES?
                                        BEQ     20$             ;BR IF YES
                                        PRINTX  R0              ;PRINT STATUS BIT NAMES
                                        MOV     R0,-(SP)
                                        MOV     #1,-(SP)
                                        MOV     SP,R0
                                        TRAP    C$PNTX
                                        ADD     #4,SP
                                        BR      10$             ;DO ANOTHER MSG LINE
                                20$:    MOV     #10.,R0         ;NUMBER OF WORDS IN A READ STATUS BUFFER
                                        JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
                                        ENDMSG
                                L10014:
                                        TRAP    C$MSG

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

MSGSUB - PRINT WRITE SUBSYSTEM 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  MSGSUB
014022                                  MSGSUB::
014022  012700  000012                          MOV     #10.,R0         ;SIZE OF WRITE SUBSYSTEM BUFFER
014026  004737  014632                          JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
014032                                          ENDMSG
014032                                  L10015:
014032  104423                                  TRAP    C$MSG

                                                .SBTTL  MEMADD - PRINT MEMORY ADDRESS DATA ERROR
                                        ;*
                                        ;
                                        ;PRINT ROUTINE TO PRINT MEMORY ADDRESS DATA COMPARE ERROR
                                        ;
                                        ;IMPLICIT INPUTS:
                                        ;
                                        ;       ERRHI   - MEMORY ERROR HIGH ORDER ADDRESS
                                        ;       ERRLO   - MEMORY ERROR LOW ORDER ADDRESS
                                        ;       EXP     - EXPECTED DATA
                                        ;       RECV    - RECEIVED DATA
                                        ;-
                                                BGNMSG  MEMADD
014034                                  MEMADD::
014034  004737  010236                          JSR     PC,PRIADD       ;PRINT MEMORY ADDRESS IN ERROR
014040  013701  002224                          MOV     EXPD,R1         ;GET EXPD DATA
014044  013702  002226                          MOV     RECV,R2         ;GET RECEIVED DATA
014050  004737  010020                          JSR     PC,PRIXOR       ;PRINT EXPD/RECV
014054                                          ENDMSG
014054                                  L10016:
014054  104423                                  TRAP    C$MSG
                                                .SBTTL  PRAMPKT - PRINT RAM AND PACKET DATA
                                        ;*
                                        ;
                                        ;PRINT ROUTINE TO DISPLAY RAM/PACKET DATA
                                        ;WHEN THE RAM DATA DOES NOT MATCH.
                                        ;
                                        ;INPUTS:
                                        ;
                                        ;       R4      POINTER TO COMMAND PACKET
                                        ;
                                        ;IMPLICIT INPUTS:
                                        ;
                                        ;       RAMDATA         DATA AS READ FROM THE RAM
                                        ;       RAMSIZ          NUMBER OF BYTES IN PACKET
                                        ;                       IF RAMSIZ=0 THEN DEFAULT TO 8.
                                        ;
                                        ;IMPLICIT OUTPUTS:
                                        ;
                                        ;       RAMSIZ  SET TO 0
```

PRAMPKT - PRINT RAM AND PACKET DATA

```
1654                                    ;-
1655
1656 014056                             PRAMPKT:
1657 014056                                     SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
1658 014062  012701  002234                      MOV     #RAMDATA,R1             ;DATA FROM THE RAM
1659 014066  005002                              CLR     R2                      ;INIT BYTE NUMBER
1660 014070  122124                      5$:     CMPB    (R1)+,(R4)+             ;COMPARE EXPECTED, RECEIVED
1661 014072  001005                              BNE     7$                      ;BR IF NO MATCH
1662 014074                                      FORCERROR       7$,NOTSSR
1663 014104  000436                              BR      10$                     ;@@D
1664 014106  116105  177777              7$:     MOVB    -1(R1),R5               ;GET RECV RAM DATA
1665 014112  116403  177777                      MOVB    -1(R4),R3               ;GET EXPD PACKET DATA
1666 014116                                      XOR     R5,R3                   ;XOR EXPD/RECV
1667 014126  042703  177400                      BIC     #177400,R3              ;LOW BYTE ONLY
1668 014132  116137  177777  002226              MOVB    -1(R1),RECV             ;GET RECEIVED RAM DATA
1669 014140  116437  177777  002224              MOVB    -1(R4),EXPD             ;GET EXPECTED RAM DATA
1670 014146                                      PRINTB  #RAMASC,R2,RECV,EXPD,R3
     014146  010346                              MOV     R3,-(SP)
     014150  013746  002224                      MOV     EXPD,-(SP)
     014154  013746  002226                      MOV     RECV,-(SP)
     014160  010246                              MOV     R2,-(SP)
     014162  012746  014236                      MOV     #RAMASC,-(SP)
     014166  012746  000005                      MOV     #5,-(SP)
     014172  010600                              MOV     SP,R0
     014174  104414                              TRAP    C$PNTB
     014176  062706  000014                      ADD     #14,SP
1671 014202  005202                      10$:    INC     R2                      ;UPDATE BYTE COUNT
1672 014204  005737  002274                      TST     RAMSIZ                  ;DEFAULT TO 8.?
1673 014210  001404                              BEQ     15$                     ;BR IF YES
1674 014212  020237  002274                      CMP     R2,RAMSIZ               ;DONE ALL BYTES?
1675 014216  003724                              BLE     5$                      ;BR IF NO
1676 014220  000403                              BR      25$                     ;
1677 014222  020227  000010              15$:    CMP     R2,#8.                  ;DONE DEFAULT NUMBER OF BYTES?
1678 014226  002720                      20$:    BLT     5$                      ;BR IF NO
1679 014230  005037  002274              25$:    CLR     RAMSIZ                  ;SET DEFAULT RAMSIZ
1680 014234  000207                              RTS     PC                      ;RETURN
1681
1682 014236     045     116     045  RAMASC: .ASCIZ  '#N#A  BYTE: #D2#A RAM: #O3#A Packet: #O3#A XOR:#O3'
1683                                             .EVEN
1684                                             .SBTTL  PRMESS  - PRINT CONTENTS OF MESSAGE BUFFER
1685                                    ;+
1686                                    ;
1687                                    ;THIS ROUTINE PRINTS THE CONTENTS OF
1688                                    ;THE 7 OR 8 WORD MESSAGE BUFFER RETURNED BY THE
1689                                    ;TSV-05.
1690                                    ;
1691                                    ;INPUT:
1692                                    ;
1693                                    ;       R0      LOW ORDER ADDRESS OF MESSAGE BUFFER
1694                                    ;       R1      HIGH ORDER ADDRESS OF MESSAGE BUFFER
1695                                    ;       NOTE: R1 IS IGNORED IF KTENABLE FLAG IS CLEAR
1696                                    ;
1697                                    ;THIS ROUTINE IS NORMALLY CALLED FROM A PRINT ROUTINE
1698                                    ;
1699                                    ;-
1700
1701 014322                             PRMESS:
```

PRMESS - PRINT CONTENTS OF MESSAGE BUFFER

```
1702 014322                                    SAVREG                  ;SAVE THE REGISTERS
1703 014326  010005                            MOV     R0,R5           ;SAVE LOW ORDER ADDRESS
1704 014330  005737  003126                    TST     KTENABLE        ;ADDRESS ABOVE 28K?
1705 014334  001001                            BNE     10$             ;BR IF YES
1706 014336  005001                            CLR     R1              ;SET HIGH ORDER ADDRESS TO 0
1707 014340  010103                    10$:    MOV     R1,R3           ;SAVE HIGH ORDER ADDRESS
1708 014342  006100                            ROL     R0              ;SHIFT BIT15 TO C BIT
1709 014344  006101                            ROL     R1              ;SHIFT TO HIGH ORDER FOR PRINTOUT
1710 014346                                    PRINTX  #PROASC,R1,R5   ;PRINT MESSAGE BUFFER ADDRESS
     014346  010546                            MOV     R5,-(SP)
     014350  010146                            MOV     R1,-(SP)
     014352  012746  014500                    MOV     #PROASC,-(SP)
     014356  012746  000003                    MOV     #3,-(SP)
     014362  010600                            MOV     SP,R0
     014364  104415                            TRAP    C$PNTX
     014366  062706  000010                    ADD     #10,SP
1711 014372                                    PRINTX  #PR1ASC         ;PRINT HEADER FOR CONTENTS
     014372  012746  014545                    MOV     #PR1ASC,-(SP)
     014376  012746  000001                    MOV     #1,-(SP)
     014402  010600                            MOV     SP,R0
     014404  104415                            TRAP    C$PNTX
     014406  062706  000004                    ADD     #4,SP
1712 014412  005004                            CLR     R4              ;NUMBER OF THE NEXT WORD
1713 014414  010501                            MOV     R5,R1           ;COPY LOW ORDER ADDRESS
1714 014416  010300                            MOV     R3,R0           ;COPY HIGH ORDER ADDRESS
1715 014420  001403                            BEQ     20$             ;BR IF NOT ABOVE 28K
1716 014422  004737  017376                    JSR     PC,SETMAP       ;SETUP PAR ADDRESS IN R0
1717 014426  010005                            MOV     R0,R5           ;GET PAR FORMAT ADDRESS ABOVE 28K
1718 014430                            20$:    PRINTX  #PRASC,R4,(R5)+ ;PRINT THE CONTENTS OF MEMORY BUFFER
     014430  012546                            MOV     (R5)+,-(SP)
     014432  010446                            MOV     R4,-(SP)
     014434  012746  014603                    MOV     #PRASC,-(SP)
     014440  012746  000003                    MOV     #3,-(SP)
     014444  010600                            MOV     SP,R0
     014446  104415                            TRAP    C$PNTX
     014450  062706  000010                    ADD     #10,SP
1719 014454  005204                            INC     R4              ;NUMBER OF THE NEXT
1720 014456  020427  000007                    CMP     R4,#7           ;DONE ALL YET ?
1721 014462  003005                            BGT     50$             ;BRANCH IF ALL DONE
1722 014464  002761                            BLT     20$             ;PRINT FIRST 7 WORDS
1723 014466  032763  000200  000012            BIT     #X2.EXTF,XST2(R3);EXTENDED FEATURES ON ?
1724 014474  001355                            BNE     20$             ;PRINT EXTENDED STATUS WORD
1725 014476  000207                    50$:    RTS     PC              ;RETURN
1726
1727 014500     045     116     045  PROASC: .ASCIZ  '<N><A Message Buffer Address = <01><05>'
1728 014545     045     116     045  PR1ASC: .ASCIZ  '<N><A Message Buffer Contents:'
1729 014603     045     116     045  PRASC:  .ASCIZ  '<N><A    Word<D1><A: <O'
1730                                    .EVEN
1731                                    .SBTTL  PRMSGEXP - PRINT EXPD/RECV MESSAGE BUFFERS
1732                                ;+
1733                                ;
1734                                ;ROUTINE TO PRINT EXPECTED AND RECEIVED MESSAGE BUFFERS
1735                                ;
1736                                ;       R0      - NUMBER OF WORDS IN BUFFER
1737                                ;
1738                                ;IMPLICIT INPUTS:
1739                                ;
```

```
1740                                    ;       EXPMSG  - EXPECTED MESSAGE BUFFER
1741                                    ;       RECMSG  - RECEIVED MESSAGE BUFFER
1742                                    ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
1743                                    ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
1744                                    ;
1745 014632                            PRMSGEXP::
1746 014632                                    SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
1747 014636  010005                            MOV     R0,R5                   ;SAVE NUMBER OF WORDS
1748 014640  013700  002300                    MOV     RCVLOADD,R0             ;GET RECV LOW ADDRESS
1749 014644  010004                            MOV     R0,R4                   ;COPY LOW ADDRESS
1750 014646  013701  002276                    MOV     RCVHIADD,R1             ;GET RECV HIGH ADDRESS
1751 014652  006100                            ROL     R0                      ;SHIFT BIT15 TO C BIT
1752 014654  006101                            ROL     R1                      ;SHIFT TO HIGH ORDER FOR PRINTOUT
1753 014656                                    PRINTX  #PRMSG0,R1,R4           ;PRINT MESSAGE BUFFER ADDRESS
     014656  010446                            MOV     R4,-(SP)
     014660  010146                            MOV     R1,-(SP)
     014662  012746  015012                    MOV     #PRMSG0,-(SP)
     014666  012746  000003                    MOV     #3,-(SP)
     014672  010600                            MOV     SP,R0
     014674  104415                            TRAP    C$PNTX
     014676  062706  000010                    ADD     #10,SP
1754 014702                                    PRINTX  #PRMSG1                 ;PRINT HEADER FOR CONTENTS
     014702  012746  015057                    MOV     #PRMSG1,-(SP)
     014706  012746  000001                    MOV     #1,-(SP)
     014712  010600                            MOV     SP,R0
     014714  104415                            TRAP    C$PNTX
     014716  062706  000004                    ADD     #4,SP
1755 014722  005004                            CLR     R4                      ;NUMBER OF THE CURRENT WORD
1756 014724  012701  002314                    MOV     #EXPMSG,R1              ;GET EXPD BUFFER ADDRESS
1757 014730  012702  002460                    MOV     #RECMSG,R2              ;GET RECV BUFFER ADDRESS
1758 014734  011100                    20$:    MOV     (R1),R0                 ;GET EXPD
1759 014736  011203                            MOV     (R2),R3                 ;GET RECV
1760 014740                                    XOR     R0,R3                   ;XOR EXPD/RECV
1761 014750                                    PRINTX  #PRMSG2,R4,(R1)+,(R2)+,R3
     014750  010346                            MOV     R3,-(SP)
     014752  012246                            MOV     (R2)+,-(SP)
     014754  012146                            MOV     (R1)+,-(SP)
     014756  010446                            MOV     R4,-(SP)
     014760  012746  015115                    MOV     #PRMSG2,-(SP)
     014764  012746  000005                    MOV     #5,-(SP)
     014770  010600                            MOV     SP,R0
     014772  104415                            TRAP    C$PNTX
     014774  062706  000014                    ADD     #14,SP
1762 015000  005204                            INC     R4                      ;NUMBER OF THE NEXT
1763 015002  020405                            CMP     R4,R5                   ;DONE ALL YET?
1764 015004  002001                            BGE     50$                     ;BR IF YES
1765 015006  000752                            BR      20$                     ;DO ANOTHER
1766 015010  000207                    50$:    RTS     PC                      ;RETURN
1767
1768 015012     045     116     045    PRMSG0: .ASCIZ  '%N%A Message Buffer Address = %01%05'
1769 015057     045     116     045    PRMSG1: .ASCIZ  '%N%A Message Buffer Contents:'
1770 015115     045     116     045    PRMSG2: .ASCIZ  '%N%A    WORD #%D2%A  EXPD: %06%A  RECV: %06%A  XOR: %06'
1771                                            .EVEN
1772                                            .SBTTL  PRBYTEXP - PRINT ERROR BYTES IN EXP/REC MESSAGE BUFFER
1773                                    ;*
1774                                    ;
1775                                    ;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
                                        ;-
                                        PRBYTEXP::
                                                SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
                                                MOV     R0,R5           ;SAVE NUMBER OF BYTES
                                                CLR     PRMNO           ;INIT ERROR COUNT
                                                CLR     R4              ;NUMBER OF THE CURRENT BYTE
                                                MOV     @EXPMSG,R1      ;GET EXPD BUFFER ADDRESS
                                                MOV     @RECMSG,R2      ;GET RECV BUFFER ADDRESS
                                        20$:    MOVB    (R1),R0         ;GET EXPD BYTE
                                                BIC     #^C<377>,R0     ;CLEAR UPPER BYTE
                                                MOVB    R0,PRBEXP       ;SAVE FOR ERROR REPORT
                                                MOVB    (R2),R3         ;GET RECV BYTE
                                                BIC     #^C<377>,R3     ;CLEAR UPPER BYTE
                                                MOVB    R3,PRBREC       ;FOR ERROR REPORT
                                                XOR     R0,R3           ;XOR EXPD/RECV
                                                CMPB    (R1)+,(R2)+     ;EXPD = RECV?
                                                BEQ     30$             ;BR IF YES
                                                INC     PRMNO           ;UPDATE ERROR COUNT
                                                CMP     PRMNO,#8.       ;PRINTED 8?
                                                BHI     30$             ;BR IF YES
                                        27$:    PRINTX  @PRBMSG,R4,PRBEXP,PRBREC,R3
                                                MOV     R3,-(SP)
                                                MOV     PRBREC,-(SP)
                                                MOV     PRBEXP,-(SP)
                                                MOV     R4,-(SP)
                                                MOV     @PRBMSG,-(SP)
                                                MOV     #5,-(SP)
                                                MOV     SP,R0
                                                TRAP    C$PNTX
                                                ADD     #14,SP
                                                FORCEXIT        50$     ;@@@
                                                BR      35$             ;@@@
                                        30$:
                                                FORCERROR  27$,NOTSSR   ;@@@
                                        35$:                            ;@@@
                                                INC     R4              ;NUMBER OF THE NEXT
                                                CMP     R4,R5           ;DONE ALL YET?
                                                BGE     50$             ;BR IF YES
                                                BR      20$             ;DO ANOTHER
                                        50$:    PRINTX  @PRBTOT,PRMNO   ;PRINT TOTAL ERROR COUNT
                                                MOV     PRMNO,-(SP)
                                                MOV     @PRBTOT,-(SP)
                                                MOV     #2,-(SP)
                                                MOV     SP,R0
                                                TRAP    C$PNTX
                                                ADD     #6,SP
                                                RTS     PC              ;RETURN

                                        PRBMSG: .ASCIZ  '%N%A   BYTE #%D2%A  EXPD: %O3%A  RECV: %O3%A  XOR: %O3'
```

```
1818 015503     045     116     045  PRBTOT: .ASCIZ  '*N*A NUMBER OF BYTES IN ERROR = *D2'
1819                                         .EVEN
1820 015550  000000                  PRBEXP: .WORD   0                ;EXPD
1821 015552  000000                  PRBREC: .WORD   0                ;RECV
1822                                         .SBTTL  EXPREC  - PRINT EXPD/RECV WORD DATA
1823                                 ;+
1824                                 ;
1825                                 ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
1826                                 ;
1827                                 ;INPUTS:
1828                                 ;
1829                                 ;       R1      RECEIVED DATA
1830                                 ;       R2      EXPECTED DATA
1831                                 ;
1832                                 ;-
1833
1834 015554                                  BGNMSG  EXPREC
     015554                          EXPREC::
1835 015554  004737  010020                  JSR     PC,PRIXOR               ;PRINT THE DATA
1836 015560                                  ENDMSG
     015560                          L10017:
     015560  104423                          TRAP    C$MSG
1837                                         .SBTTL  EXPBREC - PRINT EXPD/RECV BYTE DATA
1838                                 ;+
1839                                 ;
1840                                 ;PRINT ROUTINE TO DISPLAY BYTE EXPD/RECV DATA
1841                                 ;
1842                                 ;INPUTS:
1843                                 ;
1844                                 ;       R1      RECEIVED DATA BYTE
1845                                 ;       R2      EXPECTED DATA BYTE
1846                                 ;
1847                                 ;-
1848
1849
1850 015562                                  BGNMSG  EXPBREC
     015562                          EXPBREC::
1851 015562  004737  007670                  JSR     PC,PRIBXOR              ;PRINT THE DATA
1852 015566                                  ENDMSG
     015566                          L10020:
     015566  104423                          TRAP    C$MSG
1853
1854
1855                                         .SBTTL  RAMERR  - PRINT RAM AND PACKET DATA
1856                                 ;+
1857                                 ;
1858                                 ;PRINT ROUTINE TO DISPLAY RAM/PACKET DATA
1859                                 ;
1860                                 ;INPUTS:
1861                                 ;
1862                                 ;       R4      POINTER TO COMMAND PACKET
1863                                 ;
1864                                 ;IMPLICIT INPUTS:
1865                                 ;
1866                                 ;       RAMDATA         DATA AS READ FROM THE RAM
1867                                 ;       RAMSIZ          NUMBER OF BYTES IN PACKET
1868                                 ;                       IF RAMSIZ=0 THEN DEFAULT TO 8.
```

```
                                        ;
                                        ;IMPLICIT OUTPUTS:
                                        ;
                                        ;       RAMSIZ  SET TO 0
                                        ;-
                                        
                                                BGNMSG  RAMERR
                                        RAMERR::
015570  004737  014056                          JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
                                                ENDMSG
                                        L10021:
015574  104423                                  TRAP    C$MSG
                                        
                                                .SBTTL  RAMTADD - PRINT TEST ADDRESS, RAM AND PACKET DATA
                                        ;+
                                        ;
                                        ;PRINT ROUTINE TO DISPLAY RAM/PACKET DATA
                                        ;
                                        ;INPUTS:
                                        ;
                                        ;       R4      POINTER TO COMMAND PACKET
                                        ;
                                        ;IMPLICIT INPUTS:
                                        ;
                                        ;       RAMDATA         DATA AS READ FROM THE RAM
                                        ;       RAMSIZ          NUMBER OF BYTES IN PACKET
                                        ;                       IF RAMSIZ=0 THEN DEFAULT TO 8.
                                        ;       ERRHI           HIGH ORDER TEST ADDRESS
                                        ;       ERRLO           LOW ORDER TEST ADDRESS
                                        ;
                                        ;IMPLICIT OUTPUTS:
                                        ;
                                        ;       RAMSIZ  SET TO 0
                                        ;-
                                        
                                                BGNMSG  RAMTADD
                                        RAMTADD::
015576  004737  010352                          JSR     PC,PRITADD      ;PRINT TEST ADDRESS
015602  004737  014056                          JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
                                                ENDMSG
                                        L10022:
015606  104423                                  TRAP    C$MSG
                                        
                                                .SBTTL  RAMEXP  - PRINT RAM EXPD/RECV DATA
                                        ;+
                                        ;
                                        ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
                                        ;
                                        ;INPUTS:
                                        ;
                                        ;       R1      RECEIVED DATA
                                        ;       R2      EXPECTED DATA
                                        ;       R4      CONTROLLER RAM ADDRESS
                                        ;-
                                        
                                                BGNMSG  RAMEXP
                                        RAMEXP::
```

```
RAMEXP    PRINT RAM EXPD/RECV DATA

 1919 015610  042701  177400                    BIC     #^C<377>,R1             ;SAVE EXPD RAM DATA BYTE
 1920 015614  042702  177400                    BIC     #^C<377>,R2             ;SAVE EXPD RAM DATA BYTE
 1921 015620  004737  010144                    JSR     PC,PRIRAM               ;PRINT THE RAM ADDRESS
 1922 015624  004737  010020                    JSR     PC,PRIXOR               ;PRINT THE DATA
 1923 015630                                    ENDMSG
      015630                              L10023:
      015630  104423                            TRAP    C$MSG
 1924
 1925                                           .SBTTL  TIMEXP  - PRINT TIMER A,B AND EXP/REC
 1926                                ;+
 1927                                ;
 1928                                ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
 1929                                ;AND TIMER A,B HEADER MESSAGE
 1930                                ;
 1931                                ;INPUTS:
 1932                                ;
 1933                                ;       R1      RECEIVED DATA
 1934                                ;       R2      EXPECTED DATA
 1935                                ;-
 1936
 1937 015632                                    BGNMSG  TIMEXP
      015632                              TIMEXP::
 1938 015632                                    PRINTX  #TIMSGO                 ;PRINT HEADER
      015632  012746  015660                    MOV     #TIMSGO,-(SP)
      015636  012746  000001                    MOV     #1,-(SP)
      015642  010600                            MOV     SP,R0
      015644  104415                            TRAP    C$PNTX
      015646  062706  000004                    ADD     #4,SP
 1939 015652  004737  010020                    JSR     PC,PRIXOR               ;PRINT THE DATA
 1940 015656                                    ENDMSG
      015656                              L10024:
      015656  104423                            TRAP    C$MSG
 1941
 1942 015660     045     116     045    TIMSGO: .ASCIZ  '<N><A TIMER A STATUS IS IN BIT 3<N><A TIMER B STATUS IS IN BIT 2'
 1943                                    .EVEN
 1944                                           .SBTTL  BADSSR - PRINT TSSR ERRORS ON DATA TRANSFERS
 1945
 1946                                ;+
 1947                                ;
 1948                                ;PRINT ROUTINE FOR TSSR ERRORS ON DATA TRANSFERS
 1949                                ;
 1950                                ;INPUTS:
 1951                                ;
 1952                                ;       R1      CONTENTS OF TSSR
 1953                                ;       R2      DATA WRITTEN (8 BITS)
 1954                                ;
 1955                                ;-
 1956
 1957 015760                                    BGNMSG  BADSSR
      015760                              BADSSR::
 1958 015760  010246                            MOV     R2,-(SP)                ;SAVE DATA TRANSFERRED
 1959 015762  042702  177400                    BIC     #177400,R2              ;GET JUST ONE BYTE
 1960 015766                                    PRINTB  #XFERASC,R2
      015766  010246                            MOV     R2,-(SP)
      015770  012746  016020                    MOV     #XFERASC,-(SP)
      015774  012746  000002                    MOV     #2,(SP)
      016000  010600                            MOV     SP,R0
```

```
        016002  104416                          TRAP    C$PNTB
        016004  062706  000006                  ADD     #6,SP
   1961 016010  012602                          MOV     (SP)+,R2                ;RESTORE R2
   1962 016012  004737  006020                  JSR     PC,PRITSSR              ;DECODE TSSR CONTENTS
   1963 016016                                  ENDMSG
        016016                          L10025:
        016016  104423                          TRAP    C$MSG
   1964 016020     045     116     045  XFERASC:        .ASCIZ  '#N#A Data Transferred = #03'
   1965                                         .SBTTL  GLOBAL SUBROUTINES SECTION
   1966
   1967                                 ;++
   1968                                 ; THE GLOBAL SUBROUTINES SECTION CONTAINS THE SUBROUTINES
   1969                                 ; THAT ARE USED IN MORE THAN ONE TEST.
   1970                                 ;--
   1971                                         .SBTTL  SOFINIT - SOFT INITIALIZE OF CONTROLLER
   1972
   1973                                 ;+
   1974                                 ;
   1975                                 ;ROUTINE TO DO A SOFT INITIALIZE OF THE CONTROLLER
   1976                                 ;BY WRITING INTO THE TSSR REGISTER. AFTER THE INIT,
   1977                                 ;THE TSSR REGISTER IS TESTED FOR ERRORS. ANY ERRORS
   1978                                 ;DETECTED SHOULD BE TREATED AS DEVICE FATAL ERRORS.
   1979                                 ;
   1980                                 ;INPUTS:
   1981                                 ;
   1982                                 ;       R5      ADDRESS OF FIRST REGISTER
   1983                                 ;
   1984                                 ;OUTPUTS:
   1985                                 ;
   1986                                 ;       R0      CONTENTS OF TSSR, IF ERROR
   1987                                 ;       CARRY   SET IF INIT WAS OKAY
   1988                                 ;               CLEAR IF FATAL ERROR
   1989                                 ;
   1990                                 ;CALLING SEQUENCE:
   1991                                 ;
   1992                                 ;       MOV     #ADDRESS,R5
   1993                                 ;       JSR     PC,SOFINIT
   1994                                 ;       BCS     CONTINUE
   1995                                 ;       ERRDF                           ;REPORT FATAL ERROR
   1996                                 ;
   1997                                 ;-
   1998
   1999 016054                          SOFINIT::
   2000 016054                                  SAVREG                          ; SAVE THE REGISTERS
   2001 016060  012765  000000  000002          MOV     #0,TSSR(R5)             ; DO THE INIT.
   2002 016066  004737  016330                  JSR     PC,WAITF                ; WAIT FOR SSR
   2003 016072  016500  000002                  MOV     TSSR(R5),R0             ;GET THE TSSR REGISTER
   2004 016076  010004                          MOV     R0,R4                   ;TSSR CONTENTS
   2005 016100  042704  176277                  BIC     #^C<MIADDR!OFL>,R4
   2006 016104  052704  002200                  BIS     #SSR!NBA,R4             ;R4 HAS EXPECTED CONTENTS
   2007 016110  020400                          CMP     R4,R0                   ;ONLY EXPECTED BITS SET ?
   2008 016112  001402                          BEQ     5$                      ;BRANCH IF OKAY
   2009 016114  000241                          CLC                             ;CLEAR THE CARRY FOR ERROR
   2010 016116  000401                          BR      10$                     ;GO TO EXIT
   2011 016120  000261                  5$:     SEC                             ;SET THE CARRY BIT
   2012 016122  000207                  10$:    RTS     PC                      ;RETURN TO CALLER
   2013                                         .SBTTL  CHKAMB  - CHECK TSSR FOR AMBIGUITY
```

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
                                ;
                                ;-

016124                          CHKAMB:
016124                                  SAVREG                  ;SAVE THE GENERAL REGISTERS
016130  010004                          MOV     R0,R4           ;CONTENTS OF TSSR
016132  032700  100000                  BIT     #SC,R0          ;IS BIT 15 SET ?
016136  001004                          BNE     5$              ;BRANCH IF YES
016140  032700  174077                  BIT     #^C<NBA!OFL!SSR!HIADDR>,R0      ;ANY OTHER BITS SET ?
016144  001023                          BNE     40$             ;MUST BE AN ERROR
016146  000424                          BR      45$             ;RETURN WITH SUCCESS
016150  032700  000200          5$:     BIT     #SSR,R0         ;IS READY BIT SET ?
016154  001011                          BNE     10$             ;BRANCH IF READY BIT IS SET.
016156  032700  000040                  BIT     #BIT5,R0        ;IS FATAL ERROR BIT SET ?
016162  001414                          BEQ     40$             ;ERROR IF NOT
016164  042704  177761                  BIC     #^CTERCLS,R4    ;CLEAR ALL BUT TERMINATION CODE
016170  020427  000016                  CMP     R4,#16          ;ALL THREE BITS MUST BE SET
016174  001007                          BNE     40$             ;ERROR IF NOT SET
016176  000410                          BR      45$             ;OK IF ALL ARE SET
016200  032700  000040          10$:    BIT     #BIT5,R0        ;IS FATAL ERROR BIT SET ?
016204  001405                          BEQ     45$             ;ERROR IF BIT IS SET WITH SSR
016206  032700  000006                  BIT     #BIT2!BIT1,R0   ;IS THIS A FUNCTION REJECT
016212  001002                          BNE     45$             ;BR. IF TSSR IS OK
016214  000241                  40$:    CLC                     ;AMBIGUOUS CONTENTS
016216  000401                          BR      50$
016220  000261                  45$:    SEC                     ;SHOW SUCCESS - NO AMBIGUITY
016222  000207                  50$:    RTS     PC              ;RETURN TO CALLER
                                        .SBTTL  ENAINT,DSBINT - ENABLE/DISABLE INTERRUPTS
                                ;
                                ; DEFAULT DISPLAY INTERRUPT HANDLERS.
                                ; IF DISPLAY TIME-OUT, REPORT DEV FATAL, AND ABORT PASS.
                                ; OTHERWISE, SAVE DPU REGISTERS AND DISMISS.
                                ;
                                ;
                                ; BIT DEFINITIONS FOR "INTMASK" AND "INTFLAG" BYTES:
                                ;
000200                                  IOKCKIN=BIT7    ; DON'T CHECK FOR BAD INTERRUPTS -- TEST WILL.
000001                                  IOKSTP=BIT0     ; EXPECT "STOP" INTERRUPT.
                                ;
                                ;INTERRUPT MASK -  SAYS EXPECTING INTERRUPTS
016224  000                     INTMASK:        .BYTE   0
```

```
2071
2072 016225  000                    ;INTERRUPT FLAG - SAYS WE GOT ONE (IF POSITIVE)
2073                                 INTFLAG:        .BYTE   0
2074
2075 016226  000000                 ;SAVED INTERRUPT VECTOR:
2076                                 INTVEC: .WORD   0
2077 016230  000000                 ;SAVE CPU PC
2078                                 INTCPC: .WORD   0
2079
2080 016232  010046                 ;SUBROUTINE TO ENABLE INTERRUPTS:
2081 016234  013700  002202         ENAINT: MOV     R0,-(SP)        ;SAVE R0
2082 016240  012720  016276                 MOV     IVEC,R0         ;GET POINTER TO VECTORS
2083 016244  012720  000300                 MOV     #INTR,(R0)+     ;SET UP INTERRUPT VECTOR
2084 016250  012600                         MOV     #PRI06,(R0)+
2085 016252  011646                         MOV     (SP)+,R0        ;RESTORE R0
2086 016254  012766  000000  000002        MOV     (SP),-(SP)
2087 016262  000002                         MOV     #0,2(SP)        ;SET CPU TO LEVEL 0
2088                                         RTI
2089
2090 016264  011646                 ;SUBROUTINE TO DISABLE INTERRUPTS (RAISE PRIORITY TO LEVEL 6)
2091 016266  012766  000300  000002 DSBINT: MOV     (SP),-(SP)
2092 016274  000002                         MOV     #PRI06,2(SP)
2093                                         RTI
2094                                         .SBTTL  INTR    - INTERRUPT HANDLERS
2095 016276                                 BGNSRV  INTR            ;DEFINE INTERRUPT ENTRY
     016276                         INTR::
2096 016276  012737  000001  002216         MOV     #1,INTRECV      ;SET FLAG TO SHOW INTERRUPT RECEIVED
2097 016304  105037  016225                 CLRB    INTFLAG         ;CLEAR FLAG TO SAY WE GOT INTERRUPT
2098 016310  132737  000001  016224         BITB    #IOKSTP,INTMASK ;EXPECTING STOP INTERRUPT?
2099 016316  001003                         BNE     1$              ;BR IF YES
2100 016320  152737  000001  016225         BISB    #IOKSTP,INTFLAG ;NO. SET THE ERROR FLAG.
2101
2102                                 ;SAVE REGISTERS, MSG BUFFER, ETC.
2103 016326                         1$:
2104 016326                                 ENDSRV
     016326                         L10026:
     016326  000002                         RTI
2105                                         .SBTTL  WAITF   - WAIT FOR SUBSYSTEM READY
2106                                 ;
2107                                 ; SUBROUTINE TO WAIT FOR THE SUBSYSTEM READY FLAG
2108                                 ;
2109                                 ;INPUTS:
2110                                 ;
2111                                 ;       R5      ADDRESS OF FIRST DEVICE RECISTER
2112                                 ;
2113                                 ;OUTPUTS:
2114                                 ;
2115                                 ;       R0      CONTENTS OF LAST TSSR READ
2116                                 ;       CARRY   SET - READY BIT SET
2117                                 ;               CLR - TIMEOUT WAITING FOR READY
2118                                 ;
2119 016330  000401                 WAITF:: BR      1$              ;NOP WHEN SUPER FIXED
2120 016332                                 BREAK                   ; DO A SUPVSR BREAK FIRST.
     016332  104422                         TRAP    C$BRK
2121 016334  012746  011000         1$:     MOV     #11000,-(SP)    ;25-APRIL-83 REV B  - 1100 MSEC TIMER
2122 016340  016500  000002         2$:     MOV     TSSR(R5),R0     ;READ THE TSSR REGISTER
2123 016344  105700                         TSTB    R0              ;TEST FOR READY BIT SET
```

WAITF - WAIT FOR SUBSYSTEM READY

```
2124
2125 016346  100420                    BMI     3$              ; EXIT ON STOP FLAG.
2126 016350                            DELAY   1               ; WAIT 100 USEC
     016350  012727  000001            MOV     #1,(PC)+
     016354  000000                    .WORD   0
     016356  013727  002116            MOV     L$DLY,(PC)+
     016362  000000                    .WORD   0
     016364  005367  177772            DEC     -6(PC)
     016370  001375                    BNE     .-4
     016372  005367  177756            DEC     -22(PC)
     016376  001367                    BNE     .-20
2127 016400  005316                    DEC     (SP)            ;REDUCE DELAY COUNT
2128 016402  001356                    BNE     2$              ;RETRY UNTIL TIMER EXPIRES
2129 016404  000241                    CLC                     ; C = 0, CONTROLLER STILL RUNNING...
2130 016406  000401                    BR      4$              ;...OR HUNG-UP AFTER 300 MSEC.
2131 016410  000261            3$:     SEC                     ; C = 1, CONTROLLER IS STOPPED.
2132 016412  005326            4$:     DEC     (SP)+           ;RESTORE STACK WITHOUT CHANGING CARRY BIT
2133 016414  000207                    RTS     PC
2134                                   .SBTTL  CHKTSSR - CHECK TSSR FOR READY
2135
2136                           ;+
2137                           ;
2138                           ;THIS ROUTINE WAITS FOR READY IN THE TSSR
2139                           ;AND TESTS FOR AMBIGUOUS BIT SETTINGS IN TSSR.
2140                           ;
2141                           ;INPUT:
2142                           ;
2143                           ;       R5      ADDRESS OF CSR REGISTERS
2144                           ;
2145                           ;OUTPUT:
2146                           ;
2147                           ;       R0      CONTENTS OF TSSR
2148                           ;       CARRY   SET - OKAY
2149                           ;               CLR - NOT READY AMBIGUOUS, OR SC SET
2150                           ;
2151                           ;-
2152
2153 016416                    CHKTSSR:
2154 016416  004737  016330            JSR     PC,WAITF                ;WAIT FOR READY
2155 016422  103014                    BCC     20$                     ;BRANCH IF TIME OUT
2156 016424  004737  016124            JSR     PC,CHKAMB               ;TSSR AMBIGOUS?
2157 016430  103006                    BCC     10$                     ;BR IF YES
2158 016432  032700  100000            BIT     #SC,R0                  ;SPECIAL CONDITION SET?
2159 016436  001405                    BEQ     15$                     ;BR IF NO
2160 016440  032700  074000            BIT     #<SCE!BIE!RMR!NXM>,R0   ;ANY ERROR BITS SET?
2161 016444  001402                    BEQ     15$                     ;BR IF NO
2162 016446  000241            10$:    CLC                             ;SET FAILURE
2163 016450  000401                    BR      20$                     ;
2164 016452  000261            15$:    SEC                             ;SET SUCCESS
2165 016454  000207            20$:    RTS     PC                      ;RETURN TO CALLER
2166                                   .SBTTL  XNXM    - CHECK FOR NONEXISTENT MEMORY
2167                           ;+
2168                           ; ROUTINE TO TEST FOR A NEXM IN THE RANGE (R1) THRU (R2).
2169                           ; ON RETURN, IF "C" = 1, (R1) = NEXM ADDRESS.
2170                           ;               "C" = 0, ALL ADDRESSES OK.
2171                           ;
2172                           ;CALL:  MOV ADR1,R1
```

XNXM - CHECK FOR NONEXISTENT MEMORY

```
                                        ;       MOV ADR2,R2
                                        ;       JSR PC,NXM
                                        ;       RETURN          ;TEST "C" AND PROCEED.
                                        ;
016456  012737  016510  000004  XNXM:   MOV     #2$,@#4         ; SET BUSERR VECTOR.
016464  012737  000200  000006          MOV     #PRI04,@#6
016472  005003                          CLR     R3              ;FLAG.
016474  005711                  1$:     TST     (R1)            ;TEST THE ADDRESS(ES).
                                                                ;IF ANY TRAP, CONTINUE AT 2$.
016476  020102                          CMP     R1,R2           ;OTHERWISE, CONTINUE HERE.
016500  001407                          BEQ     3$              ;BR IF FINISHED (NO NEXM'S).
016502  062701  000002                  ADD     #2,R1           ;SET NEXT ADDRESS...
016506  000772                          BR      1$              ;...AND CONTINUE.

016510  005103                  2$:     COM     R3              ;GOT ONE, SET FLAG...
016512  012716  016520                  MOV     #3$,(SP)
016516  000002                          RTI                     ;...AND DISMISS INTERRUPT...
016520                          3$:     CLRVEC  #4              ;...AND GIVE BACK THE VECTOR.
016520  012700  000004                  MOV     #4,R0
016524  104436                          TRAP    C$CVEC
016526  005703                          TST     R3              ;DID WE CATCH ONE ??
016530  001401                          BEQ     .+4             ;NO, "C" = 0, SKIP NEXT.
016532  000261                          SEC                     ;YES, "C" = 1, (R1) = NEXM ADDR.
016534  000207                          RTS     PC

                                                .SBTTL  TSTLOOP - CHECK ITERATION COUNT
                                        ;+
                                        ; SUBROUTINE TO EXECUTE TEST ITERATIONS.
                                        ; EXIT WITH "C" SET IF LOOPS ALLOWED AND LOOP COUNT NON-ZERO.
                                        ; LOOP COUNTER IS SET BY "BEGIN.TEST" MACRO.
                                        ;
                                        ; CALL: LOOPTO  ARG
                                        ;
016536                                  TSTLOOP::
016536  005737  002162                          TST     NOITS           ; ITERATIONS INHIBITED?
016542  001006                                  BNE     1$              ; YES.
016544  005737  002176                          TST     QVP             ; NO.
016550  100403                                  BMI     1$              ;LOOPS DISALLOWED IN QUICK PASS.
016552  005337  002210                          DEC     LOOPCNT         ; BUMP LOOP COUNTER.
016556  001002                                  BNE     2$
016560  000241                  1$:     CLC                             ;LOOP DISALLOWED, OR DONE.
016562  000401                          BR      3$
016564  000261                  2$:     SEC                             ;LOOP ENABLED.
016566  000207                  3$:     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
                                        ;
```

TSTSETUP - PRINT TEST NAME AND INIT ERROR COUNTS

```
                                        ;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
                                        ;
                                        ;-

016570                                  TSTSETUP::
016570  010046                                  MOV     R0,-(SP)        ;SAVE THE TEST ID MESSAGE
016572  005037  003146                          CLR     SIFLAG          ; CLEAR "SOFT INIT" FLAG
016576  005037  017036                          CLR     ERRK            ; CLEAR LOCAL ERROR COUNTER.
016602  005037  005766                          CLR     EXTA            ; CLEAR ERROR EXTENSION FLAG.
016606  105037  016224                          CLRB    INTMASK         ; CLEAR INTERRUPT MASK (CHECK ERROR)
016612  013700  002174                          MOV     UNITN,R0        ; GET THE UNIT NUMBER.
016616  006300                                  ASL     R0              ; ... AND MAKE IT A WORD OFFSET.
016620  005737  003106                          TST     NODEV           ; DID STARTUP FIND THE DEVICE?
016624  001430                                  BEQ     4$              ; BR IF YES
016626  100010                                  BPL     3$              ; BR IF NOT IDLE
016630  052760  160000  003170                  BIS     #160000,ERTABL(R0) ; FLAG ERROR IN THE ERROR TABLE
016636                                          ERRDF   1,NXR,NXRERR    ; NO DEVICE HERE -- PRINT IT
016636  104455                                  TRAP    C$ERDF
016640  000001                                  .WORD   1
016642  003734                                  .WORD   NXR
016644  005732                                  .WORD   NXRERR
016646  000407                                  BR      2$
016650  052760  160001  003170  3$:             BIS     #160001,ERTABL(R0)      ; FLAG ERROR IN THE ERROR TABLE
016656                                          ERRDF   2,NOINIT        ; DEVICE NOT IDLE
016656  104455                                  TRAP    C$ERDF
016660  000002                                  .WORD   2
016662  004331                                  .WORD   NOINIT
016664  000000                                  .WORD   0
016666  012737  177777  003104  2$:             MOV     #-1,DUFLG       ; DROP THE UNIT
016674                                          DODU    UNITN
016674  013700  002174                          MOV     UNITN,R0
016700  104451                                  TRAP    C$DODU
016702                                          DOCLN                   ; ABORT THE PASS
016702  104444                                  TRAP    C$DCLN
016704  000423                                  BR      5$

016706                                  4$:     RFLAGS  R0              ; GET THE OPERATOR FLAGS.
016706  104421                                  TRAP    C$RFLA
016710  032700  001000                          BIT     #PNT,R0         ; PRINT THE TEST NUMBERS?
016714  001412                                  BEQ     1$              ; BR IF NO
016716  011600                                  MOV     (SP),R0         ;GET THE ID MESSAGE
016720                                          PRINTF  #TNAM,R0                ;DISPLAY THE TEST ID
016720  010046                                  MOV     R0,-(SP)
016722  012746  016764                          MOV     #TNAM,-(SP)
016726  012746  000002                          MOV     #2,-(SP)
016732  010600                                  MOV     SP,R0
```

```
"STSETUP - PRINT TEST NAME AND INIT ERROR COUNTS

        016734  104417                          TRAP    C$PNTF
        016736  062706  000006                  ADD     #6,SP
2269    016742  005237  002206          1$:     INC     TSTCNT          ; BUMP TEST COUNTER.
2270    016746                                  SETPRI  IPRI            ;PRIORITY THAT OF DEVICE
        016746  013700  002204                  MOV     IPRI,R0
        016752  104441                          TRAP    C$SPRI
2271    016754  005726                  5$:     TST     (SP)+           ;FIX UP THE STACK
2272    016756  013705  002200                  MOV     CSRADDR,R5      ; ADDRESS OF TSV REGISTERS ON UNIBUS
2273    016762  000207                          RTS     PC
2274    016764     045     123     045  TNAM:   .ASCIZ  '%S%T%A Test'
2275                                            .EVEN
2276                                            .SBTTL  TSTEND  - PRINT ERRORS RECEIVED
2277                                    ;
2278                                    ; AT END OF EACH TEST, PRINT THE NUMBER OF ERRORS RECEIVED
2279                                    ; IF NORMAL ERROR REPORTING IS DISABLED (FLA:IER).
2280                                    ;
2281    017000                          TSTEND: RFLAGS  R0
        017000  104421                          TRAP    C$RFLA
2282    017002  030027  020000                  BIT     R0,#IER
2283    017006  001412                          BEQ     1$              ; BR IF "IER" NOT SET.
2284    017010                                  PRINTF  #ESUM,ERRK      ; PRINT ERROR COUNT.
        017010  013746  017036                  MOV     ERRK,-(SP)
        017014  012746  017040                  MOV     #ESUM,-(SP)
        017020  012746  000002                  MOV     #2,-(SP)
        017024  010600                          MOV     SP,R0
        017026  104417                          TRAP    C$PNTF
        017030  062706  000006                  ADD     #6,SP
2285    017034  000207                  1$:     RTS     PC
2286
2287    017036  000000                  ERRK:   0                       ; LOCAL ERROR COUNT.
2288    017040     045     101     040  ESUM:   .ASCIZ  /%A %D%A ERRORS/
2289    017057     105     122     122  EMAXDU: .ASCIZ  /ERROR LIMIT REACHED -- DROPPING UNIT/
2290                                            .EVEN
2291
2292                                            .SBTTL  INCERK  - INCREMENT LOCAL ERROR COUNT
 293                                    ;+
2294                                    ; ROUTINES TO INCREMENT LOCAL ERROR COUNT AND CHECK FOR LIMIT:
2295                                    ;-
2296    017124  005237  017036          INCERK: INC     ERRK            ; INCREMENT LOCAL ERROR COUNT
2297    017130  010046                          MOV     R0,-(SP)        ; SAVE R0
2298    017132  013700  002174                  MOV     UNITN,R0        ; GET UNIT NUMBER,
2299    017136  006300                          ASL     R0              ; ... AND MAKE IT A WORD OFFSET.
2300    017140  062700  003170                  ADD     #ERTABL,R0      ; R0 GETS ADDRESS OF ERROR TABLE ENTRY.
2301    017144  005210                          INC     (R0)            ; INCREMENT THE DEVICE ERROR COUNT
2302    017146  032710  007777                  BIT     #7777,(R0)      ; DID WE OVERFLOW THE FIELD?
2303    017152  001001                          BNE     1$              ; BR IF NO.
2304    017154  005310                          DEC     (R0)            ; YES -- BACK IT UP TO 7777.
2305    017156  012600                  1$:     MOV     (SP)+,R0        ; RESTORE R0
2306    017160  000207                          RTS     PC              ; RETURN TO CALLER.
2307
2308    017162  010046                  CKEMAX: MOV     R0,-(SP)        ; SAVE R0
2309    017164  013700  002174                  MOV     UNITN,R0        ; GET UNIT NUMBER
2310    017170  006300                          ASL     R0              ; ... AND MAKE IT A WORD OFFSET
2311    017172  016000  003170                  MOV     ERTABL(R0),R0   ; GET ERROR TABLE ENTRY
2312    017176  042700  170000                  BIC     #170000,R0      ; EXTRACT ERROR COUNT FIELD
2313    017202  020037  002166                  CMP     R0,GERRMAX      ; IS GLOBAL LIMIT EXCEEDED FOR THIS UNIT?
2314    017206  103004                          BHIS    1$              ; BR IF YES
```

INCERK - INCREMENT LOCAL ERROR COUNT

```
2315 017210  023737  017036  002164          CMP     ERRK,LERRMAX    ; IS LOCAL LIMIT EXCEEDED FOR THIS TEST?
2316 017216  103417                          BLO     2$              ; BR IF NO
2317 017220                          1$:     RFLAGS  R0              ; GET OPERATOR FLAGS
     017220  104421                          TRAP    C$RFLA
2318 017222  032700  000040                  BIT     #IDU,R0         ; IS DROPPING INHIBITED?
2319 017226  001013                          BNE     2$              ; BR IF YES.
2320 017230  012737  177777  003104          MOV     #-1,DUFLG       ; NO -- DROP THE UNIT
2321 017236                                  ERRDF   4,EMAXDU
     017236  104455                          TRAP    C$ERDF
     017240  000004                          .WORD   4
     017242  017057                          .WORD   EMAXDU
     017244  000000                          .WORD   0
2322 017246                                  DODU    UNITN
     017246  013700  002174                  MOV     UNITN,R0
     017252  104451                          TRAP    C$DODU
2323 017254                                  DOCLN
     017254  104444                          TRAP    C$DCLN
2324 017256  012600                  2$:     MOV     (SP)+,R0        ; RESTORE R0
2325 017260  000207                          RTS     PC              ; RETURN TO CALLER
2326                                         .SBTTL  CKDROP  - CHECK IF UNIT SHOULD BE DROPPED
2327                                 ;+
2328                                 ; CHECK IF UNIT SHOULD BE DROPPED
2329                                 ;-
2330 017262  010046                  CKDROP: MOV     R0,-(SP)
2331 017264                                  FORCERROR       1$,NOTSSR
2332 017274                                  RFLAGS  R0
     017274  104421                          TRAP    C$RFLA
2333 017276  032700  000040                  BIT     #IDU,R0
2334 017302  001010                          BNE     1$
2335 017304  011600                          MOV     (SP),R0
2336 017306  012737  177777  003104          MOV     #-1,DUFLG
2337 017314                                  DODU    UNITN
     017314  013700  002174                  MOV     UNITN,R0
     017320  104451                          TRAP    C$DODU
2338 017322                                  DOCLN                   ;ABORT THE PASS
     017322  104444                          TRAP    C$DCLN
2339 017324  012600                  1$:     MOV     (SP)+,R0
2340 017326  000207                          RTS     PC
2341
2342
2343                                         .SBTTL  CONFIG  - DETERMINE CONFIGURATION OF SYSTEM
2344                                 ;
2345                                 ; SUBROUTINE - DETERMINE CONFIGURATION OF TSV05 SYSTEM.
2346                                 ;
2347 017330                          CONFIG:
2348 017330  004737  016054                  JSR     PC,SOFINIT
2349 017334  000207                          RTS     PC
2350                                         .SBTTL  KTON,KTOFF      - ENABLE/DISABLE MEMORY MANAGEMENT
2351                                 ;
2352                                 ; SUBROUTINE - ENABLE MEM MGT.
2353                                 ;
2354 017336  005737  003124          KTON:   TST     KTFLG           ; GOT KT?
2355 017342  001403                          BEQ     1$              ; NO.
2356 017344  012737  000001  177572          MOV     #1,SR0          ; YES. ENABLE KT11.
2357 017352  000207                  1$:     RTS     PC
2358
2359                                 ;
```

KTON,KTOFF - ENABLE/DISABLE MEMORY MANAGEMENT

```
                                        ; SUBROUTINE - DISABLE MEM MGT.
                                        ;
017354  005737  003124          KTOFF:  TST     KTFLG           ; GOT KT11?
017360  001405                          BEQ     1$              ; NO.
017362  000240                          NOP
017364  000240                          NOP
017366  012737  000000  177572          MOV     #0,SR0          ; DISABLE KT.
017374  000207                  1$:     RTS     PC
                                        .SBTTL  SETMAP  - SETUP PAR6 MAPPING
                                        ;+
                                        ;
                                        ;THIS ROUTINE SETS UP KERNEL PAR6 TP HANDLE
                                        ;AN 18 BIT ADDRESS. THE OFFSET INTO THE PAGE
                                        ;IS RETURNED BIASED TO PAR6.
                                        ;
                                        ;INPUTS:
                                        ;
                                        ;       R0      HIGH ORDER ADDRESS BITS
                                        ;       R1      LOW ORDER ADDRESS BITS
                                        ;
                                        ;OUTPUTS:
                                        ;
                                        ;       R0      OFFSET INTO BLOCK WITH PAR6 BIAS (I.E. THE ADDRESS)
                                        ;       CARRY   SET IF SUCCESS
                                        ;               CLR IF ERROR
                                        ;-
017376                          SETMAP:
017376                                  SAVREG                          ;SAVE R1-R4 UNTIL NEXT RETURN
017402  005737  003124                  TST     KTFLG                   ;SYSTEM HAVE ABOVE 28K?
017406  001433                          BEQ     10$                     ;BR IF NO
017410  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
017442  042701  000177                  BIC     #177,R1                 ;ALINE FOR LOWER 4K BOUNDARY
017446  020137  003124                  CMP     R1,KTFLG                ;HIGHER THAN EXISTING MEMORY?
017452  103011                          BHIS    10$                     ;BR IF YES
017454  010137  172354                  MOV     R1,@#KIPAR6             ;SETUP MAPPING REGISTER PAR6
017460  042702  160000                  BIC     #160000,R2              ;SETUP DISPLACEMENT IN PAGE
017464  062702  140000                  ADD     #140000,R2              ;ADD IN PAR6 BIAS
017470  010200                          MOV     R2,R0                   ;RETURN IN R0
017472  000261                          SEC                             ;SET SUCCESS
017474  000401                          BR      15$                     ;
017476  000241                  10$:    CLC                             ;SET FAILURE
017500  000207                  15$:    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.
                                        ;
```

FILLMEM - FILL MEMORY WITH BACKGROUND PATTERN

```
2417                                    ; OUTPUTS:
2418                                    ;
2419                                    ;       NONE
2420                                    ;-
2421                                    ;
2422 017502                            FILLMEM:
2423 017502                                    SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
2424 017506  004737  017354                    JSR     PC,KTOFF        ;DISABLE KT.
2425 017512  010003                            MOV     R0,R3           ;COPY TEST PATTERN
2426 017514  013701  003116                    MOV     FREE,R1         ;GET FIRST FREE LOCATION
2427 017520  013702  003120                    MOV     FRESIZ,R2       ;SIZE OF FREE SPACE BELOW 28K.
2428 017524  010321                    10$:    MOV     R3,(R1)+        ;STORE A BACKGROUND WORD
2429 017526  005302                            DEC     R2              ;DONE ALL MEMORY IN FREE SPACE?
2430 017530  003375                            BGT     10$             ;BR IF NO
2431 017532  005737  003124                    TST     KTFLG           ; GOT KT?
2432 017536  001477                            BEQ     55$             ; NO. GET OUT.
2433 017540  004737  017336                    JSR     PC,KTON         ; YES. ENABLE KT.
2434 017544  005000                            CLR     R0              ;HIGH ORDER ADDRESS START
2435 017546  013701  003144                    MOV     PST32W,R1       ;GET >28K START ADDRESS (IN 32W BLOCKS)
2436         000006                            .REPT   6
2437                                            CLC                     ;CLEAR C BIT
2438                                            ROL     R1              ;CONVERT BLOCKS TO WORDS
2439                                            ROL     R0              ;MAKE IT DOUBLE PRECISION
2440                                            .ENDR
2441 017616  004737  017376                    JSR     PC,SETMAP       ;SETUP PAR6 MAPPING REGISTER
2442 017622  010320                    30$:    MOV     R3,(R0)+        ;STORE TEST PATTERN IN >28K ADDRESS
2443 017624  020027  160000                    CMP     R0,#160000      ;END OF PAR6 MAPPING AREA?
2444 017630  103774                            BLO     30$             ;BR IF NO
2445 017632  162700  020000                    SUB     #20000,R0       ;BACKUP INTO PAR6 MAPPING BEGIN
2446 017636  062737  000200  172354            ADD     #200,@#KIPAR6   ;POINT TO NEXT 4K BLOCK >28K.
2447 017644  023737  172354  003124            CMP     @#KIPAR6,KTFLG  ;END OF MEMORY?
2448 017652  001427                            BEQ     50$             ;BR IF YES
2449 017654  005737  003136                    TST     T23A            ;11/23A?
2450 017660  001407                            BEQ     35$             ;NO KEEP GOING
2451 017662  013704  177572                    MOV     SR0,R4          ;GET SR0 CONTENTS
2452 017666  042704  177761                    BIC     #177761,R4      ;CLEAR ALL BUT PAGE NUMBER
2453 017672  022704  000016                    CMP     #16,R4          ;SEE IF PAGE 7
2454 017676  001415                            BEQ     50$             ;EXIT IF THERE
2455 017700  005737  003140            35$:    TST     T23B            ;11/23B?
2456 017704  001410                            BEQ     45$             ;NO KEEP GOING
2457 017706  023727  172354  007600            CMP     @#KIPAR6,#7600  ;REACHED 18 BITS?
2458 017714  103001                            BHIS    40$             ;YES
2459 017716  000403                            BR      45$             ;NO KEEP GOING
2460 017720  012737  000020  172516    40$:    MOV     #20,SR3         ;SET 22 BIT RELOCATION
2461 017726  000137  017622            45$:    JMP     30$             ;KEEP GOING ON ETC.
2462 017732  004737  017354            50$:    JSR     PC,KTOFF        ; DISABLE KT.
2463 017736  000207                    55$:    RTS     PC
2464                                            .SBTTL  CMPMEM  - COMPARE MEMORY TO BACKGROUND PATTERN
2465                                    ;+
2466                                    ; COMPARE MEMORY WITH A BACKGROUND PATTERN
2467                                    ;
2468                                    ; INPUTS:
2469                                    ;
2470                                    ;       R0 = BACKGROUND PATTERN
2471                                    ;       FREE    = FIRST LOCATION AVAILABLE TO DIAGNOSTIC
2472                                    ;       KTFLG   = SET TO HIGHEST MEMORY LOCATION IF > 28K.
2473                                    ;
```

```
                                        ; 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
                                        ;-
017740                                  CMPMEM:
017740                                          SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
017744  010003                                  MOV     R0,R3           ;COPY TEST PATTERN
017746  004737  017354                          JSR     PC,KTOFF        ;DISABLE KT.
017752  013701  003116                          MOV     FREE,R1         ;GET FIRST FREE LOCATION
017756  013702  003120                          MOV     FRESIZ,R2       ;SIZE OF FREE SPACE BELOW 28K.
017762  020311                        10$:      CMP     R3,(R1)         ;FREE SPACE LOCATION EQUAL TO EXPD?
017764  001411                                  BEQ     15$             ;BR IF YES
017766  010137  002232                          MOV     R1,ERRLO        ;SAVE ADDRESS IN ERROR
017772  005037  002230                          CLR     ERRHI           ;NO HIGH ADDRESS
017776  010337  002224                          MOV     R3,EXPD         ;SAVE EXPD FOR ERROR REPORT
020002  011137  002226                          MOV     (R1),RECV       ;SAVE RECV FOR ERROR REPORT
020006  000474                                  BR      50$             ;
020010  005721                        15$:      TST     (R1)+           ;POINT TO NEXT ADDRESS
020012  005302                                  DEC     R2              ;DONE ALL MEMORY IN FREE SPACE?
020014  003362                                  BGT     10$             ;BR IF NO
020016  005737  003124                          TST     KTFLG           ; GOT KT?
020022  001472                                  BEQ     55$             ; NO. GET OUT.
020024  004737  017336                          JSR     PC,KTON         ; YES. ENABLE KT.
020030  005000                                  CLR     R0              ;HIGH ORDER ADDRESS START
020032  013701  003144                          MOV     PST32W,R1       ;GET >28K START ADDRESS (IN 32W BLOCKS)
        000006                                  .REPT   6
                                                ROL     R1              ;CONVERT BLOCKS TO WORDS
                                                ROL     R0              ;MAKE IT DOUBLE PRECISION
                                                .ENDR
020066  042701  000177                          BIC     #177,R1         ;ALINE 4K BOUNDARY
020072  010046                                  MOV     R0,-(SP)        ;SAVE HIGH ORDER
020074  010146                                  MOV     R1,-(SP)        ;SAVE LOW ORDER
020076  004737  017376                          JSR     PC,SETMAP       ;SETUP PAR6 MAPPING REGISTER
020102  010004                                  MOV     R0,R4           ;COPY ADDRESS BIASED TO PAR6
020104  012601                                  MOV     (SP)+,R1        ;RESTORE LOW ORDER IN NON PAR6 FORMAT
020106  012600                                  MOV     (SP)+,R0        ;RESTORE HIGH ORDER IN NON PAR6 FORMAT
020110  020314                        30$:      CMP     R3,(R4)         ;ABOVE 28K LOCATION EQUAL EXPD?
020112  001411                                  BEQ     32$             ;BR IF YES
020114  010037  002230                          MOV     R0,ERRHI        ;SAVE HIGH ORDER IN ERROR
020120  010137  002232                          MOV     R1,ERRLO        ;SAVE LOW ORDER IN ERROR
020124  010337  002224                          MOV     R3,EXPD         ;SAVE EXPD FOR ERROR REPORT
020130  011437  002226                          MOV     (R4),RECV       ;SAVE RECV FOR ERROR REPORT
020134  000421                                  BR      50$             ;
020136  062701  000002                32$:      ADD     #2,R1           ;UPDATE NON PAR6 ADDRESS
020142  005500                                  ADC     R0              ;MAKE IT DOUBLE PRECISION ADD
020144  062704  000002                          ADD     #2,R4           ;UPDATE PAR FORMAT ADDRESS
020150  020427  160000                          CMP     R4,#160000      ;END OF PAR6 MAPPING AREA?
020154  103755                                  BLO     30$             ;BR IF NO
020156  162704  020000                          SUB     #20000,R4       ;BACKUP INTO PAR6 MAPPING BEGIN
```

```
2531 020162  062737  000200  172354          ADD     #200,@#KIPAR6   ;POINT TO NEXT 4K BLOCK >28K.
2532 020170  023737  172354  003124          CMP     @#KIPAR6,KTFLG  ;END OF MEMORY?
2533 020176  101414                          BLOS    30$             ;BR IF NO
2534 020200  004737  017354          50$:    JSR     PC,KTOFF        ;TURN OFF MEMORY MAPPING
2535 020204  000241                          CLC                     ;SET FAILURE
2536 020206  000403                          BR      60$             ;
2537 020210  004737  017354          55$:    JSR     PC,KTOFF        ;TURN OFF MEMORY MAPPING
2538 020214  000261                          SEC                     ;SET SUCCESS
2539 020216  000207                  60$:    RTS     PC
2540                                          .SBTTL  REGSAV  - SAVE R1-R5 ON STACK
2541                                 ;+
2542                                 ;
2543                                 ;ROUTINE TO
2544                                 ;SAVE R1 THROUGH R5 ON THE STACK
2545                                 ;
2546                                 ;CALLING SEQUENCE:
2547                                 ;
2548                                 ;       JSR     R5,REGSAV
2549                                 ;
2550                                 ;THIS IS A COOROUTINE WHICH TRANSFER CONTROL BACK TO
2551                                 ;THE CALLING ROUTINE. AT THE END OF THE CALLING ROUTINE,
2552                                 ;THE RTS PC RETURNS CONTROL TO THIS ROUTINE TO RESTORE
2553                                 ;REGISTERS.
2554                                 ;
2555                                 ;THIS ROUTINE SHOULD ONLY BE CALLED FROM ROUTINES WHICH ARE
2556                                 ;CALLED VIA A JSR PC INSTRUCTION
2557                                 ;
2558                                 ;-
2559
2560 020220                      REGSAV:
2561 020220  010446                          MOV     R4,-(SP)
2562 020222  010346                          MOV     R3,-(SP)
2563 020224  010246                          MOV     R2,-(SP)
2564 020226  010146                          MOV     R1,-(SP)
2565 020230  010546                          MOV     R5,-(SP)
2566 020232  016605  000012                  MOV     10.(SP),R5
2567 020236  004736                          JSR     PC,@(SP)+
2568 020240  012601                          MOV     (SP)+,R1
2569 020242  012602                          MOV     (SP)+,R2
2570 020244  012603                          MOV     (SP)+,R3
2571 020246  012604                          MOV     (SP)+,R4
2572 020250  012605                          MOV     (SP)+,R5
2573 020252  000207                          RTS     PC
2574                                          .SBTTL  GETPAT  - GET 8 BIT PATTERN FROM OPERATOR
2575                                 ;+
2576                                 ;
2577                                 ;ROUTINE TO REQUEST AN 8 BIT DATA PATTERN FROM THE OPERATOR
2578                                 ;
2579                                 ;INPUTS:
2580                                 ;
2581                                 ;       NONE.
2582                                 ;
2583                                 ;OUTPUTS:
2584                                 ;
2585                                 ;       R0      OCTAL NUMBER FROM THE OPERATOR
2586                                 ;
2587                                 ;CALLING SEQUENCE:
```

```
                                ;
                                ;       JSR     PC,GETPAT
                                ;
                                ;-

                                GETPAT::
020254                                  SAVREG                          ;SAVE THE GENERAL REGISTERS
020260                          1$:     GMANID  DATASC,PATDAT,0,377,0,377,NO
020260  104443                          TRAP    C$GMAN
020262  000406                          BR      10000$
020264  020310                          .WORD   PATDAT
020266  000022                          .WORD   T$CODE
020270  020312                          .WORD   DATASC
020272  000377                          .WORD   377
020274  000000                          .WORD   T$LOLIM
020276  000377                          .WORD   T$HILIM
020300                          10000$:
020300                                  BNCOMPLETE      1$      ;RETRY IF ERROR
020300  103367                          BCC     1$
020302  013700  020310                  MOV     PATDAT,R0       ;DATA PATTERN FROM OPERATOR
020306  000207                          RTS     PC              ;RETURN TO CALLER

                                ;+
                                ;LOCAL DATA AREA
                                ;-

020310  000000                  PATDAT: .WORD   0               ;TEMPORARY STORAGE FOR DATA
020312     105     116     124  DATASC: .ASCIZ  'ENTER DATA PATTERN'
                                        .EVEN
                                        .SBTTL  GETSEL  - ISSUE MENU AND GET OPERATOR RESPONSE
                                ;+
                                ;
                                ;ROUTINE TO ISSUE A MENU AND GET
                                ;THE OPERATOR'S RESPONSE.
                                ;
                                ;INPUTS:
                                ;
                                ;       R0      ADDRESS OF ASCIZ STRING OF MENU
                                ;       R1      MAXIMUM ALLOWABLE OPERATOR RESPONSE
                                ;
                                ;OUTPUTS:
                                ;
                                ;       R0      NUMBER OF THE OPERATOR'S SELECTION
                                ;
                                ;-

020336                          GETSEL::
020336                                  SAVREG                          ;SAVE GENERAL REGISTERS
020342  010002                          MOV     R0,R2                   ;SAVE THE MENU ADDRESS
020344  010203                  1$:     MOV     R2,R3                   ;START OF MENU STRING
020346  005713                  2$:     TST     (R3)                    ;END OF ASCII ?
020350  001412                          BEQ     3$                      ;BRANCH IF ALL LINES DISPLAYED
020352                                  PRINTF  #SELASC,(R3)+           ;DISPLAY THE MENU
020352  012346                          MOV     (R3)+,-(SP)
020354  012746  020522                  MOV     #SELASC,-(SP)
020360  012746  000002                  MOV     #2,-(SP)
020364  010600                          MOV     SP,R0
```

GETSEL - ISSUE MENU AND GET OPERATOR RESPONSE

```
        020366  104417                          TRAP    C$PNTF
        020370  062706  000006                  ADD     #6,SP
   2631 020374  000764                          BR      2$
   2632 020376                          3$:     GMANID  MENASC,MENRES,D,-1,0,-1,NO
        020376  104443                          TRAP    C$GMAN
        020400  000406                          BR      10001$
        020402  020556                          .WORD   MENRES
        020404  000042                          .WORD   T$CODE
        020406  020527                          .WORD   MENASC
        020410  177777                          .WORD   -1
        020412  000000                          .WORD   T$LOLIM
        020414  177777                          .WORD   T$HILIM
        020416                          10001$:
   2633 020416                                  BNCOMPLETE      1$      ;RETRY IF ERROR
        020416  103352                          BCC     1$
   2634 020420  013700  020556                  MOV     MENRES,R0       ;GET THE OPERATOR'S REPLY
   2635 020424  020001                          CMP     R0,R1           ;COMPARE TO MAXIMUM ALLOWED
   2636 020426  101411                          BLOS    5$              ;BRANCH IF OK
   2637 020430                                  PRINTF  #MENERR         ;DISPLAY ERROR MESSAGE
        020430  012746  020454                  MOV     #MENERR,-(SP)
        020434  012746  000001                  MOV     #1,-(SP)
        020440  010600                          MOV     SP,R0
        020442  104417                          TRAP    C$PNTF
        020444  062706  000004                  ADD     #4,SP
   2638 020450  000735                          BR      1$              ;RETRY
   2639 020452  000207                  5$:     RTS     PC              ;RETURN TO CALLER
   2640 020454     045     116     045  MENERR: .ASCIZ  '<N><A *** Menu Selection Too Large ***'
   2641 020522     045     116     045  SELASC: .ASCIZ  '<N><T'
   2642 020527     105     156     164  MENASC: .ASCIZ  'Enter Menu Selection: '
   2643                                         .EVEN
   2644 020556  000000                  MENRES:         .WORD   0
   2645                                         .SBTTL  CHKMAN  - CHECK MANUAL INTERVENTION LEGALITY
   2646                                 ;+
   2647                                 ;
   2648                                 ;ROUTINE TO TEST FOR MANUAL INTERVENTION LEGALITY.
   2649                                 ;
   2650                                 ;INPUT:
   2651                                 ;
   2652                                 ;       NONE.
   2653                                 ;
   2654                                 ;OUTPUT:
   2655                                 ;
   2656                                 ;       CARRY   0       MANUAL INTERVENTION NOT ALLOWED
   2657                                 ;               1       MANUAL INTERVENTION IS OK
   2658                                 ;
   2659                                 ;SIDE EFFECTS:
   2660                                 ;
   2661                                 ;       A MESSAGE IS DISPLAYED WARNING THAT TEST IS
   2662                                 ;       NOT EXECUTED IF MANUAL INTERVENTION IS NOT
   2663                                 ;       ALLOWED.
   2664                                 ;
   2665                                 ;-
   2666
   2667 020560                          CHKMAN::
   2668 020560                                  SAVREG                  ;SAVE THE REGISTERS
   2669 020564                                  MANUAL                  ;SEE IF MANUAL INTERVENTION OK
        020564  104450                          TRAP    C$MANI
```

```
020566                                BCOMPLETE 1$           ;BRANCH IF ALLOWED
020566  103411                        BCS     1$
020570                                PRINTF  #NOMAN          ;PRINT THE WARNING MESSAGE
020570  012746  020614                MOV     #NOMAN,-(SP)
020574  012746  000001                MOV     #1,-(SP)
020600  010600                        MOV     SP,R0
020602  104417                        TRAP    C$PNTF
020604  062706  000004                ADD     #4,SP
020610  000241                        CLC                     ;CLEAR CARRY FOR ERROR
020612  000207                1$:     RTS     PC              ;RETURN

020614     045     116     045  NOMAN:  ASCIZ  '%N%A *** Manual Intervention not Allowed   Test Aborted ***'
                                        .even
                                        SBTTL  ENVIRN  - SETUP FREE DIAGNOSTIC SPACE
                                ;
                                ; SUBROUTINE TO SET-UP VARIOUS ENVIRONMENTAL PARAMETERS.
                                ;
020710                          ENVIRN: MEMORY  R0
020710  104431                        TRAP    C$MEM
020712  010037  003116                MOV     R0,FREE         ; GET 1ST FREE ADDRESS...
020716  062737  000002  003116        ADD     #2,FREE
020724  011037  003120                MOV     (R0),FRESIZ     ;...AND WORD COUNT.
020730  162737  000004  003120        SUB     #4,FRESIZ
020736  013702  002012                MOV     L$UNIT,R2       ; GET NUMBER OF UNITS
020742  162737  000007  003120  10$:  SUB     #7,FRESIZ       ; TAKE AWAY 7 WORD  PER UNIT
020750  005302                        DEC     R2
020752  001373                        BNE     10$
020754  013700  003116                MOV     FREE,R0         ;GET FIRST FREE ADDRESS
020760  063700  003120                ADD     FRESIZ,R0       ;POINT TO LAST FREE ADDRESS
020764  162700  000002                SUB     #2,R0           ;BACKUP 1 WORD
020770  010037  003122                MOV     R0,FREEHI       ;STORE LAST FREE ADDRESS
020774  000240                        NOP                     ;*********************************************
020776  012701  177520                MOV     #BDVPCR,R1      ;GET BDV11 PCR ADDRESS
021002  010102                        MOV     R1,R2           ;COPY TO R2
021004  062702  000002                ADD     #2,R2           ;SET THE RANGE
021010  004737  016456                JSR     PC,XNXM         ;SEE IF WE HAVE ONE
021014  103001                        BCC     15$             ;OK TO SET FLAGS
021016  000445                        BR      40$             ;RETURN WITH FLAGS CLEAR
021020  013701  177520        15$:    MOV     BDVPCR,R1       ;SAVE PCR CONTENTS
021024  062701  000001                ADD     #1,R1           ;ADD ONE TO IT
021030  012702  177520                MOV     #BDVPCR,R2      ;GET BDV11 PCR ADDRESS
021034  005212                        INC     (R2)            ;TRY TO WRITE TO IT
021036  013703  177520                MOV     BDVPCR,R3       ;GET RESULTS
021042  020103                        CMP     R1,R3           ;DID IT CHANGE?
021044  001017                        BNE     20$             ;NO, MUST BE 11/23B
021046  005237  003136                INC     T23A            ;SET THE FLAG
021052  042737  170000  002120        BIC     #170000,L$HIME  ;SUPERVISOR COULD BE WRONG
021060  000240                        NOP                     ;BR 40$ FOR RELEASE
021062                                PRINTF  #M8186          ;TELL THE SYSTEM TYPE
021062  012746  005550                MOV     #M8186,-(SP)
021066  012746  000001                MOV     #1,-(SP)
021072  010600                        MOV     SP,R0
021074  104417                        TRAP    C$PNTF
021076  062706  000004                ADD     #4,SP
021102  000413                        BR      40$             ;RETURN
021104  005237  003140        20$:    INC     T23B            ;SET THE FLAG
021110  000240                        NOP                     ;BR 40$ FOR RELEASE
```

```
2715 021112                                    PRINTF  #M8189          ;TELL THE SYSTEM TYPE
     021112  012746  005641                    MOV     #M8189,-(SP)
     021116  012746  000001                    MOV     #1,-(SP)
     021122  010600                            MOV     SP,R0
     021124  104417                            TRAP    C$PNTF
     021126  062706  000004                    ADD     #4,SP
2716 021132  000207                 40$:       RTS     PC              ;RETURN
2717                                           .SBTTL  KTINIT  - SETUP KT11 MEMORY MANAGEMENT REGISTERS
2718                                ;*
2719                                ;
2720                                ;ROUTINE TO INIT KT-11
2721                                ;
2722                                ;-
2723
2724 021134                         KTINIT:
2725 021134  005037  003124                    CLR     KTFLG           ; INIT >28K MEMORY FLAG
2726 021140  005037  003126                    CLR     KTENABLE        ; INIT TEST >28K FLAG
2727 021144  023727  002120  001577            CMP     L$HIME,#1577    ; GOT ENOUGH MEMORY (>28K)?
2728 021152  101444                            BLOS    9$              ; NO.
2729 021154  013700  000004                    MOV     @#ERRVEC,R0     ; SAVE OLD ERR VEC PTR.
2730 021160  012737  021252  000004            MOV     #2$,@#ERRVEC    ; SET ERR VEC PTR.
2731 021166  005737  177572                    TST     @#SR0           ; GOT KT11?
2732 021172  000240                            NOP                     ;  (TRAP IF NO).
2733 021174  013737  002120  003124            MOV     L$HIME,KTFLG    ; YES. SET KT FLAG.
2734 021202  042737  000177  003124            BIC     #177,KTFLG      ;
2735 021210  010037  000004                    MOV     R0,@#ERRVEC     ; RESTORE OLD ERR VEC PTR.
2736 021214  005000                            CLR     R0              ; R0 = AR DATA.
2737 021216  012701  172340                    MOV     #KIPAR0,R1      ; R1 = KI REGS PTR.
2738 021222  012761  077406  177740  1$:       MOV     #77406,-40(R1)  ; SET DESCRIPTOR REG.
2739 021230  010021                            MOV     R0,(R1)+        ; SET KIPAR REG.
2740 021232  062700  000200                    ADD     #200,R0         ; BUMP AR DATA BY "4K".
2741 021236  020027  002000                    CMP     R0,#2000        ; AT "I/O"?
2742 021242  001367                            BNE     1$              ; NO.
2743 021244  012741  177600                    MOV     #177600,-(R1)   ; YES. SET KTPAR7 FOR I/O.
2744 021250  000405                            BR      9$
2745
2746 021252  012716  021260          2$:       MOV     #6$,(SP)        ; SET UP RETURN
2747 021256  000002                            RTI                     ; RTI TO NEXT LOCATION
2748
2749 021260  010037  000004          6$:       MOV     R0,@#ERRVEC     ; RESTORE OLD ERR VEC PTR.
2750
2751 021264  000207                 9$:       RTS     PC
2752                                ;*
2753                                ;       SUBROUTINE TO SET EXTENDED FEATURES SWITCH
2754                                ;
2755                                ;       Requires that SOFINIT and WRTCHR have been done previous to call.
2756                                ;
2757                                ;
2758                                ;INPUTS:
2759                                ;       R5      CURRENT UNIT NUMBER
2760                                ;OUTPUTS:
2761                                ;       The Extended Features Switch is set.
2762                                ;
2763                                ;-
2764
2765 021266                         INVERT::
2766
```

KTINIT - SETUP KT11 MEMORY MANAGEMENT REGISTERS

```
2767 021266  005737  002220                    TST     EXTFEA                  ; IS SWITCH SET?
2768 021272  001020                            BNE     1$                      ; YES,EXIT STAGE RIGHT!(or the next one outa town!)
2769 021274  012737  100206  021340            MOV     #100206,CMDPKT          ; WRT SUB-SYS MEM CMD
2770 021302  012737  021350  021342            MOV     #WSMBK,CMDPKT+2         ; MSG BUF ADDR
2771 021310  012737  000006  021346            MOV     #6,CMDPKT+6             ; BYTE COUNT
2772 021316  012737  100010  021350            MOV     #100010,WSMBK           ; INVERT THE SWITCH
2773 021324  012704  021340                    MOV     #CMDPKT,R4              ; SET CMDPKT INTO R4
2774 021330  004737  010742                    JSR     PC,WRTCHR               ; DO IT
2775 021334  000207                    1$:     RTS     PC                      ; RETURN
2776
2777                                    ;       COMMAND PACKET.
2778
2779         021340                     .       .       <.+3>&177774    ;MUST BE ON MOD 4 BOUNDRY.
2780
2781 021340  000000                    CMDPKT:: 0                      ;1ST WORD IS TSO5 COMMAND.
2782 021342  000000                             0                      ;2ND WORD IS THE BUFFER LOW ADDRESS.
2783 021344  000000                             0                      ;3RD WORD IS THE BUFFER HIGH ADDRESS.
2784 021346  000000                             0                      ;4TH WORD IS THE BYTE/RECORD/FILE COUNT.
2785
2786                                    ;       WRITE SUB-SYSTEM MEMORY CHARACTERISTIC BLOCK.
2787
2788 021350  000000                    WSMBK:: 0                       ;1ST WORD:: SEL 0
2789 021352  000000                             0                      ;2ND WORD:: SEL 2
2790 021354  000000                             0                      ;3RD WORD:: SEL 4
2791                                            .EVEN
2792                                    ;+
2793                                    ;       SUBROUTINE TO CHECK WETHER OR NOT WE'LL TEST NXM
2794                                    ;
2795                                    ;
2796                                    ;INPUTS:
2797                                    ;OUTPUTS:
2798                                    ;       The NXMFLG is set if we can test.
2799                                    ;       The NXMLO and NXMHI addresses are setup.
2800                                    ;-
2801
2802 021356                             MEMCK::
2803
2804 021356                                     SAVREG                  ;SAVE THE REGISTERS
2805 021362  005037  003130                     CLR     NXMFLG          ;CLEAR THE FLAG
2806 021366  005037  003132                     CLR     NXMLO           ;CLEAR THE TEST ADDRESS LO
2807 021372  005037  003134                     CLR     NXMHI           ;CLEAR THE TEST ADDRESS HI
2808 021376  005737  003140                     TST     T23B            ;IS IT A 11/23B?
2809 021402  001407                            BEQ     1$              ;NO
2810 021404  023727  002120  007777             CMP     L$HIME,#7777    ; GREATER THAN 128K
2811 021412  103406                            BLO     2$              ; NO
2812 021414  004737  021532                     JSR     PC,NXMTST       ;SETUP THE ADDRESS
2813 021420  000427                            BR      13$             ;SET THE FLAG AND EXIT
2814 021422  005737  003136             1$:     TST     T23A            ;IS IT A 11/23A?
2815 021426  001413                            BEQ     4$              ;NO
2816 021430  023727  002120  005777     2$:     CMP     L$HIME,#5777    ;GREATER THAN 96K
2817 021436  101023                            BHI     14$             ;YES,23A/23B WITH 128K MEMORY
2818 021440  023727  002120  003777             CMP     L$HIME,#3777    ;GREATER THAN 64K BUT LESS THAN 92K?
2819 021446  103403                            BLO     4$              ;NO, CHECK 24K
2820 021450  004737  021532                     JSR     PC,NXMTST       ;SETUP THE ADDRESS
2821 021454  000411                            BR      13$             ;SET THE FLAG AND EXIT
2822 021456  023727  002120  001577     4$:     CMP     L$HIME,#1577    ;GREATER THAN 24K BUT LESS THAN 64K?
2823 021464  103410                            BLO     14$             ;NO, TELL THEM AND EXIT WITH FLAG CLEAR
```

KTINIT - SETUP KT11 MEMORY MANAGEMENT REGISTERS

```
2824 021466  004737  021532                JSR     PC,NXMTST               ;SETUP THE ADDRESS
2825 021472  062737  000077  003134        ADD     #77,NXMHI               ;FOOL THE 11/02 & 11/03
2826 021500  005237  003130        13$:    INC     NXMFLG                  ;SET THE FLAG
2827 021504  000411                        BR      15$                     ;EXIT
2828 021506  000410                14$:    BR      15$                     ;NOP FOR PRINTOUT
2829 021510                                PRINTF  #NOMEM                  ;TELL THEM & EXIT ***NO PRINT*****
     021510  012746  005454                MOV     #NOMEM,-(SP)
     021514  012746  000001                MOV     #1,-(SP)
     021520  010600                        MOV     SP,R0
     021522  104417                        TRAP    C$PNTF
     021524  062706  000004                ADD     #4,SP
2830 021530  000207                15$:    RTS     PC                      ;RETURN
2831
2832                                ;*
2833                                ;       SUBROUTINE TO SETUP THE NXM ADDRESS FOR TESTING
2834                                ;
2835                                ;OUTPUTS:NXMLO,NXMHI            ;SETUP WITH NXM ADDRESS
2836                                ;
2837                                ;-
2838
2839 021532  013701  002120        NXMTST: MOV     L$HIME,R1               ;GET TOP OF MEMORY
2840 021536  062701  000200                ADD     #200,R1                 ;MAKE IT I/O BLOCK OR OTHER NXM
2841 021542  042701  000177                BIC     #177,R1
2842 021546  010102                        MOV     R1,R2                   ;RESAVE RESULTS
2843         000006                        .REPT   6
2844                                       ASL     R1                      ;PUT IN PLACE FOR XFER
2845                                       .ENDR
2846 021564  010137  003132                MOV     R1,NXMLO                ;SAVE TEST ADDRESS LOW
2847         000012                        .REPT   10.
2848                                       ASR     R2                      ;PUT IN PLACE FOR XFER
2849                                       .ENDR
2850 021614  042702  177700                BIC     #177700,R2              ;DON'T WANT ILA!
2851 021620  010237  003134                MOV     R2,NXMHI                ;SAVE TEST ADDRESS HIGH
2852 021624  000207                        RTS     PC                      ;RETURN
2853
2854
2855
2856 021626                                ENDMOD
```

```
                                        .TITLE  TSV4 - MISCELLANEOUS SECTIONS
                                        BGNMOD  TSV4
021626                          TSV4::
021626
```

PROTECTION TABLE

```
                                                .SBTTL  PROTECTION TABLE
                                                BGNPROT
                                        L$PROT::
                                                .WORD   -1, -1, -1, -1          ;NO DEVICE PROTECTION REQUIRED.
                                                ENDPROT
```

INITIALIZE SECTION

```
                                        .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
                                L$INIT::

                                        SETVEC  #140,#170000,#340       ;ODT ROM ADDRESS                ;JB REV A-0
021636  012746  000340                  MOV     #340,-(SP)
021642  012746  170000                  MOV     #170000,-(SP)
021646  012746  000140                  MOV     #140,-(SP)
021652  012746  000003                  MOV     #3,-(SP)
021656  104437                          TRAP    C$SVEC
021660  062706  000010                  ADD     #10,SP

021664  005037  002220          40$:    CLR     EXTFEA
021670  005037  003130                  CLR     NXMFLG
021674  012737  006354  002172          MOV     #EPRT1,EPRTSW           ;SET UP PRIMARY MESSAGE FOR REPLACEMENT
021702  005037  003146                  CLR     SIFLAG                  ;CLEAR "SOFT INTT" FLAG
021706  005037  003126                  CLR     KTENABLE                ;CLEAR TEST ABOVE 28K FLAG
021712  005037  002274                  CLR     RAMSIZ                  ;CLEAR RAM SIZE FOR RAMERR ROUTINE
021716                                  READEF  #EF.CONTINUE
021716  012700  000036                  MOV     #EF.CONTINUE,R0
021722  104447                          TRAP    C$REFG
021724                                  BNCOMPLETE 1$
021724  103023                          BCC     1$
021726  023737  002174  002012          CMP     UNITN,L$UNIT            ;UNIT IN RANGE?
021734  103070                          BHIS    4$                      ;BR IF NO.
021736  005737  003104                  TST     DUFLG                   ;DROPPED UNIT?
021742  100472                          BMI     NXTU                    ;BR IF YES
021744  013701  002174                  MOV     UNITN,R1
021750  006301                          ASL     R1
021752  005761  003170                  TST     ERTABL(R1)
021756  001516                          BEQ     SETU
021760  032761  040000  003170          BIT     #BIT14,ERTABL(R1)       ;DROPPED?
021766  001060                          BNE     NXTU
021770                                  EXIT    INIT                    ;DO NOTHING IF "CONTINUE".
021770  104432                          TRAP    C$EXIT
021772  000416                          .WORD   L10030-.
021774                          1$:     READEF  #EF.NEW
021774  012700  000035                  MOV     #EF.NEW,R0
022000  104447                          TRAP    C$REFG
022002                                  BNCOMPLETE NXTU                 ;TAKE NEXT UNIT IF NOT NEW PASS.
022002  103052                          BCC     NXTU
022004                                  READEF  #EF.START
022004  012700  000040                  MOV     #EF.START,R0
022010  104447                          TRAP    C$REFG
022012                                  BCOMPLETE 2$
```

INITIALIZE SECTION

```
                022012  103404                          BCS     2$
     64         022014                                  READEF  @EF,RESTART
                022014  012700  000037                  MOV     @EF,RESTART,R0
                022020  104447                          TRAP    C$REFG
     65         022022                                  BNCOMPLETE 31$
                022022  103031                          BCC     31$
     66         022024                          2$:                             ;1ST PASS, BUS-INIT...
     67         022024                                  BRESET                  ;BUS RESET.
                022024  104433                          TRAP    C$RESET
     68         022026  005037  002206                  CLR     TSTCNT          ;NUMBER OF TESTS RUN IN PASS
     69         022032  005037  002214                  CLR     FATFLG          ;CLEAR FATAL ERROR COUNT
     70         022036  005037  003136                  CLR     T23A            ;CLEAR 11/23A FLAG
     71         022042  005037  003140                  CLR     T23B            ;CLEAR 11/23B FLAG
     72                                          ;       MOV     @340,-(SP)
     73                                          ;       MOV     @20$,-(SP)      ;RETURN TO DEBUGGER
     74                                          ;       JMP     0.ODT       ;;@@ENTER THE DEBUGGER
     75         022046  005037  003372                  CLR     SKIPT       ;CLEAR THE SUBTEST "SKIPPER"
     76         022052                          20$:
     77         022052  012737  177777  002176          MOV     @-1,QVP         ;...QUICK VERIFY...
     78         022060  004737  020710                  JSR     PC,ENVIRN       ;SET ENVIRONMENT.
     79         022064  004737  021134                  JSR     PC,KTINIT       ;INITIALIZE KT MEMORY MANAGEMENT
     80         022070  012700  003170                  MOV     @ERTABL,R0
     81         022074  005020                  30$:    CLR     (R0)+           ;CLEAR THE ERROR TABLE
     82         022076  020027  003370                  CMP     R0,@ERTABE
     83         022102  103774                          BLO     30$
     84         022104  000404                          BR      4$
     85         022106  005037  002176          31$:    CLR     QVP
     86         022112  000137  022162                  JMP     PASRPT          ;GO REPORT THE STATUS
     87
     88         022116                          4$:
     89         022116  012737  177777  002174  NEWPAS: MOV     @-1,UNITN       ;INIT UNIT NUMBER...
     90         022124  005037  002212                  CLR     DEVCNT          ;CLEAR COUNT OF DEVICES RUNNING
     91         022130                          NXTU:   BREAK
                022130  104422                          TRAP    C$BRK
     92         022132  005237  002174                  INC     UNITN           ;...AND SET NEXT UNIT NUMBER.
     93         022136  023737  002174  002012          CMP     UNITN,L$UNIT
     94         022144  103423                          BLO     SETU
     95         022146  012737  177777  003104          MOV     @-1,DUFLG
     96         022154  000401                          BR      11$
     97         022156                                  DOCLN                   ;ABORT, NO MORE UNITS.
                022156  104444                          TRAP    C$DCLN
     98         022160  000240                  11$:    NOP
     99         022162                          PASRPT:
    100         022162  023727  002012  000001          CMP     L$UNIT,@1       ;HOW MANY UNITS SELECTED?
    101         022170  101752                          BLOS    NEWPAS          ;BR IF ONLY 1
    102         022172  005737  002212                  TST     DEVCNT          ;ARE ANY STILL RUNNING?
    103         022176  001747                          BEQ     NEWPAS          ;BR IF NO
    104         022200                                  RFLAGS  R0
                022200  104421                          TRAP    C$RFLA
    105         022202  032700  000100                  BIT     @ISR,R0         ;SHOULD WE PRINT STATISTICS
    106         022206  001343                          BNE     NEWPAS          ;BR IF NO
    107
    108         022210                                  DORPT
                022210  104424                          TRAP    C$DRPT
    109         022212  000741                          BR      NEWPAS
    110         022214                          10$:
    111
```

INITIALIZE SECTION

```
112 022214                          SETU:   GPHARD  UNITN,R0              ;GET UNIT N P-TABLE POINTER.
    022214  013700  002174                  MOV     UNITN,R0
    022220  104442                          TRAP    C$GPHRD
113 022222                                  BNCOMPLETE NXTU                ;BR IF UNIT NOT AVAILABLE.
    022222  103342                          BCC     NXTU
114 022224  005037  003104                  CLR     DUFLG                  ;CLEAR "DROPPED" FLAG.
115 022230  005237  002212                  INC     DEVCNT
116 022234  012001                          MOV     (R0)+,R1               ;GET 1ST REGISTER ADDRESS.
117 022236  010137  002200                  MOV     R1,CSRADDR             ;ADDRESS OF REGISTERS OF UNIT UNDER TEST
118
119 022242  012001                          MOV     (R0)+,R1               ;GET VECTOR ADDRESS.
120                                         ;MOV    (R0),R2                ;GET INTERRUPT PRIORITY
121                                         ;MOV    R2,IPRI                ;SET INTERRUPT PRIORITY.
122 022244  010137  002202                  MOV     R1,IVEC                ;SET INTERRUPT VECTOR POINTER...
123 022250  012721  016276                  MOV     #INTR,(R1)+            ;...VECTOR...
124 022254  013721  002204                  MOV     IPRI,(R1)+             ;...AND PRIORITY.
125
126 022260                          1$:
127                                 ;       TST     QVP             ;1ST PASS ??
128                                 ;       BEQ     5$              ;NO, SKIP THE PASS 1 STUFF.
129
130                                 ;
131                                 ;1ST PASS, CHECK THAT DEVICE ADDRESSES ARE VALID, AND
132                                 ;THAT THE DISPLAY STATUS IS PROPERLY INITIALIZED.
133                                 ;
134 022260  013701  002174                  MOV     UNITN,R1
135 022264  006301                          ASL     R1
136 022266  052761  100000  003170          BIS     #BIT15,ERTABL(R1)      ;SAY DEVICE RUNNING
137 022274  005037  005766                  CLR     EXTA                   ;CLEAR ERROR EXTENSION FLAG.
138 022300  023727  002012  000001          CMP     L$UNIT,#1              ;ARE WE TESTING MULTIPLE UNITS?
139 022306  101416                          BLOS    10$                    ;BR IF NO.
140 022310                                  RFLAGS  R0                     ;YES -- GET OPERATOR FLAGS.
    022310  104421                          TRAP    C$RFLA
141 022312  032700  001000                  BIT     #PNT,R0                ;SHOULD WE PRINT UNIT #?
142 022316  001412                          BEQ     10$                    ;BR IF NOT.
143 022320                                  PRINTF  #PUNIT,UNITN           ;PRINT THE UNIT #
    022320  013746  002174                  MOV     UNITN,-(SP)
    022324  012746  022412                  MOV     #PUNIT,-(SP)
    022330  012746  000002                  MOV     #2,-(SP)
    022334  010600                          MOV     SP,R0
    022336  104417                          TRAP    C$PNTF
    022340  062706  000006                  ADD     #6,SP
144 022344                          10$:
145 022344  005037  003106                  CLR     NODEV
146 022350  013701  002200                  MOV     CSRADDR,R1             ;ADDRESS OF FIRST REGISTER
147 022354  010102                          MOV     R1,R2                  ;START OF REGISTERS
148 022356  062702  000002                  ADD     #TSSR,R2               ;ADDRESS OF TSSR REGISTER
149 022362  004737  016456                  JSR     PC,XNXM                ;TEST BOTH CONTROLLER REGISTERS...
150 022366  103005                          BCC     2$                     ;...AND BR IF ALL OK.
151 022370  010137  003106                  MOV     R1,NODEV               ;FLAG DEVICE AS NON-EXISTENT
152 022374  012737  177777  003104          MOV     #-1,DUFLG              ;DROP THIS UNIT.
153 022402                          2$:
154                                 ;
155                                 ;FINALLY, SET CPU PRIORITY AND WE'RE DONE.
156                                 ;
157 022402                          5$:     SETPRI  #PRI00                 ;ENABLE INTERRUPTS.
    022402  012700  000000                  MOV     #PRI00,R0
```

SEQ 0088

INITIALIZE SECTION

```
     022406  104441                          TRAP    C$SPRI
158  022410                                  ENDINIT
     022410                          L10030:
     022410  104411                          TRAP    C$INIT
159
160  022412     045     116     045  PUNIT:  .ASCIZ  /%N%N%A***** TESTING UNIT %D2%A *****/
161                                         .EVEN
```

ADD AND DROP UNITS SECTIONS

```
                                        .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.
                                ;--
022460                                  BGNAU
022460                          L$AU::
022460  010001                          MOV     R0,R1                   ; GET UNIT TO BE ADDED (R0)
022462  006301                          ASL     R1                      ; MAKE IT A WORD INDEX
022464  052761  100000  003170          BIS     #100000,ERTABL(R1)      ; SET THE "ACTIVE" BIT
022472  042761  040000  003170          BIC     #40000,ERTABL(R1)       ; CLEAR THE "DROPPED" BIT
022500                                  PRINTF  #1$,R0
022500  010046                          MOV     R0,-(SP)
022502  012746  022526                  MOV     #1$,-(SP)
022506  012746  000002                  MOV     #2,-(SP)
022512  010600                          MOV     SP,R0
022514  104417                          TRAP    C$PNTF
022516  062706  000006                  ADD     #6,SP
022522                                  EXIT    AU
022522  000167                          .WORD   J$JMP
022524  000026                          .WORD   L10031-2-.
022526     045     116     045  1$:     .ASCIZ  /%N%A  UNIT %D%A ADDED/
                                        .EVEN

022554                                  ENDAU           ; UNUSED.
022554                          L10031:
022554  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.

022556                                  BGNDU
022556                          L$DU::
022556  012737  177777  003104          MOV     #-1,DUFLG
022564  010001                          MOV     R0,R1
022566  006301                          ASL     R1
022570  052761  140000  003170          BIS     #140000,ERTABL(R1)      ; SAY DROPPED
022576  000240  000240  000240          240,240,240                     ; ?????????
022604                                  PRINTF  #1$,R0
022604  010046                          MOV     R0,-(SP)
022606  012746  022632                  MOV     #1$,-(SP)
022612  012746  000002                  MOV     #2,-(SP)
022616  010600                          MOV     SP,R0
022620  104417                          TRAP    C$PNTF
022622  062706  000006                  ADD     #6,SP
022626                                  EXIT    DU
022626  000167                          .WORD   J$JMP
022630  000030                          .WORD   L10032-2-.
```

ADD AND DROP UNITS SECTIONS

```
                                045  1$:     .ASCIZ  /%N%A  UNIT %D%A DROPPED/
                                             .EVEN
                                             ENDDU
                                L10032:
022662  104453                               TRAP    C$DU
                                ;--
                                ; AUTO-DROP CODE SECTION.
                                ;--
                                             BGNAUTO
                                L$AUTO::
022664  013705  002200                       MOV     CSRADDR,R5          ;POINT TO DEVICE REGISTER
022670  012703  000550                       MOV     #360.,R3            ;ENOUGH TIME FOR 2400' REEL TO REWIND
022674  004737  016330               10$:    JSR     PC,WAITF            ;WAIT FOR SSR TO SET
022700  103420                               BCS     20$                 ;LEAVE WHEN SSR IS SET
022702                                       DELAY   250.                ;WAIT FOR .25 SECONDS
022702  012727  000372                       MOV     #250.,(PC)+
022706  000000                               .WORD   0
022710  013727  002116                       MOV     L$DLY,(PC)+
022714  000000                               .WORD   0
022716  005367  177772                       DEC     -6(PC)
022722  001375                               BNE     .-4
022724  005367  177756                       DEC     -22(PC)
022730  001367                               BNE     .-20
022732  005303                               DEC     R3                  ;BUMP COUNTER DOWN
022734  001357                               BNE     10$                 ;KEEP GOING
022736  004737  017262                       JSR     PC,CKDROP           ;TRY AND DROP UNIT
022742                          20$:
                                             ENDAUTO                     ; UNUSED.
022742
022742  104461                  L10033:      TRAP    C$AUTO
```

CLEAN-UP AND REPORT CODING SECTIONS

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

                                ;++
                                ; THE CLEANUP CODING SECTION CONTAINS THE CODING THAT IS
                                ; EXECUTED AT THE END OF EACH PASS (OR SUB PASS).
                                ; USE TO RETURN DEVICE UNDER TEST TO A NEUTRAL STATE.
                                ;--
022744                                  BGNCLN
022744                          L$CLEAN::
022744  013705  002200                  MOV     CSRADDR,R5              ;POINT TO DEVICE REGISTER
022750  005737  003104                  TST     DUFLG           ;"DROPPED" FLAG IS SET ON...
022754  100405                          BMI     1$              ;...AND GROSS CONTROLLER FAULT...
                                                                ;...DON'T TRY TO XCT CLEANUP CODE.

022756  012765  000000  000002          MOV     #0,TSSR(R5)     ;DO SOFT INIT
022764  004737  016330                  JSR     PC,WAITF
022770                          1$:
022770                          2$:     ENDCLN
022770                          L10034:
022770  104412                          TRAP    C$CLEAN

                                ;++
                                ; THE REPORT CODING SECTION CONTAINS THE
                                ; "PRINTS" CALLS THAT GENERATE STATISTICAL REPORTS.
                                ;--
022772                                  BGNRPT
022772                          L$RPT::
022772                                  PRINTS  #DEVSUM
022772  012746  023234                  MOV     #DEVSUM,-(SP)
022776  012746  000001                  MOV     #1,-(SP)
023002  010600                          MOV     SP,R0
023004  104416                          TRAP    C$PNTS
023006  062706  000004                  ADD     #4,SP
023012  010246                          MOV     R2,-(SP)
023014  010346                          MOV     R3,-(SP)
023016  010446                          MOV     R4,-(SP)
023020  012704  003170                  MOV     #ERTABL,R4      ; GET START OF ERROR TABLE.
023024  005003                          CLR     R3              ; CLEAR UNIT NUMBER
023026  011402                  1$:     MOV     (R4),R2         ; GET ERROR TABLE ENTRY & TEST IT.
023030  001467                          BEQ     4$              ; ZERO IF UNIT NOT RUN
023032  100066                          BPL     4$
023034  032702  040000                  BIT     #BIT14,R2       ; WAS UNIT DROPPED?
023040  001015                          BNE     2$              ; BR IF YES
023042  042702  170000                  BIC     #^C7777,R2      ; GET ERROR COUNT FIELD
023046                                  PRINTS  #DEVONL,R3,R2   ; PRINT
023046  010246                          MOV     R2,-(SP)
023050  010346                          MOV     R3,-(SP)
023052  012746  023271                  MOV     #DEVONL,-(SP)
023056  012746  000003                  MOV     #3,-(SP)
023062  010600                          MOV     SP,R0
023064  104416                          TRAP    C$PNTS
023066  062706  000010                  ADD     #10,SP
023072  000446                          BR      4$
023074  020227  160000          2$:     CMP     R2,#160000      ; WAS UNIT NON-EXISTENT?
023100  001012                          BNE     3$              ; BR IF NO
023102                                  PRINTS  #DEVNXR,R3
023102  010346                          MOV     R3,-(SP)
023104  012746  023341                  MOV     #DEVNXR,-(SP)
```

CLEAN-UP AND REPORT CODING SECTIONS SEQ 0092

```
        023110  012746  000002                  MOV     #2,-(SP)
        023114  010600                          MOV     SP,R0
        023116  104416                          TRAP    C$PNTS
        023120  062706  000006                  ADD     #6,SP
257     023124  000431                          BR      4$
258     023126  020227  160001          3$:     CMP     R2,#160001      ; WAS UNIT NOT READY AT STARTUP?
259     023132  001012                          BNE     30$             ; BR IF NO.
260     023134                                  PRINTS  #DEVNRD,R3
        023134  010346                          MOV     R3,-(SP)
        023136  012746  023423                  MOV     #DEVNRD,-(SP)
        023142  012746  000002                  MOV     #2,-(SP)
        023146  010600                          MOV     SP,R0
        023150  104416                          TRAP    C$PNTS
        023152  062706  000006                  ADD     #6,SP
261     023156  000414                          BR      4$
262     023160  042702  170000          30$:    BIC     #^C7777,R2
263     023164                                  PRINTS  #DEVDRO,R3,R2
        023164  010246                          MOV     R2,-(SP)
        023166  010346                          MOV     R3,-(SP)
        023170  012746  023504                  MOV     #DEVDRO,-(SP)
        023174  012746  000003                  MOV     #3,-(SP)
        023200  010600                          MOV     SP,R0
        023202  104416                          TRAP    C$PNTS
        023204  062706  000010                  ADD     #10,SP
264     023210  062704  000002          4$:     ADD     #2,R4
265     023214  005203                          INC     R3
266     023216  020427  003370                  CMP     R4,#ERTABE
267     023222  103701                          BLO     1$
268     023224  012604                          MOV     (SP)+,R4
269     023226  012603                          MOV     (SP)+,R3
270     023230  012602                          MOV     (SP)+,R2
271     023232                                  ENDRPT          ; UNUSED.
        023232                          L10035:
        023232  104425                          TRAP    C$RPT
272
273
274     023234      045     116     045 DEVSUM: .ASCIZ  /%N%ADEVICE STATUS SUMMARY:%N/
275     023271      045     101     040 DEVONL: .ASCIZ  /%A  UNIT %D3%A   ONLINE,  ERRORS = %D%N/
276     023341      045     101     040 DEVNXR: .ASCIZ  /%A  UNIT %D3%A   DROPPED, NON-EXISTENT REGISTER%N/
277     023423      045     101     040 DEVNRD: .ASCIZ  /%A  UNIT %D3%A   DROPPED, NOT READY AT STARTUP%N/
278     023504      045     101     040 DEVDRO: .ASCIZ  /%A  UNIT %D3%A   DROPPED, ERRORS = %D%N/
279                                     .EVEN
280
281     023554                          ENDMOD
282
283
```

CLEAN-UP AND REPORT CODING SECTIONS

```
                                        .TITLE  TEST 1 - HARDWARE TEST 1-8 TESTS
                                        BGNMOD  TSV7B
023554                          TSV7B::
023554
```

TEST 1: WRITE TAPE MARK RETRY

```
                                        .SBTTL  TEST  1: WRITE TAPE MARK RETRY
                                ;+
                                ;
                                ;THIS TEST VERIFIES PROPER OPERATION OF THE WRITE TAPE MARK RETRY COMMAND (SPACE
                                ;REVERSE, ERASE, WRITE TAPE MARK). SUBTESTS ARE AS FOLLOWS:
                                ;
                                ;
                                ;THE TEST CONSISTS OF THE FOLLOWING 4 SUBTESTS
                                ;
                                ;
                                ;
                                ;-
023554                                  BGNTST
023554                                                                          T1::
023554  012737  006354  002172          MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
023562  012700  032147                  MOV     #TST29ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
023566  004737  016570                  JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
023572  012737  000005  002210          MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
023600  005037  026524                  CLR     T29CNT                  ;CLEAR TAPE RECORD COUNTER
023604                          T29LOOP:
                                ;+
                                ;
                                ;TEST 1, SUBTEST 1
                                ;
                                ;VERIFIES THAT A WRITE TAPE MARK RETRY COMMAND ISSUED WHILE THE
                                ;TAPE IS POSITIONED AT BOT CAUSES FUNCTION REJECT TERMINATION, WITH THE
                                ;NON-EXECUTABLE FUNCTION (NEF) ERROR BIT SET.
                                ;
                                ;
                                ;
                                ;-
023604                                  BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
023604                                                                          T1.1:
023604  104402                                                                  TRAP    C$BSUB
023606  004737  032176                  JSR     PC,T29REST              ;SET COMMAND PACKET
023612  004737  032270                  JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
023616  004737  032332                  JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
023622  012737  023420  026530          MOV     #10000.,T29DLY          ;SET UP DELAY ROUTINE
023630  004737  016054          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
023634  103426                          BCS     20$                     ;BR IF INIT WAS OK
023636                                  DELAY   250                     ;DELAY ABOUT .25 SECONDS
023636  012727  000250                                                          MOV     #250.,(PC)+
023642  000000                                                                  .WORD   0
023644  013727  002116                                                          MOV     L$DLY,(PC)+
023650  000000                                                                  .WORD   0
023652  005367  177772                                                          DEC     -6(PC)
023656  001375                                                                  BNE     .-4
023660  005367  177756                                                          DEC     -22(PC)
023664  001367                                                                  BNE     .-20
023666  005337  026530                  DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
023672  001356                          BNE     10$                     ;BR, IF MORE DELAY TIME LEFT
023674  005237  002214                  INC     FATFLG                          ;ERROR COUNT
023700  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
023702                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
023702  104455                                                                  TRAP    C$ERDF
023704  000145                                                                  .WORD   101
023706  003646                                                                  .WORD   SFIERR
```

```
    023710  012114                                                                      .WORD   SFIMSG
    023712  013737  002174  026370  20$:    MOV     UNITN,T29DSW          ;SET UP UNIT NUMBER

    023720  012704  026350                  MOV     #T29PACKET,R4         ;SUBROUTINE NEEDS PACKET ADDRESS
    023724  004737  010742                  JSR     PC,WRTCHR             ;ISSUE WRITE CHARACTERISTICS
    023730  103407                          BCS     25$                   ;BR. IF COMMAND ISSUED OK
    023732  005237  002214                  INC     FATFLG                        ;ERROR COUNT
    023736  010001                          MOV     R0,R1                 ;SAVE CONTENTS OF TSSR
    023740                                  ERRHRD  ERRNO,WRTMSG,SFIMSG   ;WRITE CHARACTERISTISC FAILED
    023740  104456                                                                      TRAP    C$ERHRD
    023742  000146                                                                      .WORD   102
    023744  005052                                                                      .WORD   WRTMSG
    023746  012114                                                                      .WORD   SFIMSG
    023750                          25$:    CKLOOP                        ;LOOP IF SELECTED
    023750  104406                                                                      TRAP    C$CLP1
    023752  016501  000002                  MOV     TSSR(R5),R1           ;GET THE TSSR
    023756  010102                          MOV     R1,R2                 ;SET UP EXPECTED
    023760  042702  000100                  BIC     #OFL,R2               ;OFF LINE SHOULD NOT BE SET
    023764  020102                          CMP     R1,R2                 ;THEY SHOULD BE EQUAL
    023766  001406                          BEQ     26$                   ;BR. IF OFL IS NOT SET
    023770                                  ERRDF   ERRNO,T29OFL,EXPREC   ;DRIVE IS OFF LINE
    023770  104455                                                                      TRAP    C$ERDF
    023772  000147                                                                      .WORD   103
    023774  026532                                                                      .WORD   T29OFL
    023776  015554                                                                      .WORD   EXPREC
    024000  004737  017262                  JSR     PC,CKDROP             ;TRY AND DROP DRIVE
    024004  004737  011074          26$:    JSR     PC,REWIND             ;CALL TAPE REWIND COMMAND
    024010  016501  000002                  MOV     TSSR(R5),R1           ;GET TSSR
    024014  012702  000200                  MOV     #SSR,R2               ;SET UP EXPECTED TSSR
    024020  103407                          BCS     30$                   ;BR. IF NO PROBLEM
    024022  010004                          MOV     R0,R4                 ;PACKET ADDRESS SET UP
    024024  005237  002214                  INC     FATFLG                        ;ERROR COUNT
    024030                                  ERRHRD  ERRNO,T29RWN,PKTSSR   ;REWIND NOT ACCEPTED
    024030  104456                                                                      TRAP    C$ERHRD
    024032  000150                                                                      .WORD   104
    024034  030335                                                                      .WORD   T29RWN
    024036  012126                                                                      .WORD   PKTSSR
    024040                          30$:    CKLOOP                        ;LOOP IF SELECTED
    024040  104406                                                                      TRAP    C$CLP1
    024042  013701  026400                  MOV     T29BFR+6,R1           ;PICK UP XSTO
    024046  010102                          MOV     R1,R2                 ;SET UP EXPECTED
    024050  052702  000002                  BIS     #BIT1,R2              ;SET BOT BIT IN EXPECTED
    024054  020102                          CMP     R1,R2                 ;DOES EXP = REC'D
    024056  001406                          BEQ     40$                   ;BR. IF EQUAL (OK)
    024060  005237  002214                  INC     FATFLG                        ;ERROR COUNT
    024064                                  ERRHRD  ERRNO,T29BOT,EXPREC   ;TAPE NOT AT BOT AFTER REWIND
    024064  104456                                                                      TRAP    C$ERHRD
    024066  000151                                                                      .WORD   105
    024070  030026                                                                      .WORD   T29BOT
    024072  015554                                                                      .WORD   EXPREC
    024074                          40$:    CKLOOP                        ;LOOP IF SELECTED
    024074  104406                                                                      TRAP    C$CLP1
    024076  013737  003116  026472          MOV     FREE,T29RB            ;ADDRESS OF READ BUFFER
    024104  012737  141011  026470          MOV     #141011,T29PK3        ;WRITE TAPE MARK RETRY,CVC=1,ACK COMMAND
    024112  012704  026470                  MOV     #T29PK3,R4            ;SET UP R4 WITH PACKET ADDRESS
    024116  010465  000000                  MOV     R4,TSDB(R5)           ;ISSUE COMMAND
    024122  004737  016330                  JSR     PC,WAITF              ;WAIT FOR SSR TO SET
```

TEST 1: WRITE TAPE MARK RETRY SEQ 0096

```
    125 024126  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
    126 024132  012702  100206                  MOV     #SSR!SC!BIT1!BIT2,R2    ;SET UP EXPECTED
    127 024136  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
    128 024140  001406                          BEQ     75$                     ;BR, IF OK
    129 024142  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    133 024146                                  ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
        024146  104456                                                                  TRAP    C$ERHRD
        024150  000152                                                                  .WORD   106
        024152  027612                                                                  .WORD   T29WDE
        024154  012126                                                                  .WORD   PKTSSR
    134 024156                          75$:    CKLOOP                          ;LOOP IF SELECTED
        024156  104406                                                                  TRAP    C$CLP1
    135 024160  013701  026400                  MOV     T29BFR+6,R1             ;GET XSTO STATUS WORD
    136 024164  010102                          MOV     R1,R2                   ;SET UP EXPECTED
    137 024166  052702  002000                  BIS     #BIT10,R2               ;SET THE NEF BIT
    138 024172  020102                          CMP     R1 R2                   ;ARE THEY EQUAL
    139 024174  001406                          BEQ     170$                    ;BR, IF EQUAL (GOOD)
    140 024176  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    144 024202                                  ERRHRD  ERRNO,T29NEF,EXPREC     ;NEF SHOULD BE SET
        024202  104456                                                                  TRAP    C$ERHRD
        024204  000153                                                                  .WORD   107
        024206  026660                                                                  .WORD   T29NEF
        024210  015554                                                                  .WORD   EXPREC
    145 024212                          170$:
    146 024212  005103                          COM     R3                      ;RESET THE SWITCH
    147 024214  001273                          BNE     26$                     ;BR, IF FIRST TIME THROUGH HERE
    148 024216                                  ENDSUB
        024216                                                                  L10037:
        024216  104403                                                                  TRAP    C$ESUB
    149 024220  023727  002214  000017          CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
    150 024226  103402                          BLO     999$                    ;BR, IF LESS THAN 25
    151 024230  004737  017262                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
    152 024234                          999$:
    153                                 ;+
    154                                 ;
    155                                 ;TEST 1, SUBTEST 2
    156                                 ;
    157                                 ;VERIFIES THAT A WRITE TAPE MARK RETRY COMMAND ISSUED WHILE THE TAPE
    158                                 ;IS POSITIONED BEFORE THE FIRST RECORD ON TAPE (BUT NOT AT BOT) RESULTS IN
    159                                 ;TAPE STATUS ALERT TERMINATION, WITH THE REVERSE INTO BOT (RIB) STATUS BIT
    160                                 ;SET.
    161                                 ;
    162                                 ;
    163                                 ;
    164                                 ;-
    165 024234                                  BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
        024234                                                                          T1.2:
        024234  104402                                                                  TRAP    C$BSUB
    166 024236  004737  032176                  JSR     PC,T29REST              ;SET COMMAND PACKET
    167 024242  004737  032270                  JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
    168 024246  004737  032332                  JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
    169 024252  004737  016054                  JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
    170 024256  103407                          BCS     20$                     ;BR IF INIT WAS OK
    171 024260  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    175 024264  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
    176 024266                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
        024266  104455                                                                  TRAP    C$ERDF
```

TEST 1: WRITE TAPE MARK RETRY

```
                024270  000154                                                          .WORD   108
                024272  003646                                                          .WORD   SFIERR
                024274  012114                                                          .WORD   SFIMSG
    177 024276  013737  002174  026370  20$:    MOV     UNITN,T29DSW            ;SET UP UNIT NUMBER
    178
    179 024304  012704  026350                  MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
    180 024310  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
    181 024314  103407                          BCS     25$                     ;BR, IF COMMAND ISSUED OK
    182 024316  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    186 024322  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
    187 024324                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
                024324  104456                                                          TRAP    C$ERHRD
                024326  000155                                                          .WORD   109
                024330  005052                                                          .WORD   WRTMSG
                024332  012114                                                          .WORD   SFIMSG
    188 024334                          25$:    CKLOOP                          ;LOOP IF SELECTED
                024334  104406                                                          TRAP    C$CLP1
    189 024336  004737  011074          26$:    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
    190 024342  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR
    191 024346  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
    192 024352  103407                          BCS     30$                     ;BR, IF NO PROBLEM
    193 024354  010004                          MOV     R0,R4                   ;PACKET ADDRESS SET UP
    194 024356  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    198 024362                                  ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
                024362  104456                                                          TRAP    C$ERHRD
                024364  000156                                                          .WORD   110
                024366  030335                                                          .WORD   T29RWN
                024370  012126                                                          .WORD   PKTSSR
    199 024372                          30$:    CKLOOP                          ;LOOP IF SELECTED
                024372  104406                                                          TRAP    C$CLP1
    200 024374  013701  026400                  MOV     T29BFR+6,R1             ;PICK UP XSTO
    201 024400  010102                          MOV     R1,R2                   ;SET UP EXPECTED
    202 024402  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
    203 024406  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
    204 024410  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
    205 024412  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    209 024416                                  ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                024416  104456                                                          TRAP    C$ERHRD
                024420  000157                                                          .WORD   111
                024422  030026                                                          .WORD   T29BOT
                024424  015554                                                          .WORD   EXPREC
    210 024426  012737  000001  026472  40$:    MOV     #1,T29RB                ;NUMBER OF RECORDS TO SPACE OVER
    211 024434  012737  000400  026476          MOV     #256.,T29SZ             ;SET UP RECORD SIZE
    212 024442  012737  140005  026470          MOV     #140005,T29PK3          ;WRITE FORWARD,CVC=1,ACK COMMAND
    213 024450  012704  026470                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
    214 024454  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
    215 024460  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    216 024464  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
    217 024470  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
    218 024474  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
    219 024476  001420                          BEQ     75$                     ;BR, IF OK
    220 024500  013703  026400                  MOV     T29BFR+6,R3             ;PICK UP XTSO
    221 024504  032703  000004                  BIT     #4,R3                   ;IS UNIT WRITE-LOCKED?
    222 024510  001405                          BEQ     41$                     ;NO,PROCEED WITH NORMAL ERROR
    223 024512                                  ERRDF   ERRNO,T29WLK,SFIMSG     ;TAPE IS WRITE LOCKED
                024512  104455                                                          TRAP    C$ERDF
                024514  000157                                                          .WORD   111
```

```
        024516  027674                                                          .WORD   T29WLK
        024520  012114                                                          .WORD   SFIMSG
    224 024522                          DOCLN                   ;DROP IT
        024522  104444                                                          TRAP    C$DCLN
    225 024524  005237  002214      41$:    INC     FATFLG                      ;ERROR COUNT
    229 024530                          ERRHRD  ERRNO,T29WRT,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        024530  104456                                                          TRAP    C$ERHRD
        024532  000160                                                          .WORD   112
        024534  027761                                                          .WORD   T29WRT
        024536  012126                                                          .WORD   PKTSSR
    230 024540                      75$:    CKLOOP                  ;LOOP IF SELECTED
        024540  104406                                                          TRAP    C$CLP1
    231 024542  012737  000001  026472      MOV     #1,T29RB                ;NUMBER OF RECORDS TO SPACE OVER
    232 024550  012737  140410  026470      MOV     #140410,T29PK3          ;SET UP COMMAND IN APCKET                       ;SET
 UP SPACE REVERSE
    233 024556  012704  026470              MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
    234 024562  010465  000000              MOV     R4,TSDB(R5)             ;ISSUE COMMAND
    235 024566  004737  016330              JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    236 024572  016501  000002              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
    237 024576  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED
    238 024602  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
    239 024604  001406                      BEQ     175$                    ;BR. IF OK
    240 024606  005237  002214              INC     FATFLG                      ;ERROR COUNT
    244 024612                              ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
        024612  104456                                                          TRAP    C$ERHRD
        024614  000161                                                          .WORD   113
        024616  027612                                                          .WORD   T29WDE
        024620  012126                                                          .WORD   PKTSSR
    245 024622                      175$:   CKLOOP                  ;LOOP IF SELECTED
        024622  104406                                                          TRAP    C$CLP1
    246 024624  013737  003116  026472      MOV     FREE,T29RB              ;ADDRESS OF BUFFER
    247 024632  012737  141011  026470      MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMD.
    248 024640  012704  026470              MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
    249 024644  010465  000000              MOV     R4,TSDB(R5)             ;ISSUE COMMAND
    250 024650  004737  016330              JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    251 024654  016501  000002              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
    252 024660  012702  100204              MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
    253 024664  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
    254 024666  001406                      BEQ     180$                    ;BR. IF OK
    255 024670  005237  002214              INC     FATFLG                      ;ERROR COUNT
    259 024674                              ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
        024674  104456                                                          TRAP    C$ERHRD
        024676  000162                                                          .WORD   114
        024700  027612                                                          .WORD   T29WDE
        024702  012126                                                          .WORD   PKTSSR
    260 024704                      180$:   CKLOOP                  ;LOOP IF SELECTED
        024704  104406                                                          TRAP    C$CLP1
    261 024706  013701  026406              MOV     T29BFR+14,R1            ;GET XST3 STATUS WORD
    262 024712  010102                      MOV     R1,R2                   ;SET UP EXPECTED
    263 024714  052702  000001              BIS     #BIT0,R2                ;SET THE RIB BIT
    264 024720  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
    265 024722  001406                      BEQ     190$                    ;BR. IF EQUAL (GOOD)
    266 024724  005237  002214              INC     FATFLG                      ;ERROR COUNT
    270 024730                              ERRHRD  ERRNO,T29RIB,EXPREC     ;NEF SHOULD BE SET
        024730  104456                                                          TRAP    C$ERHRD
        024732  000163                                                          .WORD   115
        024734  031754                                                          .WORD   T29RIB
        024736  015554                                                          .WORD   EXPREC
```

SEQ 0099

TEST 1: WRITE TAPE MARK RETRY

```
                                190$:
                                        ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
                                                                                        T.10040:
                                                                                                TRAP    C$ESUB
                                        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
                                        BLO     999$                            ;BR, IF LESS THAN 25
                                        JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
                                999$:
                                ;+
                                ;
                                ;TEST 1, SUBTEST 3
                                ;
                                ;VERIFIES THAT A WRITE TAPE MARK RETRY COMMAND TERMINATES
                                ;PROPERLY AND WRITES THE TAPE MARK ONTO TAPE (BY ISSUING A READ REVERSE
                                ;COMMAND AND CHECKING FOR TAPE STATUS ALERT TERMINATION AND TMK=1).
                                ;
                                ;-
                                        BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
                                                                                        T1.3:
                                                                                                TRAP    C$BSUB
                                        JSR     PC,T29REST              ;SET COMMAND PACKET
                                        JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
                                        JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
                                        MOV     #10000.,T29DLY          ;SET UP DELAY ROUTINE
                                10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
                                        BCS     20$                     ;BR IF INIT WAS OK
                                        DELAY   250                     ;DELAY ABOUT .25 SECONDS
                                                                                                MOV     #250,(PC)+
                                                                                                .WORD   0
                                                                                                MOV     L$DLY,(PC)+
                                                                                                .WORD   0
                                                                                                DEC     -6(PC)
                                                                                                BNE     .-4
                                                                                                DEC     22(PC)
                                                                                                BNE     .-20
                                        DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
                                        BNE     10$                     ;BR, IF MORE DELAY TIME LEFT
                                        INC     FATFLG                          ;ERROR COUNT
                                        MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
                                        ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
                                                                                                TRAP    C$ERDF
                                                                                                .WORD   116
                                                                                                .WORD   SFIERR
                                                                                                .WORD   SFIMSG
                                20$:    MOV     UNITN,T29DSW            ;SET UP DRIVE NUMBER
                                        MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
                                        JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
                                        BCS     23$                     ;BR, IF COMMAND ISSUED OK
                                        INC     FATFLG                          ;ERROR COUNT
                                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
                                        ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
                                                                                                TRAP    C$ERHRD
                                                                                                .WORD   117
                                                                                                .WORD   WRTMSG
                                                                                                .WORD   SFIMSG
                                23$:    CKLOOP                          ;LOOP IF SELECTED
                                                                                                TRAP    C$CLP1
```

TEST 1: WRITE TAPE MARK RETRY SEQ 0100

```
313 025124  006737  011074                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
314 025130  103411                        BCS     30$                     ;BR. IF NO PROBLEM
315 025132  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR
316 025136  010004                        MOV     R0,R4                   ;SAVE PACKET ADDRESS
317 025140  005237  002214                INC     FATFLG                          ;ERROR COUNT
321 025144                                ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
    025144  104456                                                                  TRAP    C$ERHRD
    025146  000166                                                                 .WORD   118
    025150  030335                                                                 .WORD   T29RWN
    025152  012126                                                                 .WORD   PKTSSR
322 025154                          30$:  CKLOOP                          ;LOOP IF SELECTED
    025154  104406                                                                  TRAP    C$CLP1
323 025156  013701  026400                MOV     T29BFR+6,R1             ;PICK UP XSTO
324 025162  010102                        MOV     R1,R2                   ;SET UP EXPECTED
325 025164  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
326 025170  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
327 025172  001406                        BEQ     40$                     ;BR. IF EQUAL (OK)
328 025174  005237  002214                INC     FATFLG                          ;ERROR COUNT
332 025200                                ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
    025200  104456                                                                  TRAP    C$ERHRD
    025202  000167                                                                 .WORD   119
    025204  030026                                                                 .WORD   T29BOT
    025206  015554                                                                 .WORD   EXPREC
333 025210                          40$:  CKLOOP                          ;LOOP IF SELECTED
    025210  104406                                                                  TRAP    C$CLP1
334 025212  012737  140011  026470          MOV     #140011,T29PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
335 025220  012704  026470                MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
336 025224  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
337 025230  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
338 025234  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
339 025240  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
340 025244  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
341 025246  001406                        BEQ     70$                     ;BR. IF OK
342 025250  005237  002214                INC     FATFLG                          ;ERROR COUNT
346 025254                                ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE TAPE MARK
    025254  104456                                                                  TRAP    C$ERHRD
    025256  000170                                                                 .WORD   120
    025260  030727                                                                 .WORD   T29WDC
    025262  012126                                                                 .WORD   PKTSSR
347 025264                          70$:  CKLOOP                          ;LOOP IF SELECTED
    025264  104406                                                                  TRAP    C$CLP1
348 025266  012703  000001          150$: MOV     #1.,R3                  ;NUMBER OF RECORDS TO WRITE TM
349 025272  012737  141011  026470          MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMMAND
350 025300  012704  026470                MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
351 025304  010465  000000          155$: MOV     R4,TSDB(R5)             ;ISSUE COMMAND
352 025310  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
353 025314  016501  000002                MOV     TSSR(R5),R1             ;PICK UP TSSR
354 025320  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
355 025324  020102                        CMP     R1,R2                   ;WAS STATUS GOOD
356 025326  001406                        BEQ     165$                    ;BR. IF TERMINATION WAS GOOD
357 025330  005237  002214                INC     FATFLG                          ;ERROR COUNT
361 025334                                ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
    025334  104456                                                                  TRAP    C$ERHRD
    025336  000171                                                                 .WORD   121
    025340  030727                                                                 .WORD   T29WDC
    025342  012126                                                                 .WORD   PKTSSR
362 025344                          165$: CKLOOP                          ;LOOP IF SELECTED
```

TEST 1: WRITE TAPE MARK RETRY

```
     025344  104406                                                                  TRAP    C$CLP1
363  025346  012737  140401  026470          MOV     #140401,T29PK3          ;READ REVERSE,ACK, COMMAND
364  025354  013737  003116  026472          MOV     FREE,T29RB              ;NUMBER OF RECORDS TO SPACE BACK
365  025362  012704  026470                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
366  025366  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
367  025372  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
368  025376  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
369  025402  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
370  025406  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
371  025410  001406                          BEQ     222$                    ;BR, IF OK
372  025412  005237  002214                  INC     FATFLG                          ;ERROR COUNT
376  025416                                  ERRHRD  ERRNO,T29RDG,PKTSSR     ;TSSR INCORRECT AFTER SPACE CMD.
     025416  104456                                                                  TRAP    C$ERHRD
     025420  000172                                                                  .WORD   122
     025422  031673                                                                  .WORD   T29RDG
     025424  012126                                                                  .WORD   PKTSSR
377  025426                          222$:   CKLOOP                          ;LOOP IF SELECTED
     025426  104406                                                                  TRAP    C$CLP1
378  025430  013701  026400                  MOV     T29BFR+6,R1             ;PICK UP XSTO
379  025434  010102                          MOV     R1,R2                   ;SET UP EXPECTED
380  025436  052702  100000                  BIS     #BIT15,R2               ;TMK SHOULD BE SET
381  025442  020102                          CMP     R1,R2                   ;IS TMK SET
382  025444  001406                          BEQ     226$                    ;BR, IF TMK WAS SET (GOOD)
383  025446  005237  002214                  INC     FATFLG                          ;ERROR COUNT
387  025452                                  ERRHRD  ERRNO,T29RRN,EXPREC     ;TMK NOT SET AFTER READ REV
     025452  104456                                                                  TRAP    C$ERHRD
     025454  000173                                                                  .WORD   123
     025456  032054                                                                  .WORD   T29RRN
     025460  015554                                                                  .WORD   EXPREC
388  025462                          226$:   CKLOOP                          ;LOOP IF SELECTED
     025462  104406                                                                  TRAP    C$CLP1
389  025464                                  ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     025464                                                                      L10041:
     025464  104403                                                                  TRAP    C$ESUB
390  025466  023727  002214  000017                  CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
391  025474  103402                                  BLO     999$                            ;BR, IF LESS THAN 25
392  025476  004737  017262                          JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
393  025502                          999$:
394                                  ;+
395                                  ;
396                                  ;TEST 1, SUBTEST 4
397                                  ;
398                                  ;VERIFIES THAT THE SPACE-REVERSE PORTION OF THE WRITE TAPE MARK
399                                  ;RETRY OPERATION IS PERFORMED BY REWINDING THE TAPE, ISSUING SEVERAL
400                                  ;WRITE TAPE MARK RETRY COMMANDS IN SUCCESSION, THEN ISSUING TWO SPACE
401                                  ;RECORDS REVERSE COMMANDS IN SUCCESSION.  THE SECOND SPACE RECORDS REVERSE
402                                  ;COMMAND SHOULD TERMINATE WITH REVERSE INTO BOT (RIB) STATUS SET.
403                                  ;
404                                  ;-
405  025502                                  BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     025502                                                                      T1.4:
     025502  10440                                                                   TRAP    C$BSUB
406  025504  004737  032176                  JSR     PC,T29REST              ;SET COMMAND PACKET
407  025510  004737  032270                  JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
408  025514  004737  032332                  JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
409  025520  012737  023420  026530                  MOV     #10000.,T29DLY          ;SET UP DELAY ROUTINE
410  025526  004737  016054          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
```

TEST 1: WRITE TAPE MARK RETRY

```
411 025532  103426                          BCS     20$                     ;BR IF INIT WAS OK
412 025534                                   DELAY   250                     ;DELAY ABOUT .25 SECONDS
    025534  012727  000250                                                          MOV     #250.,(PC)+
    025540  000000                                                                   .WORD   0
    025542  013727  002116                                                           MOV     L$DLY,(PC)+
    025546  000000                                                                   .WORD   0
    025550  005367  177772                                                           DEC     -6(PC)
    025554  001375                                                                   BNE     .-4
    025556  005367  177756                                                           DEC     -22(PC)
    025562  001367                                                                   BNE     .-20
413 025564  005337  026530                  DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
414 025570  001356                          BNE     10$                     ;BR, IF MORE DELAY TIME LEFT
415 025572  005237  002214                  INC     FATFLG                          ;ERROR COUNT
419 025576  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
420 025600                                   ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
    025600  104455                                                                   TRAP    C$ERDF
    025602  000174                                                                   .WORD   124
    025604  003646                                                                   .WORD   SFIERR
    025606  012114                                                                   .WORD   SFIMSG
421 025610  013737  002174  026370  20$:     MOV     UNITN,T29DSW            ;SET UP DRIVE NUMBER
422 025616  012704  026350                  MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
423 025622  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
424 025626  103407                          BCS     23$                     ;BR,  IF COMMAND ISSUED OK
425 025630  005237  002214                  INC     FATFLG                          ;ERROR COUNT
429 025634  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
430 025636                                   ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
    025636  104456                                                                   TRAP    C$ERHRD
    025640  000175                                                                   .WORD   125
    025642  005052                                                                   .WORD   WRTMSG
    025644  012114                                                                   .WORD   SFIMSG
431 025646                           23$:    CKLOOP                          ;LOOP IF SELECTED
    025646  104406                                                                   TRAP    C$CLP1
432 025650  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
433 025654  103411                          BCS     30$                     ;BR, IF NO PROBLEM
434 025656  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR
435 025662  010004                          MOV     R0,R4                   ;SAVE PACKET ADDRESS
436 025664  005237  002214                  INC     FATFLG                          ;ERROR COUNT
440 025670                                   ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
    025670  104456                                                                   TRAP    C$ERHRD
    025672  000176                                                                   .WORD   126
    025674  030335                                                                   .WORD   T29RWN
    025676  012126                                                                   .WORD   PKTSSR
441 025700                           30$:    CKLOOP                          ;LOOP IF SELECTED
    025700  104406                                                                   TRAP    C$CLP1
442 025702  013701  026400                  MOV     T29BFR+6,R1             ;PICK UP XSTO
443 025706  010102                          MOV     R1,R2                   ;SET UP EXPECTED
444 025710  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
445 025714  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
446 025716  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
447 025720  005237  002214                  INC     FATFLG                          ;ERROR COUNT
451 025724                                   ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
    025724  104456                                                                   TRAP    C$ERHRD
    025726  000177                                                                   .WORD   127
    025730  030026                                                                   .WORD   T29BOT
    025732  015554                                                                   .WORD   EXPREC
452 025734                           40$:    CKLOOP                          ;LOOP IF SELECTED
    025734  104406                                                                   TRAP    C$CLP1
```

TEST 1: WRITE TAPE MARK RETRY

```
453 025736  012737  140011  026470          MOV     #140011,T29PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
454 025744  012704  026470                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
455 025750  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
456 025754  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
457 025760  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
458 025764  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
459 025770  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
460 025772  001406                          BEQ     70$                     ;BR, IF OK
461 025774  005237  002214                  INC     FATFLG                          ;ERROR COUNT
465 026000                                  ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE TAPE MARK
    026000  104456                                                                      TRAP    C$ERHRD
    026002  000200                                                                      .WORD   128
    026004  030727                                                                      .WORD   T29WDC
    026006  012126                                                                      .WORD   PKTSSR
466 026010                          70$:    CKLOOP                          ;LOOP IF SELECTED
    026010  104406                                                                      TRAP    C$CLP1
467 026012  012703  000012          150$:   MOV     #10.,R3                 ;NUMBER OF RECORDS TO WRITE TM
468 026016  012737  000001  026472          MOV     #1,T29PB                ;SET UP PACKET
469 026024  012737  141011  026470          MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMMAND
470 026032  012704  026470                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
471 026036  010465  000000          155$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
472 026042  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
473 026046  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
474 026052  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
475 026056  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
476 026060  001406                          BEQ     165$                    ;BR, IF TERMINATION WAS GOOD
477 026062  005237  002214                  INC     FATFLG                          ;ERROR COUNT
481 026066                                  ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
    026066  104456                                                                      TRAP    C$ERHRD
    026070  000201                                                                      .WORD   129
    026072  030727                                                                      .WORD   T29WDC
    026074  012126                                                                      .WORD   PKTSSR
482 026076                          165$:   CKLOOP                          ;LOOP IF SELECTED
    026076  104406                                                                      TRAP    C$CLP1
483 026100  005303                          DEC     R3                      ;BUMP COUNTER DOWN
484 026102  001355                          BNE     155$                    ;BR, IF LESS THAN 10 TAPE MARKS
485 026104  012737  140410  026470          MOV     #140410,T29PK3          ;SPACE REVERSE,ACK,CVC=1, COMMAND
486 026112  012737  000001  026472          MOV     #1,T29RB                ;NUMBER OF RECORDS TO SPACE BACK
487 026120  012704  026470                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
488 026124  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
489 026130  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
490 026134  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
491 026140  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
492 026144  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
493 026146  001406                          BEQ     222$                    ;BR, IF OK
494 026150  005237  002214                  INC     FATFLG                          ;ERROR COUNT
498 026154                                  ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER SPACE CMD.
    026154  104456                                                                      TRAP    C$ERHRD
    026156  000202                                                                      .WORD   130
    026160  027612                                                                      .WORD   T29WDE
    026162  012126                                                                      .WORD   PKTSSR
499 026164                          222$:   CKLOOP                          ;LOOP IF SELECTED
    026164  104406                                                                      TRAP    C$CLP1
500 026166  012737  100410  026470          MOV     #100410,T29PK3          ;SPACE REVERSE,ACK, COMMAND
501 026174  012737  000005  026472          MOV     #5,T29RB                ;NUMBER OF RECORDS TO SPACE BACK
502 026202  012704  026470                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
503 026206  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
```

TEST 1: WRITE TAPE MARK RETRY

```
    504 026212  004737  016330                  JSR     PC,WAITT                ;WAIT FOR SSR TO SET
    505 026216  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
    506 026222  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
    507 026226  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
    508 026230  001406                          BEQ     260$                    ;BR, IF OK
    509 026232  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    513 026236                                  ERRHRD  ERRNO,T29RDG,PKTSSR     ;TSSR INCORRECT AFTER SPACE REV CMD.
        026236  104456                                                                     TRAP    C$ERHRD
        026240  000203                                                                      .WORD   131
        026242  031673                                                                      .WORD   T29RDG
        026244  012126                                                                      .WORD   PKTSSR
    514 026246                          260$:   CKLOOP                          ;LOOP IF SELECTED
        026246  104406                                                                      TRAP    C$CLP1
    515 026250  013701  026406                  MOV     T29BFR+14,R1            ;PICK UP XST3
    516 026254  010102                          MOV     R1,R2                   ;SET UP EXPECTED
    517 026256  052702  000001                  BIS     #BIT0,R2                ;RIB SHOULD BE SET
    518 026262  020102                          CMP     R1,R2                   ;IS RIB SET
    519 026264  001406                          BEQ     270$                    ;BR, IF RIB WAS SET (GOOD)
    520 026266  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    524 026272                                  ERRHRD  ERRNO,T29RIB,EXPREC     ;TMK NOT SET AFTER READ REV
        026272  104456                                                                      TRAP    C$ERHRD
        026274  000204                                                                      .WORD   132
        026276  031754                                                                      .WORD   T29RIB
        026300  015554                                                                      .WORD   EXPREC
    525 026302                          270$:   CKLOOP                          ;LOOP IF SELECTED
        026302  104406                                                                      TRAP    C$CLP1
    526 026304                          330$:   CKLOOP                          ;LOOP IF SELECTED
        026304  104406                                                                      TRAP    C$CLP1
    527 026306                                  ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
        026306                                                                      L10042:
        026306  104403                                                                      TRAP    C$ESUB
    528 026310  023727  002214  000017                CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
    529 026316  103402                          BLO     999$                    ;BR, IF LESS THAN 25
    530 026320  004737  017262                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
    531 026324                          999$:
    532                                 ;
    533                                 ;
    534                                 ;
    535 026324  004737  016536                  JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
    536 026330  103002                          BCC     163$                    ;BR, IF NO LOOP REQUIRED
    537 026332  000137  023604                  JMP     T29LOOP                 ;EXECUTE AGAIN
    538 026336                          163$:   EXIT    TST                     ;ALL DONE THIS TEST
        026336  104432                                                                      TRAP    C$EXIT
        026340  004022                                                                      .WORD   L10036-.
    539                                 ;+
    540                                 ;LOCAL STORAGE FOR THIS TEST
    541                                 ;-
    543         026350                          .=<.+10>&177770
    545 026350                          T29PACKET:
    546 026350  014004                          .WORD   14004                   ;COMMAND PACKET FOR TEST
    547 026352  026360                          .WORD   T29DATA                 ;WRITE CHARACTERISTICS COMMAND, WITH CVC=1, ACK
    548 026354  000000                          .WORD   0                       ;ADDRESS OF CHARACTERISTICS BLOCK
    549 026356  000012                          .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
    550 026360                          T29DATA:                                ;CHARACTERISTICS DATA BLOCK
    551 026360  026372                          .WORD   T29BFR                  ;ADDRESS OF MESSAGE BUFFER
    552 026362  000000                          .WORD   0
    553 026364  000024                          .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
```

```
554 026366  000000                        .WORD   0
555 026370  000000              T29DSW: .WORD   0                       ;SELECT DRIVE 0
556 026372                      T29BFR: .BLKW   25.                     ;MESSAGE BUFFER
557                                     ;
558                                     ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
559                                     ;
561         026460                      .=.+10>&177770
563 026460                      T29PK2:
564 026460  100006                      .WORD   100006                  ;WRITE SUB SYS MEM COMMAND, AND ACK
565 026462  026500                      .WORD   T29BF2                  ;ADDRESS OF SELECT BLOCK DATA
566 026464  000000                      .WORD   0
567 026466  000006                      .WORD   6.                      ;SIZE OF DATA PACKET
568
572 026470                      T29PK3:
573 026470  140005                      .WORD   140005                  ;WRITE TAPE MARK RETRY COMMAND, CVC=1 AND ACK
574 026472                      T29R8:
575 026472  003116              T29WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
576 026474  000000                      .WORD   0
577 026476  000000              T29SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
578                                     .EVEN
579                                     ;
580                                     ;
581                                     ;
582 026500                      T29BF2:
583 026500      010             T29BS0: .BYTE   10                      ;BSEL0 AREA
584 026501      200             T29BS1: .BYTE   200                     ;BSEL1 AREA
585 026502  000000              T29S2:  .WORD   0                       ;SEL 2 AREA
586 026504  000000              T29S3:  .WORD   0                       ;DATA AREA
587                                     ;
588                                     ;
589                                     .EVEN
590                                     ;TAPE MOTION PACKET COMMAND VALUES
591
592 026506  140001              T29RM   .WORD   140001                  ;READ DATA
593 026510  140401              T29RDR: .WORD   140401                  ;READ DATA REVERSE
594 026512  141001              T29CON: .WORD   141001                  ;READ PREVIOUS OPP=0
595 026514  161001                      .WORD   161001                  ;READ PREVIOUS OPP=1
596 026516  141401                      .WORD   141401                  ;WRITE TAPE MARK RETRY NEXT OPP=0
597 026520  161401                      .WORD   161401                  ;WRITE TAPE MARK RETRY NEXT OPP=1
598 026522  177777                      .WORD   177777                  ;END OF DATA
599
600                                     ;
601 026524  000000              T29CNT: .WORD   0                       ;TAPE RECORD COUNTER STORAGE AREA
602
603 026526  000000              T29RSZ: .WORD   0                       ;RECORD STORAGE SIZE  AREA
604 026530  000000              T29DLY: .WORD                   ;DELAY COUNTER STORAGE AREA
605                                     ;*
606                                     ;LOCAL TEXT MESSAGES FOR TEST
607                                     ;-
608
609 026532      104     162     151 T29OFL: .ASCIZ  'Drive is OFFLINE'
610 026553      124     141     160 T29WNG: .ASCIZ  'Tape Position Incorrect After WRITE TAPE MARK RETRY Previous (OPP=1)'
611 026660      127     122     111 T29NEF: .ASCIZ  'WRITE TAPE MARK RETRY, At BOT, Failed To Set NEF (XST0)'
612 026750      124     123     123 T29RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
613 027017      127     122     111 T29RRF: .ASCIZ  'WRITE TAPE MARK RETRY Previous (Space Reverse, Read Forward) Command Failed'
614 027133      127     122     111 T29RRG: .ASCIZ  'WRITE TAPE MARK RETRY Previous (Read Forward, Space Reverse) Command Failed'
615 027247      120     117     123 T29SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
```

```
027331      122     111     102  T29LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
027401      124     123     123  T29WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
027456      111     154     154  T29LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
027537      127     122     111  T29SSR: .ASCIZ  'WRITE TAPE MARK RETRY COMMAND Not Accepted'
027612      124     123     123  T29WDE: .ASCIZ  'TSSR Not Correct After SPACE REVERSE DATA Command'
027674      052     052     052  T29WLK: .ASCIZ  '*****TAPE IS WRITE-LOCKED AND WILL CAUSE ERRORS*****'
027761      124     123     123  T29WRT: .ASCIZ  'TSSR Not Correct After WRITE Command'
030026      124     141     160  T29BOT: .ASCIZ  'Tape Not At BOT After REWIND Command'
030073      104     141     164  T29DTA: .ASCIZ  'Data Written To Tape Not Equal To Data Read From Tape'
030161      127     122     111  T29EOT: .ASCIZ  'WRITE TAPE MARK RETRY DATA OVER EOT GAVE NO TAPE STATUS ALERT'
030257      124     123     123  T29TM:  .ASCIZ  'TSSR Not Correct After SPACE REVERSE Into BOT'
030335      122     145     167  T29RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
030404      122     101     115  T29RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
030457      124     123     123  T29AM3: .ASCIZ  'TSSR Init. Failed After WRITE TAPE MARK RETRY COMMAND'
030545      104     162     151  T29OF7: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
030620      124     123     123  T29WDD: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK RETRY DATA Command, SWB Bit Set'
030727      124     123     123  T29WDC: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK RETRY DATA Command'
031021      103     126     103  T29VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
031074      124     123     102  T29BA:  .ASCIZ  'TSBA Not Correct After WRITE TAPE MARK RETRY DATA Command'
031166      127     122     111  T29WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
031255      122     145     141  T29LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XSTO'
031337      122     145     141  T29LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
031421      122     145     163  T29PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
031507      122     145     141  T29TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
031575      104     141     164  T29NEQ: .ASCIZ  'Data WRITE TAPE MARK RETRY From Tape Not Correct, After SWB=1'
031673      124     123     123  T29RDG: .ASCIZ  'TSSR Incorrect After READ REVERSE Into Tape Mark'
031754      127     122     111  T29RIB: .ASCIZ  'WRITE TAPE MARK RETRY At First Record, Failed To Set RIB (XST3)'
032054      124     115     113  T29RRN: .ASCIZ  'TMK (XSTO) Failed To Set After READ REVERSE Into Tape Mark'
032147      127     162     151  TST29ID:        .ASCIZ  'Write Tape Mark Retry'
                                          .EVEN
                                 ;+
                                 ;
                                 ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                 ;WRITE SUBSYSTEM MEMORY COMMAND
                                 ;
                                 ;-

032176                           T29REST:
032176                                    SAVREG                                  ;SAVE THE REGISTERS
032202  012701  026350                    MOV     #T29PACKET,R1                   ;START OF THE PACKET
032206  012721  140004                    MOV     #140004,(R1)+                   ;WRITE SUBSYSTEM MEM. WITH ACK, CVC=1
032212  012721  026360                    MOV     #T29DATA,(R1)+                  ;ADDRESS OF CHARAISTICS DATA BLOCK
032216  005021                            CLR     (R1)+                           ;EXTENDED ADDRESS
032220  012721  000012                    MOV     #10.,(R1)+                      ;SIZE OF DATA BLOCK IN BYTES
032224  012721  026372                    MOV     #T29BFR,(R1)+                   ;ADDRESS OF MESSAGE BUFFER
032230  005021                            CLR     (R1)+
032232  012721  000024                    MOV     #20.,(R1)+                      ;LENGTH OF MESSAGE BUFFER
032236  005021                            CLR     (R1)+
032240  012711  000000                    MOV     #0,(R1)                         ;SELECT DRIVE ZERO (0)
032244  012702  000030                    MOV     #24.,R2                         ;NUMBER OF LOCATIONS TO BE CLEARED
032250  012762  177777  026372   64$:     MOV     #177777,T29BFR(R2)              ;ALL ONES TO MESSAGE BUFFER
032256  005742                            TST     -(R2)                           ;NEXT LOCATION
032260  020227  000000                    CMP     R2,#0                           ;CHECK FOR END OF LOOP
032264  001371                            BNE     64$                             ;KEEP GOING UNTIL DONE
032266  000207                            RTS     PC                              ;RETURN

032270                           T29RT2:
```

TEST 1: WRITE TAPE MARK RETRY


```
673 032270                                      SAVREG                          ;SAVE THE REGISTERS
674 032274  012701  026460                      MOV     #T29PK2,R1              ;START OF THE PACKET
675 032300  012721  140006                      MOV     #140006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,CVC=1,
676 032304  012721  026500                      MOV     #T29BF2,(R1)+           ;ADDRESS OF DATA BLOCK
677 032310  005021                              CLR     (R1)+                   ;EXTENDED ADDRESS
678 032312  012721  000006                      MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
679 032316  005021                              CLR     (R1)+
680 032320  012701  026500                      MOV     #T29BF2,R1              ;POINT TO DATA SEL AREA
681 032324  005021                              CLR     (R1)+
682 032326  005011                              CLR     (R1)
683 032330  000207                              RTS     PC                      ;RETURN
684 032332                              T29RT3:
685 032332                                      SAVREG                          ;SAVE THE REGISTERS
686 032336  012701  026470                      MOV     #T29PK3,R1              ;START OF THE PACKET
687 032342  012721  000000                      MOV     #0,(R1)+                ;WRITE SUBSYSTEM MEM. WITH ACK,
688 032346  012721  000000                      MOV     #0,(R1)+                ;ADDRESS OF DATA BLOCK
689 032352  005021                              CLR     (R1)+                   ;EXTENDED ADDRESS
690 032354  012711  000000                      MOV     #0,(R1)         ;SIZE OF DATA BLOCK IN BYTES
691 032360  000207                              RTS     PC                      ;RETURN
692 032362                                      ENDTST
    032362                                                                              L10036:
    032362  104401                                                                             TRAP    C$ETST
693                                     .SBTTL  TEST  2: SKIP TAPE MARKS
694                                     ;+
695                                     ;
696                                     ;THIS TEST VERIFIES PROPER OPERATION OF THE SKIP TAPE MARKS
697                                     ;FORWARD AND SKIP TAPE MARKS REVERSE COMMANDS. PROPER OPERATION
698                                     ;UNDER CONTROL OF ALL COMBINATIONS OF THE ENABLE SKIP TAPE MARKS
699                                     ;STOP (ESS) AND ENABLE TAPE MARKS STOP OFF BOT (ENB) BITS SPECIFIED
700                                     ;BY THE WRITE CHARACTERISTICS COMMAND. THE TEST CONSISTS OF THE
701                                     ;FOLLOWING SUBTESTS (FOR EACH SUBTEST, THE TAPE IS FIRST WRITTEN
702                                     ;WITH AN APPROPRIATE SERIES OF DATA RECORDS AND/OR TAPE MARKS
703                                     ;AND/OR DOUBLE TAPE MARKS.
704                                     ;
705                                     ;
706                                     ;THE TEST CONSISTS OF THE FOLLOWING 11 SUBTESTS
707                                     ;
708                                     ;
709                                     ;
710                                     ;-
711 032364                                      BGNTST
    032364                                                                              T2::
712 032364  012737  006354  002172              MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
717 032372  012700  041261                      MOV     #TST30ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
718 032376  004737  016570                      JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
719 032402  012737  000005  002210              MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
720                                     ;+
721                                     ;
722                                     ;TEST 2, SUBTEST 1
723                                     ;
724                                     ;
725                                     ;VERIFIES THAT A SKIP TAPE MARKS FORWARD COMMAND WITH
726                                     ;A TAPE MARK COUNT OF 1 OPERATES OPERATES PROPERLY. THE TAPE
727                                     ;IS FIRST REWOUND, THEN WRITTEN WITH SEVERAL "FILES";
728                                     ;EACH FILE CONSISTS OF A NUMBER OF DATA RECORDS
729                                     ;FOLLOWED BY A TAPE MARK. THE FINAL FILE IS
730                                     ;TERMINATED BY A DOUBLE TAPE MARK. EACH DATA RECORD
```

TEST 2: SKIP TAPE MARKS

```
                                        ;CONTAINS A FILE NUMBER AND THE RECORD NUMBER WITHIN
                                        ;THE FILE SO THAT TAPE POSITION CAN BE SUBSEQUENTLY
                                        ;VERIFIED BY READING THE DATA. THE TAPE IS AGAIN
                                        ;REWOUND AND A SERIES OF SKIP TAPE MARKS FORWARD
                                        ;COMMANDS ARE ISSUED AND THE RESULTS (TAPE STATUS ALERT
                                        ;TERMINATION, TMK=1 STATUS, TAPE POSITION VIA READ
                                        ;COMMAND) IS CHECKED. PRIOR TO ISSUANCE OF EACH SKIP
                                        ;COMMAND, A WRITE CHARACTERISTICS COMMAND IS ISSUED TO
                                        ;SET UP THE ESS AND ENB CONTROL BITS. ALL
                                        ;COMBINATIONS OF ESS AND ENB ARE USED (00,01,10,
                                        ;11); OPERATION SHOULD BE THE SAME IN EACH CASE FOR
                                        ;THIS SUBTEST.
                                        ;
                                        ;-

032410                                  T30LOOP:
032410                                          BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
032410                                                                                  T2.1:
032410  106402                                                                                  TRAP    C$BSUB
032412  004737  041302                          JSR     PC,T30REST      ;SET COMMAND PACKET
032416  005037  036704                          CLR     T30FCN          ;CLEAR FILE COUNTER
032422  004737  041374                          JSR     PC,T30RT2       ;SET UP OTHER COMMAND PACKET
032426  004737  041436                          JSR     PC,T30RT3       ;SET UP OTHER COMMAND PACKET
032432  012737  176750  036706                  MOV     #65000.,T30DLY  ;SET UP DELAY COUNTER
032440  004737  016054          10$:    JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
032444  103426                          BCS     20$             ;BR IF INIT WAS OK
032446                                  DELAY   250             ;DELAY ROUTINE CALL
032446  012727  000250                                                          MOV     #250,(PC)+
032452  000000                                                                  .WORD   0
032454  013727  002116                                                          MOV     L$DLY,(PC)+
032460  000000                                                                  .WORD   0
032462  005367  177772                                                          DEC     -6(PC)
032466  001375                                                                  BNE     .-4
032470  005367  177756                                                          DEC     -22(PC)
032474  001367                                                                  BNE     .-20
032476  005337  036706                          DEC     T30DLY          ;BUMP COUNTER
032502  001356                          BNE     10$             ;BR, IF MORE COUNTING TO DO
032504  005237  002214                          INC     FATFLG                  ;ERROR COUNT
032510  010001                          MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
032512                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
032512  104455                                                                  TRAP    C$ERDF
032514  000311                                                                  .WORD   201
032516  003646                                                                  .WORD   SFIERR
032520  012114                                                                  .WORD   SFIMSG
032522                          20$:
032522  013737  002174  036550          MOV     UNITN,T30DSW    ;SET UP UNIT NUMBER
032530  012704  036530                  MOV     #T30PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS

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

032534  004737  010742                  JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
032540  103407                          BCS     23$             ;BR, IF COMMAND ISSUED OK
```

```
777 032542  005237  002214                  INC     FATFLG                          ;ERROR COUNT
781 032546  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
782 032550                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
    032550  104456                                                                  TRAP    C$ERHRD
    032552  000312                                                                  .WORD   202
    032554  005052                                                                  .WORD   WRTMSG
    032556  012114                                                                  .WORD   SFIMSG
783 032560                          23$:    CKLOOP                          ;LOOP IF SELECTED
    032560  104406                                                                  TRAP    C$CLP1
784
785                                 ;*************************************************************
786                                 ;
787                                 ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
788                                 ;
789                                 ;*************************************************************
790
791 032562  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
792 032566  103411                          BCS     30$                     ;BR, IF NO PROBLEM
793 032570  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
794 032572  016501  000002                  MOV     TSSR(R5),R1             ;GET STATUS REGISTER
795 032576  005237  002214                  INC     FATFLG                          ;ERROR COUNT
799 032602                                  ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
    032602  104456                                                                  TRAP    C$ERHRD
    032604  000313                                                                  .WORD   203
    032606  040270                                                                  .WORD   T30RWN
    032610  012126                                                                  .WORD   PKTSSR
800 032612                          30$:    CKLOOP                          ;LOOP IF SELECTED
    032612  104406                                                                  TRAP    C$CLP1
801
802                                 ;*************************************************************
803                                 ;
804                                 ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
805                                 ;
806                                 ;*************************************************************
807
808 032614  013701  036560                  MOV     T30BFR+6,R1             ;PICK UP XST0
809 032620  010102                          MOV     R1,R2                   ;SET UP EXPECTED
810 032622  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
811 032626  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
812 032630  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
813 032632  005237  002214                  INC     FATFLG                          ;ERROR COUNT
817 032636                                  ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
    032636  104456                                                                  TRAP    C$ERHRD
    032640  000314                                                                  .WORD   204
    032642  040071                                                                  .WORD   T30BOT
    032644  015554                                                                  .WORD   EXPREC
818 032646                          40$:    CKLOOP                          ;LOOP IF SELECTED
    032646  104406                                                                  TRAP    C$CLP1
819 032650  012737  000001  036704          MOV     #1.,T30FCN              ;SET "FILE" COUNTER AT 1 DECIMAL
820 032656  012703  000001          64$:    MOV     #1,R3                   ;ONE RECORD  PER "FILE"
821 032662  013737  003116  036652  65$:    MOV     FREE,T30WB              ;SET UP PACKETS'S WRITE BUFFER
822 032670  012737  003720  036656          MOV     #2000.,T30SZ            ;SET RECORD SIZE AT 2000 BYTES
823
824                                 ;*************************************************************
825                                 ;
826                                 ;WRITE DATA,ACK,CVC=1 COMMAND
827                                 ;
```

```
828                                     ;*************************************************************
829
830 032676  012737  140005  036650          MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
831 032704  012704  036650                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
832 032710  013702  036704                  MOV     T30FCN,R2               ;GET FILE COUNTER
833 032714  000302                          SWAB    R2                      ;MOVE TO UPPER BYTE
834 032716  010301                          MOV     R3,R1                   ;GET RECORD COUNTER
835 032720  060201                          ADD     R2,R1                   ;FILE COUNTER IN UPPER, RECORD # LOW
836 032722  010177  150170                  MOV     R1,@FREE                ;MOV TO OUT PUT BUFFER
837 032726  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
838 032732  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
839 032736  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
840 032742  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
841 032746  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
842 032750  001406                          BEQ     70$                     ;BR, IF OK
843 032752  005237  002214                  INC     FATFLG                          ;ERROR COUNT
847 032756                                  ERRHRD  ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
    032756  104456                                                                  TRAP    C$ERHRD
    032760  000315                                                                  .WORD   205
    032762  037220                                                                  .WORD   T30WDD
    032764  012126                                                                  .WORD   PKTSSR
848 032766                              70$:    CKLOOP                          ;LOOP IF SELECTED
    032766  104406                                                                  TRAP    C$CLP1
849 032770  005203                          INC     R3                      ;COUNT THE RECORD COUNTER DOWN
850 032772  020327  000021                  CMP     R3,#21                  ;AT 20 YET
851 032776  001331                          BNE     65$                     ;BR, IF NOT AT 20 RECORDS WRITTEN
852
853                                     ;*************************************************************
854                                     ;
855                                     ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
856                                     ;
857                                     ;*************************************************************
858
859 033000  012737  141011  036650          MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
860 033006  012704  036650                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
861 033012  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
862 033016  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
863 033022  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
864 033026  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
865 033032  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
866 033034  001406                          BEQ     160$                    ;BR, IF TERMINATION WAS GOOD
867 033036  005237  002214                  INC     FATFLG                          ;ERROR COUNT
871 033042                                  ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
    033042  104456                                                                  TRAP    C$ERHRD
    033044  000316                                                                  .WORD   206
    033046  040412                                                                  .WORD   T30WDC
    033050  012126                                                                  .WORD   PKTSSR
872 033052                              160$:   CKLOOP                          ;LOOP IF SELECTED
    033052  104406                                                                  TRAP    C$CLP1
873 033054  005237  036704                  INC     T30FCN                  ;COUNT THE "FILE" COUNTER DOWN
874 033060  023727  036704  000006          CMP     T30FCN,#6               ;WRITE 5 FILE TO TAPE
875 033066  001273                          BNE     64$                     ;BR, IF NOT AT 5 FILES WRITTEN
876
877                                     ;*************************************************************
878                                     ;
879                                     ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
880                                     ;
```

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

     033070  012737  141011  036650          MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC+1 COMMAND
     033076  012704  036650                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
     033102  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
     033106  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
     033112  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
     033116  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
     033122  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
     033124  001406                          BEQ     165$                    ;BR, IF TERMINATION WAS GOOD
     033126  005237  002214                  INC     FATFLG                          ;ERROR COUNT
     033132                                  ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     033132  104456                                                                            TRAP    C$ERHRD
     033134  000317                                                                            .WORD   207
     033136  040412                                                                            .WORD   T30WDC
     033140  012126                                                                            .WORD   PKTSSR
     033142                          165$:   CKLOOP                          ;LOOP IF SELECTED
     033142  104406                                                                            TRAP    C$CLP1

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

     033144  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
     033150  103411                          BCS     170$                    ;BR, IF NO PROBLEM
     033152  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
     033154  016501  000002                  MOV     TSSR(R5),R1             ;GET STATUS REGISTER
     033160  005237  002214                  INC     FATFLG                          ;ERROR COUNT
     033164                                  ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     033164  104456                                                                            TRAP    C$ERHRD
     033166  000320                                                                            .WORD   208
     033170  040270                                                                            .WORD   T30RWN
     033172  012126                                                                            .WORD   PKTSSR
     033174                          170$:   CKLOOP                          ;LOOP IF SELECTED
     033174  104406                                                                            TRAP    C$CLP1

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

     033176  013701  036560                  MOV     T30BFR+6,R1             ;PICK UP XST0
     033202  010102                          MOV     R1,R2                   ;SET UP EXPECTED
     033204  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
     033210  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
     033212  001406                          BEQ     180$                    ;BR, IF EQUAL (OK)
     033214  005237  002214                  INC     FATFLG                          ;ERROR COUNT
     033220                                  ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     033220  104456                                                                            TRAP    C$ERHRD
     033222  000321                                                                            .WORD   209
     033224  040071                                                                            .WORD   T30BOT
     033226  015554                                                                            .WORD   EXPREC
     033230                          180$:   CKLOOP                          ;LOOP IF SELECTED
     033230  104406                                                                            TRAP    C$CLP1
```

SEQ 0112

TEST 2: SKIP TAPE MARKS

```
 932 033232  012703  036666                  MOV     #T30IMV,R3              ;SET UP POINTER TO COMMAND TABLE
 933 033236  013703  002174  036550          MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
 934 033244  011337  036546          182$:   MOV     (R3),T30ETM             ;GET NEXT COMMAND
 935 033250  012704  036530                  MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 936
 937                                 ;*************************************************************
 938                                 ;
 939                                 ;ISSUE WRITE CHARACTERISTICS COMMAND
 940                                 ;
 941                                 ;*************************************************************
 942
 943 033254  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 944 033260  103407                          BCS     188$                    ;BR, IF COMMAND ISSUED OK
 945 033262  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 949 033266  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 950 033270                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     033270  104456                                                                      TRAP    C$ERHRD
     033272  000322                                                                      .WORD   210
     033274  005052                                                                      .WORD   WRTMSG
     033276  012114                                                                      .WORD   SFIMSG
 951 033300                          188$:   CKLOOP                          ;LOOP IF SELECTED
     033300  104406                                                                      TRAP    C$CLP1
 952
 953                                 ;*************************************************************
 954                                 ;
 955                                 ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
 956                                 ;
 957                                 ;*************************************************************
 958
 959 033302  012737  141010  036650          MOV     #141010,T30PK3          ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
 960 033310  012737  000001  036652          MOV     #1,T30RB                ;SET UP NUMBER TO SKIP
 961 033316  012704  036650                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 962 033322  010465  000000          189$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 963 033326  012737  176750  036706          MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
 964 033334  004737  016330          190$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 965 033340  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
 966 033344  032701  000200                  BIT     #SSR,R1                 ;IS SSR SET YET
 967 033350  001017                          BNE     191$                    ;BR, IF SSR IS SET
 968 033352                                  DELAY   250                     ;CALL DELAY ROUTINE
     033352  012727  000250                                                          MOV     #250,(PC)+
     033356  000000                                                                  .WORD   0
     033360  013727  002116                                                          MOV     L$DLY,(PC)+
     033364  000000                                                                  .WORD   0
     033366  005367  177772                                                          DEC     -6(PC)
     033372  001375                                                                  BNE     .-4
     033374  005367  177756                                                          DEC     -22(PC)
     033400  001367                                                                  BNE     .-20
 969 033402  005337  036706                  DEC     T30DLY                  ;BUMP DELAY ROUTINE
 970 033406  001352                          BNE     190$                    ;BR, IF MORE DELAY TO GO
 971 033410  012702  000200          191$:   MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
 972 033414  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
 973 033416  001406                          BEQ     192$                    ;BR, IF TERMINATION WAS GOOD
 974 033420  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 978 033424                                  ERRHRD  ERRNO,T30SKM,PKTSSR     ;TSSR NOT CORRECT AFTER SKIP TAPE M.
     033424  104456                                                                      TRAP    C$ERHRD
     033426  000323                                                                      .WORD   211
     033430  037144                                                                      .WORD   T30SKM
```

```
     033432  012126                                                                                    .WORD   PKTSSR
     033434                          192$:   CKLOOP                          ;LOOP IF SELECTED
     033434  104406                                                                                    TRAP    C$CLP1

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

     033436  013701  036560                  MOV     T30BFR+6,R1             ;PICK UP XSTO
     033442  010102                          MOV     R1,R2                   ;SET UP EXPECTED
     033444  052702  100000                  BIS     #BIT15,R2               ;SET TMK BIT IN EXPECTED
     033450  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
     033452  001406                          BEQ     195$                    ;BR, IF EQUAL (OK)
     033454  005237  002214                  INC     FATFLG                          ;ERROR COUNT
     033460                                  ERRHRD  ERRNO,T30TMK,EXPREC     ;TMK NOT SET AFTER WRT TAPE MARK
     033460  104456                                                                                    TRAP    C$ERHRD
     033462  000324                                                                                    .WORD   212
     033464  040544                                                                                    .WORD   T30TMK
     033466  015554                                                                                    .WORD   EXPREC
     033470                          195$:   CKLOOP                          ;LOOP IF SELECTED
     033470  104406                                                                                    TRAP    C$CLP1
     033472  012700  177777                  MOV     #177777,R0              ;VALUE TO WRITTEN TO MEMORY
     033476  004737  017502                  JSR     PC,FILLMEM              ;FILL MEM WITH ALL ONES
     033502  013737  003116  036652          MOV     FREE,T30RB              ;STARTING READ BUFFER ADDRESS

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

     033510  012737  140001  036650          MOV     #140001,T30PK3          ;READ FORWARD,ACK,CVC=1 COMMAND
     033516  012704  036650                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
     033522  012737  003720  036656          MOV     #2000.,T30SZ            ;SET UP RECORD SIZE IN PACKET
     033530  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
     033534  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
     033540  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
     033544  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
     033550  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
     033552  001406                          BEQ     200$                    ;BR, IF OK
     033554  005237  002214                  INC     FATFLG                          ;ERROR COUNT
     033560                                  ERRHRD  ERRNO,T30RDF,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     033560  104456                                                                                    TRAP    C$ERHRD
     033562  000325                                                                                    .WORD   213
     033564  037443                                                                                    .WORD   T30RDF
     033566  012126                                                                                    .WORD   PKTSSR
     033570                          200$:   CKLOOP                          ;LOOP IF SELECTED
     033570  104406                                                                                    TRAP    C$CLP1
     033572  017701  147320                  MOV     @FREE,R1                ;FIRST LOC IN READ BUFFER
     033576  012702  177777                  MOV     #177777,R2              ;EXPECTED IF NO DATA TRANS.
     033602  020102                          CMP     R1,R2                   ;DID ANY DATA GET TRANSFERRED
     033604  001006                          BNE     220$                    ;BR, IF NO DATA TRANS (GOOD)
     033606  005237  002214                  INC     FATFLG                          ;ERROR COUNT
     033612                                  ERRHRD  ERRNO,T30DTR,EXPREC     ;DATA TRANSFERRED ON READ TAPE MARK
     033612  104456                                                                                    TRAP    C$ERHRD
```

SEQ 0114

TEST 2: SKIP TAPE MARKS

```
        033614  000326                                                          .WORD   214
        033616  041120                                                          .WORD   T30DTR
        033620  015554                                                          .WORD   EXPREC
   1032 033622                          220$:   CKLOOP                          ;LOOP IF SELECTED
        033622  104406                                                          TRAP    C$CLP1
   1033 033624  012702  001001                  MOV     #1001,R2                ;SET UP RECORD NUMBER EXPECTED (FILE 2)
   1034 033630  017701  147262                  MOV     @FREE,R1                ;GET INFO FROM BUFFER
   1035 033634  020201                          CMP     R2,R1                   ;ARE THEY EQUAL
   1036 033636  001406                          BEQ     228$                    ;BR, IF EQUAL (OK)
   1037 033640  005237  002214                  INC     FATFLG                          ;ERROR COUNT
   1041 033644                                  ERRHRD  ERRNO,T30PTB,EXPREC     ;RECORD POSITION WAS NOT CORRECT
        033644  104456                                                          TRAP    C$ERHRD
        033646  000327                                                          .WORD   215
        033650  037272                                                          .WORD   T30PTB
        033652  015554                                                          .WORD   EXPREC
   1042 033654                          228$:   CKLOOP                          ;LOOP IF SELECTED
        033654  104406                                                          TRAP    C$CLP1
   1043
   1044                                 ;*************************************************************
   1045                                 ;
   1046                                 ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
   1047                                 ;
   1048                                 ;*************************************************************
   1049
   1050 033656  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
   1051 033662  103411                          BCS     230$                    ;BR, IF NO PROBLEM
   1052 033664  010004                          MOV     R0,R4                   ;SAVE PACKET ADDRESS
   1053 033666  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR STATUS
   1054 033672  005237  002214                  INC     FATFLG                          ;ERROR COUNT
   1058 033676                                  ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
        033676  104456                                                                  TRAP    C$ERHRD
        033700  000330                                                                  .WORD   216
        033702  040270                                                                  .WORD   T30RWN
        033704  012126                                                                  .WORD   PKTSSR
   1059 033706                          230$:   CKLOOP                          ;LOOP IF SELECTED
        033706  104406                                                                  TRAP    C$CLP1
   1060
   1061                                 ;*************************************************************
   1062                                 ;
   1063                                 ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
   1064                                 ;
   1065                                 ;*************************************************************
   1066
   1067 033710  013701  036560                  MOV     T30BFR+6,R1             ;PICK UP XST0
   1068 033714  010102                          MOV     R1,R2                   ;SET UP EXPECTED
   1069 033716  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
   1070 033722  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
   1071 033724  001406                          BEQ     240$                    ;BR, IF EQUAL (OK)
   1072 033726  005237  002214                  INC     FATFLG                          ;ERROR COUNT
   1076 033732                                  ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        033732  104456                                                                  TRAP    C$ERHRD
        033734  000331                                                                  .WORD   217
        033736  040071                                                                  .WORD   T30BOT
        033740  015554                                                                  .WORD   EXPREC
   1077 033742                          240$:   CKLOOP                          ;LOOP IF SELECTED
        033742  104406                                                                  TRAP    C$CLP1
   1078 033744  005723                          TST     (R3)+                   ;POINT TO NEXT POSITION
```

SEQ 0115

TEST 2: SKIP TAPE MARKS

```
1079 033746  011301                          MOV     (R3),R1                 ;GET NEXT COMMAND ETC.
1080 033750  020127  177777                  CMP     R1,#177777              ;END OF TABLE MARKER
1081 033754  001402                          BEQ     330$                    ;BR, IF AT END OF TABLE
1082 033756  000137  033244                  JMP     182$                    ;JUMP TO MORE COMMANDS TO DO
1083 033762                          330$:   CKLOOP                          ;LOOP IF SELECTED
     033762  104406                                                                  TRAP    C$CLP1
1084 033764                          ENDSUB                                  ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     033764                                                                       L10044:
     033764  104403                                                                  TRAP    C$ESUB
1085 033766  023727  002214  000017          CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
1086 033774  103402                          BLO     999$                    ;BR, IF LESS THAN 25
1087 033776  004737  017262                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
1088 034002                          999$:
1089                                 ;+
1090                                 ;
1091                                 ;TEST 2, SUBTEST 2
1092                                 ;
1093                                 ;VERIFIES THAT SKIP TAPE MARKS COMMANDS WITH A TAPE
1094                                 ;MARK COUNT GREATER THAN 1 OPERATE PROPERLY. COUNTS
1095                                 ;OF 2,3,8,64,256, AND 512 ARE TESTED. THE
1096                                 ;TESTING SEQUENCE IS SIMILAR TO THAT USED IN SUBTEST 1.
1097                                 ;
1098                                 ;
1099                                 ;
1100                                 ;-
1101
1102 034002                          BGNSUB                                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     034002                                                                       T2.2:
     034002  104402                                                                  TRAP    C$BSUB
1103 034004  004737  041302                  JSR     PC,T30REST              ;SET COMMAND PACKET
1104 034010  005037  036704                  CLR     T30FCN                  ;CLEAR FILE COUNTER
1105 034014  004737  041374                  JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
1106 034020  004737  041436                  JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
1107 034024  012737  176750  036706          MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
1108 034032  004737  016054          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
1109 034036  103426                          BCS     20$                     ;BR IF INIT WAS OK
1110 034040                          DELAY   250                             ;DELAY ROUTINE CALL
     034040  012727  000250                                                          MOV     #250,(PC)+
     034044  000000                                                                  .WORD   0
     034046  013727  002116                                                          MOV     L$DLY,(PC)+
     034052  000000                                                                  .WORD   0
     034054  005367  177772                                                          DEC     -6(PC)
     034060  001375                                                                  BNE     .-4
     034062  005367  177756                                                          DEC     -22(PC)
     034066  001367                                                                  BNE     .-20
1111 034070  005337  036706                  DEC     T30DLY                  ;BUMP COUNTER
1112 034074  001356                          BNE     10$                     ;BR, IF MORE COUNTING TO DO
1113 034076  005237  002214                  INC     FATFLG                          ;ERROR COUNT
1117 034102  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
1118 034104                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     034104  104455                                                                  TRAP    C$ERDF
     034106  000332                                                                  .WORD   218
     034110  003646                                                                  .WORD   SFIERR
     034112  012114                                                                  .WORD   SFIMSG
1119 034114                          20$:
1120 034114  013737  002174  036550          MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
1121 034122  012704  036530                  MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
```

```
1122
1123                                    ;*************************************************************
1124                                    ;
1125                                    ;ISSUE WRITE CHARACTERISTICS COMMAND
1126                                    ;
1127                                    ;*************************************************************
1128
1129 034126  004737  010742                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
1130 034132  103407                            BCS     23$                     ;BR, IF COMMAND ISSUED OK
1131 034134  005237  002214                    INC     FATFLG                          ;ERROR COUNT
1135 034140  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
1136 034142                                    ERRHRD  ERRNO,WRTMSG,SFTMSG     ;WRITE CHARACTERISTISC FAILED
     034142  104456                                                                    TRAP    C$ERHRD
     034144  000333                                                                    .WORD   219
     034146  005052                                                                    .WORD   WRTMSG
     034150  012114                                                                    .WORD   SFTMSG
1137 034152                            23$:    CKLOOP                          ;LOOP IF SELECTED
     034152  104406                                                                    TRAP    C$CLP1
1138
1139                                    ;*************************************************************
1140                                    ;
1141                                    ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
1142                                    ;
1143                                    ;*************************************************************
1144
1145 034154  004737  011074                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
1146 034160  103411                            BCS     30$                     ;BR, IF NO PROBLEM
1147 034162  010004                            MOV     R0,R4                   ;GET PACKET ADDRESS
1148 034164  016501  000002                    MOV     TSSR(R5),R1             ;GET STATUS REGISTER
1149 034170  005237  002214                    INC     FATFLG                          ;ERROR COUNT
1153 034174                                    ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     034174  104456                                                                    TRAP    C$ERHRD
     034176  000334                                                                    .WORD   220
     034200  040270                                                                    .WORD   T30RWN
     034202  012126                                                                    .WORD   PKTSSR
1154 034204                            30$:    CKLOOP                          ;LOOP IF SELECTED
     034204  10440(                                                                    TRAP    C$CLP1
1155
1156                                    ;*************************************************************
1157                                    ;
1158                                    ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
1159                                    ;
1160                                    ;*************************************************************
1161
1162 034206  013701  036560                    MOV     T30BFR+6,R1             ;PICK UP XSTO
1163 034212  010102                            MOV     R1,R2                   ;SET UP EXPECTED
1164 034214  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
1165 034220  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
1166 034222  001406                            BEQ     40$                     ;BR, IF EQUAL (OK)
1167 034224  005237  002214                    INC     FATFLG                          ;ERROR COUNT
1171 034230                                    ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     034230  104456                                                                    TRAP    C$ERHRD
     034232  000335                                                                    .WORD   221
     034234  040071                                                                    .WORD   T30BOT
     034236  015554                                                                    .WORD   EXPREC
1172 034240                            40$:    CKLOOP                          ;LOOP IF SELECTED
     034240  104406                                                                    TRAP    C$CLP1
```

TEST 2: SKIP TAPE MARKS

```
1173 034242  012737  000001  036704          MOV     #1.,T30FCN              ;SET "FILE" COUNTER AT 1 DECIMAL
1174 034250  012703  000001          64$:    MOV     #1,R3                   ;ONE RECORD  PER "FILE"
1175 034254  013737  003116  036652  65$:    MOV     FREE,T30WB              ;SET UP PACKETS'S WRITE BUFFER
1176 034262  012737  000024  036656          MOV     #20.,T30SZ              ;SET RECORD SIZE AT 2000 BYTES
1177
1178                                 ;*************************************************************
1179                                 ;
1180                                 ;WRITE DATA,ACK,CVC=1 COMMAND
1181                                 ;
1182                                 ;*************************************************************
1183
1184 034270  012737  140005  036650          MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
1185 034276  012704  036650                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
1186 034302  013702  036704                  MOV     T30FCN,R2               ;GET FILE COUNTER
1187 034306  000302                          SWAB    R2                      ;MOVE TO UPPER BYTE
1188 034310  010301                          MOV     R3,R1                   ;GET RECORD COUNTER
1189 034312  060201                          ADD     R2,R1                   ;FILE COUNTER IN UPPER, RECORD # LOW
1190 034314  010177  146576                  MOV     R1,@FREE                ;MOV TO OUT PUT BUFFER
1191 034320  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
1192 034324  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1193 034330  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
1194 034334  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
1195 034340  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
1196 034342  001406                          BEQ     70$                     ;BR. IF OK
1197 034344  005237  002214                  INC     FATFLG                          ;ERROR COUNT
1201 034350                                  ERRHRD  ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     034350  104456                                                                  TRAP    C$ERHRD
     034352  000336                                                                  .WORD   222
     034354  037220                                                                  .WORD   T30WDD
     034356  012126                                                                  .WORD   PKTSSR
1202 034360                          70$:    CKLOOP                          ;LOOP IF SELECTED
     034360  104406                                                                  TRAP    C$CLP1
1203 034362  005203                          INC     R3                      ;COUNT THE RECORD COUNTER DOWN
1204 034364  020327  000021                  CMP     R3,#21                  ;AT 20 YET
1205 034370  001331                          BNE     65$                     ;BR. IF NOT AT 20 RECORDS WRITTEN
1206
1207                                 ;*************************************************************
1208                                 ;
1209                                 ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
1210                                 ;
1211                                 ;*************************************************************
1212
1213 034372  012737  141011  036650          MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
1214 034400  012704  036650                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
1215 034404  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
1216 034410  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1217 034414  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
1218 034420  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
1219 034424  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
1220 034426  001406                          BEQ     160$                    ;BR. IF TERMINATION WAS GOOD
1221 034430  005237  002214                  INC     FATFLG                          ;ERROR COUNT
1225 034434                                  ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     034434  104456                                                                  TRAP    C$ERHRD
     034436  000337                                                                  .WORD   223
     034440  040412                                                                  .WORD   T30WDC
     034442  012126                                                                  .WORD   PKTSSR
1226 034444                          160$:   CKLOOP                          ;LOOP IF SELECTED
```

```
034444  104406                                                                         TRAP    C$CLP1
034446  005237  036704                   INC     T30FCN               ;COUNT THE "FILE" COUNTER DOWN
034452  023727  036704  000031           CMP     T30FCN,#25.          ;WRITE 25 FILES TO TAPE
034460  001273                           BNE     64$                  ;BR, IF NOT AT 25 FILES WRITTEN

                                 ;*****************************************************
                                 ;
                                 ;WRITE TAPE MARK,ACK,CVC-1 COMMAND
                                 ;
                                 ;*****************************************************

034462  012737  141011  036650           MOV     #141011,T30PK3       ;WRITE TAPE MARK,ACK,CVC-1 COMMAND
034470  012704  036650                   MOV     #T30PK3,R4           ;SET UP R4 WITH PACKET ADDRESS
034474  010465  000000                   MOV     R4,TSDB(R5)          ;ISSUE COMMAND
034500  004737  016330                   JSR     PC,WAITS             ;WAIT FOR SSR TO SET
034504  016501  000002                   MOV     TSSR(R5),R1          ;PICK UP TSSR
034510  012702  000200                   MOV     #SSR,R2              ;SET UP EXPECTED (SSR ONLY)
034514  020102                           CMP     R1,R2                ;WAS STATUS GOOD
034516  001406                           BEQ     165$                 ;BR, IF TERMINATION WAS GOOD
034520  005237  002214                   INC     FATFLG                       ;ERROR COUNT
034524                                   ERRHRD  ERRNO,T30WDC,PKTSSR  ;TSSR NOT CORRECT AFTER WRT TAPE M.
034524  104456                                                                         TRAP    C$ERHRD
034526  000340                                                                         .WORD   224
034530  040412                                                                         .WORD   T30WDC
034532  012126                                                                         .WORD   PKTSSR
034534                           165$:   CKLOOP                       ;LOOP IF SELECTED
034534  104406                                                                         TRAP    C$CLP1

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

034536  004737  011074                   JSR     PC,REWIND            ;CALL TAPE REWIND COMMAND
034542  103411                           BCS     170$                 ;BR, IF NO PROBLEM
034544  010004                           MOV     R0,R4                ;GET PACKET ADDRESS
034546  016501  000002                   MOV     TSSR(R5),R1          ;GET STATUS REGISTER
034552  005237  002214                   INC     FATFLG                       ;ERROR COUNT
034556                                   ERRHRD  ERRNO,T30RWN,PKTSSR  ;REWIND NOT ACCEPTED
034556  104456                                                                         TRAP    C$ERHRD
034560  000341                                                                         .WORD   225
034562  040270                                                                         .WORD   T30RWN
034564  012126                                                                         .WORD   PKTSSR
034566                           170$:   CKLOOP                       ;LOOP IF SELECTED
034566  104406                                                                         TRAP    C$CLP1

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

034570  013701  036560                   MOV     T30BFR+6,R1          ;PICK UP XST0
034574  010102                           MOV     R1,R2                ;SET UP EXPECTED
034576  052702  000002                   BIS     #BIT1,R2             ;SET BOT BIT IN EXPECTED
034602  020102                           CMP     R1,R2                ;DOES EXP = REC'D
```

TEST 2: SKIP TAPE MARKS

```
1279 034604  001406                    BEQ     180$                    ;BR, IF EQUAL (OK)
1280 034606  005237  002214            INC     FATFLG                          ;ERROR COUNT
1284 034612                            ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     034612  104456                                                            TRAP    C$ERHRD
     034614  000342                                                            .WORD   226
     034616  040071                                                            .WORD   T30BOT
     034620  015554                                                            .WORD   EXPREC
1285 034622                    180$:   CKLOOP                          ;LOOP IF SELECTED
     034622  104406                                                            TRAP    C$CLP1
1286 034624  012737  000002  036704        MOV     #2,T30FCN               ;SET TO NUMBER OF SKIP "FILES"
1287 034632  012703  036666              MOV     #T30IMV,R3              ;SET UP POINTER TO COMMAND TABLE
1288 034636  013737  002174  036550      MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
1289 034644  011337  036546        182$: MOV     (R3),T30ETM             ;GET NEXT COMMAND
1290 034650  012704  036530              MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
1291
1292                                   ;*************************************************************
1293                                   ;
1294                                   ;ISSUE WRITE CHARACTERISTICS COMMAND
1295                                   ;
1296                                   ;*************************************************************
1297
1298 034654  004737  010742              JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
1299 034660  103407                    BCS     188$                    ;BR, IF COMMAND ISSUED OK
1300 034662  005237  002214            INC     FATFLG                          ;ERROR COUNT
1304 034666  010001                    MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
1305 034670                            ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     034670  104456                                                            TRAP    C$ERHRD
     034672  000343                                                            .WORD   227
     034674  005052                                                            .WORD   WRTMSG
     034676  012114                                                            .WORD   SFIMSG
1306 034700                    188$:   CKLOOP                          ;LOOP IF SELECTED
     034700  104406                                                            TRAP    C$CLP1
1307
1308                                   ;*************************************************************
1309                                   ;
1310                                   ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
1311                                   ;
1312                                   ;*************************************************************
1313
1314 034702  012737  141010  036650      MOV     #141010,T30PK3          ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
1315 034710  013737  036704  036652      MOV     T30FCN,T30R8            ;SET UP NUMBER TO SKIP
1316 034716  012704  036650              MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
1317 034722  010465  000000        189$: MOV     R4,T5DB(R5)             ;ISSUE COMMAND
1318 034726  012737  176750  036706      MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
1319 034734  004737  016330        190$: JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1320 034740  016501  000002              MOV     TSSR(R5),R1             ;PICK UP TSSR
1321 034744  032701  000200              BIT     #SSR,R1                 ;IS SSR SET YET
1322 034750  001017                    BNE     191$                    ;BR, IF SSR IS SET
1323 034752                            DELAY   250                     ;CALL DELAY ROUTINE
     034752  012727  000250                                                    MOV     #250,(PC)+
     034756  000000                                                            .WORD   0
     034760  013727  002116                                                    MOV     L$DLY,(PC)+
     034764  000000                                                            .WORD   0
     034766  005367  177772                                                    DEC     -6(PC)
     034772  001375                                                            BNE     .-4
     034774  005367  177756                                                    DEC     -22(PC)
     035000  001367                                                            BNE     .-20
```

TEST 2: SKIP TAPE MARKS

```
1324 035002  005337  036706                DEC     T30DLY                  ;BUMP DELAY ROUTINE
1325 035006  001352                        BNE     190$                    ;BR, IF MORE DELAY TO GO
1326 035010  012702  000200          191$: MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
1327 035014  020102                        CMP     R1,R2                   ;WAS STATUS GOOD
1328 035016  001406                        BEQ     192$                    ;BR, IF TERMINATION WAS GOOD
1329 035020  005237  002214                INC     FATFLG                          ;ERROR COUNT
1333 035024                                ERRHRD  ERRNO,T30SKM,PKTSSR     ;TSSR NOT CORRECT AFTER SKIP TAPE M,
     035024  104456                                                                TRAP    C$ERHRD
     035026  000344                                                                .WORD   228
     035030  037144                                                                .WORD   T30SKM
     035032  012126                                                                .WORD   PKTSSR
1334 035034                          192$: CKLOOP                          ;LOOP IF SELECTED
     035034  104406                                                                TRAP    C$CLP1
1335
1336                                       ;*************************************************************
1337                                       ;
1338                                       ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
1339                                       ;
1340                                       ;*************************************************************
1341
1342 035036  013701  036560                MOV     T30BFR+6,R1             ;PICK UP XSTO
1343 035042  010102                        MOV     R1,R2                   ;SET UP EXPECTED
1344 035044  052702  100000                BIS     #BIT15,R2               ;SET TMK BIT IN EXPECTED
1345 035050  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
1346 035052  001406                        BEQ     195$                    ;BR, IF EQUAL (OK)
1347 035054  005237  002214                INC     FATFLG                          ;ERROR COUNT
1351 035060                                ERRHRD  ERRNO,T30TMK,EXPREC     ;TMK NOT SET AFTER WRT TAPE MARK
     035060  104456                                                                TRAP    C$ERHRD
     035062  000345                                                                .WORD   229
     035064  040544                                                                .WORD   T30TMK
     035066  015554                                                                .WORD   EXPREC
1352 035070                          195$: CKLOOP                          ;LOOP IF SELECTED
     035070  104406                                                                TRAP    C$CLP1
1353 035072  012700  177777                MOV     #177777,R0              ;VALUE TO WRITTEN TO MEMORY
1354 035076  004737  017502                JSR     PC,FILLMEM              ;FILL MEM WITH ALL ONES
1355 035102  013737  003116  036652        MOV     FREE,T30RB              ;STARTING READ BUFFER ADDRESS
1356
1357                                       ;*************************************************************
1358                                       ;
1359                                       ;READ FORWARD,ACK,CVC=1 COMMAND
1360                                       ;
1361                                       ;*************************************************************
1362
1363 035110  012737  140001  036650        MOV     #140001,T30PK3          ;READ FORWARD,ACK,CVC=1 COMMAND
1364 035116  012704  036650                MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
1365 035122  012737  000024  036656        MOV     #20.,T30SZ              ;SET UP RECORD SIZE IN PACKET
1366 035130  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
1367 035134  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1368 035140  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
1369 035144  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
1370 035150  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
1371 035152  001406                        BEQ     200$                    ;BR, IF OK
1372 035154  005237  002214                INC     FATFLG                          ;ERROR COUNT
1376 035160                                ERRHRD  ERRNO,T30RDF,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     035160  104456                                                                TRAP    C$ERHRD
     035162  000346                                                                .WORD   230
     035164  037443                                                                .WORD   T30RDF
```

TEST 2: SKIP TAPE MARKS

```
     035166  012126                                                          .WORD   PKTSSR
1377 035170                          200$:  CKLOOP                          ;LOOP IF SELECTED
     035170  104406                                                          TRAP    C$CLP1
1378 035172  017701  145720                 MOV     @FREE,R1                ;FIRST LOC IN READ BUFFER
1379 035176  012702  177777                 MOV     #177777,R2              ;EXPECTED IF NO DATA TRANS.
1380 035202  020102                         CMP     R1,R2                   ;DID ANY DATA GET TRANSFERRED
1381 035204  001006                         BNE     220$                    ;BR, IF NO DATA TRANS (GOOD)
1382 035206  005237  002214                 INC     FATFLG                          ;ERROR COUNT
1386 035212                                 ERRHRD  ERRNO,T30DTR,EXPREC     ;DATA TRANSFERRED ON READ TAPE MARK
     035212  104456                                                          TRAP    C$ERHRD
     035214  000347                                                          .WORD   231
     035216  041120                                                          .WORD   T30DTR
     035220  015554                                                          .WORD   EXPREC
1387 035222                          220$:  CKLOOP                          ;LOOP IF SELECTED
     035222  104406                                                          TRAP    C$CLP1
1388 035224  013702  036704                 MOV     T30FCN,R2               ;GET NUMBER OF SKIPS
1389 035230  005202                         INC     R2                      ;SET TO CORRECT FILE VALUE
1390 035232  000302                         SWAB    R2                      ;SWAP BYTE HALVES
1391 035234  052702  000001                 BIS     #BIT0,R2                ;SET FOR RECORD #1
1392 035240  017701  145652                 MOV     @FREE,R1                ;GET INFO FROM BUFFER
1393 035244  020201                         CMP     R2,R1                   ;ARE THEY EQUAL
1394 035246  001406                         BEQ     228$                    ;BR, IF EQUAL (OK)
1395 035250  005237  002214                 INC     FATFLG                          ;ERROR COUNT
1399 035254                                 ERRHRD  ERRNO,T30PTB,EXPREC     ;RECORD POSITION WAS NOT CORRECT
     035254  104456                                                          TRAP    C$ERHRD
     035256  000350                                                          .WORD   232
     035260  037272                                                          .WORD   T30PTB
     035262  015554                                                          .WORD   EXPREC
1400 035264                          228$:  CKLOOP                          ;LOOP IF SELECTED
     035264  104406                                                          TRAP    C$CLP1
1401
1402                                 ;*****************************************************************
1403                                 ;
1404                                 ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
1405                                 ;
1406                                 ;*****************************************************************
1407
1408 035266  004737  011074                 JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
1409 035272  103411                         BCS     230$                    ;BR, IF NO PROBLEM
1410 035274  010004                         MOV     R0,R4                   ;SAVE PACKET ADDRESS
1411 035276  016501  000002                 MOV     TSSR(R5),R1             ;GET TSSR STATUS
1412 035302  005237  002214                 INC     FATFLG                          ;ERROR COUNT
1416 035306                                 ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     035306  104456                                                          TRAP    C$ERHRD
     035310  000351                                                          .WORD   233
     035312  040270                                                          .WORD   T30RWN
     035314  012126                                                          .WORD   PKTSSR
1417 035316                          230$:  CKLOOP                          ;LOOP IF SELECTED
     035316  104406                                                          TRAP    C$CLP1
1418
1419                                 ;*****************************************************************
1420                                 ;
1421                                 ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
1422                                 ;
1423                                 ;*****************************************************************
1424
1425 035320  013701  036560                 MOV     T30BFR+6,R1             ;PICK UP XST0
```

```
1426 035324  010102                    MOV     R1,R2                   ;SET UP EXPECTED
1427 035326  052702  000002              BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
1428 035332  020102                    CMP     R1,R2                   ;DOES EXP = REC'D
1429 035334  001406                    BEQ     240$                    ;BR, IF EQUAL (OK)
1430 035336  005237  002214                  INC     FATFLG                          ;ERROR COUNT
1434 035342                            ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     035342  104456                                                            TRAP    C$ERHRD
     035344  000352                                                            .WORD   234
     035346  040071                                                            .WORD   T30BOT
     035350  015554                                                            .WORD   EXPREC
1435 035352                    240$:   CKLOOP                          ;LOOP IF SELECTED
     035352  104406                                                            TRAP    C$CLP1
1436 035354  005723                    TST     (R3)+                   ;POINT TO NEXT POSITION
1437 035356  011301                    MOV     (R3),R1                 ;GET NEXT COMMAND ETC.
1438 035360  020127  177777            CMP     R1,#177777              ;END OF TABLE MARKER
1439 035364  001410                    BEQ     330$                    ;BR, IF AT END OF TABLE
1440 035366  013701  036704            MOV     T30FCN,R1               ;GET NUMBER OF SKIPS
1441 035372  000241                    CLC                             ;CLEAR THE CARRY BIT
1442 035374  006101                    ROL     R1                      ;PUSH OVER ONE POSITION
1443 035376  010137  036704            MOV     R1,T30FCN               ;PUT BACK IN COUNTER
1444 035402  000137  034644            JMP     182$                    ;JUMP TO MORE COMMANDS TO DO
1445 035406                    330$:   CKLOOP                          ;LOOP IF SELECTED
     035406  104406                                                            TRAP    C$CLP1
1446 035410                            ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     035410                                                                  L10045:
     035410  104403                                                            TRAP    C$ESUB
1447 035412  023727  002214  000017            CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
1448 035420  103402                            BLO     999$                            ;BR, IF LESS THAN 25
1449 035422  004737  017262                    JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
1450 035426                    999$:
1451                           ;+
1452                           ;
1453                           ;TEST 2, SUBTEST 3
1454                           ;
1455                           ;
1456                           ;VERIFIES THAT A SKIP TAPE MARKS REVERSE COMMAND
1457                           ;ISSUED WHILE THE TAPE IS POSITIONED AT BOT CAUSES
1458                           ;FUNCTION REJECT TERMINATION, WITH THE NON-EXECUTABLE
1459                           ;FUNCTION (NEF) ERROR BIT SET.
1460                           ;
1461                           ;
1462                           ;
1463                           ;
1464                           ;
1465                           ;-
1466 035426                            BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     035426                                                                  T2.3:
     035426  104402                                                            TRAP    C$BSUB
1467 035430  004737  041302                    JSR     PC,T30REST              ;SET COMMAND PACKET
1468 035434  005037  036704                    CLR     T30FCN                  ;CLEAR FILE COUNTER
1469 035440  004737  041374                    JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
1470 035444  004737  041436                    JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
1471 035450  012737  176750  036706            MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
1472 035456  004737  016054            10$:    JSR     PC,SDFINIT              ;DO INITIALIZE ON CONTROLLER
1473 035462  103426                            BCS     20$                     ;BR IF INIT WAS OK
1474 035464                                    DELAY   250                     ;DELAY ROUTINE CALL
     035464  012727  000250                                                            MOV     #250,(PC)+
```

```
        035470  000000                                                          .WORD   0
        035472  013727  002116                                                  MOV     L$DLY,(PC)+
        035476  000000                                                          .WORD   0
        035500  005367  177772                                                  DEC     -6(PC)
        035504  001375                                                          BNE     .-4
        035506  005367  177756                                                  DEC     -22(PC)
        035512  001367                                                          BNE     .-20
  1475  035514  005337  036706          DEC     T3ODLY                  ;BUMP COUNTER
  1476  035520  001356                  BNE     10$                     ;BR. IF MORE COUNTING TO DO
  1477  035522  005237  002214          INC     FATFLG                          ;ERROR COUNT
  1481  035526  010001                  MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
  1482  035530                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
        035530  104455                                                          TRAP    C$ERDF
        035532  000353                                                          .WORD   235
        035534  003646                                                          .WORD   SFIERR
        035536  012114                                                          .WORD   SFIMSG
  1483  035540                  20$:
  1484  035540  013737  002174  036550          MOV     UNITN,T3ODSW            ;SET UP UNIT NUMBER
  1485  035546  012704  036530                  MOV     #T3OPACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
  1486
  1487                          ;*************************************************************
  1488                          ;
  1489                          ;ISSUE WRITE CHARACTERISTICS COMMAND
  1490                          ;
  1491                          ;*************************************************************
  1492
  1493  035552  004737  010742          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
  1494  035556  103407                  BCS     23$                     ;BR. IF COMMAND ISSUED OK
  1495  035560  005237  002214          INC     FATFLG                          ;ERROR COUNT
  1499  035564  010001                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
  1500  035566                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        035566  104456                                                          TRAP    C$ERHRD
        035570  000354                                                          .WORD   236
        035572  005052                                                          .WORD   WRTMSG
        035574  012114                                                          .WORD   SFIMSG
  1501  035576                  23$:    CKLOOP                          ;LOOP IF SELECTED
        035576  104406                                                          TRAP    C$CLP1
  1502
  1503                          ;*************************************************************
  1504                          ;
  1505                          ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
  1506                          ;
  1507                          ;*************************************************************
  1508
  1509  035600  004737  011074          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
  1510  035604  103411                  BCS     30$                     ;BR. IF NO PROBLEM
  1511  035606  010004                  MOV     R0,R4                   ;GET PACKET ADDRESS
  1512  035610  016501  000002          MOV     TSSR(R5),R1             ;GET STATUS REGISTER
  1513  035614  005237  002214          INC     FATFLG                          ;ERROR COUNT
  1517  035620                          ERRHRD  ERRNO,T3ORWN,PKTSSR     ;REWIND NOT ACCEPTED
        035620  104456                                                          TRAP    C$ERHRD
        035622  000355                                                          .WORD   237
        035624  040270                                                          .WORD   T3ORWN
        035626  012126                                                          .WORD   PKTSSR
  1518  035630                  30$:    CKLOOP                          ;LOOP IF SELECTED
        035630  104406                                                          TRAP    C$CLP1
  1519
```

```
1520                                    ;*************************************************************
1521                                    ;
1522                                    ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
1523                                    ;
1524                                    ;*************************************************************
1525
1526 035632  013701  036560                    MOV     T30BFR+6,R1             ;PICK UP XST0
1527 035636  010102                            MOV     R1,R2                   ;SET UP EXPECTED
1528 035640  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
1529 035644  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
1530 035646  001406                            BEQ     40$                     ;BR, IF EQUAL (OK)
1531 035650  005237  002214                    INC     FATFLG                          ;ERROR COUNT
1535 035654                                    ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     035654  104456                                                                    TRAP    C$ERHRD
     035656  000356                                                                    .WORD   238
     035660  040071                                                                    .WORD   T30BOT
     035662  015554                                                                    .WORD   EXPREC
1536 035664                            40$:    CKLOOP                          ;LOOP IF SELECTED
     035664  104406                                                                    TRAP    C$CLP1
1537 035666  012737  000001  036652            MOV     #1,T30WB                ;SET # OF TM TO SKIP
1538
1539                                    ;*************************************************************
1540                                    ;
1541                                    ;SKIP TAPE MARK REVERSE,ACK,CVC=1 COMMAND
1542                                    ;
1543                                    ;*************************************************************
1544
1545 035674  012737  141410  036650            MOV     #141410,T30PK3          ;SKIP TAPE MARK REVERSE,ACK,CVC=1 CMD
1546 035702  012704  036650                    MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
1547 035706  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
1548 035712  004737  016330                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1549 035716  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
1550 035722  012702  100206                    MOV     #SSR!SC!BIT1!BIT2,R2    ;SET UP EXPECTED
1551 035726  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
1552 035730  001406                            BEQ     70$                     ;BR, IF OK
1553 035732  005237  002214                    INC     FATFLG                          ;ERROR COUNT
1557 035736                                    ERRHRD  ERRNO,T30IBT,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     035736  104456                                                                    TRAP    C$ERHRD
     035740  000357                                                                    .WORD   239
     035742  037061                                                                    .WORD   T30IBT
     035744  012126                                                                    .WORD   PKTSSR
1558 035746                            70$:    CKLOOP                          ;LOOP IF SELECTED
     035746  104406                                                                    TRAP    C$CLP1
1559
1560                                    ;*************************************************************
1561                                    ;
1562                                    ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
1563                                    ;
1564                                    ;*************************************************************
1565
1566 035750  013701  036560                    MOV     T30BFR+6,R1             ;PICK UP XST0
1567 035754  010102                            MOV     R1,R2                   ;SET UP EXPECTED
1568 035756  052702  002000                    BIS     #BIT10,R2               ;SET NEF BIT IN EXPECTED
1569 035762  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
1570 035764  001406                            BEQ     180$                    ;BR, IF EQUAL (OK)
1571 035766  005237  002214                    INC     FATFLG                          ;ERROR COUNT
1575 035772                                    ERRHRD  ERRNO,T30NEF,EXPREC     ;TAPE NOT AT NEF
```

TEST 2: SKIP TAPE MARKS

```
        035772  104456                                                                  TRAP    C$ERHRD
        035774  000360                                                                  .WORD   240
        035776  040626                                                                  .WORD   T30NEF
        036000  015554                                                                  .WORD   EXPREC
  1576  036002                          180$:   CKLOOP                  ;LOOP IF SELECTED
        036002  104406                                                                  TRAP    C$CLP1
  1577  036004                          ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
        036004                                                                        L10046:
        036004  104403                                                                  TRAP    C$ESUB
  1578  036006  023727  002214  000017          CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
  1579  036014  103402                          BLO     999$                    ;BR, IF LESS THAN 25
  1580  036016  004737  017262                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
  1581  036022                          999$:
  1582                                  ;+
  1583                                  ;
  1584                                  ;TEST 2, SUBTEST 4
  1585                                  ;
  1586                                  ;
  1587                                  ;VERIFIES THAT A SKIP TAPE MARKS REVERSE COMMAND
  1588                                  ;ISSUED WHILE THE TAPE IS POSITIONED JUST BEFORE THE
  1589                                  ;FIRST RECORD ON ON TAPE (BUT NOT AT BOT) CAUSES TAPE
  1590                                  ;STATUS ALERT TERMINATION, WITH THE REVERSE INTO BOT
  1591                                  ;(RIB) STATUS BIT SET.
  1592                                  ;
  1593                                  ;
  1594                                  ;
  1595                                  ;
  1596                                  ;
  1597                                  ;-
  1598  036022                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
        036022                                                                        T2.4:
        036022  104402                                                                  TRAP    C$BSUB
  1599  036024  004737  041302                  JSR     PC,T30REST              ;SET COMMAND PACKET
  1600  036030  005037  036704                  CLR     T30FCN                  ;CLEAR FILE COUNTER
  1601  036034  004737  041374                  JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
  1602  036040  004737  041436                  JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
  1603  036044  012737  176750  036706          MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
  1604  036052  004737  016054          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
  1605  036056  103426                          BCS     20$                     ;BR IF INIT WAS OK
  1606  036060                                  DELAY   250                     ;DELAY ROUTINE CALL
        036060  012727  000250                                                          MOV     #250,(PC)+
        036064  000000                                                                  .WORD   0
        036066  013727  002116                                                          MOV     L$DLY,(PC)+
        036072  000000                                                                  .WORD   0
        036074  005367  177772                                                          DEC     -6(PC)
        036100  001375                                                                  BNE     .-4
        036102  005367  177756                                                          DEC     -22(PC)
        036106  001367                                                                  BNE     .-20
  1607  036110  005337  036706                  DEC     T30DLY                  ;BUMP COUNTER
  1608  036114  001356                          BNE     10$                     ;BR, IF MORE COUNTING TO DO
  1609  036116  005237  002214                  INC     FATFLG                          ;ERROR COUNT
  1613  036122  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
  1614  036124                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
        036124  104455                                                                  TRAP    C$ERDF
        036126  000361                                                                  .WORD   241
        036130  003646                                                                  .WORD   SFIERR
        036132  012114                                                                  .WORD   SFIMSG
```

TEST 2: SKIP TAPE MARKS

```
1615 036134                            20$:
1616 036134  013737  002174  036550            MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
1617 036142  012704  036530                    MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
1618
1619                                   ;*************************************************************
1620                                   ;
1621                                   ;ISSUE WRITE CHARACTERISTICS COMMAND
1622                                   ;
1623                                   ;*************************************************************
1624
1625 036146  004737  010742                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
1626 036152  103407                            BCS     23$                     ;BR, IF COMMAND ISSUED OK
1627 036154  005237  002214                    INC     FATFLG                          ;ERROR COUNT
1631 036160  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
1632 036162                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     036162  104456                                                                    TRAP    C$ERHRD
     036164  000362                                                                    .WORD   242
     036166  005052                                                                    .WORD   WRTMSG
     036170  012114                                                                    .WORD   SFIMSG
1633 036172                            23$:    CKLOOP                          ;LOOP IF SELECTED
     036172  104406                                                                    TRAP    C$CLP1
1634
1635                                   ;*************************************************************
1636                                   ;
1637                                   ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
1638                                   ;
1639                                   ;*************************************************************
1640
1641 036174  004737  011074                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
1642 036200  103411                            BCS     30$                     ;BR, IF NO PROBLEM
1643 036202  010004                            MOV     R0,R4                   ;GET PACKET ADDRESS
1644 036204  016501  000002                    MOV     TSSR(R5),R1             ;GET STATUS REGISTER
1645 036210  005237  002214                    INC     FATFLG                          ;ERROR COUNT
1649 036214                                    ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     036214  104456                                                                    TRAP    C$ERHRD
     036216  000363                                                                    .WORD   243
     036220  040270                                                                    .WORD   T30RWN
     036222  012126                                                                    .WORD   PKTSSR
1650 036224                            30$:    CKLOOP                          ;LOOP IF SELECTED
     036224  104406                                                                    TRAP    C$CLP1
1651
1652                                   ;*************************************************************
1653                                   ;
1654                                   ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
1655                                   ;
1656                                   ;*************************************************************
1657
1658 036226  013701  036560                    MOV     T30BFR+6,R1             ;PICK UP XSTO
1659 036232  010102                            MOV     R1,R2                   ;SET UP EXPECTED
1660 036234  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
1661 036240  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
1662 036242  001406                            BEQ     40$                     ;BR, IF EQUAL (OK)
1663 036244  005237  002214                    INC     FATFLG                          ;ERROR COUNT
1667 036250                                    ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     036250  104456                                                                    TRAP    C$ERHRD
     036252  000364                                                                    .WORD   244
     036254  040071                                                                    .WORD   T30BOT
```

```
036256  015554                                                                  .WORD   EXPREC
036260                          40$:    CKLOOP                          ;LOOP IF SELECTED
036260  104406                                                                  TRAP    C$CLP1
036262  013737  003116  036652          MOV     FREE,T30WB              ;SET UP GOOD WRITE BUFFER
036270  012737  000400  036656          MOV     #256.,T30SZ             ;SET UP SIZE

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

036276  012737  140005  036650          MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
036304  012704  036650                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
036310  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
036314  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
036320  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
036324  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
036330  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
036332  001406                          BEQ     70$                     ;BR. IF OK
036334  005237  002214                  INC     FATFLG                          ;ERROR COUNT
036340                                  ERRHRD  ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
036340  104456                                                                  TRAP    C$ERHRD
036342  000365                                                                  .WORD   245
036344  037220                                                                  .WORD   T30WDD
036346  012126                                                                  .WORD   PKTSSR
036350                          70$:    CKLOOP                          ;LOOP IF SELECTED
036350  104406                                                                  TRAP    C$CLP1

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

036352  012737  000001  036652          MOV     #1,T30WB                ;# OF TM TO SKIP
036360  012737  141410  036650          MOV     #141410,T30PK3          ;SKIP TAPE MARK REVERSE,ACK,CVC=1 CMD
036366  012704  036650                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
036372  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
036376  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
036402  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
036406  012702  100204                  MOV     #SSR!BIT2!SC,R2         ;SET UP EXPECTED (SSR AND SC ONLY)
036412  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
036414  001406                          BEQ     160$                    ;BR. IF TERMINATION WAS GOOD
036416  005237  002214                  INC     FATFLG                          ;ERROR COUNT
036422                                  ERRHRD  ERRNO,T30IBU,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
036422  104456                                                                  TRAP    C$ERHRD
036424  000366                                                                  .WORD   246
036426  036710                                                                  .WORD   T30IBU
036430  012126                                                                  .WORD   PKTSSR
036432                          160$:   CKLOOP                          ;LOOP IF SELECTED
036432  104406                                                                  TRAP    C$CLP1

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

```
1719                                    ;*****************************************************************
1720
1721 036434  013701  036566                    MOV     T30BFR+14,R1            ;FTCK UP XST3
1722 036440  010102                            MOV     R1,R2                   ;SET UP EXPECTED
1723 036442  052702  000001                    BIS     #BIT0,R2                ;SET RIB BIT IN EXPECTED
1724 036446  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
1725 036450  001406                            BEQ     170$                    ;BR, IF EQUAL (OK)
1726 036452  005237  002214                    INC     FATFLG                          ;ERROR COUNT
1730 036456                                    ERRHRD  ERRNO,T30RIB,EXPREC     ;TAPE NOT AT RIB
     036456  104456                                                                    TRAP    C$ERHRD
     036460  000367                                                                    .WORD   247
     036462  036775                                                                    .WORD   T30RIB
     036464  015554                                                                    .WORD   EXPREC
1731 036466                            170$:   CKLOOP                          ;LOOP IF SELECTED
     036466  104406                                                                    TRAP    C$CLP1
1732 036470                                    ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     036470                                                                         L10047:
     036470  104403                                                                    TRAP    C$ESUB
1733 036472  023727  002214  000017                CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
1734 036500  103402                            BLO     999$                            ;BR, IF LESS THAN 25
1735 036502  004737  017262                    JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
1736 036506                            999$:
1737                                    ;SUBTEST END
1738                                    ;
1739                                    ;
1740 036506  004737  016536                    JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
1741 036512  103002                            BCC     400$                    ;BR, IF NO LOOP REQUIRED
1742 036514  000137  032410                    JMP     T30LOOP                 ;EXECUTE AGAIN
1743 036520                            400$:   EXIT    TST                     ;ALL DONE THIS TEST
     036520  104432                                                                    TRAP    C$EXIT
     036522  002736                                                                    .WORD   L10043-.
1744
1745                                    ;*
1746                                    ;LOCAL STORAGE FOR THIS TEST
1748          036530                    ;-
                                                .=<.+10>&177770
1750 036530                             T30PACKET:                              ;COMMAND PACKET FOR TEST
1751 036530  100004                             .WORD   100004                 ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
1752 036532  036540                             .WORD   T30DATA                ;ADDRESS OF CHARACTERISTICS BLOCK
1753 036534  000000                             .WORD   0
1754 036536  000012                             .WORD   10.                    ;STARTING VALUE OF BLOCK SIZE
1755 036540                             T30DATA:                                ;CHARACTERISTICS DATA BLOCK
1756 036540  036552                             .WORD   T30BFR                 ;ADDRESS OF MESSAGE BUFFER
1757 036542  000000                             .WORD   0
1758 036544  000024                             .WORD   20.                    ;LENGTH OF MESSAGE BUFFER
1759 036546  000000                     T30ETM: .WORD   0                      ;SKIP TAPE MARK CONTROL
1760 036550  000000                     T30DSW: .WORD   0                      ;SELECT DRIVE 0
1761 036552                              T30BFR: .BLKW   25.                    ;MESSAGE BUFFER
1762                                    ;
1763                                    ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
1764                                    ;
1766          036640                            .=<.+10>&177770
1768 036640                             T30PK2:
1769 036640  100006                             .WORD   100006                 ;WRITE SUB SYS MEM COMMAND,  AND ACK
1770 036642  036660                             .WORD   T30BF2                 ;ADDRESS OF SELECT BLOCK DATA
1771 036644  000000                             .WORD   0
1772 036646  000006                             .WORD   6.                     ;SIZE OF DATA PACKET
1773
```

TEST 2: SKIP TAPE MARKS

```
1777 036650                            T3OPK3:
1778 036650  100205                              .WORD   100205                  ;REREAD COMMAND, IE AND ACK
1779 036652                            T3OR3:
1780 036652  003116                    T3OWP:    .WORD   FREE                  ;ADDRESS OF WRITE BUFFER
1781 036654  000000                              .WORD   0
1782 036656  000000                    T3OSZ:    .WORD   0                     ;SIZE OF BUFFER (EXTENT)
1783                                             .EVEN
1784                                   ;
1785                                   ;
1786                                   ;
1787 036660                            T3OBF2:
1788 036660     010                    T3OBS0:   .BYTE   10                    ;BSEL0 AREA
1789 036661     200                    T3OBS1:   .BYTE   200                   ;BSEL1 AREA
1790 036662  000000                    T3OS2:    .WORD   0                     ;SEL 2 AREA
1791 036664  000000                    T3OS3:    .WORD   0                     ;DATA AREA
1792                                   ;
1793                                   ;
1794                                             .EVEN
1795                                   ;TAPE MOTION PACKET COMMAND VALUES
1796
1797 036666                            T3OIMV:
1798 036666                            T3ORN:
1799 036666  000000                              .WORD   000000                  ;NEITHER EWB NOR ESS
1800 036670  000100                              .WORD   000100                  ;EWB SET
1801 036672  000200                              .WORD   000200                  ;ESS SET
1802 036674  000300                              .WORD   000300                  ;BOTH EWB AND ESS SET
1803 036676  177777                              .WORD   177777                  ;END OF DATA
1804
1805                                   ;
1806 036700  000000                    T3OCNT:   .WORD   0                     ;TAPE TIMER COUNTER STORAGE AREA
1807 036702  000000                    T3OCNU:   .WORD   0                     ;TAPE TIMER COUNTER STORAGE AREA
1808 036704  000000                    T3OFCN:   .WORD   0                     ;FILE NUMBER COUNTER
1809 036706  000000                    T3ODLY:   .WORD   0                     ;DELAY COUNTER STORAGE
1810                                   ;+
1811                                   ;LOCAL TEXT MESSAGES FOR TEST
1812                                   ;-
1813

1814 036710     124     123     123   T3OIBU:   .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE Into BOT'
1815 036775     122     111     102   T3ORIB:   .ASCIZ  'RIB Bit (XST3) Failed To Set After Reverse Into BOT'
1816 037061     124     123     123   T3OIBT:   .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE At BOT'
1817 037144     124     123     123   T3OSKM:   .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK Command'
1818 037220     124     123     123   T3OWDD:   .ASCIZ  'TSSR Not Correct After WRITE DATA Command'
1819 037272     124     141     160   T3OPTB:   .ASCIZ  'Tape Not Positioned On Correct Record After READ REVERSE'
1820 037363     124     141     160   T3OTPB:   .ASCIZ  'Tape Not Positioned On Second File First Record'
1821 037443     124     123     123   T3ORDF:   .ASCIZ  'TSSR Incorrect After READ FORWARD Into "File"'
1822 037521     124     123     123   T3ORDG:   .ASCIZ  'TSSR Incorrect After SPACE Command Into TAPE MARK'
1823 037603     124     123     123   T3OWDF:   .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
1824 037660     111     154     154   T3OLOG:   .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
1825 037741     127     122     111   T3OSSR:   .ASCIZ  'WRITE MISCELLANEOUS Command Not Accepted'
1826 040012     124     123     123   T3OWDE:   .ASCIZ  'TSSR Not Correct After SKIP TAPE MARKS, At BOT'
1827 040071     124     141     160   T3OBOT:   .ASCIZ  'Tape Not At BOT After REWIND Command'
1828 040136     124     123     123   T3OTM:    .ASCIZ  'TSSR Not Correct After SPACE FORWARD Command'
1829 040213     124     123     123   T3OTM2:   .ASCIZ  'TSSR Not Correct After SPACE REVERSE Command'
1830 040270     122     145     167   T3ORWN.   .ASCIZ  'Rewind (POSITION) Command Not Accepted'
1831 040337     104     162     151   T3OOFL:   .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
1832 040412     124     123     123   T3OWDC:   .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK Command'
1833 040471     103     126     103   T3OVCK:   .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
```

TEST 2: SKIP TAPE MARKS

```
1834 040544      124      115      113  T30TMK: .ASCIZ  'TMK Not Set After WRITE TAPE MARK (RETRY) Command'
1835 040626      123      113      111  T30NEF: .ASCIZ  'SKIP TAPE MARKS, At BOT, Failed To Set NEF Bit'
1836 040705      124      115      113  T30RRM: .ASCIZ  'TMK Not Set After READ REVERSE Into TAPE MARK'
1837 040763      124      115      113  T30RRN: .ASCIZ  'TMK Not Set After SPACE REVERSE Into TAPE MARK'
1838 041042      124      115      113  T30RRP: .ASCIZ  'TMK Not Set After READ FORWARD Into TAPE MARK'
1839 041120      116      117      040  T30DTR: .ASCIZ  'NO Data Transferred On READ FORWARD'
1840 041164      104      141      164  T30DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
1841 041261      123      153      151  TST30ID:        .ASCIZ  'Skip Tape Marks'
1842                                                    .EVEN
1843                                                ;+
1844                                                ;
1845                                                ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
1846                                                ;WRITE SUBSYSTEM MEMORY COMMAND
1847                                                ;
1848                                                ;-
1849
1850 041302                                         T30REST:
1851 041302                                                 SAVREG                          ,SAVE THE REGISTERS
1852 041306  012701  036530                                MOV     #T30PACKET,R1           ;START OF THE PACKET
1853 041312  012721  100004                                MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
1854 041316  012721  036540                                MOV     #T30DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
1855 041322  005021                                        CLR     (R1)+                   ;EXTENDED ADDRESS
1856 041324  012721  000012                                MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
1857 041330  012721  036552                                MOV     #T30BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
1858 041334  005021                                        CLR     (R1)+
1859 041336  012721  000024                                MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
1860 041342  005021                                        CLR     (R1)+
1861 041344  012711  000000                                MOV     #0,(R1)                 ;SELECT DRIVE ZERO
1862 041350  012702  000030                                MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
1863 041354  012762  177777  036552  64$:                  MOV     #177777,T30BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
1864 041362  005742                                        TST     -(R2)                   ;NEXT LOCATION
1865 041364  022702  000000                                CMP     #0.,R2                          ;CHECK R2 FOR DONE
1866 041370  001371                                        BNE     64$                     ;KEEP GOING UNTIL DONE
1867 041372  000207                                        RTS     PC                      ;RETURN
1868
1869 041374                                         T30RT2:
1870 041374                                                 SAVREG                          ;SAVE THE REGISTERS
1871 041400  012701  036640                                MOV     #T30PK2,R1              ;START OF THE PACKET
1872 041404  012721  100006                                MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
1873 041410  012721  036660                                MOV     #T30BF2,(R1)+           ;ADDRESS OF DATA BLOCK
1874 041414  005021                                        CLR     (R1)+                   ;EXTENDED ADDRESS
1875 041416  012721  000006                                MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
1876 041422  005021                                        CLR     (R1)+
1877 041424  012701  036660                                MOV     #T30BF2,R1              ;POINT TO DATA SEL AREA
1878 041430  005021                                        CLR     (R1)+
1879 041432  005011                                        CLR     (R1)
1880 041434  000207                                        RTS     PC                      ;RETURN
1881 041436                                         T30RT3:
1882 041436                                                 SAVREG                          ;SAVE REGISTERS
1883 041442  012701  036650                                MOV     #T30PK3,R1              ;SET UP POINTER ADDRESS
1884 041446  005021                                        CLR     (R1)+                   ;COMMAND SPACE
1885 041450  005021                                        CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
1886 041452  005021                                        CLR     (R1)+                   ;EXTENDED ADDRESS
1887 041454  005011                                        CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
1888 041456  000207                                        RTS     PC                      ;RETURN
1889 041460                                                 ENDTST
     041460                                                                                 L10043:
```

```
     041460  104401                                                                    TRAP      C$ETST
                                  .SBTTL   TEST  3: NO-OP ("CLEAN TAPE") AND INITIALIZE
                         ;+
                         ;
                         ;THIS TEST VERIFIES PROPER OPERATION OF THE NO OP ("CLEAN TAPE") AND INITIALIZE
                         ;COMMAND (SPACE REVERSE, ERASE, WRITE DATA)
                         ;
                         ;
                         ;THE TEST CONSISTS OF THE FOLLOWING 2 SUBTESTS
                         ;
                         ;
                         ;
                         ;-
     041462                       BGNTST
     041462                                                                        T3::
     041462  012737  006354  002172      MOV     #EPRT1,EPRTSW          ;PRIMARY ERROR MESSAGE
     041470  012700  046573              MOV     #TST31ID,R0            ;ASCII MESSAGE TO IDENTIFY TEST
     041474  004737  016570              JSR     PC,TSTSETUP            ;DO INITIAL TEST SETUP
     041500  012737  000005  002210      MOV     #5,LOOPCNT             ;PERFORM 5 ITERATIONS
     041506  005037  043366              CLR     T31CNT                 ;CLEAR TAPE RECORD COUNTER
                         ;
                         ;-
     041512              T31LOOP:
                         ;+
                         ;
                         ;TEST 3, SUBTEST 1
                         ;
                         ;         VERIFIES THAT THE NO-OP COMMAND (CORRESPONDS TO THE CLEAN TAPE
                         ;         COMMAND) TERMINATES PROPERLY (NORMAL TERMINATION), STORES PROPER
                         ;         STATUS IN THE MESSAGE BUFFER (LIKE THE GET STATUS COMMAND), AND
                         ;         INDEED DOES NOT MOVE TAPE.  THE TAPE IS FIRST REWOUND AND
                         ;         WRITTEN WITH SEQUENCED TEST RECORDS.  IT IS THEN REWOUND AGAIN
                         ;         AND THE NO-OP COMMAND IS ISSUED.  IT IS VERIFIED THAT THE TAPE
                         ;         IS STILL AT BOT AND THAT PROPER STATUS IS STORED.  THE FIRST
                         ;         RECORD ON TAPE IS READ AND VERIFIED (TO CHECK TAPE POSITION AND
                         ;         VERIFY THAT DATA WAS NOT CHANGED). THEN THE NO-OP COMMAND IS
                         ;         ISSUED AGAIN AND STATUS AND POSITION VERIFIED.
                         ;
                         ;
                         ;
                         ;
                         ;
                         ;
                         ;-
     041512                       BGNSUB                        ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>
     041512                                                                        T3.1:
     041512  104402                                                                    TRAP      C$BSUB
     041514  004737  046640              JSR     PC,T31REST             ;SET COMMAND PACKET
     041520  004737  046732              JSR     PC,T31RT2              ;SET UP OTHER COMMAND PACKET
     041524  004737  046774              JSR     PC,T31RT3              ;SET UP OTHER COMMAND PACKET
     041530  012737  176750  043372      MOV     #65000.,T31DLY         ;SET UP DELAY COUNTER
     041536  004737  016054      10$:    JSR     PC,SOFINIT             ;DO INITIALIZE ON CONTROLLER
     041542  103426                      BCS     20$                    ;BR IF INIT WAS OK
     041544                              DELAY   250                    ;DELAY ABOUT .25 SEC
     041544  012727  000250                                                            MOV       #250,(PC)+
     041550  000000                                                                    .WORD     0
```

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

```
        041552  013727  002116                                                  MOV     #$DLY,(PC)+
        041556  000000                                                          .WORD   0
        041560  005367  177772                                                  DEC     -6(PC)
        041564  001375                                                          BNE     .-4
        041566  005367  177756                                                  DEC     -22(PC)
        041572  001367                                                          BNE     .-20
  1945  041574  005337  043372            DEC     T31DLY          ;BUMP COUNTER
  1946  041600  001356                    BNE     10$             ;BR, IF COUNTER NOT DONE
  1947  041602  005237  002214            INC     FATFLG                  ;ERROR COUNT
  1951  041606  010001                    MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
  1952  041610                            ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
        041610  104455                                                          TRAP    C$ERDF
        041612  000455                                                          .WORD   301
        041614  003646                                                          .WORD   SFIERR
        041616  012114                                                          .WORD   SFIMSG
  1953  041620  013737  002174  043240  20$:    MOV     UNITN,T31DSW    ;SET UP UNIT NUMBER IN PACKET
  1954  041626  012704  043220            MOV     #T31PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
  1955  041632  004737  010742            JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
  1956  041636  103407                    BCS     23$             ;BR, IF COMMAND ISSUED OK
  1957  041640  005237  002214            INC     FATFLG                  ;ERROR COUNT
  1961  041644  010001                    MOV     R0,R1           ;SAVE CONTENTS OF TSSR
  1962  041646                            ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        041646  104456                                                          TRAP    C$ERHRD
        041650  000456                                                          .WORD   302
        041652  005052                                                          .WORD   WRTMSG
        041654  012114                                                          .WORD   SFIMSG
  1963  041656                    23$:    CKLOOP                  ;LOOP IF SELECTED
        041656  104406                                                          TRAP    C$CLP1
  1964  041660  004737  011074            JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
  1965  041664  103407                    BCS     30$             ;BR, IF NO PROBLEM
  1966  041666  010004                    MOV     R0,R4           ;SET UP REWIND PACKET ADDRESS
  1967  041670  005237  002214            INC     FATFLG                  ;ERROR COUNT
  1971  041674                            ERRHRD  ERRNO,T31RWN,PKTSSR     ;REWIND NOT ACCEPTED
        041674  104456                                                          TRAP    C$ERHRD
        041676  000457                                                          .WORD   303
        041700  044724                                                          .WORD   T31RWN
        041702  012126                                                          .WORD   PKTSSR
  1972  041704                    30$:    CKLOOP                  ;LOOP IF SELECTED
        041704  104406                                                          TRAP    C$CLP1
  1973  041706  013701  043250            MOV     T31BFR+6,R1     ;PICK UP XSTO
  1974  041712  010102                    MOV     R1,R2           ;SET UP EXPECTED
  1975  041714  052702  000002            BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
  1976  041720  020102                    CMP     R1,R2           ;DOES EXP - REC'D
  1977  041722  001406                    BEQ     40$             ;BR, IF EQUAL (OK)
  1978  041724  005237  002214            INC     FATFLG                  ;ERROR COUNT
  1982  041730                            ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        041730  104456                                                          TRAP    C$ERHRD
        041732  000460                                                          .WORD   304
        041734  044375                                                          .WORD   T31BOT
        041736  015554                                                          .WORD   EXPREC
  1983  041740                    40$:    CKLOOP                  ;LOOP IF SELECTED
        041740  104406                                                          TRAP    C$CLP1
  1984  041742  013737  003116  043342            MOV     FREE,T31WB      ;STARTING WRITE BUFFER ADDRESS
  1985  041750  012737  140005  043340  65$:    MOV     #140005,T31PK3  ;WRITE DATA,CYC=1,ACK COMMAND
  1986  041756  012704  043340            MOV     #T31PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
  1987  041762  012700  000144            MOV     #100.,R0                ;SET PATTERN IN CORRECT REGISTER
  1988  041766  004737  017502            JSR     PC,FILLMEM      ;FILL MEMORY WITH RECORD SIZE
```

```
 1989 041772  012737  000144  043346          MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
 1990 042000  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 1991 042004  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 1992 042010  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 1993 042014  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 1994 042020  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 1995 042022  001406                          BEQ     80$                     ;BR, IF OK
 1996 042024  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 2000 042030                                  ERRHRD  ERRNO,T31WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      042030  104456                                                                  TRAP    C$ERHRD
      042032  000461                                                                  .WORD   305
      042034  045260                                                                  .WORD   T31WDC
      042036  012126                                                                  .WORD   PKTSSR
 2001 042040                          80$:    CKLOOP                          ;LOOP IF SELECTED
      042040  104406                                                                  TRAP    C$CLP1
 2002 042042  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 2003 042046  103407                          BCS     230$                    ;BR, IF NO PROBLEM
 2004 042050  010001                          MOV     R0,R1                   ;SAVE TSSR
 2005 042052  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 2009 042056                                  ERRHRD  ERRNO,T31RWN,EXPREC     ;REWIND NOT ACCEPTED
      042056  104456                                                                  TRAP    C$ERHRD
      042060  000462                                                                  .WORD   306
      042062  044724                                                                  .WORD   T31RWN
      042064  015554                                                                  .WORD   EXPREC
 2010 042066                          230$:   CKLOOP                          ;LOOP IF SELECTED
      042066  104406                                                                  TRAP    C$CLP1
 2011 042070  013701  043250                  MOV     T31BFR+6,R1             ;PICK UP XSTO
 2012 042074  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 2013 042076  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 2014 042102  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
 2015 042104  001406                          BEQ     240$                    ;BR, IF EQUAL (OK)
 2016 042106  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 2020 042112                                  ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      042112  104456                                                                  TRAP    C$ERHRD
      042114  000463                                                                  .WORD   307
      042116  044375                                                                  .WORD   T31BOT
      042120  015554                                                                  .WORD   EXPREC
 2021 042122                          240$:   CKLOOP                          ;LOOP IF SELECTED
      042122  104406                                                                  TRAP    C$CLP1
 2022 042124  012737  041012  043340  265$:   MOV     #041012,T31PK3          ;NO-OP,CVC=1 COMMAND
 2023 042132  012704  043340                  MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 2024 042136  010337  043346                  MOV     R3,T31SZ                ;SET UP RECORD SIZE IN PACKET
 2025 042142  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 2026 042146  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 2027 042152  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 2028 042156  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 2029 042162  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 2030 042164  001406                          BEQ     280$                    ;BR, IF OK
 2031 042166  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 2035 042172                                  ERRHRD  ERRNO,T31RDF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      042172  104456                                                                  TRAP    C$ERHRD
      042174  000464                                                                  .WORD   308
      042176  043573                                                                  .WORD   T31RDF
      042200  012126                                                                  .WORD   PKTSSR
 2036 042202                          280$:   CKLOOP                          ;LOOP IF SELECTED
      042202  104406                                                                  TRAP    C$CLP1
 2037 042204  013701  043250                  MOV     T31BFR+6,R1             ;PICK UP XSTO
```

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

```
2038 042210  010102                          MOV     R1,R2                   ;SET UP EXPECTED
2039 042212  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2040 042216  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
2041 042220  001406                          BEQ     285$                    ;BR, IF EQUAL (OK)
2042 042222  005237  002214                  INC     FATFLG                          ;ERROR COUNT
2046 042226                                  ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     042226  104456                                                              TRAP    C$ERHRD
     042230  000465                                                              .WORD   309
     042232  044375                                                              .WORD   T31BOT
     042234  015554                                                              .WORD   EXPREC
2047 042236                          285$:   CKLOOP                          ;LOOP IF SELECTED
     042236  104406                                                              TRAP    C$CLP1
2048 042240  012737  140001  043340          MOV     #140001,T31PK3          ;READ,ACK,CVC=1 COMMAND
2049 042246  012704  043340                  MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2050 042252  012737  000144  043346          MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
2051 042260  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2052 042264  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2053 042270  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2054 042274  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
2055 042300  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
2056 042302  001406                          BEQ     290$                    ;BR, IF OK
2057 042304  005237  002214                  INC     FATFLG                          ;ERROR COUNT
2061 042310                                  ERRHRD  ERRNO,T31RDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     042310  104456                                                              TRAP    C$ERHRD
     042312  000466                                                              .WORD   310
     042314  043374                                                              .WORD   T31RDE
     042316  012126                                                              .WORD   PKTSSR
2062 042320                          290$:   CKLOOP                          ;LOOP IF SELECTED
     042320  104406                                                              TRAP    C$CLP1
2063 042322  017701  140570                  MOV     @FREE,R1                ;GET DATA READ
2064 042326  012702  000144                  MOV     #100.,R2                ;READ EXPECTED
2065 042332  020102                          CMP     R1,R2                   ;DID TAPE STAY POSITIONED
2066 042334  001406                          BEQ     330$                    ;BR, IF EXPD = RECC
2067 042336  005237  002214                  INC     FATFLG                          ;ERROR COUNT
2071 042342                                  ERRHRD  ERRNO,T31WNG,EXPREC     ;TAPE DATA NOT CORRECT
     042342  104456                                                              TRAP    C$ERHRD
     042344  000467                                                              .WORD   311
     042346  043521                                                              .WORD   T31WNG
     042350  015554                                                              .WORD   EXPREC
2072 042352                          330$:
2073 042352                                  ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     042352                                                                          L10051:
     042352  104403                                                              TRAP    C$ESUB
2074 042354  023727  002214  000017          CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
2075 042362  103402                          BLO     999$                            ;BR, IF LESS THAN 25
2076 042364  004737  017262                  JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
2077 042370                          999$:
2078                                 ;*
2079                                 ;
2080                                 ;TEST 3, SUBTEST 2
2081                                 ;
2082                                 ;
2083                                 ;       VERIFIES THAT THE INITIALIZE COMMAND OPERATES AS A NO-OP,
2084                                 ;       ASSUMING NO MICRODIAGNOSTIC ERRORS ARE PRESENT (THEY WOULD
2085                                 ;       ALREADY HAVE BEEN DETECTED IN PREVIOUS TESTS).  THE TEST
2086                                 ;       SEQUENCE IS SIMILAR TO THAT USED IN SUBTEST 1.
2087                                 ;
```

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

```
2088                                    ;
2089                                    ;
2090                                    ;-
2091 042370                             BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     042370                                                                          T3.2:
     042370  104402                                                                  TRAP    C$BSUB
2092 042372  004737  046640             JSR     PC,T31REST              ;SET COMMAND PACKET
2093 042376  004737  046732             JSR     PC,T31RT2               ;SET UP OTHER COMMAND PACKET
2094 042402  004737  046774             JSR     PC,T31RT3               ;SET UP OTHER COMMAND PACKET
2095 042406  004737  016054             JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
2096 042412  103407                     BCS     20$                     ;BR IF INIT WAS OK
2097 042414  005237  002214             INC     FATFLG                          ;ERROR COUNT
2101 042420  010001                     MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
2102 042422                             ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     042422  104455                                                                  TRAP    C$ERDF
     042424  000470                                                                  .WORD   312
     042426  003646                                                                  .WORD   SFIERR
     042430  012114                                                                  .WORD   SFIMSG
2103 042432  013737  002174  043240  20$:    MOV     UNITN,T31DSW            ;SET UP UNIT NUMBER IN PACKET
2104 042440  012704  043220             MOV     #T31PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
2105 042444  004737  010742             JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
2106 042450  103407                     BCS     23$                     ;BR, IF COMMAND ISSUED OK
2107 042452  005237  002214             INC     FATFLG                          ;ERROR COUNT
2111 042456  010001                     MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
2112 042460                             ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     042460  104456                                                                  TRAP    C$ERHRD
     042462  000471                                                                  .WORD   313
     042464  005052                                                                  .WORD   WRTMSG
     042466  012114                                                                  .WORD   SFIMSG
2113 042470                     23$:    CKLOOP                          ;LOOP IF SELECTED
     042470  104406                                                                  TRAP    C$CLP1
2114 042472  004737  011074             JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
2115 042476  103407                     BCS     30$                     ;BR, IF NO PROBLEM
2116 042500  010004                     MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
2117 042502  005237  002214             INC     FATFLG                          ;ERROR COUNT
2121 042506                             ERRHRD  ERRNO,T31RWN,PKTSSR     ;REWIND NOT ACCEPTED
     042506  104456                                                                  TRAP    C$ERHRD
     042510  000472                                                                  .WORD   314
     042512  044724                                                                  .WORD   T31RWN
     042514  012126                                                                  .WORD   PKTSSR
2122 042516                     30$:    CKLOOP                          ;LOOP IF SELECTED
     042516  104406                                                                  TRAP    C$CLP1
2123 042520  013701  043250             MOV     T31BFR+6,R1             ;PICK UP XSTO
2124 042524  010102                     MOV     R1,R2                   ;SET UP EXPECTED
2125 042526  052702  000002             BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2126 042532  020102                     CMP     R1,R2                   ;DOES EXP = REC'D
2127 042534  001406                     BEQ     40$                     ;BR, IF EQUAL (OK)
2128 042536  005237  002214             INC     FATFLG                          ;ERROR COUNT
2132 042542                             ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     042542  104456                                                                  TRAP    C$ERHRD
     042544  000473                                                                  .WORD   315
     042546  044375                                                                  .WORD   T31BOT
     042550  015554                                                                  .WORD   EXPREC
2133 042552                     40$:    CKLOOP                          ;LOOP IF SELECTED
     042552  104406                                                                  TRAP    C$CLP1
2134 042554  013737  003116  043342     MOV     FREE,T31WB              ;STARTING WRITE BUFFER ADDRESS
2135 042562  012737  140005  043340  65$:    MOV     #140005,T31PK3          ;WRITE DATA,CVC=1,ACK COMMAND
```

```
2136 042570  012704  043340                MOV     #T31PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
2137 042574  012700  000144                MOV     #100.,R0                    ;SET PATTERN IN CORRECT REGISTER
2138 042600  004737  017502                JSR     PC,FILLMEM          ;FILL MEMORY WITH RECORD SIZE
2139 042604  012737  000144  043346        MOV     #100.,T31SZ         ;SET UP RECORD SIZE IN PACKET
2140 042612  010465  000000                MOV     R4,TSDB(R5)         ;ISSUE COMMAND
2141 042616  004737  016330                JSR     PC,WAITF            ;WAIT FOR SSR TO SET
2142 042622  016501  000002                MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
2143 042626  012702  000200                MOV     #SSR,R2             ;SET UP EXPECTED
2144 042632  020102                        CMP     R1,R2               ;ARE THEY EQUAL
2145 042634  001406                        BEQ     80$                 ;BR, IF OK
2146 042636  005237  002214                INC     FATFLG                      ;ERROR COUNT
2150 042642                                ERRHRD  ERRNO,T31WDC,PKTSSR ;TSSR INCORRECT AFTER WRITE DATA
     042642  104456                                                            TRAP    C$ERHRD
     042644  000474                                                            .WORD   316
     042646  045260                                                            .WORD   T31WDC
     042650  012126                                                            .WORD   PKTSSR
2151 042652                        80$:    CKLOOP                      ;LOOP IF SELECTED
     042652  104406                                                            TRAP    C$CLP1
2152 042654  004737  011074                JSR     PC,REWIND           ;CALL TAPE REWIND COMMAND
2153 042660  103407                        BCS     230$                ;BR, IF NO PROBLEM
2154 042662  010001                        MOV     R0,R1               ;SAVE TSSR
2155 042664  005237  002214                INC     FATFLG                      ;ERROR COUNT
2159 042670                                ERRHRD  ERRNO,T31RWN,EXPREC ;REWIND NOT ACCEPTED
     042670  104456                                                            TRAP    C$ERHRD
     042672  000475                                                            .WORD   317
     042674  044724                                                            .WORD   T31RWN
     042676  015554                                                            .WORD   EXPREC
2160 042700                        230$:   CKLOOP                      ;LOOP IF SELECTED
     042700  104406                                                            TRAP    C$CLP1
2161 042702  013701  043250                MOV     T31BFR+6,R1         ;PICK UP XSTO
2162 042706  010102                        MOV     R1,R2               ;SET UP EXPECTED
2163 042710  052702  000002                BIS     #BIT1,R2            ;SET BOT BIT IN EXPECTED
2164 042714  020102                        CMP     R1,R2               ;DOES EXP = REC'D
2165 042716  001406                        BEQ     240$                ;BR, IF EQUAL (OK)
2166 042720  005237  002214                INC     FATFLG                      ;ERROR COUNT
2170 042724                                ERRHRD  ERRNO,T31BOT,EXPREC ;TAPE NOT AT BOT AFTER REWIND
     042724  104456                                                            TRAP    C$ERHRD
     042726  000476                                                            .WORD   318
     042730  044375                                                            .WORD   T31BOT
     042732  015554                                                            .WORD   EXPREC
2171 042734                        240$:   CKLOOP                      ;LOOP IF SELECTED
     042734  104406                                                            TRAP    C$CLP1
2172 042736  012737  041012  043340  265$:   MOV     #041012,T31PK3      ;INITIALIZE,CVC=1 COMMAND
2173 042744  012704  043340                MOV     #T31PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
2174 042750  010337  043346                MOV     R3,T31SZ            ;SET UP RECORD SIZE IN PACKET
2175 042754  010465  000000                MOV     R4,TSDB(R5)         ;ISSUE COMMAND
2176 042760  004737  016330                JSR     PC,WAITF            ;WAIT FOR SSR TO SET
2177 042764  016501  000002                MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
2178 042770  012702  000200                MOV     #SSR,R2             ;SET UP EXPECTED
2179 042774  020102                        CMP     R1,R2               ;ARE THEY EQUAL
2180 042776  001406                        BEQ     280$                ;BR, IF OK
2181 043000  005237  002214                INC     FATFLG                      ;ERROR COUNT
2185 043004                                ERRHRD  ERRNO,T31RDF,PKTSSR ;TSSR INCORRECT AFTER READ DATA
     043004  104456                                                            TRAP    C$ERHRD
     043006  000477                                                            .WORD   319
     043010  043573                                                            .WORD   T31RDF
     043012  012126                                                            .WORD   PKTSSR
```

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

```
2186 043014                          280$:  CKLOOP                                ;LOOP IF SELECTED
     043014  104406                                                                      TRAP    C$CLP1
2187 043016  013701  043250                 MOV     T31BFR+6,R1                  ;PICK UP XSTO
2188 043022  010102                         MOV     R1,R2                        ;SET UP EXPECTED
2189 043024  052702  000002                 BIS     #BIT1,R2                     ;SET BOT BIT IN EXPECTED
2190 043030  020102                         CMP     R1,R2                        ;DOES EXP = REC'D
2191 043032  001406                         BEQ     285$                         ;BR, IF EQUAL (OK)
2192 043034  005237  002214                 INC     FATFLG                               ;ERROR COUNT
2196 043040                                 ERRHRD  ERRNO,T31BOT,EXPREC          ;TAPE NOT AT BOT AFTER REWIND
     043040  104456                                                                      TRAP    C$ERHRD
     043042  000500                                                                      .WORD   320
     043044  044375                                                                      .WORD   T31BOT
     043046  015554                                                                      .WORD   EXPREC
2197 043050                          285$:  CKLOOP                                ;LOOP IF SELECTED
     043050  104406                                                                      TRAP    C$CLP1
2198 043052  012737  140001  043340         MOV     #140001,T31PK3               ;READ,ACK,CVC=1 COMMAND
2199 043060  012704  043340                 MOV     #T31PK3,R4                   ;SET UP R4 WITH PACKET ADDRESS
2200 043064  012737  000144  043346         MOV     #100.,T31SZ                  ;SET UP RECORD SIZE IN PACKET
2201 043072  010465  000000                 MOV     R4,TSDB(R5)                  ;ISSUE COMMAND
2202 043076  004737  016330                 JSR     PC,WAITF                     ;WAIT FOR SSR TO SET
2203 043102  016501  000002                 MOV     TSSR(R5),R1                  ;GET TSSR CONTENTS
2204 043106  012702  000200                 MOV     #SSR,R2                      ;SET UP EXPECTED
2205 043112  020102                         CMP     R1,R2                        ;ARE THEY EQUAL
2206 043114  001406                         BEQ     290$                         ;BR, IF OK
2207 043116  005237  002214                 INC     FATFLG                               ;ERROR COUNT
2211 043122                                 ERRHRD  ERRNO,T31RDE,PKTSSR          ;TSSR INCORRECT AFTER READ DATA
     043122  104456                                                                      TRAP    C$ERHRD
     043124  000501                                                                      .WORD   321
     043126  043374                                                                      .WORD   T31RDE
     043130  012126                                                                      .WORD   PKTSSR
2212 043132                          290$:  CKLOOP                                ;LOOP IF SELECTED
     043132  104406                                                                      TRAP    C$CLP1
2213 043134  017701  137756                 MOV     @FREE,R1                     ;GET DATA READ
2214 043140  012702  000144                 MOV     #100.,R2                     ;READ EXPECTED
2215 043144  020102                         CMP     R1,R2                        ;DID TAPE STAY POSITIONED
2216 043146  001406                         BEQ     330$                         ;BR, IF EXPD = RECD
2217 043150  005237  002214                 INC     FATFLG                               ;ERROR COUNT
2221 043154                                 ERRHRD  ERRNO,T31WNH,EXPREC          ;TAPE POSITION NOT CORRECT AFTER INIT
     043154  104456                                                                      TRAP    C$ERHRD
     043156  000502                                                                      .WORD   322
     043160  043440                                                                      .WORD   T31WNH
     043162  015554                                                                      .WORD   EXPREC
2222 043164                          330$:
2223 043164                                 ENDSUB                               ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     043164                                                                              L10052:
     043164  104403                                                                      TRAP    C$ESUB
2224 043166  023727  002214  000017         CMP     FATFLG,#15.                          ;IS ERROR COUNT AT 25
2225 043174  103402                         BLO     999$                                 ;BR, IF LESS THAN 25
2226 043176  004737  017262                 JSR     PC,CKDROP                            ;TRY TO DROP THE UNIT
2227 043202                          999$:
2228                                 ;
2229                                 ;
2230                                 ;
2231 043202  004737  016536                 JSR     PC,TSTLOOP                   ;DO WE NEED TO ITERATE TEST
2232 043206  103002                         BCC     163$                         ;BR, IF NO LOOP REQUIRED
2233 043210  000137  041512                 JMP     T31LOOP                      ;EXECUTE AGAIN
2234 043214                          163$:  EXIT    TST                          ;ALL DONE THIS TEST
```

```
043214  104432                                                          TRAP    C$EXIT
043216  003600                                                          .WORD   L10050-.
2235                            ;*
2236                            ;LOCAL STORAGE FOR THIS TEST
2237                            ;-
2241 043220                     T31PACKET:                              ;COMMAND PACKET FOR TEST
2242 043220  100004                     .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
2243 043222  043230                     .WORD   T31DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
2244 043224  000000                     .WORD   0
2245 043226  000012                     .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
2246 043230                     T31DATA:                                ;CHARACTERISTICS DATA BLOCK
2247 043230  043242                     .WORD   T31BFR                  ;ADDRESS OF MESSAGE BUFFER
2248 043232  000000                     .WORD   0
2249 043234  000024                     .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
2250 043236  000000                     .WORD   0
2251 043240  000000             T31DSW: .WORD   0                       ;SELECT DRIVE 0
2252 043242                     T31BFR: .BLKW   25.                     ;MESSAGE BUFFER
2253                            ;
2254                            ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
2255                            ;
2257         043330                     .=<.+10>&177770
2259 043330                     T31PK2:
2260 043330  100006                     .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
2261 043332  043350                     .WORD   T31BF2                  ;ADDRESS OF SELECT BLOCK DATA
2262 043334  000000                     .WORD   0
2263 043336  000006                     .WORD   6.                      ;SIZE OF DATA PACKET
2264
2268 043340                     T31PK3:
2269 043340  100005                     .WORD   100005                  ;REREAD COMMAND, AND ACK
2270 043342                     T31RB:
2271 043342  003116             T31WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
2272 043344  000000                     .WORD   0
2273 043346  000000             T31SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
2274                                    .EVEN
2275                            ;
2276                            ;
2277                            ;
2278 043350                     T31BF2:
2279 043350     010             T31BS0: .BYTE   10                      ;BSEL0 AREA
2280 043351     200             T31BS1: .BYTE   200                     ;BSEL1 AREA
2281 043352  000000             T31S2:  .WORD   0                       ;SEL 2 AREA
2282 043354  000000             T31S3:  .WORD   0                       ;DATA AREA
2283                            ;
2284                            ;
2285                                    .EVEN
2286                            ;TAPE MOTION PACKET COMMAND VALUES
2287
2288 043356  100205             T31RN:  .WORD   100205                  ;REREAD DATA (NEXT)
2289 043360  100605             T31WDR: .WORD   100605                  ;REREAD DATA RETRY
2290 043362  102205             T31CON: .WORD   102205                  ;WRITE CONTINOUS
2291 043364  177777                     .WORD   177777                  ;END OF DATA
2292
2293                            ;
2294 043366  000000             T31CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
2295 043370  000000             T31CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
2296 043372  000000             T31DLY: .WORD   0                       ;DELAY COUNTER
2297                            ;+
```

```
2298                                    ;LOCAL TEXT MESSAGES FOR TEST
2299                                    ;-
2300
2301 043374     124     123     123    T31RDE: .ASCIZ  'TSSR Not Correct After READ Command'
2302 043440     124     141     160    T31WNH: .ASCIZ  'Tape Position Incorrect After INITIALIZE Command'
2303 043521     124     141     160    T31WNG: .ASCIZ  'Tape Position Incorrect After NOP Command'
2304 043573     124     123     123    T31RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
2305 043642     122     105     122    T31RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
2306 043737     120     117     123    T31SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
2307 044021     122     111     102    T31LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
2308 044071     124     123     123    T31WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
2309 044146     111     154     154    T31LOG: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
2310 044227     122     105     122    T31SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
2311 044263     124     123     123    T31WDE: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE Command,At BOT'
2312 044375     124     141     160    T31BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
2313 044470     116     117     055    T31TIM: .ASCIZ  'NO-OP ("CLEAN TAPE") AND INITIALIZ''S Erase Tape Not Long Enough'
2314 044570     122     105     122    T31EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
2315 044647     124     123     123    T31TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
2316 044724     122     145     167    T31RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
2317 044773     122     101     115    T31RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
2318 045046     124     123     123    T31AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
2319 045115     104     162     151    T310FL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
2320 045170     124     123     123    T31WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
2321 045260     124     123     123    T31WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
2322 045333     103     126     103    T31VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
2323 045406     124     123     102    T31BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
2324 045461     127     122     111    T31WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
2325 045550     122     145     141    T31LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XST0'
2326 045632     122     145     141    T31LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XST0'
2327 045714     122     145     163    T31PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
2328 046002     122     145     141    T31TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
2329 046070     116     117     055    T31NEF: .ASCIZ  'NO-OP ("CLEAN TAPE") AND INITIALIZE, At First Record, Failed To Set RIB Bit
X
2330 046211     124     123     123    T31SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
2331 046266     124     123     123    T31TSA: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE, Into BOT'
2332 046373     124     123     123    T31WRF: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE Command'
2333 046476     104     141     164    T31DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
2334 046573     116     117     055    TST31ID:        .ASCIZ  'NO-OP ("Clean Tape") And INITIALIZE'
2335                                            .EVEN
2336                                    ;*
2337                                    ;
2338                                    ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
2339                                    ;WRITE SUBSYSTEM MEMORY COMMAND
2340                                    ;
2341                                    ;-
2342
2343 046640                             T31REST:
2344 046640                                     SAVREG                          ;SAVE THE REGISTERS
2345 046644     012701  043220                   MOV     #T31PACKET,R1           ;START OF THE PACKET
2346 046650     012721  100004                   MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
2347 046654     012721  043230                   MOV     #T31DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
2348 046660     005021                           CLR     (R1)+                   ;EXTENDED ADDRESS
2349 046662     012721  000012                   MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
2350 046666     012721  043242                   MOV     #T31BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
2351 046672     005021                           CLR     (R1)+
2352 046674     012721  000024                   MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
2353 046700     005021                           CLR     (R1)+
2354 046702     012711  000000                   MOV     #0,(R1)                 ;SELECT DRIVE ZERO
```

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

```
2355 046706  012702  000030                 MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
2356 046712  012762  177777  043242  64$:   MOV     #177777,T31BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
2357 046720  005742                         TST     -(R2)                   ;NEXT LOCATION
2358 046722  022702  000000                 CMP     #0,R2                   ;AT END OF LOOP YET
2359 046726  001371                         BNE     64$                     ;KEEP GOING UNTIL DONE
2360 046730  000207                         RTS     PC                      ;RETURN
2361
2362 046732                          T31RT2:
2363 046732                                 SAVREG                          ;SAVE THE REGISTERS
2364 046736  012701  043330                 MOV     #T31PK2,R1              ;START OF THE PACKET
2365 046742  012721  100006                 MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
2366 046746  012721  043350                 MOV     #T31BF2,(R1)+           ;ADDRESS OF DATA BLOCK
2367 046752  005021                         CLR     (R1)+                   ;EXTENDED ADDRESS
2368 046754  012721  000006                 MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
2369 046760  005021                         CLR     (R1)+
2370 046762  012701  043350                 MOV     #T31BF2,R1              ;POINT TO DATA SEL AREA
2371 046766  005021                         CLR     (R1)+
2372 046770  005011                         CLR     (R1)
2373 046772  000207                         RTS     PC                      ;RETURN
2374 046774                          T31RT3:
2375 046774                                 SAVREG                          ;SAVE REGISTERS
2376 047000  012701  043340                 MOV     #T31PK3,R1              ;SET UP POINTER ADDRESS
2377 047004  005021                         CLR     (R1)+                   ;COMMAND SPACE
2378 047006  005021                         CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
2379 047010  005021                         CLR     (R1)+                   ;EXTENDED ADDRESS
2380 047012  005011                         CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
2381 047014  000207                         RTS     PC                      ;RETURN
2382 047016                                 ENDTST
     047016                                                         L10050:
     047016  104401                                                 TRAP    C$ETST
```

```
2383                    .SBTTL  TEST  4: Erase And Operation Incomplete
2384
2385                    ;*
2386                    ;       VERIFIES THAT AN ERASE COMMAND ISSUED WHEN THE TAPE IS
2387                    ;       POSITIONED AT BOT OPERATES PROPERLY AND ACTUALLY ERASES TAPE.
2388                    ;       THE FOLLOWING TEST SEQUENCE IS PERFORMED:
2389                    ;
2390                    ;
2391                    ;            1.  THE TAPE IS FIRST REWOUND, SEVERAL TEST RECORDS ARE
2392                    ;                WRITTEN, AND THE TAPE IS REWOUND AGAIN.
2393                    ;
2394                    ;            2.  AN ERASE COMMAND IS ISSUED, WHICH SHOULD ERASE A NUMBER
2395                    ;                OF THE TEST RECORDS.
2396                    ;
2397                    ;            3.  NORMAL TERMINATION IS VERIFIED AND STATUS IS CHECKED
2398                    ;                (BOT SHOULD BE 0).
2399                    ;
2400                    ;            4.  A READ REVERSE COMMAND IS ISSUED.  IT IS VERIFIED THAT
2401                    ;                THE COMMAND TERMINATES WITH TAPE STATUS ALERT, THAT THE
2402                    ;                REVERSE INTO BOT (RIB) STATUS BIT IS SET, AND THAT NO
2403                    ;                DATA IS TRANSFERRED.  THIS DEMONSTRATES THAT NO DATA
2404                    ;                WAS ENCOUNTERED IN THE AREA ERASED BY THE ERASE
2405                    ;                COMMAND.
2406                    ;
2407                    ;
2408                    ;
2409                    ;
```

TEST 4: ERASE AND OPERATION INCOMPLETE

```
                                        ;
                                        ;
                                        ;
                                        ;THE TEST CONSISTS OF THE FOLLOWING 3 SUBTESTS
                                        ;
                                        ;
                                        ;
                                        ;-
047020                                          BGNTST
047020                                                                          T4::
047020  012737  006354  002172                  MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
047026  012700  052670                          MOV     #TST32ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
047032  004737  016570                          JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
047036  012737  000005  002210                  MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
047044  005037  051540                          CLR     T32CNT                  ;CLEAR TAPE RECORD COUNTER
                                        ;+
                                        ;
                                        ;TEST 4, SUBTEST 1
                                        ;
                                        ;
                                        ;VERIFIES THAT A Erase And Operation Incomplete COMMAND ISSUED WHILE
                                        ;THE TAPE IS POSITIONED AT BOT CAUSES FUNCTION REJECT
                                        ;TERMINATION, WITH THE NON-EXECUTABLE FUNCTION (NEF)
                                        ;ERROR BIT SET.
                                        ;
                                        ;
                                        ;-
047050                                  T32LOOP:
                                        ;
                                        ;
                                        ;-
047050                                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
047050                                                                                  T4.1:
047050  104402                                                                          TRAP    C$BSUB
047052  004737  052730                          JSR     PC,T32REST              ;SET COMMAND PACKET
047056  004737  053022                          JSR     PC,T32RT2               ;SET UP OTHER COMMAND PACKET
047062  004737  053052                          JSR     PC,T32RT3               ;SET UP OTHER COMMAND PACKET
047066  012737  176750  051544                  MOV     #65000.,T32DLY          ;SET UP DELAY COUNTER
047074  004737  016054          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
047100  103426                          BCS     20$                     ;BR IF INIT WAS OK
047102                                  DELAY   250                     ;DELAY ABOUT .25 SEC
047102  012727  000250                                                          MOV     #250,(PC)+
047106  000000                                                                  .WORD   0
047110  013727  002116                                                          MOV     L$DLY,(PC)+
047114  000000                                                                  .WORD   0
047116  005367  177772                                                          DEC     -6(PC)
047122  001375                                                                  BNE     .-4
047124  005367  177756                                                          DEC     -22(PC)
047130  001367                                                                  BNE     .-20
047132  005337  051544                          DEC     T32DLY                  ;BUMP COUNTER
047136  001356                          BNE     10$                     ;BR. IF COUNTER NOT DONE
047140  005237  002214                          INC     FATFLG                          ;ERROR COUNT
047144  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
047146                                  ERRDF   CRRNU,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
047146  104455                                                                  TRAP    C$ERDF
047150  000621                                                                  .WORD   401
```

TEST 4: ERASE AND OPERATION INCOMPLETE

```
        047152  003646                                                          .WORD   SFIERR
        047154  012114                                                          .WORD   SFIMSG
2461    047156  013737  002174  051400  20$:    MOV     UNITN,T32DSW           ;SET UP DRIVE NUMBER
2462    047164  012704  051360                  MOV     #T32PACKET,R4          ;SUBROUTINE NEEDS PACKET ADDRESS
2463    047170  004737  010742                  JSR     PC,WRTCHR              ;ISSUE WRITE CHARACTERISTICS
2464    047174  103407                          BCS     25$                    ;BR, IF COMMAND ISSUED OK
2465    047176  005237  002214                  INC     FATFLG                         ;ERROR COUNT
2469    047202  010001                          MOV     R0,R1                  ;SAVE CONTENTS OF TSSR
2470    047204                                  ERRHRD  ERRNO,WRTMSG,SFIMSG    ;WRITE CHARACTERISTISC FAILED
        047204  104456                                                          TRAP    C$ERHRD
        047206  000622                                                          .WORD   402
        047210  005052                                                          .WORD   WRTMSG
        047212  012114                                                          .WORD   SFIMSG
2471    047214                          25$:    CKLOOP                         ;LOOP IF SELECTED
        047214  104406                                                          TRAP    C$CLP1
2472    047216  004737  011074                  JSR     PC,REWIND              ;CALL TAPE REWIND COMMAND
2473    047222  103411                          BCS     26$                    ;BR, IF NO PROBLEM
2474    047224  010004                          MOV     R0,R4                  ;SET UP REWIND PACKET ADDRESS
2475    047226  016501  000002                  MOV     TSSR(R5),R1            ;GET TSSR CONTENTS
2476    047232  005237  002214                  INC     FATFLG                         ;ERROR COUNT
2480    047236                                  ERRHRD  ERRNO,T32RWN,PKTSSR    ;REWIND NOT ACCEPTED
        047236  104456                                                          TRAP    C$ERHRD
        047240  000623                                                          .WORD   403
        047242  051730                                                          .WORD   T32RWN
        047244  012126                                                          .WORD   PKTSSR
2481    047246                          26$:    CKLOOP                         ;LOOP IF SELECTED
        047246  104406                                                          TRAP    C$CLP1
2482    047250  012703  000400                  MOV     #256.,R3               ;STARTING RECORD SIZE
2483    047254  013737  003116  051502          MOV     FREE,T32WB             ;STARTING WRITE BUFFER ADDRESS
2484    047262  012737  140005  051500          MOV     #140005,T32PK3         ;WRITE DATA,CVC=1,ACK COMMAND
2485    047270  012704  051500                  MOV     #T32PK3,R4             ;SET UP R4 WITH PACKET ADDRESS
2486    047274  010337  051506          27$:    MOV     R3,T32SZ               ;SET UP RECORD SIZE IN PACKET
2487    047300  010465  000000                  MOV     R4,TSDB(R5)            ;ISSUE COMMAND
2488    047304  004737  016330                  JSR     PC,WAITF               ;WAIT FOR SSR TO SET
2489    047310  016501  000002                  MOV     TSSR(R5),R1            ;GET TSSR CONTENTS
2490    047314  012702  000200                  MOV     #SSR,R2                ;SET UP EXPECTED
2491    047320  020102                          CMP     R1,R2                  ;ARE THEY EQUAL
2492    047322  001406                          BEQ     28$                    ;BR, IF OK
2493    047324  005237  002214                  INC     FATFLG                         ;ERROR COUNT
2497    047330                                  ERRHRD  ERRNO,T32WDC,PKTSSR    ;TSSR INCORRECT AFTER WRITE DATA
        047330  104456                                                          TRAP    C$ERHRD
        047332  000624                                                          .WORD   404
        047334  052566                                                          .WORD   T32WDC
        047336  012126                                                          .WORD   PKTSSR
2498    047340                          26$:    CKLOOP                         ;LOOP IF SELECTED
        047340  104406                                                          TRAP    C$CLP1
2499    047342  005723                          TST     (R3)+                  ;BUMP RECORD COUNTER
2500    047344  020327  001002                  CMP     R3,#514.               ;AT MAX SIZE YET
2501    047350  001351                          BNE     27$                    ;BR, IF NOT AT END OF LOOP
2502    047352  004737  011074                  JSR     PC,REWIND              ;CALL TAPE REWIND COMMAND
2503    047356  103411                          BCS     30$                    ;BR, IF NO PROBLEM
2504    047360  016501  000002                  MOV     TSSR(R5),R1            ;GET TSSR CONTENTS
2505    047364  010004                          MOV     R0,R4                  ;SET UP REWIND PACKET ADDRESS
2506    047366  005237  002214                  INC     FATFLG                         ;ERROR COUNT
2510    047372                                  ERRHRD  ERRNO,T32RWN,PKTSSR    ;REWIND NOT ACCEPTED
        047372  104456                                                          TRAP    C$ERHRD
        047374  000625                                                          .WORD   405
```

TEST 4: ERASE AND OPERATION INCOMPLETE

```
        047376  051730                                                          .WORD   T32RWN
        047400  012126                                                          .WORD   PKTSSR
   2511 047402                          30$:    CKLOOP                      ;LOOP IF SELECTED
        047402  104406                                                          TRAP    C$CLP1
   2512 047404  013701  051410                  MOV     T32BFR+6,R1         ;PICK UP XSTO
   2513 047410  010102                          MOV     R1,R2               ;SET UP EXPECTED
   2514 047412  052702  000002                  BIS     #BIT1,R2            ;SET BOT BIT IN EXPECTED
   2515 047416  020102                          CMP     R1,R2               ;DOES EXP = REC'D
   2516 047420  001406                          BEQ     40$                 ;BR. IF EQUAL (OK)
   2517 047422  005237  002214                  INC     FATFLG                      ;ERROR COUNT
   2521 047426                                  ERRHRD  ERRNO,T32BOE,EXPREC ;TAPE NOT AT BOT AFTER ERASE
        047426  104456                                                          TRAP    C$ERHRD
        047430  000626                                                          .WORD   406
        047432  052416                                                          .WORD   T32BOE
        047434  015554                                                          .WORD   EXPREC
   2522 047436                          40$:    CKLOOP                      ;LOOP IF SELECTED
        047436  104406                                                          TRAP    C$CLP1
   2523 047440  012737  140411  051500          MOV     #140411,T32PK3      ;ERASE TAPE,CVC=1,ACK COMMAND
   2524 047446  012704  051500                  MOV     #T32PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
   2525 047452  010465  000000                  MOV     R4,TSDB(R5)         ;ISSUE COMMAND
   2526 047456  004737  016330                  JSR     PC,WAITF            ;WAIT FOR SSR TO SET
   2527 047462  016501  000002                  MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
   2528 047466  012702  000200                  MOV     #SSR,R2             ;SET UP EXPECTED
   2529 047472  020102                          CMP     R1,R2               ;ARE THEY EQUAL
   2530 047474  001406                          BEQ     50$                 ;BR. IF OK
   2531 047476  005237  002214                  INC     FATFLG                      ;ERROR COUNT
   2535 047502                                  ERRHRD  ERRNO,T32ERA,PKTSSR ;TSSR INCORRECT AFTER ERASE DATA
        047502  104456                                                          TRAP    C$ERHRD
        047504  000627                                                          .WORD   407
        047506  052046                                                          .WORD   T32ERA
        047510  012126                                                          .WORD   PKTSSR
   2536 047512                          50$:    CKLOOP                      ;LOOP IF SELECTED
        047512  104406                                                          TRAP    C$CLP1
   2537 047514  013701  051410                  MOV     T32BFR+6,R1         ;PICK UP XSTO
   2538 047520  010102                          MOV     R1,R2               ;SET UP EXPECTED
   2539 047522  042702  000002                  BIC     #BIT1,R2            ;SET BOT BIT IN EXPECTED
   2540 047526  020102                          CMP     R1,R2               ;DOES EXP = REC'D
   2541 047530  001406                          BEQ     55$                 ;BR. IF EQUAL (OK)
   2542 047532  005237  002214                  INC     FATFLG                      ;ERROR COUNT
   2546 047536                                  ERRHRD  ERRNO,T32BOE,EXPREC ;TAPE NOT AT BOT AFTER REWIND
        047536  104456                                                          TRAP    C$ERHRD
        047540  000630                                                          .WORD   408
        047542  052416                                                          .WORD   T32BOE
        047544  015554                                                          .WORD   EXPREC
   2547 047546                          55$:    CKLOOP                      ;LOOP IF SELECTED
        047546  104406                                                          TRAP    C$CLP1
   2548 047550  013737  003116  051502          MOV     FREE,T32RB          ;ADDRESS OF BUFFER
   2549 047556  012737  140401  051500          MOV     #140401,T32PK3      ;READ REVERSE,ACK,CVC=1 COMMAND
   2550 047564  012737  000400  051506          MOV     #256.,T32SZ         ;SET UP THE SIZE OF RECORD
   2551 047572  012704  051500                  MOV     #T32PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
   2552 047576  010465  000000                  MOV     R4,TSDB(R5)         ;ISSUE COMMAND
   2553 047602  004737  016330                  JSR     PC,WAITF            ;WAIT FOR SSR TO SET
   2554 047606  016501  000002                  MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
   2555 047612  012702  100204                  MOV     #SSR!SC!BIT2,R2     ;SET UP EXPECTED TAPE STATUS ALERT
   2556 047616  020102                          CMP     R1,R2               ;ARE THEY EQUAL
   2557 047620  001406                          BEQ     180$                ;BR. IF OK
   2558 047622  005237  002214                  INC     FATFLG                      ;ERROR COUNT
```

TEST 4: ERASE AND OPERATION INCOMPLETE

```
2562 047626                                    ERRHRD  ERRNO,T32TSA,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     047626  104456                                                                    TRAP    C$ERHRD
     047630  000631                                                                    .WORD   409
     047632  052341                                                                    .WORD   T32TSA
     047634  012126                                                                    .WORD   PKTSSR
2563 047636                            180$:   CKLOOP                          ;LOOP IF SELECTED
     047636  104406                                                                    TRAP    C$CLP1
2564 047640  013701  051416                       MOV     T32BFR+14,R1        ;GET XST3 STATUS WORD
2565 047644  010102                               MOV     R1,R2               ;SET UP EXPECTED
2566 047646  052702  000001                       BIS     #BIT0,R2            ;SET THE RIB BIT
2567 047652  020102                               CMP     R1,R2               ;ARE THEY EQUAL
2568 047654  001406                               BEQ     190$                ;BR, IF EQUAL (GOOD)
2569 047656  005237  002214                       INC     FATFLG                      ;ERROR COUNT
2573 047662                                       ERRHRD  ERRNO,T32RIB,EXPREC ;RIB SHOULD BE SET
     047662  104456                                                                    TRAP    C$ERHRD
     047664  000632                                                                    .WORD   410
     047666  052166                                                                    .WORD   T32RIB
     047670  015554                                                                    .WORD   EXPREC
2574 047672                            190$:
2575 047672                                       ENDSUB                  ;>>>>>>>>>>>> END SUBTEST <<<<<<<<<<<<
     047672                                                                 10054:
     047672  104403                                                                    TRAP    C$ESUB
2576 047674  023727  002214  000017               CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
2577 047702  103402                               BLO     999$                    ;BR, IF LESS THAN 25
2578 047704  004737  017262                       JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
2579 047710                            999$:
2580                                   ;*
2581                                   ;
2582                                   ;TEST 4, SUBTEST 2
2583                                   ;
2584                                   ;       VERIFIES THAT AN ERASE COMMAND EXECUTED WHEN THE TAPE IS NOT
2585                                   ;       POSITIONED AT BOT OPERATES PROPERLY AND DOES NOT CORRUPT
2586                                   ;       PREVIOUS TAPE RECORDS.  THE TEST SEQUENCE IS:
2587                                   ;
2588                                   ;            1.  THE TAPE IS FIRST REWOUND, SEVERAL TEST RECORDS ARE
2589                                   ;                WRITTEN, AND THE TAPE IS REWOUND AGAIN.
2590                                   ;
2591                                   ;
2592                                   ;            2.  A SPACE RECORDS FORWARD COMMAND IS ISSUED TO MOVE THE
2593                                   ;                TAPE OFF OF BOT AND SKIP OVER THE FIRST SEVERAL
2594                                   ;                RECORDS.
2595                                   ;
2596                                   ;            3.  AN ERASE COMMAND IS ISSUED, WHICH SHOULD ERASE A NUMBER
2597                                   ;                OF THE TEST RECORDS.
2598                                   ;
2599                                   ;            4.  NORMAL TERMINATION IS VERIFIED AND STATUS IS CHECKED.
2600                                   ;
2601                                   ;            5.  A READ REVERSE COMMAND IS ISSUED.  IT IS VERIFIED THAT
2602                                   ;                NORMAL TERMINATION IS ACCOMPLISHED AND THAT THE DATA
2603                                   ;                TRANSFERRED CORRESPONDS TO THAT FOR THE EXPECTED
2604                                   ;                RECORD.  THIS DEMONSTRATES THAT NO DATA WAS ENCOUNTERED
2605                                   ;                IN THE AREA ERASED BY THE ERASE COMMAND, AND THAT THE
2606                                   ;                PREVIOUS RECORD WAS NOT CORRUPTED.
2607                                   ;
2608                                   ;
2609                                   ;
2610                                   ;
```

. TEST 4: ERASE AND OPERATION INCOMPLETE

```
2611                                    ;
2612                                    ;
2613                                    ;-
2614 047710                                     BGNSUB                                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     047710                                                                                     T4.2:
     047710  104402                                                                               TRAP    C$BSUB
2615 047712  004737  052730                     JSR     PC,T32REST              ;SET COMMAND PACKET
2616 047716  004737  053022                     JSR     PC,T32RT2               ;SET UP OTHER COMMAND PACKET
2617 047722  004737  053052                     JSR     PC,T32RT3               ;SET UP OTHER COMMAND PACKET
2618 047726  004737  016054                     JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
2619 047732  103407                           BCS     20$                     ;BR IF INIT WAS OK
2620 047734  005237  002214                     INC     FATFLG                          ;ERROR COUNT
2624 047740  010001                           MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
2625 047742                                     ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     047742  104455                                                                             TRAP    C$ERDF
     047744  000633                                                                           .WORD   411
     047746  003646                                                                           .WORD   SFIERR
     047750  012114                                                                           .WORD   SFIMSG
2626 047752  013737  002174  051400  20$:      MOV     UNITN,T32DSW            ;SET UP UNIT NUMBER IN PACKET
2627 047760  012704  051360                     MOV     #T32PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
2628 047764  004737  010742                     JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
2629 047770  103407                           BCS     23$                     ;BR, IF COMMAND ISSUED OK
2630 047772  005237  002214                     INC     FATFLG                          ;ERROR COUNT
2634 047776  010001                           MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
2635 050000                                     ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     050000  104456                                                                             TRAP    C$ERHRD
     050002  000634                                                                           .WORD   412
     050004  005052                                                                           .WORD   WRTMSG
     050006  012114                                                                           .WORD   SFIMSG
2636 050010                             23$:    CKLOOP                          ;LOOP IF SELECTED
     050010  104406                                                                             TRAP    C$CLP1
2637 050012  004737  011074                     JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
2638 050016  103407                           BCS     30$                     ;BR, IF NO PROBLEM
2639 050020  010004                           MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
2640 050022  005237  002214                     INC     FATFLG                          ;ERROR COUNT
2644 050026                                     ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
     050026  104456                                                                             TRAP    C$ERHRD
     050030  000635                                                                           .WORD   413
     050032  051730                                                                           .WORD   T32RWN
     050034  012126                                                                           .WORD   PKTSSR
2645 050036                             30$:    CKLOOP                          ;LOOP IF SELECTED
     050036  104406                                                                             TRAP    C$CLP1
2646 050040  013701  051410                     MOV     T32BFR+6,R1             ;PICK UP XSTO
2647 050044  010102                           MOV     R1,R2                   ;SET UP EXPECTED
2648 050046  052702  000002                     BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2649 050052  020102                           CMP     R1,R2                   ;DOES EXP = REC'D
2650 050054  001406                           BEQ     40$                     ;BR, IF EQUAL (OK)
2651 050056  005237  002214                     INC     FATFLG                          ;ERROR COUNT
2655 050062                                     ERRHRD  ERRNO,T32BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     050062  104456                                                                             TRAP    C$ERHRD
     050064  000636                                                                           .WORD   414
     050066  051546                                                                           .WORD   T32BOT
     050070  015554                                                                           .WORD   EXPREC
2656 050072                             40$:    CKLOOP                          ;LOOP IF SELECTED
     050072  104406                                                                             TRAP    C$CLP1
2657 050074  012703  000144                     MOV     #100.,R3                ;STARTING RECORD SIZE
2658 050100  010300                           MOV     R3,R0                   ;SET UP MEMORY FILL
```

TEST 4: ERASE AND OPERATION INCOMPLETE

```
2659 050102  004737  017502                    JSR     PC,FILLMEM              ;CALL MEMORY FILLER
2660 050106  013737  003116  051502            MOV     FREE,T32WB              ;STARTING WRITE BUFFER ADDRESS
2661 050114  012737  140005  051500  65$:      MOV     #140005,T32PK3          ;WRITE DATA,CVC=1,ACK COMMAND
2662 050122  012704  051500                    MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2663 050126  010300                            MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
2664 050130  004737  017502                    JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
2665 050134  010337  051506                    MOV     R3,T32SZ                ;SET UP RECORD SIZE IN PACKET
2666 050140  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2667 050144  004737  016330                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2668 050150  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2669 050154  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
2670 050160  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
2671 050162  001406                            BEQ     80$                     ;BR, IF OK
2672 050164  005237  002214                    INC     FATFLG                          ;ERROR COUNT
2676 050170                                    ERRHRD  ERRNO,T32WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     050170  104456                                                                    TRAP    C$ERHRD
     050172  000637                                                                    .WORD   415
     050174  052566                                                                    .WORD   T32WDC
     050176  012126                                                                    .WORD   PKTSSR
2677 050200                            80$:    CKLOOP                          ;LOOP IF SELECTED
     050200  104406                                                                    TRAP    C$CLP1
2678 050202  005723                            TST     (R3)+                   ;BUMP RECORD SIZE COUNTER
2679 050204  020327  000156                    CMP     R3,#110.                ;AT 160 SIZE YET
2680 050210  001341                            BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
2681 050212  004737  011074                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
2682 050216  103407                            BCS     230$                    ;BR, IF NO PROBLEM
2683 050220  010001                            MOV     R0,R1                   ;SAVE TSSR
2684 050222  005237  002214                    INC     FATFLG                          ;ERROR COUNT
2688 050226                                    ERRHRD  ERRNO,T32RWN,EXPREC     ;REWIND NOT ACCEPTED
     050226  104456                                                                    TRAP    C$ERHRD
     050230  000640                                                                    .WORD   416
     050232  051730                                                                    .WORD   T32RWN
     050234  015554                                                                    .WORD   EXPREC
2689 050236                            230$:   CKLOOP                          ;LOOP IF SELECTED
     050236  104406                                                                    TRAP    C$CLP1
2690 050240  013701  051410                    MOV     T32BFR+6,R1             ;PICK UP XSTO
2691 050244  010102                            MOV     R1,R2                   ;SET UP EXPECTED
2692 050246  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2693 050252  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
2694 050254  001406                            BEQ     240$                    ;BR, IF EQUAL (OK)
2695 050256  005237  002214                    INC     FATFLG                          ;ERROR COUNT
2699 050262                                    ERRHRD  ERRNO,T32BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     050262  104456                                                                    TRAP    C$ERHRD
     050264  000641                                                                    .WORD   417
     050266  051546                                                                    .WORD   T32BOT
     050270  015554                                                                    .WORD   EXPREC
2700 050272                            240$:   CKLOOP                          ;LOOP IF SELECTED
     050272  104406                                                                    TRAP    C$CLP1
2701 050274  012703  000001                    MOV     #1,R3                   ;SET UP FOR SPACE COMMAND
2702 050300  004737  010544                    JSR     PC,SPACE                ;ISSUE SPACE COMMAND 1 FORWARD
2703 050304  012737  140411  051500  265$:     MOV     #140411,T32PK3          ;ERASE DATA,ACK COMMAND
2704 050312  012704  051500                    MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2705 050316  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2706 050322  004737  016330                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2707 050326  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2708 050332  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
2709 050336  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
```

TEST 4: ERASE AND OPERATION INCOMPLETE

```
2710 050340  001406                          BEQ     280$                    ;BR, IF OK
2711 050342  005237  002214                  INC     FATFLG                          ;ERROR COUNT
2715 050346                                  ERRHRD  ERRNO,T32ERA,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     050346  104456                                                                  TRAP    C$ERHRD
     050350  000642                                                                  .WORD   418
     050352  052046                                                                  .WORD   T32ERA
     050354  012126                                                                  .WORD   PKTSSR
2716 050356                          280$:   CKLOOP                          ;LOOP IF SELECTED
     050356  104406                                                                  TRAP    C$CLP1
2717 050360  013737  003116  051502          MOV     FREE,T32RB              ;ADDRESS OF BUFFER
2718 050366  012737  140401  051500          MOV     #140401,T32PK3          ;READ REVERSE,ACK,CVC-1 COMMAND
2719 050374  012737  000144  051506          MOV     #100.,T32SZ             ;SET UP THE SIZE OF RECORD
2720 050402  012704  051500                  MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2721 050406  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2722 050412  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2723 050416  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2724 050422  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED TAPE STATUS ALERT
2725 050426  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
2726 050430  001406                          BEQ     290$                    ;BR, IF OK
2727 050432  005237  002214                  INC     FATFLG                          ;ERROR COUNT
2731 050436                                  ERRHRD  ERRNO,T32TSA,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     050436  104456                                                                  TRAP    C$ERHRD
     050440  000643                                                                  .WORD   419
     050442  052341                                                                  .WORD   T32TSA
     050444  012126                                                                  .WORD   PKTSSR
2732 050446                          290$:   CKLOOP                          ;LOOP IF SELECTED
     050446  104406                                                                  TRAP    C$CLP1
2733 050450  017701  132442                  MOV     @FREE,R1                ;GET DATA READ
2734 050454  012702  000144                  MOV     #100.,R2                ;SHOULD BE 100
2735 050460  020102                          CMP     R1,R2                   ;CHECK'EM OUT
2736 050462  001406                          BEQ     300$                    ;BR, IF OK
2737 050464  005237  002214                  INC     FATFLG                          ;ERROR COUNT
2741 050470                                  ERRHRD  ERRNO,T32ECF,EXPREC     ;ERASE COMMAND DIDN'T WORK
     050470  104456                                                                  TRAP    C$ERHRD
     050472  000644                                                                  .WORD   420
     050474  052505                                                                  .WORD   T32ECF
     050476  015554                                                                  .WORD   EXPREC
2742 050500                          300$:   CKLOOP                          ;LOOP IF SELECTED
     050500  104406                                                                  TRAP    C$CLP1
2743 050502                          330$:
2744 050502                                  ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     050502                                                                       L10055:
     050502  104403                                                                  TRAP    C$ESUB
2745 050504  023727  002214  000017          CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
2746 050512  103402                          BLO     999$                            ;BR, IF LESS THAN 25
2747 050514  004737  017262                  JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
2748 050520                          999$:
2749                                 ;+
2750                                 ;
2751                                 ;TEST 4, SUBTEST 3
2752                                 ;
2753                                 ;       VERIFIES THAT AN ERASE COMMAND ENCOUNTERING THE EOT MARKER, OR
2754                                 ;       EXECUTED BEYOND THE EOT MARKER, CAUSES TAPE STATUS ALERT
2755                                 ;       TERMINATION WITH THE EOT STATUS BIT SET.  ALSO VERIFIES THAT THE
2756                                 ;       OTHER TAPE MOTION COMMANDS EXECUTED WHEN THE TAPE IS BLANK
2757                                 ;       RESULT IN UNRECOVERABLE ERROR TERMINATION AND OPERATION
2758                                 ;       INCOMPLETE STATUS.  THE FOLLOWING TEST SEQUENCE IS EXECUTED:
```

TEST 4: ERASE AND OPERATION INCOMPLETE

```
2759                                    ;
2760                                    ;       1.  THE TAPE IS REWOUND.
2761                                    ;
2762                                    ;       2.  ERASE COMMANDS ARE REPEATEDLY ISSUED UNTIL EOT STATUS
2763                                    ;           IS SEEN.  AN ERROR IS REPORTED IF ANY TERMINATION OTHER
2764                                    ;           THAN NORMAL (WITH EOT=0) OR TAPE STATUS ALERT (WITH
2765                                    ;           EOT=1) IS ENCOUNTERED.  IF THE CONTROLLER OR TRANSPORT
2766                                    ;           DOES NOT DETECT THE EOT, THE TRANSPORT WILL FAULT.
2767                                    ;           THIS IS REPORTED AS A FATAL ERROR AND THE TEST IS
2768                                    ;           ABORTED.
2769                                    ;
2770                                    ;       3.  AN ADDITIONAL ERASE COMMAND IS ISSUED AND IT IS
2771                                    ;           VERIFIED THAT TAPE STATUS ALERT TERMINATION RESULTS,
2772                                    ;           WITH EOT=1.
2773                                    ;
2774                                    ;       4.  IT IS VERIFIED THAT EACH OF THE FOLLOWING COMMANDS
2775                                    ;           (ISSUED IN THE ORDER GIVEN) RESULTS IN UNRECOVERABLE
2776                                    ;           ERROR TERMINATION WITH OPI=1:  SPACE RECORDS REVERSE
2777                                    ;           SKIP TAPE MARKS REVERSE READ REVERSE REREAD PREVIOUS
2778                                    ;           (OPP=0) REREAD PREVIOUS (OPP=1) REREAD NEXT (OPP=1)
2779                                    ;           REREAD NEXT (OPP=0) READ NEXT SKIP TAPE MARKS REVERSE
2780                                    ;           SKIP TAPE MARKS FORWARD SPACE RECORDS FORWARD WRITE
2781                                    ;           DATA RETRY
2782                                    ;
2783                                    ;
2784                                    ;
2785                                    ;
2786                                    ;-
2787 050520                                    BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      050520                                                                                    T4.3:
      050520  104402                                                                              TRAP    C$BSUB
2788 050522  004737  052730                    JSR     PC,T32REST              ;SET COMMAND PACKET
2789 050526  004737  053022                    JSR     PC,T32RT2               ;SET UP OTHER COMMAND PACKET
2790 050532  004737  053052                    JSR     PC,T32RT3               ;SET UP OTHER COMMAND PACKET
2791 050536  012737  176750  051544            MOV     #65000.,T32DLY          ;SET UP DELAY COUNTER
2792 050544  004737  016054          10$:      JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
2793 050550  103426                            BCS     20$                     ;BR IF INIT WAS OK
2794 050552                                    DELAY   250                     ;DELAY ABOUT .25 SEC
      050552  012727  000250                                                                   MOV     #250,(PC)+
      050556  000000                                                                           .WORD   0
      050560  013727  002116                                                                   MOV     L$DLY,(PC)+
      050564  000000                                                                           .WORD   0
      050566  005367  177772                                                                   DEC     -6(PC)
      050572  001375                                                                           BNE     .-4
      050574  005367  177756                                                                   DEC     -22(PC)
      050600  001367                                                                           BNE     .-20
2795 050602  005337  051544                    DEC     T32DLY                  ;BUMP COUNTER
2796 050606  001356                            BNE     10$                     ;BR. IF COUNTER NOT DONE
2797 050610  005237  002214                    INC     FATFLG                          ;ERROR COUNT
2801 050614  010001                            MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
2802 050616                                    ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      050616  104455                                                                            TRAP    C$ERDF
      050620  000645                                                                           .WORD   421
      050622  003646                                                                           .WORD   SFIERR
      050624  012114                                                                           .WORD   SFIMSG
2803 050626  013737  002174  051400  20$:      MOV     UNITN,T32DSW            ;SET UP UNIT (DRIVE) NUMBER
2804 050634  052737  000040  051400            BIS     #BIT5,T32DSW            ;TURN ON HIGH SPEED TO SAVE TIME
```

TEST 4: ERASE AND OPERATION INCOMPLETE

```
2805 050642  012704  051360                MOV     #T32PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
2806 050646  004737  010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
2807 050652  103407                        BCS     23$                     ;BR, IF COMMAND ISSUED OK
2808 050654  005237  002214                INC     FATFLG                          ;ERROR COUNT
2812 050660  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
2813 050662                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     050662  104456                                                                TRAP    C$ERHRD
     050664  000646                                                                .WORD   422
     050666  005052                                                                .WORD   WRTMSG
     050670  012114                                                                .WORD   SFIMSG
2814 050672                        23$:    CKLOOP                          ;LOOP IF SELECTED
     050672  104406                                                                TRAP    C$CLP1
2815 050674  004737  011074                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
2816 050700  103411                        BCS     30$                     ;BR, IF NO PROBLEM
2817 050702  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2818 050706  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
2819 050710  005237  002214                INC     FATFLG                          ;ERROR COUNT
2823 050714                                ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
     050714  104456                                                                TRAP    C$ERHRD
     050716  000647                                                                .WORD   423
     050720  051730                                                                .WORD   T32RWN
     050722  012126                                                                .WORD   PKTSSR
2824 050724                        30$:    CKLOOP                          ;LOOP IF SELECTED
     050724  104406                                                                TRAP    C$CLP1
2825 050726  013701  051410                MOV     T32BFR+6,R1             ;PICK UP XSTO
2826 050732  010102                        MOV     R1,R2                   ;SET UP EXPECTED
2827 050734  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2828 050740  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
2829 050742  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
2830 050744  005237  002214                INC     FATFLG                          ;ERROR COUNT
2834 050750                                ERRHRD  ERRNO,T32BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     050750  104456                                                                TRAP    C$ERHRD
     050752  000650                                                                .WORD   424
     050754  051546                                                                .WORD   T32BOT
     050756  015554                                                                .WORD   EXPREC
2835 050760                        40$:    CKLOOP                          ;LOOP IF SELECTED
     050760  104406                                                                TRAP    C$CLP1
2836 050762  012737  140411  051500  65$:    MOV     #140411,T32PK3          ;ERASE DATA,CVC=1,ACK COMMAND
2837 050770  012704  051500                MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2838 050774  010337  051506                MOV     R3,T32SZ                ;SET UP RECORD SIZE IN PACKET
2839 051000  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2840 051004  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2841 051010  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2842 051014  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
2843 051020  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
2844 051022  001757                        BEQ     65$                     ;BR, IF OK
2845 051024  032701  000004                BIT     #BIT2,R1                ;CHECK FOR TAPE STATUS ALERT
2846 051030  001006                        BNE     80$                     ;BR, IF TAPE STATUS ALERT SET
2847 051032  005237  002214                INC     FATFLG                          ;ERROR COUNT
2851 051036                                ERRHRD  ERRNO,T32WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     051036  104456                                                                TRAP    C$ERHRD
     051040  000651                                                                .WORD   425
     051042  052566                                                                .WORD   T32WDC
     051044  012126                                                                .WORD   PKTSSR
2852 051046                        80$:    CKLOOP                          ;LOOP IF SELECTED
     051046  104406                                                                TRAP    C$CLP1
2853 051050  013701  051410                MOV     T32BFR+6,R1             ;PICK UP XSTO
```

TEST 4: ERASE AND OPERATION INCOMPLETE

```
2854 051054  010102                        MOV     R1,R2                   ;SET UP EXPECTED
2855 051056  052702  000001                BIS     #BIT0,R2                ;SET EOT BIT IN EXPECTED
2856 051062  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
2857 051064  001406                        BEQ     240$                    ;BR, IF EQUAL (OK)
2858 051066  005237  002214                INC     FATFLG                          ;ERROR COUNT
2862 051072                                ERRHRD  ERRNO,T32EOT,EXPREC     ;TAPE NOT AT EOT AFTER ERASE COMMANDS
     051072  104456                                                                TRAP    C$ERHRD
     051074  000652                                                                .WORD   426
     051076  051641                                                                .WORD   T32EOT
     051100  015554                                                                .WORD   EXPREC
2863 051102                        240$:   CKLOOP                          ;LOOP IF SELECTED
     051102  104406                                                                TRAP    C$CLP1
2864 051104  012703  051510                MOV     #T32CMD,R3              ;STARTING RECORD SIZE
2865 051110  013737  003116  051502        MOV     FREE,T32RB              ;STARTING READ BUFFER ADDRESS
2866 051116  011337  051500        265$:   MOV     (R3),T32PK3             ;READ DATA,ACK COMMAND
2867 051122  012704  051500                MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2868 051126  012700  177777                MOV     #177777,R0              ;SET PATTERN IN CORRECT REGISTER
2869 051132  004737  017502                JSR     PC,FILLMEM              ;FILL MEMORY WITH ALL ONES
2870 051136  012737  000144  051506        MOV     #100.,T32SZ             ;SET UP RECORD SIZE IN PACKET
2871 051144  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2872 051150  012737  000062  051544        MOV     #50.,T32DLY             ;SET UP DELAY COUNTER
2873 051156  004737  016330        270$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2874 051162  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2875 051166  012702  100214                MOV     #SSR!SC!BIT2!BIT3,R2    ;SET UP EXPECTED
2876 051172  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
2877 051174  001425                        BEQ     280$                    ;BR, IF OK
2878 051176                                DELAY   250                     ;DELAY FOR SSR TO BE SET
     051176  012727  000250                                                        MOV     #250,(PC)+
     051202  000000                                                                .WORD   0
     051204  013727  002116                                                        MOV     L$DLY,(PC)+
     051210  000000                                                                .WORD   0
     051212  005367  177772                                                        DEC     -6(PC)
     051216  001375                                                                BNE     .-4
     051220  005367  177756                                                        DEC     -22(PC)
     051224  001367                                                                BNE     .-20
2879 051226  005337  051544                DEC     T32DLY                  ;COUNT DELAY ROUTINE DOWN
2880 051232  001351                        BNE     270$                    ;BR, IF DELAY HAS NOT ENDED
2881 051234  005237  002214                INC     FATFLG                          ;ERROR COUNT
2885 051240                                ERRHRD  ERRNO,T32ECF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     051240  104456                                                                TRAP    C$ERHRD
     051242  000653                                                                .WORD   427
     051244  052505                                                                .WORD   T32ECF
     051246  012126                                                                .WORD   PKTSSR
2886 051250                        280$:   CKLOOP                          ;LOOP IF SELECTED
     051250  104406                                                                TRAP    C$CLP1
2887 051252  013701  051416                MOV     T32BFR+14,R1            ;PICK UP XST3
2888 051256  010102                        MOV     R1,R2                   ;SET UP EXPECTED
2889 051260  052702  000100                BIS     #BIT6,R2                ;SET OPI BIT IN EXPECTED
2890 051264  020102                        CMP     R1,R2                   ;IS OPI BIT SET
2891 051266  001406                        BEQ     290$                    ;BR, IF BIT IS SET
2892 051270  005237  002214                INC     FATFLG                          ;ERROR COUNT
2896 051274                                ERRHRD  ERRNO,T32OPI,EXPREC     ;OPI BIT NOT SET
     051274  104456                                                                TRAP    C$ERHRD
     051276  000654                                                                .WORD   428
     051300  052633                                                                .WORD   T32OPI
     051302  015554                                                                .WORD   EXPREC
2897 051304                        290$:   CKLOOP                          ;LOOP IF SELECTED
```

TEST 4: ERASE AND OPERATION INCOMPLETE

```
      051304  104406                                                    TRAP    C$CLP1
 2898 051306  005723                    TST     (R3)+           ;BUMP COMMAND POINTER
 2899 051310  021327  177777            CMP     (R3),#177777    ;AT END OF TABLE YET
 2900 051314  001300                    BNE     265$            ;BR, KEEP TRYING COMMANDS
 2901 051316                            ENDSUB                  ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      051316                                                            L10056:
      051316  104403                                                    TRAP    C$ESUB
 2902 051320  023727  002214  000017    CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
 2903 051326  103402                    BLO     999$                    ;BR, IF LESS THAN 25
 2904 051330  004737  017262            JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
 2905 051334                    999$:
 2906                           ;
 2907                           ;
 2908                           ;
 2909 051334  004737  016536            JSR     PC,TSTLOOP      ;DO WE NEED TO ITERATE TEST
 2910 051340  103002                    BCC     163$            ;BR, IF NO LOOP REQUIRED
 2911 051342  000137  047050            JMP     T32LOOP         ;EXECUTE AGAIN
 2912 051346                    163$:   EXIT    TST             ;ALL DONE THIS TEST
      051346  104432                                                    TRAP    C$EXIT
      051350  001524                                                    .WORD   L10053-.
 2913                           ;+
 2914                           ;LOCAL STORAGE FOR THIS TEST
 2915                           ;-
 2917          051360                   .=<.+10>&177770
 2919 051360                    T32PACKET:                      ;COMMAND PACKET FOR TEST
 2920 051360  100004                    .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
 2921 051362  051370                    .WORD   T32DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
 2922 051364  000000                    .WORD   0
 2923 051366  000012                    .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
 2924 051370                    T32DATA:                        ;CHARACTERISTICS DATA BLOCK
 2925 051370  051402                    .WORD   T32BFR          ;ADDRESS OF MESSAGE BUFFER
 2926 051372  000000                    .WORD   0
 2927 051374  000024                    .WORD   20.             ;LENGTH OF MESSAGE BUFFER
 2928 051376  000000                    .WORD   0
 2929 051400  000000            T32DSW: .WORD   0               ;SELECT DRIVE 0
 2930 051402                    T32BFR: .BLKW   25.             ;MESSAGE BUFFER
 2931                           ;
 2932                           ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
 2933                           ;
 2935          051470                   .=<.+10>&177770
 2937 051470                    T32PK2:
 2938 051470  100006                    .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
 2939 051472  000000                    .WORD   0               ;ADDRESS OF SELECT BLOCK DATA
 2940 051474  000000                    .WORD   0
 2941 051476  000006                    .WORD   6.              ;SIZE OF DATA PACKET
 2942
 2946 051500                    T32PK3:
 2947 051500  100005                    .WORD   100005          ;REREAD COMMAND, AND ACK
 2948 051502                    T32RB:
 2949 051502  003116            T32WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
 2950 051504  000000                    .WORD   0
 2951 051506  000000            T32SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
 2952                                   .EVEN
 2953                           ;
 2954                           ;
 2955                           ;
 2956                           ;
```

```
                                        ;
                                                .EVEN
                                        ;TAPE MOTION PACKET COMMAND VALUES
                                        ;
051510                                  T32CMD:
051510  140410                                  .WORD   140410          ;SPACE RECORDS REVERSE
051512  141410                                  .WORD   141410          ;SKIP TAPE MARKS REVERSE
051514  140401                                  .WORD   140401          ;READ REVERSE
051516  141001                                  .WORD   141001          ;REREAD PREVIOUS (OPP=0)
051520  161401                                  .WORD   161401          ;REREAD NEXT (OPP=1)
051522  161001                                  .WORD   161001          ;REREAD PREVIOUS (OPP=1)
051524  141401                                  .WORD   141401          ;REREAD NEXT (OPP=0)
051526  140001                                  .WORD   140001          ;READ NEXT
051530  141410                                  .WORD   141410          ;SKIP TAPE MARKS REVERSE
051532  141010                                  .WORD   141010          ;SKIP RECORDS FORWARD
051534  141005                                  .WORD   141005          ;WRITE DATA RETRY
051536  177777                                  .WORD   177777          ;END OF DATA
                                        ;
051540  000000                        T32CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
051542  000000                        T32CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
051544  000000                        T32DLY: .WORD   0               ;DELAY COUNTER
                                        ;*
                                        ;LOCAL TEXT MESSAGES FOR TEST
                                        ;-
                                        ;
051546  124  141  160                 T32BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
051641  124  141  160                 T32EOT: .ASCIZ  'Tape Status Alert During Erase To EOT, But EOT Not Set'
051730  122  145  167                 T32RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
051777  124  123  123                 T32AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
052046  124  123  123                 T32ERA: .ASCIZ  'TSSR Not Correct After ERASE Command'
052113  124  123  102                 T32BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
052166  122  105  101                 T32RIB: .ASCIZ  'READ REVERSE, After ERASE From BOT, Failed To Set RIB In XST3'
052264  124  123  123                 T32SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
052341  124  123  123                 T32TSA: .ASCIZ  'TSSR Not Correct After READ REVERSE Into BOT'
052416  102  117  124                 T32BOE: .ASCIZ 'BOT (XST0) Still Set After Erase From Tape''s BOT Marker'
052505  105  122  101                 T32ECF: .ASCIZ  'ERASE Failed To Clear Tape (Erase) Tape Properly'
052566  124  123  123                 T32WDC: .ASCIZ  'TSSR Not Correct After ERASE Command'
052633  117  120  111                 T32OPI: .ASCIZ  'OPI Bit (XST3) Failed To Set'
052670  105  162  141                 TST32ID:        .ASCIZ  'Erase And Operation Incomplete'
                                                .EVEN
                                        ;*
                                        ;
                                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                        ;WRITE SUBSYSTEM MEMORY COMMAND
                                        ;
                                        ;-
                                        ;
052730                                  T32REST:
052730                                          SAVREG                          ;SAVE THE REGISTERS
052734  012701  051360                          MOV     #T32PACKET,R1           ;START OF THE PACKET
052740  012721  100004                          MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
052744  012721  051370                          MOV     #T32DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
052750  005021                                  CLR     (R1)+                   ;EXTENDED ADDRESS
052752  012721  000012                          MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
052756  012721  051402                          MOV     #T32BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
052762  005021                                  CLR     (R1)+
```

```
052764  012721  000024                  MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
052770  005021                          CLR     (R1)+
052772  012711  000000                  MOV     #0,(R1)                 ;SELECT DRIVE ZERO
052776  012702  000030                  MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
053002  012762  177777  051402  64$:    MOV     #177777,T32BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
053010  005742                          TST     -(R2)                   ;NEXT LOCATION
053012  022702  000000                  CMP     #0,R2                   ;AT END OF LOOP YET
053016  001371                          BNE     64$                     ;KEEP GOING UNTIL DONE
053020  000207                          RTS     PC                      ;RETURN

053022                          T32RT2:
053022                                  SAVREG                          ;SAVE THE REGISTERS
053026  012701  051470                  MOV     #T32PK2,R1              ;START OF THE PACKET
053032  012721  100006                  MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
053036  005021                          CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
053040  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
053042  012721  000006                  MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
053046  005021                          CLR     (R1)+
053050  000207                          RTS     PC                      ;RETURN
053052                          T32RT3:
053052                                  SAVREG                          ;SAVE REGISTERS
053056  012701  051500                  MOV     #T32PK3,R1              ;SET UP POINTER ADDRESS
053062  005021                          CLR     (R1)+                   ;COMMAND SPACE
053064  005021                          CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
053066  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
053070  005011                          CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
053072  000207                          RTS     PC                      ;RETURN
053074                                  ENDTST
053074                                                                          L10053:
053074  104401                                                                          TRAP    C$ETST
                                        .SBTTL  TEST  5: DATA PARITY TEST
                                ;+
                                ;
                                ;
                                ;
                                ;
                                ;TEST 5 -- Data Parity Test
                                ;
                                ;
                                ;This test verifies that the data parity circuitry in both the controller and the
                                ;transport  is operating properly by forcing data records with wrong parity to be
                                ;written onto tape and checking the results obtained when the data is read.   The
                                ;following test sequence is performed:
                                ;
                                ;     1.  A Write Characteristics command is issued and the resulting  status  is
                                ;         examined to determine the states of the Extended Features and Buffering
                                ;         Enable switches on the controller module.  If buffering is disabled, no
                                ;         further  actions need be taken in this step and the program proceeds to
                                ;         the next step.  If buffering is enabled, it is disabled via the  Buffer
                                ;         Control  field  in the extended characteristics data word supplied by a
                                ;         Write Characteristics command.  (The module must be in  Extended  mode,
                                ;         so  if it is not already, a Write Subsystem Memory command is issued to
                                ;         change the logical sense of the Extended Features switch.)
                                ;
                                ;     2.  The Write Subsystem Memory command is  used  to  set  the  Force  Wrong
                                ;         Parity control flip-flop.
```

TEST 5: DATA PARITY TEST

```
                                ;
                                ;       3.  The tape is rewound.
                                ;
                                ;       4.  A Write Data command is issued to write a data record containing all
                                ;           0's.  It is verified that this command results in Recoverable Error
                                ;           termination (TC=4) and that the Uncorrectable Data Error (UNC) error
                                ;           bit is set.
                                ;
                                ;       5.  The previous step is repeated for each data value 2 through 377
                                ;           (octal).
                                ;
                                ;       6.  The tape is rewound.
                                ;
                                ;       7.  A Read Next command is issued to read a record with faulty parity.  It
                                ;           is verified that this command results in Recoverable Error termination
                                ;           (TC=4) and that both the Uncorrectable Data (UNC) and Read Bus Parity
                                ;           (RBP) error bits are set.  It is also verified that the data actually
                                ;           read is correct.
                                ;
                                ;       8.  A Read Reverse command with OPP=1 is issued to read, in reverse, the
                                ;           same record with faulty parity as read in the previous step.  It is
                                ;           verified that this command results in Recoverable Error termination
                                ;           (TC=4) and that both the Uncorrectable Data (UNC) and Read Bus Parity
                                ;           (RBP) error bits are set.  It is also verified that the data actually
                                ;           read is correct.
                                ;
                                ;       9.  Tape is spaced forward one record.
                                ;
                                ;      10.  The previous three steps are executed for each test record originally
                                ;           written.
                                ;
                                ;      11.  The controller is initialized to clear the special test conditions
                                ;           previously set up.
                                ;
                                ;
                                ;-
3106 053076                             BGNTST
     053076                                                                     T5::
3107 053076  012737  006413  002172      MOV     @EPRT2,EPRTSW           ;SECONDARY ERROR MESSAGE
3112 053104  012700  055675              MOV     @TST33ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
3113 053110  004737  016570              JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
3114 053114  012737  000005  002210      MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
3115 053122  005037  054746              CLR     T33CNT                  ;CLEAR TAPE RECORD COUNTER
3116
3117                                    ;*
                                        ;
3118 053126                             T33LOOP:
3119 053126                             BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     053126                                                                     T5.1:
     053126  104402                                                                TRAP    C$BSUB
3120 053130  005037  002216              CLR     INTRECV                 ;INTERRUPT INDICATOR
3121 053134  005037  054746              CLR     T33CNT                  ;TIMER FOR WRITE DATA SPACING
3122 053140  005037  054750              CLR     T33CNU                  ;TIMER FOR WRITE DATA RETRY SPACING
3123 053144  004737  055712              JSR     PC,T33REST              ;SET COMMAND PACKET
3124 053150  004737  056004              JSR     PC,T33RT2               ;SET UP OTHER COMMAND PACKET
3125 053154  004737  056046              JSR     PC,T33RT3               ;SET UP OTHER COMMAND PACKET
3126 053160  012737  176750  054752      MOV     #65000.,T33DLY          ;SET UP DELAY COUNTER
```

```
3127 053166  004737  016054          10$:    JSR     PC,$OFINIT              ;DO INITIALIZE ON CONTROLLER
3128 053172  103426                         BCS     20$                     ;BR IF INIT WAS OK
3129 053174                                 DELAY   250                     ;DELAY ABOUT .25 SEC
     053174  012727  000250                                                           MOV     #250,(PC)+
     053200  000000                                                                    .WORD   0
     053202  013727  002116                                                           MOV     L$DLY,(PC)+
     053206  000000                                                                    .WORD   0
     053210  005367  177772                                                           DEC     -6(PC)
     053214  001375                                                                    BNE     .-4
     053216  005367  177756                                                           DEC     -22(PC)
     053222  001367                                                                    BNE     .-20
3130 053224  005337  054752                 DEC     T33DLY                  ;BUMP COUNTER
3131 053230  001356                         BNE     10$                     ;BR, IF COUNTER NOT DONE
3132 053232  005237  002214                 INC     FATFLG                          ;ERROR COUNT
3136 053236  010001                         MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
3137 053240                                 ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     053240  104455                                                                    TRAP    C$ERDF
     053242  000765                                                                    .WORD   501
     053244  003646                                                                    .WORD   SFIERR
     053246  012114                                                                    .WORD   SFIMSG
3138 053250  013737  002174  054620  20$:    MOV     UNITN,T33DSW            ;SET UP UNIT NUMBER
3139
3140 053256  012704  054600                 MOV     #T33PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
3141 053262  004737  010742                 JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
3142 053266  103407                         BCS     23$                     ;BR, IF COMMAND ISSUED OK
3143 053270  005237  002214                 INC     FATFLG                          ;ERROR COUNT
3147 053274  010001                         MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
3148 053276                                 ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     053276  104456                                                                    TRAP    C$ERHRD
     053300  000766                                                                    .WORD   502
     053302  005052                                                                    .WORD   WRTMSG
     053304  012114                                                                    .WORD   SFIMSG
3149 053306                         23$:    CKLOOP                          ;LOOP IF SELECTED
     053306  104406                                                                    TRAP    C$CLP1
3150 053310  004737  011074                 JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
3151 053314  103411                         BCS     30$                     ;BR, IF NO PROBLEM
3152 053316  016501  000002                 MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3153 053322  010004                         MOV     R0,R4                   ;GET PACKET ADDRESS
3154 053324  005237  002214                 INC     FATFLG                          ;ERROR COUNT
3158 053330                                 ERRHRD  ERRNO,T33RWN,PKTSSR     ;REWIND NOT ACCEPTED
     053330  104456                                                                    TRAP    C$ERHRD
     053332  000767                                                                    .WORD   503
     053334  055450                                                                    .WORD   T33RWN
     053336  012126                                                                    .WORD   PKTSSR
3159 053340                         30$:    CKLOOP                          ;LOOP IF SELECTED
     053340  104406                                                                    TRAP    C$CLP1
3160 053342  013701  054630                 MOV     T33BFR+6,R1             ;PICK UP XSTO
3161 053346  010102                         MOV     R1,R2                   ;SET UP EXPECTED
3162 053350  052702  000002                 BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
3163 053354  020102                         CMP     R1,R2                   ;DOES EXP = REC'D
3164 053356  001406                         BEQ     40$                     ;BR, IF EQUAL (OK)
3165 053360  005237  002214                 INC     FATFLG                          ;ERROR COUNT
3169 053364                                 ERRHRD  ERRNO,T33BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     053364  104456                                                                    TRAP    C$ERHRD
     053366  000770                                                                    .WORD   504
     053370  055355                                                                    .WORD   T33BOT
     053372  015554                                                                    .WORD   EXPREC
```

TEST 5: DATA PARITY TEST

```
3170 053374                        40$:    CKLOOP                                  ;LOOP IF SELECTED
     053374  104406                                                                        TRAP    C$CLP1
3171 053376  005737  002220        42$:    TST     EXTFEA                          ;CHECK FOR EXTENDED FEATURES SW SWITCH
3172 053402  001025                        BNE     55$                             ;BR IF SWITCH IS ON
3173 053404  112737  000200  054731        MOVB    #200,T33BS1                     ;WRITE MISCELLANEOUS CONT/READ STATUS
3174 053412  112737  000010  054730        MOVB    #10,T33BSO                      ;FUNC. SEL. BIT (TURN ON EXTFEA SWITCH)
3175 053420  012704  054710                MOV     #T33PK2,R4                      ;WRITE SUBSYS MEM PACKET
3176 053424  010465  000000                MOV     R4,TSDB(R5)                     ;ISSUE COMMAND
3177 053430  004737  016416                JSR     PC,CHKTSSR                      ;WAIT FOR SSR
3178 053434  103407                       BCS     50$                             ;BR, IF NO ERROR
3179 053436  010001                       MOV     R0,R1                           ;ERROR, SAVE TSSR
3180 053440  005237  002214                INC     FATFLG                                  ;ERROR COUNT
3184 053444                                ERRHRD  ERRNO,T33SSR,PKTSSR             ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
     053444  104456                                                                        TRAP    C$ERHRD
     053446  000771                                                                        .WORD   505
     053450  055271                                                                        .WORD   T33SSR
     053452  012126                                                                        .WORD   PKTSSR
3185 053454                        50$:    CKLOOP                                  ;LOOP IF SELECTED
     053454  104406                                                                        TRAP    C$CLP1
3186 053456  005737  002222        55$:    TST     BENBSW                          ;CHECK FOR BUFFER ENABLED
3187 053462  001426                        BEQ     70$                             ;BR, IF BUFFERING NOT ENABLED
3188 053464  013737  002174  054620        MOV     UNITN,T33DSW                    ;SET UP UNIT NUMBER
3189 053472  042737  000020  054620        BIC     #BIT4,T33DSW                    ;BUFFER DISABLE
3190 053500  052737  000010  054620        BIS     #BIT3,T33DSW                    ;BUFFER DISABLE SEND 01 TO BITS 4 AND 3
3191 053506  012704  054600                MOV     #T33PACKET,R4                   ;SUBROUTINE NEEDS PACKET ADDRESS
3192 053512  004737  010742                JSR     PC,WRTCHR                       ;ISSUE WRITE CHARACTERISTICS
3193 053516  103407                       BCS     60$                             ;BR, IF COMMAND ISSUED OK
3194 053520  005237  002214                INC     FATFLG                                  ;ERROR COUNT
3198 053524  010001                       MOV     R0,R1                           ;SAVE CONTENTS OF TSSR
3199 053526                                ERRHRD  ERRNO,WRTMSG,SFIMSG             ;WRITE CHARACTERISTISC FAILED
     053526  104456                                                                        TRAP    C$ERHRD
     053530  000772                                                                        .WORD   506
     053532  005052                                                                        .WORD   WRTMSG
     053534  012114                                                                        .WORD   SFIMSG
3200 053536                        60$:    CKLOOP                                  ;LOOP IF SELECTED
     053536  104406                                                                        TRAP    C$CLP1
3201 053540                        70$:
3202 053540  112737  000100  054731        MOVB    #100,T33BS1                     ;WRITE MISCELLANEOUS CONT/READ STATUS
3203 053546  112737  000011  054730        MOVB    #11,T33BSO                      ;FUNC. SEL. BIT (SET WRONG PARITY)
3204 053554  012704  054710                MOV     #T33PK2,R4                      ;WRITE SUBSYS MEM PACKET
3205 053560  010465  000000                MOV     R4,TSDB(R5)                     ;ISSUE COMMAND
3206 053564  004737  016416                JSR     PC,CHKTSSR                      ;WAIT FOR SSR
3207 053570  103407                       BCS     80$                             ;BR, IF NO ERROR
3208 053572  010001                       MOV     R0,R1                           ;ERROR, SAVE TSSR
3209 053574  005237  002214                INC     FATFLG                                  ;ERROR COUNT
3213 053600                                ERRHRD  ERRNO,T33SSR,PKTSSR             ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
     053600  104456                                                                        TRAP    C$ERHRD
     053602  000773                                                                        .WORD   507
     053604  055271                                                                        .WORD   T33SSR
     053606  012126                                                                        .WORD   PKTSSR
3214 053610                        80$:    CKLOOP                                  ;LOOP IF SELECTED
     053610  104406                                                                        TRAP    C$CLP1
3215 053612  012703  000026                MOV     #22.,R3         ;NUMBER OF RECORDS TO BE WRITTEN
3216 053616  013737  003116  054722        MOV     FREE,T33WB                      ;STARTING WRITE BUFFER ADDRESS
3217 053624  005037  054750                CLR     T33CMD                          ;MAKE SURE ITS CLEAR
3218 053630  012737  140005  054720  110$: MOV     #140005,T33PK3                  ;WRITE DATA,ACK,CYC=1 COMMAND
3219 053636  012704  054720                MOV     #T33PK3,R4                      ;SET UP R4 WITH PACKET ADDRESS
```

TEST 5: DATA PARITY TEST

```
3220 053642 012737 000024 054726          MOV     #20.,T33SZ              ;SET UP RECORD SIZE IN PACKET
3221 053650 013777 054750 127240          MOV     T33CNO,@#REE            ;MEMORY FILLED WITH DATA IN RECORD
3222 053656 005237 054750                 INC     T33CNO                  ;READY FOR NEXT RECORD
3223 053662 010465 000000                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3224 053666 004737 016330                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3225 053672 016501 000002                 MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3226 053676 012702 100210                 MOV     #SSR!SC!BIT3,R2         ;SET UP EXPECTED
3227 053702 020102                        CMP     R1,R2                   ;ARE THEY EQUAL
3228 053704 001406                        BEQ     120$                    ;BR. IF OK
3229 053706 005237 002214                 INC     FATFLG                          ;ERROR COUNT
3233 053712                               ERRHRD  ERRNO,T33WPW,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     053712 104456                                                                      TRAP    C$ERHRD
     053714 000774                                                                      .WORD   504
     053716 055032                                                                      .WORD   T33WPW
     053720 012126                                                                      .WORD   PKTSSR
3234 053722                       120$:   CKLOOP                          ;LOOP IF SELECTED
     053722 104406                                                                      TRAP    C$CLP1
3235 053724 013701 054632                 MOV     T33BFR+10,R1            ;PICK UP XST1
3236 053730 010102                        MOV     R1,R2                   ;SET UP EXPECTED
3237 053732 052702 000002                 BIS     #BIT1,R2                ;SET UNC BIT IN EXPECTED
3238 053736 020102                        CMP     R1,R2                   ;DOES EXP = REC'D
3239 053740 001406                        BEQ     130$                    ;BR. IF EQUAL (OK)
3240 053742 005237 002214                 INC     FATFLG                          ;ERROR COUNT
3244 053746                               ERRHRD  ERRNO,T33UNC,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     053746 104456                                                                      TRAP    C$ERHRD
     053750 000775                                                                      .WORD   509
     053752 055112                                                                      .WORD   T33UNC
     053754 015554                                                                      .WORD   EXPREC
3245 053756                       130$:   CKLOOP                          ;LOOP IF SELECTED
     053756 104406                                                                      TRAP    C$CLP1
3246 053760 005303                        DEC     R3                      ;DEC RECORD COUNTER
3247 053762 001322                        BNE     110$                    ;BR. IF MORE RECORDS TO WRITE
3248 053764 004737 011074                 JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
3249 053770 103411                        BCS     140$                    ;BR. IF NO PROBLEM
3250 053772 016501 000002                 MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3251 053776 010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
3252 054000 005237 002214                 INC     FATFLG                          ;ERROR COUNT
3256 054004                               ERRHRD  ERRNO,T33RWN,PKTSSR     ;REWIND NOT ACCEPTED
     054004 104456                                                                      TRAP    C$ERHRD
     054006 000776                                                                      .WORD   510
     054010 055450                                                                      .WORD   T33RWN
     054012 012126                                                                      .WORD   PKTSSR
3257 054014                       140$:   CKLOOP                          ;LOOP IF SELECTED
     054014 104406                                                                      TRAP    C$CLP1
3258 054016 013701 054630                 MOV     T33BFR+6,R1             ;PICK UP XST0
3259 054022 010102                        MOV     R1,R2                   ;SET UP EXPECTED
3260 054024 052702 000002                 BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
3261 054030 020102                        CMP     R1,R2                   ;DOES EXP = REC'D
3262 054032 001406                        BEQ     150$                    ;BR. IF EQUAL (OK)
3263 054034 005237 002214                 INC     FATFLG                          ;ERROR COUNT
3267 054040                               ERRHRD  ERRNO,T33BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     054040 104456                                                                      TRAP    C$ERHRD
     054042 000777                                                                      .WORD   511
     054044 055355                                                                      .WORD   T33BOT
     054046 015554                                                                      .WORD   EXPREC
3268 054050                       150$:   CKLOOP                          ;LOOP IF SELECTED
     054050 104406                                                                      TRAP    C$CLP1
```

TEST 5: DATA PARITY TEST

```
3269 054052  005037  054750                  CLR     T33CNO                  ;CLEAR DATA VALUE IN RECORD
3270 054056  012703  000024                  MOV     #20.,R3                 ;RECORD SIZE
3271 054062  013737  003116  054722  155$:   MOV     FREE,T33RB              ;STARTING WRITE BUFFER ADDRESS
3272 054070  012737  140001  054720          MOV     #140001,T33PK3          ;READ DATA,CVC=1,ACK COMMAND
3273 054076  012704  054720                  MOV     #T33PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
3274 054102  012737  000024  054726          MOV     #20.,T33SZ              ;SET UP RECORD SIZE IN PACKET
3275 054110  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3276 054114  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3277 054120  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3278 054124  012702  100210                  MOV     #SSR!SC!BIT3,R2         ;SET UP EXPECTED
3279 054130  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3280 054132  001406                          BEQ     160$                    ;BR. IF OK
3281 054134  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3285 054140                                  ERRHRD  ERRNO,T33WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     054140  104456                                                                  TRAP    C$ERHRD
     054142  001000                                                                  .WORD   512
     054144  055517                                                                  .WORD   T33WDC
     054146  012126                                                                  .WORD   PKTSSR
3286 054150                          160$:   CKLOOP                          ;LOOP IF SELECTED
     054150  104406                                                                  TRAP    C$CLP1
3287 054152  013701  054632                  MOV     T33BFR+10,R1            ;PICK UP XST1
3288 054156  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3289 054160  052702  000002                  BIS     #BIT1,R2                ;SET UNC BIT IN EXPECTED
3290 054164  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
3291 054166  001406                          BEQ     170$                    ;BR. IF EQUAL (OK)
3292 054170  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3296 054174                                  ERRHRD  ERRNO,T33UND,EXPREC     ;UNC BIT NOT SET AFTER READ CMD.
     054174  104456                                                                  TRAP    C$ERHRD
     054176  001001                                                                  .WORD   513
     054200  055202                                                                  .WORD   T33UND
     054202  015554                                                                  .WORD   EXPREC
3297 054204                          170$:   CKLOOP                          ;LOOP IF SELECTED
     054204  104406                                                                  TRAP    C$CLP1
3298 054206  013701  054632                  MOV     T33BFR+10,R1            ;PICK UP XST1
3299 054212  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3300 054214  052702  000400                  BIS     #BIT8,R2                ;SET RBP BIT IN EXPECTED
3301 054220  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
3302 054222  001406                          BEQ     180$                    ;BR. IF EQUAL (OK)
3303 054224  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3307 054230                                  ERRHRD  ERRNO,T33RBP,EXPREC     ;READ BUS PARITY ERROR BIT NOT SET
     054230  104456                                                                  TRAP    C$ERHRD
     054232  001002                                                                  .WORD   514
     054234  054754                                                                  .WORD   T33RBP
     054236  015554                                                                  .WORD   EXPREC
3308 054240                          180$:   CKLOOP                          ;LOOP IF SELECTED
     054240  104406                                                                  TRAP    C$CLP1
3309 054242  017701  126650                  MOV     @FREE,R1                ;GET DATA READ
3310 054246  013702  054750                  MOV     T33CNO,R2                       ;GET PATTERN
3311 054252  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3312 054254  001406                          BEQ     182$                    ;BR. IF OK
3313 054256  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3317 054262                                  ERRHRD  ERRNO,T33DTA,EXPREC     ;DATA NOT CORRECT
     054262  104456                                                                  TRAP    C$ERHRD
     054264  001003                                                                  .WORD   515
     054266  055600                                                                  .WORD   T33DTA
     054270  015554                                                                  .WORD   EXPREC
3318 054272                          182$:   CKLOOP                          ;LOOP IF SELECTED
```

TEST 5: DATA PARITY TEST

```
      054272  104406                                                          TRAP    C$CLP1
3319  054274  013737  003116  054722          MOV     FREE,T33WB              ;STARTING WRITE BUFFER ADDRESS
3320  054302  012737  140401  054720  195$:   MOV     #140401,T33PK3          ;READ REVERSE DATA RETRY,ACK COMMAND
3321  054310  012704  054720                  MOV     #T33PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
3322  054314  012737  000024  054726          MOV     #20.,T33SZ              ;SET UP RECORD SIZE IN PACKET
3323  054322  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3324  054326  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3325  054332  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3326  054336  012702  100210                  MOV     #SC!SSR!BIT3,R2                 ;SET UP EXPECTED
3327  054342  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3328  054344  001406                          BEQ     190$                    ;BR, IF OK
3329  054346  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3333  054352                                  ERRHRD  ERRNO,T33WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      054352  104456                                                                  TRAP    C$ERHRD
      054354  001004                                                                  .WORD   516
      054356  055517                                                                  .WORD   T33WDC
      054360  012126                                                                  .WORD   PKTSSR
3334  054362                          190$:   CKLOOP                          ;LOOP IF SELECTED
      054362  104406                                                                  TRAP    C$CLP1
3335  054364  013701  054632                  MOV     T33BFR+10,R1            ;PICK UP XST1
3336  054370  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3337  054372  052702  000002                  BIS     #BIT1,R2                ;SET UNC BIT IN EXPECTED
3338  054376  020102                          CMP     R1,R2                   ;DOES EXP = REC D
3339  054400  001406                          BEQ     200$                    ;BR, IF EQUAL (OK)
3340  054402  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3344  054406                                  ERRHRD  ERRNO,T33UND,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      054406  104456                                                                  TRAP    C$ERHRD
      054410  001005                                                                  .WORD   517
      054412  055202                                                                  .WORD   T33UND
      054414  015554                                                                  .WORD   EXPREC
3345  054416                          200$:   CKLOOP                          ;LOOP IF SELECTED
      054416  104406                                                                  TRAP    C$CLP1
3346  054420  013701  054632                  MOV     T33BFR+10,R1            ;PICK UP XST0
3347  054424  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3348  054426  052702  000400                  BIS     #BIT8,R2                ;SET RBP BIT IN EXPECTED
3349  054432  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
3350  054434  001406                          BEQ     210$                    ;BR, IF EQUAL (OK)
3351  054436  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3355  054442                                  ERRHRD  ERRNO,T33RBP,EXPREC     ;READ BUS PARITY ERROR BIT NOT SET
      054442  104456                                                                  TRAP    C$ERHRD
      054444  001006                                                                  .WORD   518
      054446  054754                                                                  .WORD   T33RBP
      054450  015554                                                                  .WORD   EXPREC
3356  054452                          210$:   CKLOOP                          ;LOOP IF SELECTED
      054452  104406                                                                  TRAP    C$CLP1
3357  054454  017701  126436                  MOV     @FREE,R1                ;GET DATA READ
3358  054460  013702  054750                  MOV     T33CNU,R2                       ;GET PATTERN
3359  054464  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3360  054466  001406                          BEQ     215$                    ;BR, IF OK
3361  054470  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3365  054474                                  ERRHRD  ERRNO,T33DTA,EXPREC     ;DATA NOT CORRECT
      054474  104456                                                                  TRAP    C$ERHRD
      054476  001007                                                                  .WORD   519
      054500  055600                                                                  .WORD   T33DTA
      054502  015554                                                                  .WORD   EXPREC
3366  054504                          215$:   CKLOOP                          ;LOOP IF SELECTED
      054504  104406                                                                  TRAP    C$CLP1
```

TEST 5: DATA PARITY TEST SEQ 0160

```
3367 054506  010302                        MOV     R3,R2           ;SAVE R3 FOR A MOMENT
3368 054510  012703  000001                MOV     #1,R3           ;SPACE FORWARD ONE RECORD
3369 054514  004737  010544                JSR     PC,SPACE        ;CALL ROUTINE
3370 054520  010203                        MOV     R2,R3           ;RESTORE R3
3371 054522  005237  054750                INC     T33CNU          ;BUMP TO NEXT RECORD NUMBER
3372 054526  005303                        DEC     R3              ;BUMP COUNTER
3373 054530  001402                        BEQ     220$            ;BR, IF DONE
3374 054532  000137  054062                JMP     155$            ;BR, IF NOT DONE YET
3375 054536                          220$:
3376 054536                                ENDSUB                  ;<<<<<<<<<<<< END SUBTEST >>>>>>>>>>>>
     054536                                                              L10060:
     054536  104403                                                        TRAP    C$ESUB
3377 054540  023727  002214  000017        CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
3378 054546  103402                        BLO     999$                    ;BR, IF LESS THAN 25
3379 054550  004737  017262                JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
3380 054554                          999$:
3381                                 ;
3382                                 ;
3383                                 ;
3384 054554  004737  016536                JSR     PC,TSTLOOP      ;DO WE NEED TO ITERATE TEST
3385 054560  103002                        BCC     230$            ;BR, IF NO LOOP REQUIRED
3386 054562  000137  053126                JMP     T33LOOP         ;EXECUTE AGAIN
3387 054566                          230$: EXIT    TST             ;ALL DONE THIS TEST
     054566  104432                                                        TRAP    C$EXIT
     054570  001300                                                        .WORD   L10057-.
3388                                 ;+
3389                                 ;LOCAL STORAGE FOR THIS TEST
3390                                 ;-
3392         054600                          .=<.+10>&177770
3394 054600                          T33PACKET:                      ;COMMAND PACKET FOR TEST
3395 054600  100004                        .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
3396 054602  054610                        .WORD   T33DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
3397 054604  000000                        .WORD   0
3398 054606  000012                        .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
3399 054610                          T33DATA:                        ;CHARACTERISTICS DATA BLOCK
3400 054610  054622                        .WORD   T33BFR          ;ADDRESS OF MESSAGE BUFFER
3401 054612  000000                        .WORD   0
3402 054614  000024                        .WORD   20.             ;LENGTH OF MESSAGE BUFFER
3403 054616  000000                        .WORD   0
3404 054620  000000                  T33DSW: .WORD   0               ;SELECT DRIVE 0
3405 054622                          T33BFR: .BLKW   25.             ;MESSAGE BUFFER
3406                                 ;
3407                                 ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
3408                                 ;
3410         054710                          .=<.+10>&177770
3412 054710                          T33PK2:
3413 054710  100006                        .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
3414 054712  054730                        .WORD   T33BF2          ;ADDRESS OF SELECT BLOCK DATA
3415 054714  000000                        .WORD   0
3416 054716  000006                        .WORD   6.              ;SIZE OF DATA PACKET
3417
3421 054720                          T33PK3:
3422 054720  100005                        .WORD   100005          ;REREAD COMMAND, AND ACK
3423 054722                          T33RB:
3424 054722  003116                  T33WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
3425 054724  000000                        .WORD   0
3426 054726  000000                  T33SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
```

TEST 5: DATA PARITY TEST

```
3427                                            .EVEN
3428                                    ;
3429                                    ;
3430                                    ;
3431 054730                             T33BF2:
3432 054730     010                     T33BS0: .BYTE   10                      ;BSEL0 AREA
3433 054731     200                     T33BS1: .BYTE   200                     ;BSEL1 AREA
3434 054732  000000                     T33S2:  .WORD   0                       ;SEL 2 AREA
3435 054734  000000                     T33S3:  .WORD   0                       ;DATA AREA
3436                                    ;
3437                                    ;
3438                                            .EVEN
3439                                    ;TAPE MOTION PACKET COMMAND VALUES
3440
3441 054736  100205                     T33RN:  .WORD   100205                  ;REREAD DATA (NEXT)
3442 054740  100605                     T33WDR: .WORD   100605                  ;REREAD DATA RETRY
3443 054742  102205                     T33CON: .WORD   102205                  ;WRITE CONTINOUS
3444 054744  177777                             .WORD   177777                  ;END OF DATA
3445
3446                                    ;
3447 054746  000000                     T33CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
3448 054750  000000                     T33CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
3449 054752  000000                     T33DLY: .WORD   0                       ;DELAY COUNTER
3450                                    ;+
3451                                    ;LOCAL TEXT MESSAGES FOR TEST
3452                                    ;-
3453
3454 054754      122     145     141    T33RBP: .ASCIZ  'Read Bus Parity Bit Not Set (XST1), Should Be'
3455 055032      124     123     123    T33WPW: .ASCIZ  'TSSR Incorrect After Wrong Parity Write Command'
3456 055112      125     116     103    T33UNC: .ASCIZ  'UNC Bit (XST1) Not Set After Wrong Parity WRITE Command'
3457 055202      125     116     103    T33UND: .ASCIZ  'UNC Bit (XST1) Not Set After Wrong Parity READ Command'
3458 055271      127     122     111    T33SSR: .ASCIZ  'WRITE MISSCELLANEOUS CONT/READ COMMAND Not Accepted'
3459 055355      124     141     160    T33BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
3460 055450      122     145     167    T33RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
3461 055517      124     123     123    T33WDC: .ASCIZ  'TSSR Not Correct After READ Wrong Parity Command'
3462 055600      104     141     164    T33DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
3463 055675      104     141     164    TST33ID:        .ASCIZ  'Data Parity'
3464                                            .EVEN
3465                                    ;+
3466                                    ;
3467                                    ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
3468                                    ;WRITE SUBSYSTEM MEMORY COMMAND
3469                                    ;
3470                                    ;-
3471
3472 055712                             T33REST:
3473 055712                                     SAVREG                          ;SAVE THE REGISTERS
3474 055716  012701  054600                     MOV     #T33PACKET,R1           ;START OF THE PACKET
3475 055722  012721  100004                     MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
3476 055726  012721  054610                     MOV     #T33DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
3477 055732  005021                             CLR     (R1)+                   ;EXTENDED ADDRESS
3478 055734  012721  000012                     MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
3479 055740  012721  054622                     MOV     #T33BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
3480 055744  005021                             CLR     (R1)+
3481 055746  012721  000024                     MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
3482 055752  005021                             CLR     (R1)+
3483 055754  012711  000000                     MOV     #0,(R1)                 ;SELECT DRIVE ZERO
```

TEST 5: DATA PARITY TEST

```
3484 055760  012702  000030                 MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
3485 055764  012762  177777  054622  64$:   MOV     #177777,T33BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
3486 055772  005742                         TST     -(R2)                   ;NEXT LOCATION
3487 055774  022702  000000                 CMP     #0,R2                   ;AT END OF LOOP YET
3488 056000  001371                         BNE     64$                     ;KEEP GOING UNTIL DONE
3489 056002  000207                         RTS     PC                      ;RETURN
3490
3491 056004                         T33RT2:
3492 056004                                 SAVREG                          ;SAVE THE REGISTERS
3493 056010  012701  054710                 MOV     #T33PK2,R1              ;START OF THE PACKET
3494 056014  012721  100006                 MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
3495 056020  012721  054730                 MOV     #T33BF2,(R1)+           ;ADDRESS OF DATA BLOCK
3496 056024  005021                         CLR     (R1)+                   ;EXTENDED ADDRESS
3497 056026  012721  000006                 MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
3498 056032  005021                         CLR     (R1)+
3499 056034  012701  054730                 MOV     #T33BF2,R1              ;POINT TO DATA SEL AREA
3500 056040  005021                         CLR     (R1)+
3501 056042  005011                         CLR     (R1)
3502 056044  000207                         RTS     PC                      ;RETURN
3503 056046                         T33RT3:
3504 056046                                 SAVREG                          ;SAVE REGISTERS
3505 056052  012701  054720                 MOV     #T33PK3,R1              ;SET UP POINTER ADDRESS
3506 056056  005021                         CLR     (R1)+                   ;COMMAND SPACE
3507 056060  005021                         CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
3508 056062  005021                         CLR     (R1)+                   ;EXTENDED ADDRESS
3509 056064  005011                         CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
3510 056066  000207                         RTS     PC                      ;RETURN
3511 056070                                 ENDTST
     056070                                                                 L10057:
     056070  104401                                                             TRAP    C$ETST
3512                                .SBTTL  TEST  6: OPERATIONS AT EOT
3513                                ;+
3514                                ;
3515                                ;THIS TEST VERIFIES PROPER OPERATION OF THE WRITE DATA RETRY
3516                                ;COMMAND (SPACE REVERSE, ERASE, WRITE DATA)
3517                                ;
3518                                ;
3519                                ;THE TEST CONSISTS OF THE FOLLOWING 1 SUBTEST
3520                                ;
3521                                ;
3522                                ;
3523                                ;-
3524 056072                                 BGNTST
     056072                                                                 T6::
3525 056072  012737  006354  002172         MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
3530 056100  012700  063237                 MOV     #TST34ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
3531 056104  004737  016570                 JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
3532 056110  012737  000005  002210         MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
3533 056116  005037  060722                 CLR     T34CNT                  ;CLEAR TAPE RECORD COUNTER
3534                                ;+
3535                                ;
3536                                ;TEST 6, SUBTEST 1
3537                                ;
3538                                ;
3539                                ;       THIS TEST VERIFIES THAT THE EOT STATUS IS HANDLED PROPERLY BY
3540                                ;       THE VARIOUS TAPE MOTION COMMANDS.  THE FOLLOWING TEST SEQUENCE
3541                                ;       IS PERFORMED:
```

```
3542                                    ;
3543                                    ;       1.  THE TAPE IS REWOUND.
3544                                    ;
3545                                    ;       2.  WRITE DATA COMMANDS ARE REPEATEDLY ISSUED UNTIL TAPE
3546                                    ;           STATUS ALERT TERMINATION IS SEEN WITH EOT=1.  ERRORS
3547                                    ;           OTHER THAN OCCASIONAL CORRECTABLE OR UNCORRECTABLE DATA
3548                                    ;           ERRORS CAUSE A FATAL ERROR REPORT.  RECORDS WITH DATA
3549                                    ;           ERRORS ARE RETRIED, SO THE TAPE ENDS UP WITH GOOD DATA.
3550                                    ;
3551                                    ;       3.  ANOTHER WRITE DATA COMMAND IS ISSUED, AND IT IS CHECKED
3552                                    ;           THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=1.
3553                                    ;
3554                                    ;       4.  A WRITE TAPE MARK COMMAND IS ISSUED, AND IT IS CHECKED
3555                                    ;           THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=1.
3556                                    ;
3557                                    ;       5.  A SKIP TAPE MARKS REVERSE COMMAND IS ISSUED, AND IT IS
3558                                    ;           CHECKED THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH
3559                                    ;           EOT=1 AND TMK=1.
3560                                    ;
3561                                    ;       6.  A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF
3562                                    ;           1, IS ISSUED, AND IT IS CHECKED THAT TAPE STATUS ALERT
3563                                    ;           TERMINATION OCCURS, WITH EOT=1 AND TMK=1.
3564                                    ;
3565                                    ;       7.  A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF
3566                                    ;           1, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
3567                                    ;           OCCURS, WITH EOT=1.
3568                                    ;
3569                                    ;       8.  A SPACE RECORDS FORWARD COMMAND, WITH A RECORD COUNT OF
3570                                    ;           1, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
3571                                    ;           OCCURS, WITH EOT=1.
3572                                    ;
3573                                    ;       9.  A READ REVERSE COMMAND IS ISSUED, AND IT IS CHECKED
3574                                    ;           THAT NORMAL TERMINATION OCCURS, WITH EOT=1.
3575                                    ;
3576                                    ;       10. A READ FORWARD COMMAND IS ISSUED, AND IT IS CHECKED
3577                                    ;           THAT NORMAL TERMINATION OCCURS, WITH EOT=1.
3578                                    ;
3579                                    ;       11. A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF
3580                                    ;           3, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
3581                                    ;           OCCURS, WITH EOT=0.
3582                                    ;
3583                                    ;       12. A SPACE RECORDS FORWARD COMMAND, WITH A RECORD COUNT OF
3584                                    ;           3, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
3585                                    ;           OCCURS, WITH EOT=1.
3586                                    ;
3587                                    ;       13. A SKIP FILE MARKS REVERSE COMMAND IS ISSUED, WHICH
3588                                    ;           SHOULD SKIP ALL THE WAY TO BOT, AND IT IS CHECKED THAT
3589                                    ;           TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=0,
3590                                    ;           BOT=1, AND RIB=1.
3591                                    ;
3592                                    ;
3593                                    ;
3594                                    ;
3595                                    ;-
3596
3597 056122                            T34LOOP:
3598                                    ;+
```

TEST 6: OPERATIONS AT EOT

```
                                        ;
                                        ;TEST 6, SUBTEST 1
                                        ;
                                        ;VERIFIES THAT WRITING OVER THE END-OF-TAPE (EOT)
                                        ;MARKER CAUSES TAPE STATUS ALERT TERMINATION. IF THE
                                        ;TAPE TRANSPORT DOES NOT RECOGNIZE THE EOT MARKER, THE
                                        ;TAPE WILL RUN OFF THE END OF THE REEL, CAUSING THE
                                        ;PROGRAM SEQUENCE TO BE ABORTED WITH A FATAL ERROR
                                        ;INDICATION. IN THIS CASE, CORRECTIVE MAINTENANCE
                                        ;MUST BE PERFORMED USING THE TRANSPORT'S BUILT-IN
                                        ;MAINTENANCE ROUTINE AVAILIABLE VIA THE FRONT PANEL.
                                        ;IF THE CONTROLLER DOES NOT RECOGNIZE THE EOT, THE
                                        ;TRANSPORT WILL FAULT BUT THE TAPE WILL NOT RUN OFF
                                        ;THE END OF THE REEL BUT THE TRANSPORT MUST BE
                                        ;MANUALLY PLACED BACK ON-LINE TO BE USABLE. THIS IS A
                                        ;FATAL DIAGNOSTIC ERROR.
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-

056122                                  BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
056122                                                                  T6.1:
056122  104402                                                          TRAP    C$BSUB
056124  004737  063262                  JSR     PC,T34REST      ;SET COMMAND PACKET
056130  004737  063416                  JSR     PC,T34RT3       ;RESTORE PACKET
056134  004737  063354                  JSR     PC,T34RT2       ;SET UP OTHER COMMAND PACKET
056140  012737  176750  060724          MOV     #65000.,T34DLY  ;SET UP COUNTER
056146  004737  016054          10$:    JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
056152  103433                  BCS     20$             ;BR IF INIT WAS OK
056154                          DELAY   250             ;DELAY A WHILE
056154  012727  000250                                          MOV     #250,(PC)+
056160  000000                                                  .WORD   0
056162  013727  002116                                          MOV     L$DLY,(PC)+
056166  000000                                                  .WORD   0
056170  005367  177772                                          DEC     -6(PC)
056174  001375                                                  BNE     .-4
056176  005367  177756                                          DEC     -22(PC)
056202  001367                                                  BNE     .-20
056204  016501  000002                  MOV     TSSR(R5),R1     ;GET TSSR STATUS
056210  032701  000200                  BIT     #SSR,R1         ;CHECK FOR SSR SET
056214  001012                          BNE     20$             ;BR, WHEN SSR IS SET
056216  005337  060724                  DEC     T34DLY          ;BUMP COUNTER DOWN
056222  001351                          BNE     10$             ;BR, IF MORE DELAY REQUIRED
056224  005237  002214                  INC     FATFLG                  ;ERROR COUNT
056230  010001                          MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
056232                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
056232  104455                                                          TRAP    C$ERDF
056234  001131                                                          .WORD   601
056236  003646                                                          .WORD   SFIERR
056240  012114                                                          .WORD   SFIMSG
056242                          20$:    CKLOOP                  ;LOOP IF SELECTED
056242  104406                                                          TRAP    C$CLP1
056244  013737  002174  060610          MOV     UNITN,T34DSW    ;SET UP DRIVE NUMBER
056252  052737  000040  060610          BIS     #BIT5,T34DSW    ;TURN ON HIGH SPEED TO SAVE TIME
056260  012704  060570                  MOV     #T34PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
```

TEST 6: OPERATIONS AT EOT

```
3644 056264  004737  010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
3645 056270  103407                        BCS     30$                     ;BR, IF COMMAND ISSUED OK
3646 056272  005237  002214                INC     FATFLG                          ;ERROR COUNT
3650 056276  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
3651 056300                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     056300  104456                                                                TRAP    C$ERHRD
     056302  001132                                                                .WORD   602
     056304  005052                                                                .WORD   WRTMSG
     056306  012114                                                                .WORD   SFIMSG
3652 056310                        30$:    CKLOOP                          ;LOOP IF SELECTED
     056310  104406                                                                TRAP    C$CLP1
3653 056312  004737  011074                JSR     PC,REWIND               ;REWIND CALL
3654 056316  103411                        BCS     35$                     ;BR, IF TSSR IS OK (GOOD)
3655 056320  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR
3656 056324  010004                        MOV     R0,R4                   ;SET UP PACKET
3657 056326  005237  002214                INC     FATFLG                          ;ERROR COUNT
3661 056332                                ERRHRD  ERRNO,T34RWN,PKTSSR     ;TSSR IS INCORRECT AFTER REWIND
     056332  104456                                                                TRAP    C$ERHRD
     056334  001133                                                                .WORD   603
     056336  062367                                                                .WORD   T34RWN
     056340  012126                                                                .WORD   PKTSSR
3662 056342                        35$:    CKLOOP                          ;LOOP IF SELECTED
     056342  104406                                                                TRAP    C$CLP1
3663 056344  012737  140005  060710        MOV     #140005,T34PK3          ;WRITE DATA, ACK, CVC-1
3664 056352  012703  176750                MOV     #65000.,R3              ;SET MAX NUMBER OF WRITES
3665 056356  013737  003116  060712        MOV     FREE,T34WB              ;SET UP WRITE BUFFER ADDRESS
3666 056364  012737  006654  060716        MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (4K BYTES)
3667 056372  012704  060710                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3668 056376  010465  000000        40$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3669 056402  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3670 056406  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3671 056412  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
3672 056416  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
3673 056420  001010                        BNE     50$                     ;BR, IT MIGHT BE END OF TAPE
3674 056422  005303                        DEC     R3                      ;DEC RECORD COUNTER
3675 056424  001364                        BNE     40$                     ;BR, IF MORE TO GO
3676 056426  005237  002214                INC     FATFLG                          ;ERROR COUNT
3680 056432                                ERRDF   ERRNO,T34ET,PKTSSR      ;EOT NOT FOUND (USE SHORTER TAPE?)
     056432  104455                                                                TRAP    C$ERDF
     056434  001134                                                                .WORD   604
     056436  062146                                                                .WORD   T34ET
     056440  012126                                                                .WORD   PKTSSR
3681 056442  032701  000004        50$:    BIT     #BIT2,R1                ;CHECK FOR TAPE STATUS ALERT
3682 056446  001001                        BNE     60$                     ;BR, IF SET
3683 056450  000752                        BR      40$                     ;KEEP GOING
3684 056452  013701  060620        60$:    MOV     T34BFR+6,R1             ;PICK UP XSTO
3685 056456  010102                        MOV     R1,R2                   ;SET UP EXPECTED
3686 056460  052702  000001                BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
3687 056464  020102                        CMP     R1,R2                   ;WAS THE BIT ON
3688 056466  001402                        BEQ     80$                     ;BR, IF EOT WAS FOUND
3689 056470  000137  056376                JMP     40$                     ;KEEP LOOKING
3690 056474                        80$:    CKLOOP                          ;LOOP IF SELECTED
     056474  104406                                                                TRAP    C$CLP1
3691 056476  012737  140005  060710        MOV     #140005,T34PK3          ;WRITE DATA, ACK, CVC-1
3692 056504  013737  003116  060712        MOV     FREE,T34WB              ;SET UP WRITE BUFFER ADDRESS
3693 056512  012737  006654  060716        MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (4K BYTES)
3694 056520  012704  060710                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
```

TEST 6: OPERATIONS AT EOT

```
3695 056524  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3696 056530  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3697 056534  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3698 056540  012702  100204                MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
3699 056544  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
3700 056546  001406                        BEQ     90$                     ;BR, IF THEY ARE OK
3701 056550  005237  002214                INC     FATFLG                          ;ERROR COUNT
3705 056554                                ERRHRD  ERRNO,T34ET2,PKTSSP     ;WRITE TAPE AT EOT FAILED TO SET TSA
     056554  104456                                                                TRAP    C$ERHRD
     056556  001135                                                                .WORD   605
     056560  061417                                                                .WORD   T34ET2
     056562  012126                                                                .WORD   PKTSSR
3706 056564                        90$:    CKLOOP                          ;LOOP IF SELECTED
     056564  104406                                                                TRAP    C$CLP1
3707 056566  013701  060620                MOV     T34BFR+6,R1             ;PICK UP XSTO
3708 056572  010102                        MOV     R1,R2                   ;SET UP EXPECTED
3709 056574  052702  000001                BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
3710 056600  020102                        CMP     R1,R2                   ;WAS THE BIT ON
3711 056602  001406                        BEQ     100$                    ;BR, IF EOT WAS FOUND
3712 056604  005237  002214                INC     FATFLG                          ;ERROR COUNT
3716 056610                                ERRHRD  ERRNO,T34ETN,EXPREC     ;EOT BIT (XSTO) NOT SET
     056610  104456                                                                TRAP    C$ERHRD
     056612  001136                                                                .WORD   606
     056614  061501                                                                .WORD   T34ETN
     056616  015554                                                                .WORD   EXPREC
3717 056620                        100$:   CKLOOP                          ;LOOP IF SELECTED
     056620  104406                                                                TRAP    C$CLP1
3718 056622  012737  140011  060710        MOV     #140011,T34PK3          ;WRITE TAPE MARK, ACK, CVC=1 COMMAND
3719 056630  012704  060710                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3720 056634  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3721 056640  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3722 056644  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3723 056650  012702  100204                MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
3724 056654  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
3725 056656  001406                        BEQ     110$                    ;BR, IF STATUS IS GOOD (OK)
3726 056660  005237  002214                INC     FATFLG                          ;ERROR COUNT
3730 056664                                ERRHRD  ERRNO,T34WTM,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     056664  104456                                                                TRAP    C$ERHRD
     056666  001137                                                                .WORD   607
     056670  061330                                                                .WORD   T34WTM
     056672  012126                                                                .WORD   PKTSSR
3731 056674                        110$:   CKLOOP                          ;LOOP IF SELECTED
     056674  104406                                                                TRAP    C$CLP1
3732 056676  013701  060620                MOV     T34BFR+6,R1             ;PICK UP XSTO
3733 056702  010102                        MOV     R1,R2                   ;SET UP EXPECTED
3734 056704  052702  000001                BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
3735 056710  020102                        CMP     R1,R2                   ;WAS THE BIT ON
3736 056712  001406                        BEQ     120$                    ;BR, IF EOT WAS FOUND
3737 056714  005237  002214                INC     FATFLG                          ;ERROR COUNT
3741 056720                                ERRHRD  ERRNO,T34ETO,EXPREC     ;EOT BIT (XSTO) NOT SET
     056720  104456                                                                TRAP    C$ERHRD
     056722  001140                                                                .WORD   608
     056724  061032                                                                .WORD   T34ETO
     056726  015554                                                                .WORD   EXPREC
3742 056730                        120$:   CKLOOP                          ;LOOP IF SELECTED
     056730  104406                                                                TRAP    C$CLP1
3743 056732  012737  141410  060710        MOV     #141410,T34PK3          ;SKIP TAPE MARK REVERSE ACK,CVC=1 COMMAND
```

TEST 6: OPERATIONS AT EOT

```
3744 056740  012737  000001  060712          MOV     #1,T34WB                ;SET NUMBER (1) OF TMS TO SKIP
3745 056746  012704  060710                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3746 056752  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3747 056756  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3748 056762  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3749 056766  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
3750 056772  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3751 056774  001406                          BEQ     130$                    ;BR, IF STATUS IS GOOD (OK)
3752 056776  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3756 057002                                  ERRHRD  ERRNO,T34STM,PKTSSR     ;SKIP TAPE MARK REV. DIDN'T SET TSA
     057002  104456                                                                  TRAP    C$ERHRD
     057004  001141                                                                  .WORD   609
     057006  061730                                                                  .WORD   T34STM
     057010  012126                                                                  .WORD   PKTSSR
3757 057012                          130$:   CKLOOP                          ;LOOP IF SELECTED
     057012  104406                                                                  TRAP    C$CLP1
3758 057014  013701  060620                  MOV     T34BFR+6,R1             ;PICK UP XSTO
3759 057020  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3760 057022  052702  000001                  BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
3761 057026  020102                          CMP     R1,R2                   ;WAS THE BIT ON
3762 057030  001406                          BEQ     140$                    ;BR, IF EOT WAS FOUND
3763 057032  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3767 057036                                  ERRHRD  ERRNO,T34ETN,EXPREC     ;EOT BIT (XSTO) NOT SET
     057036  104456                                                                  TRAP    C$ERHRD
     057040  001142                                                                  .WORD   610
     057042  061501                                                                  .WORD   T34ETN
     057044  015554                                                                  .WORD   EXPREC
3768 057046                          140$:   CKLOOP                          ;LOOP IF SELECTED
     057046  104406                                                                  TRAP    C$CLP1
3769 057050  013701  060620                  MOV     T34BFR+6,R1             ;PICK UP XSTO
3770 057054  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3771 057056  052702  100000                  BIS     #BIT15,R2               ;SET THE TMK BIT ON IN EXPECTED
3772 057062  020102                          CMP     R1,R2                   ;WAS THE BIT ON
3773 057064  001406                          BEQ     150$                    ;BR, IF TMK WAS FOUND
3774 057066  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3778 057072                                  ERRHRD  ERRNO,T34TMK,EXPREC     ;EOT BIT (XSTO) NOT SET
     057072  104456                                                                  TRAP    C$ERHRD
     057074  001143                                                                  .WORD   611
     057076  062013                                                                  .WORD   T34TMK
     057100  015554                                                                  .WORD   EXPREC
3779 057102                          150$:   CKLOOP                          ;LOOP IF SELECTED
     057102  104406                                                                  TRAP    C$CLP1
3780 057104  012737  140410  060710          MOV     #140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD
3781 057112  012737  000001  060712          MOV     #1,T34WB                ;SPACE ONE RECORD REVERSE
3782 057120  012704  060710                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3783 057124  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3784 057130  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3785 057134  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3786 057140  012702  100204                  MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
3787 057144  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3788 057146  001006                          BNE     160$                    ;BR, IT MIGHT BE END OF TAPE
3789 057150  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3793 057154                                  ERRHRD  ERRNO,T34POS,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     057154  104456                                                                  TRAP    C$ERHRD
     057156  001144                                                                  .WORD   612
     057160  060744                                                                  .WORD   T34POS
     057162  012126                                                                  .WORD   PKTSSR
```

TEST 6: OPERATIONS AT EOT

```
3794 057164                            160$:   CKLOOP                          ;LOOP IF SELECTED
     057164  104406                                                                    TRAP    C$CLP1
3795 057166  013701  060620                    MOV     T34BFR+6,R1             ;PICK UP XSTO
3796 057172  010102                            MOV     R1,R2                   ;SET UP EXPECTED
3797 057174  052702  000001                    BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
3798 057200  020102                            CMP     R1,R2                   ;WAS THE BIT ON
3799 057202  001406                            BEQ     163$                    ;BR, IF EOT WAS FOUND
3800 057204  005237  002214                    INC     FATFLG                          ;ERROR COUNT
3804 057210                                    ERRHRD  ERRNO,T34ETN,EXPREC     ;EOT BIT (XSTO) NOT SET
     057210  104456                                                                    TRAP    C$ERHRD
     057212  001145                                                                    .WORD   613
     057214  061501                                                                    .WORD   T34ETN
     057216  015554                                                                    .WORD   EXPREC
3805 057220                            163$:   CKLOOP                          ;LOOP IF SELECTED
     057220  104406                                                                    TRAP    C$CLP1
3806 057222  013701  060620                    MOV     T34BFR+6,R1             ;PICK UP XSTO
3807 057226  010102                            MOV     R1,R2                   ;SET UP EXPECTED
3808 057230  042702  100000                    BIC     #BIT15,R2               ;CLEAR THE TMK BIT ON IN EXPECTED
3809 057234  020102                            CMP     R1,R2                   ;WAS THE BIT ON
3810 057236  001406                            BEQ     165$                    ;BR, IF TMK WAS FOUND
3811 057240  005237  002214                    INC     FATFLG                          ;ERROR COUNT
3815 057244                                    ERRHRD  ERRNO,T34TMK,EXPREC     ;EOT BIT (XSTO) NOT SET
     057244  104456                                                                    TRAP    C$ERHRD
     057246  001146                                                                    .WORD   614
     057250  062013                                                                    .WORD   T34TMK
     057252  015554                                                                    .WORD   EXPREC
3816 057254                            165$:   CKLOOP                          ;LOOP IF SELECTED
     057254  104406                                                                    TRAP    C$CLP1
3817 057256  012737  140410  060710            MOV     #140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD
3818 057264  012737  000001  060712            MOV     #1,T34WB                ;SPACE ONE RECORD REVERSE
3819 057272  012704  060710                    MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3820 057276  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3821 057302  004737  016330                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3822 057306  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3823 057312  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
3824 057316  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
3825 057320  001406                            BEQ     167$                    ;BR, IT MIGHT BE END OF TAPE
3826 057322  005237  002214                    INC     FATFLG                          ;ERROR COUNT
3830 057326                                    ERRHRD  ERRNO,T34POS,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     057326  104456                                                                    TRAP    C$ERHRD
     057330  001147                                                                    .WORD   615
     057332  060744                                                                    .WORD   T34POS
     057334  012136                                                                    .WORD   PKTSSR
3831 057336                            167$:   CKLOOP                          ;LOOP IF SELECTED
     057336  104406                                                                    TRAP    C$CLP1
3832 057340  013701  060620                    MOV     T34BFR+6,R1             ;PICK UP XSTO
3833 057344  010102                            MOV     R1,R2                   ;SET UP EXPECTED
3834 057346  042702  000001                    BIC     #BIT0,R2                ;CLEAR THE EOT BIT ON IN EXPECTED
3835 057352  020102                            CMP     R1,R2                   ;WAS THE BIT OFF
3836 057354  001400                            BEQ     170$                    ;BR, IF EOT WAS FOUND
3837 057356                            170$:   CKLOOP                          ;LOOP IF SELECTED
     057356  104406                                                                    TRAP    C$CLP1
3838 057360  012737  140010  060710            MOV     #140010,T34PK3          ;SPACE RECORDS FORWARD, ACK, CVC=1
3839 057366  012737  000002  060712            MOV     #2,T34WB                ;SPACE TWO RECORDS
3840 057374  012704  060710                    MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3841 057400  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3842 057404  004737  016330                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
```

TEST 6: OPERATIONS AT EOT

```
3843 057410  016501  000002              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3844 057414  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED
3845 057420  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
3846 057422  001406                      BEQ     190$                    ;BR, IT MIGHT BE END OF TAPE
3847 057424  005237  002214                      INC     FATFLG                          ;ERROR COUNT
3851 057430                              ERRHRD  ERRNO,T34POS,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     057430  104456                                                              TRAP    C$ERHRD
     057432  001150                                                              .WORD   616
     057434  060744                                                              .WORD   T34POS
     057436  012126                                                              .WORD   PKTSSR
3852 057440                      190$:   CKLOOP                          ;LOOP IF SELECTED
     057440  104406                                                              TRAP    C$CLP1
3853 057442  013701  060620              MOV     T34BFR+6,R1             ;PICK UP XSTO
3854 057446  010102                      MOV     R1,R2                   ;SET UP EXPECTED
3855 057450  052702  000001              BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
3856 057454  020102                      CMP     R1,R2                   ;WAS THE BIT ON
3857 057456  001406                      BEQ     200$                    ;BR, IF EOT WAS FOUND
3858 057460  005237  002214                      INC     FATFLG                          ;ERROR COUNT
3862 057464                              ERRHRD  ERRNO,T34ETS,EXPREC     ;EOT BIT (XSTO) NOT SET
     057464  104456                                                              TRAP    C$ERHRD
     057466  001151                                                              .WORD   617
     057470  061560                                                              .WORD   T34ETS
     057472  015554                                                              .WORD   EXPREC
3863 057474                      200$:   CKLOOP                          ;LOOP IF SELECTED
     057474  104406                                                              TRAP    C$CLP1
3864 057476  012737  140401  060710              MOV     #140401,T34PK3          ;READ REVERSE, ACK, CVC=1
3865 057504  013737  003116  060712              MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
3866 057512  012704  060710                      MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3867 057516  010465  000000                      MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3868 057522  004737  016330                      JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3869 057526  016501  000002                      MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3870 057532  012702  000200                      MOV     #SSR,R2                 ;SET UP EXPECTED
3871 057536  020102                              CMP     R1,R2                   ;ARE THEY EQUAL
3872 057540  001406                              BEQ     205$                    ;BR, ONLY SSR IS SET
3873 057542  005237  002214                      INC     FATFLG                          ;ERROR COUNT
3877 057546                              ERRHRD  ERRNO,T34RRE,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     057546  104456                                                              TRAP    C$ERHRD
     057550  001152                                                              .WORD   618
     057552  061116                                                              .WORD   T34RRE
     057554  012126                                                              .WORD   PKTSSR
3878 057556                      205$:   CKLOOP                          ;LOOP IF SELECTED
     057556  104406                                                              TRAP    C$CLP1
3879 057560  012737  140401  060710              MOV     #140401,T34PK3          ;READ REVERSE, ACK, CVC=1
3880 057566  013737  003116  060712              MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
3881 057574  012704  060710                      MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3882 057600  010465  000000                      MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3883 057604  004737  016330                      JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3884 057610  016501  000002                      MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3885 057614  012702  000200                      MOV     #SSR,R2                 ;SET UP EXPECTED
3886 057620  020102                              CMP     R1,R2                   ;ARE THEY EQUAL
3887 057622  001406                              BEQ     210$                    ;BR, IT MIGHT BE END OF TAPE
3888 057624  005237  002214                      INC     FATFLG                          ;ERROR COUNT
3892 057630                              ERRHRD  ERRNO,T34RRE,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     057630  104456                                                              TRAP    C$ERHRD
     057632  001153                                                              .WORD   619
     057634  061116                                                              .WORD   T34RRE
     057636  012126                                                              .WORD   PKTSSR
```

TEST 6: OPERATIONS AT EOT

```
3893 057640                          2104:   CKLOOP                          ;LOOP IF SELECTED
     057640  104406                                                                  TRAP    C$CLP1
3894 057642  012737  140001  060710          MOV     #140001,T34PK3          ;READ DATA, ACK, CVC=1
3895 057650  013737  003116  060712          MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
3896 057656  012737  006654  060716          MOV     #3500.,T3457            ;SET UP BUFFER SIZE (4K BYTES)
3897 057664  012704  060710                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3898 057670  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3899 057674  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3900 057700  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3901 057704  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
3902 057710  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3903 057712  001406                          BEQ     2304                    ;BR, IT MIGHT BE END OF TAPE
3904 057714  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3908 057720                                  ERRHRD  ERRNO,T34RRE,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     057720  104456                                                                  TRAP    C$ERHRD
     057722  001154                                                                  .WORD   634
     057724  061116                                                                  .WORD   T34RRE
     057726  012126                                                                  .WORD   PKTSSR
3909 057730                          2304:   CKLOOP                          ;LOOP IF SELECTED
     057730  104406                                                                  TRAP    C$CLP1
3910 057732  012737  140001  060710          MOV     #140001,T34PK3          ;READ DATA, ACK, CVC=1
3911 057740  013737  003116  060712          MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
3912 057746  012737  006654  060716          MOV     #3500.,T3457            ;SET UP BUFFER SIZE (4K BYTES)
3913 057754  012704  060710                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3914 057760  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3915 057764  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3916 057770  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3917 057774  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
3918 060000  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3919 060002  001406                          BEQ     2354                    ;BR, IT MIGHT BE END OF TAPE
3920 060004  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3924 060010                                  ERRHRD  ERRNO,T34RRE,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     060010  104456                                                                  TRAP    C$ERHRD
     060012  001155                                                                  .WORD   635
     060014  061116                                                                  .WORD   T34RRE
     060016  012126                                                                  .WORD   PKTSSR
3925 060020                          2354:   CKLOOP                          ;LOOP IF SELECTED
     060020  104406                                                                  TRAP    C$CLP1
3926 060022  013701  060620                  MOV     T34BFR+6,R1             ;PICK UP XSTO
3927 060026  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3928 060030  052702  000001                  BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
3929 060034  020102                          CMP     R1,R2                   ;WAS THE BIT ON
3930 060036  001406                          BEQ     2404                    ;BR, IF EOT WAS FOUND
3931 060040  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3935 060044                                  ERRHRD  ERRNO,T34ETZ,EXPREC     ;EOT BIT (XSTO) NOT SET
     060044  104456                                                                  TRAP    C$ERHRD
     060046  001156                                                                  .WORD   636
     060050  061652                                                                  .WORD   T34ETZ
     060052  015554                                                                  .WORD   EXPREC
3936 060054                          2404:   CKLOOP                          ;LOOP IF SELECTED
     060054  104406                                                                  TRAP    C$CLP1
3937 060056  012737  140410  060710          MOV     #140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD.
3938 060064  012737  000005  060712          MOV     #5,T34RB                ;NUMBER OF RECORDS TO SPACE
3939 060072  012704  060710                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3940 060076  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3941 060102  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3942 060106  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
```

TEST 6: OPERATIONS AT EOT

```
3943 060112  012702  000200              MOV     #SSR,R2         ;SET UP EXPECTED
3944 060116  020102                      CMP     R1,R2           ;ARE THEY EQUAL
3945 060120  001406                      BEQ     250$            ;BR, IT MIGHT BE END OF TAPE
3946 060122  005237  002214              INC     FATFLG                  ;ERROR COUNT
3950 060126                              ERRHRD  ERRNO,T34POS,PKTSSR     ;POSITION COMMAND DIDN'T WORK
     060126  104456                                                      TRAP    C$ERHRD
     060130  001157                                                      .WORD   623
     060132  060744                                                      .WORD   T34POS
     060134  012126                                                      .WORD   PKTSSR
3951 060136                      250$:   CKLOOP                          ;LOOP IF SELECTED
     060136  104406                                                      TRAP    C$CLP1
3952 060140  013701  060620              MOV     T34BFR+6,R1     ;PICK UP XSTO
3953 060144  010102                      MOV     R1,R2           ;SET UP EXPECTED
3954 060146  042702  000001              BIC     #BIT0,R2        ;CLEAR THE EOT BIT ON IN EXPECTED
3955 060152  020102                      CMP     R1,R2           ;WAS THE BIT ON
3956 060154  001406                      BEQ     260$            ;BR, IF EOT WAS FOUND
3957 060156  005237  002214              INC     FATFLG                  ;ERROR COUNT
3961 060162                              ERRHRD  ERRNO,T34ETC,EXPREC     ;EOT BIT (XSTO) NOT CLEAR
     060162  104456                                                      TRAP    C$ERHRD
     060164  001160                                                      .WORD   624
     060166  061207                                                      .WORD   T34ETC
     060170  015554                                                      .WORD   EXPREC
3962 060172                      260$:   CKLOOP                          ;LOOP IF SELECTED
     060172  104406                                                      TRAP    C$CLP1
3963 060174  012737  140010  060710      MOV     #140010,T34PK3  ;SPACE RECORDS FORWARD, ACK, C/C=1 CMD.
3964 060202  012737  000005  060712      MOV     #5,T34RB        ;NUMBER OF RECORDS TO SPACE
3965 060210  012704  060710              MOV     #T34PK3,R4      ;R4 = POINTER TO PACKET
3966 060214  010465  000000              MOV     R4,TSDB(R5)     ;ISSUE COMMAND
3967 060220  004737  016330              JSR     PC,WAITF        ;WAIT FOR SSR TO SET
3968 060224  016501  000002              MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
3969 060230  012702  000200              MOV     #SSR,R2         ;SET UP EXPECTED
3970 060234  020102                      CMP     R1,R2           ;ARE THEY EQUAL
3971 060236  001406                      BEQ     270$            ;BR, IT MIGHT BE END OF TAPE
3972 060240  005237  002214              INC     FATFLG                  ;ERROR COUNT
3976 060244                              ERRHRD  ERRNO,T34ET,PKTSSR      ;TSSR NOT CORRECT
     060244  104456                                                      TRAP    C$ERHRD
     060246  001161                                                      .WORD   625
     060250  062146                                                      .WORD   T34ET
     060252  012126                                                      .WORD   PKTSSR
3977 060254                      270$:   CKLOOP                          ;LOOP IF SELECTED
     060254  104406                                                      TRAP    C$CLP1
3978 060256  013701  060620              MOV     T34BFR+6,R1     ;PICK UP XSTO
3979 060262  010102                      MOV     R1,R2           ;SET UP EXPECTED
3980 060264  052702  000001              BIS     #BIT0,R2        ;SET THE EOT BIT ON IN EXPECTED
3981 060270  020102                      CMP     R1,R2           ;WAS THE BIT ON
3982 060272  001400                      BEQ     280$            ;BR, IF EOT WAS FOUND
3983 060274                      280$:   CKLOOP                          ;LOOP IF SELECTED
     060274  104406                                                      TRAP    C$CLP1
3984 060276  012737  141410  060710      MOV     #141410,T34PK3  ;SKIP FILE MARKS REVERSE,ACK,CVC=1 COMMAND
3985 060304  012737  000003  060712      MOV     #3,T34RB        ;NUMBER OF FILE MARKS
3986 060312  012704  060710              MOV     #T34PK3,R4      ;R4 = POINTER TO PACKET
3987 060316  010465  000000              MOV     R4,TSDB(R5)     ;ISSUE COMMAND
3988 060322  012737  176750  060724      MOV     #65000.,T34DLY  ;SET UP DELAY COUNTER
3989 060330  004737  016330      285$:   JSR     PC,WAITF        ;WAIT FOR SSR TO SET
3990 060334  016501  000002              MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
3991 060340  032701  000200              BIT     #SSR,R1         ;CHECK FOR SSR SET
3992 060344  001017                      BNE     286$            ;BR, WHEN SSR IS SET
```

TEST 6: OPERATIONS AT EOT

```
                                        DELAY   #250                    ;WAIT ABOUT .25 SECONDS
060346  012727  000250                                                          MOV     #250,(PC)+
060352  000000                                                                  .WORD   0
060354  013727  002116                                                          MOV     @$DLY,(PC)+
060360  000000                                                                  .WORD   0
060362  005367  177772                                                          DEC     -6(PC)
060366  001375                                                                  BNE     .-4
060370  005367  177756                                                          DEC     -22(PC)
060374  001367                                                                  BNE     .-20
060376  005337  060724                        DEC     T34DLY                  ;BUMP COUNTER
060402  001352                                BNE     285$                    ;BR, IF MORE TO COUNT
060404  012702  000200          286$:         MOV     #SSR,R2                 ;SET UP EXPECTED
060410  020102                                CMP     R1,R2                   ;ARE THEY EQUAL
060412  001007                                BNE     290$                    ;BR, IT MIGHT BE END OF TAPE
060414  005303                                DEC     R3                      ;DEC RECORD COUNTER
060416  005237  002214                        INC     FATFLG                          ;ERROR COUNT
060422                                        ERRHRD  ERRNO,T34ET,PKTSSR      ;EOT NOT FOUND (USE SHORTER TAPE?)
060422  104456                                                                  TRAP    C$ERHRD
060424  001162                                                                  .WORD   626
060426  062146                                                                  .WORD   T34ET
060430  012126                                                                  .WORD   PKTSSR
060432  032701  000004          290$:         BIT     #BIT2,R1                ;CHECK FOR TAPE STATUS ALERT
060436  013701  060620                        MOV     T34BFR+6,R1             ;PICK UP XSTO
060442  010102                                MOV     R1,R2                   ;SET UP EXPECTED
060444  042702  000001                        BIC     #BIT0,R2                ;CLEAR THE EOT BIT IN EXPECTED
060450  020102                                CMP     R1,R2                   ;WAS THE BIT ON
060452  001406                                BEQ     300$                    ;BR, IF EOT WAS FOUND
060454  005237  002214                        INC     FATFLG                          ;ERROR COUNT
060460                                        ERRHRD  ERRNO,T34ETC,EXPREC     ;EOT BIT (XSTO) NOT CLEAR
060460  104456                                                                  TRAP    C$ERHRD
060462  001163                                                                  .WORD   627
060464  061207                                                                  .WORD   T34ETC
060466  015554                                                                  .WORD   EXPREC
060470                          300$:         CKLOOP                          ;LOOP IF SELECTED
060470  104406                                                                  TRAP    C$CLP1
060472  013701  060620                        MOV     T34BFR+6,R1             ;PICK UP XSTO
060476  010102                                MOV     R1,R2                   ;SET UP EXPECTED
060500  052702  000002                        BIS     #BIT1,R2                ;SET THE BOT BIT ON IN EXPECTED
060504  020102                                CMP     R1,R2                   ;WAS THE BIT ON
060506  001406                                BEQ     320$                    ;BR, IF BOT WAS FOUND
060510  005237  002214                        INC     FATFLG                          ;ERROR COUNT
060514                                        ERRHRD  ERRNO,T34BOT,EXPREC     ;EOT BIT (XSTO) NOT CLEAR
060514  104456                                                                  TRAP    C$ERHRD
060516  001164                                                                  .WORD   628
060520  061264                                                                  .WORD   T34BOT
060522  015554                                                                  .WORD   EXPREC
060524                          320$:         CKLOOP                          ;LOOP IF SELECTED
060524  104406                                                                  TRAP    C$CLP1
060526                          600$:
060526                                        ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
060526                                                                                  L10062:
060526  104403                                                                  TRAP    C$ESUB
060530  023727  002214  000017                CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
060536  103402                                BLO     999$                            ;BR, IF LESS THAN 25
060540  004737  017262                        JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
060544                          999$:
060544  004737  016536                        JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
```

```
4035 060550  103002                    BCC     163$                    ;BR, IF NO LOOP REQUIRED
4036 060552  000137  056122            JMP     T34LOOP                 ;EXECUTE AGAIN
4037 060556                    163$:   EXIT    TST                     ;ALL DONE THIS TEST
     060556  104432                                                            TRAP    C$EXIT
     060560  002662                                                            .WORD   L10061 .
4038                                   ;
4039                                   ;LOCAL STORAGE FOR THIS TEST
4040                                   ;
4042          060570                           .=<.+10>&177770
4044 060570                            T34PACKET:
4045 060570  100004                             .WORD   100004          ;COMMAND PACKET FOR TEST
4046 060572  060600                             .WORD   T34DATA         ;WRITE CHARACTERISTICS COMMAND, WITH ACK
4047 060574  000000                             .WORD   0               ;ADDRESS OF CHARACTERISTICS BLOCK
4048 060576  000010                             .WORD   8.
4049 060600                            T34DATA:                         ;STARTING VALUE OF BLOCK SIZE
4050 060600  060612                             .WORD   T34BFR          ;CHARACTERISTICS DATA BLOCK
4051 060602  000000                             .WORD   0               ;ADDRESS OF MESSAGE BUFFER
4052 060604  000012                             .WORD   10.
4053 060606  000000                             .WORD   0               ;LENGTH OF MESSAGE BUFFER
4054 060610  000000                    T34DSW:  .WORD   0               ;SELECT DRIVE 0
4055 060612                            T34BFR:  .BLKW   25.             ;MESSAGE BUFFER
4056                                   ;
4057                                   ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
4058                                   ;
4060          060700                           .=<.+10>&177770
4062 060700                            T34PK2:
4063 060700  100006                             .WORD   100006          ;WRITE SUB SYS MEM COMMAND, AND ACK
4064 060702  060726                             .WORD   T34BF2          ;ADDRESS OF SELECT BLOCK DATA
4065 060704  000000                             .WORD   0
4066 060706  000006                             .WORD   6.              ;SIZE OF DATA PACKET
4067
4071 060710                            T34PK3:
4072 060710  100005                             .WORD   100005          ;WRITE COMMAND,  AND ACK
4073 060712                            T34RB:
4074 060712  000000                    T34WB:   .WORD   0               ;ADDRESS OF WRITE/READ BUFFER
4075 060714  000000                             .WORD   0
4076 060716  000000                    T34SZ:   .WORD   0               ;SIZE OF BUFFER (EXTENT)
4077                                            .EVEN
4078                                   ;
4079 060720  000000                    T34RSZ:  .WORD   0               ;LARGEST TAPE RECORD IN BYTES
4080 060722  000000                    T34CNT:  .WORD   0               ;TAPE RECORD COUNTER
4081 060724  000000                    T34DLY:  .WORD   0               ;DELAY COUNTER
4082                                   ;
4083                                   ;
4084 060726                            T34BF2:
4085 060726     010                    T34BS0:  .BYTE   10              ;BSEL0 AREA
4086 060727     200                    T34BS1:  .BYTE   200             ;BSEL1 AREA
4087 060730  000000                    T34S2:   .WORD   0               ;SEL 2 AREA
4088 060732  000000                    T34S3:   .WORD   0               ;DATA AREA
4089                                   ;
4090                                   ;
4091                                            .EVEN
4092                                   ;TAPE MOTION PACKET COMMAND VALUES
4093
4094 060734  100005                    T34WD:   .WORD   100005          ;WRITE DATA (NEXT)
4095 060736  100405                    T34WDR:  .WORD   100405          ;WRITE DATA RETRY
4096 060740  102005                    T34CON:  .WORD   102005          ;WRITE CONTINOUS
```

```
4097 060742  177777                        .WORD   177777                  ;END OF DATA
4098                                ;+
4099                                ;LOCAL TEXT MESSAGES FOR TEST
4100                                ;-
4101
4102 060744     124     123     123  T34POS: .ASCIZ  'TSSR Incorrect After Position (SPACE RECORDS) Command'
4103 061032     127     122     111  T34ETO: .ASCIZ  'WRITE TAPE MARK At EOT Failed To Set EOT Bit (XSTO)'
4104 061116     122     105     101  T34RRE: .ASCIZ  'READ Command At EOT Didn''t Give Normal Termination (TSSR)'
4105 061207     125     156     141  T34ETC: .ASCIZ  'Unable To Clear EOT Indication, (XSTO) Bit 0'
4106 061264     122     105     127  T34BOT: .ASCIZ  'REWIND Failed To Set BOT (XSTO) Bit'
4107 061330     127     122     111  T34WTM: .ASCIZ  'WRITE TAPE MARK At EOT Failed To Set Tape Status Alert'
4108 061417     127     122     111  T34ET2: .ASCIZ  'WRITE DATA At EOT Failed To Set Tape Status Alert'
4109 061501     127     122     111  T34ETN: .ASCIZ  'WRITE DATA At EOT Failed To Set EOT Bit (XSTO)'
4110 061560     123     120     101  T34ETS: .ASCIZ  'SPACE RECORDS FORWARD At EOT Failed To Set EOT Bit (XSTO)'
4111 061652     122     105     101  T34ETZ: .ASCIZ  'READ DATA At EOT Failed To Set EOT Bit (XSTO)'
4112 061730     124     123     123  T34STM: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE At EOT'
4113 062013     120     117     123  T34TMK: .ASCIZ  'POSITION Command At EOT Onto Tape Mark Failed To Set TMK (XSTO)'
4114 062113     127     122     111  T34SSR: .ASCIZ  'WRITE Command Not Accepted'
4115 062146     105     117     124  T34ET:  .ASCIZ  'EOT Not Found In 65000 3.5K Writes, (Use Shorter Tape)'
4116 062235     127     122     111  T34EOT: .ASCIZ  'WRITE DATA OVER EOT GAVE NO TAPE STATUS ALERT'
4117 062313     124     123     123  T34TM:  .ASCIZ  'TSSR Not Correct After WRITE Command Reject'
4118 062367     122     145     167  T34RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
4119 062436     122     101     115  T34RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
4120 062511     124     123     123  T34AM3: .ASCIZ  'TSSR Init, Failed After WRITE Command'
4121 062557     104     162     151  T34OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
4122 062632     124     123     123  T34WDD: .ASCIZ  'TSSR Not Correct After WRITE DATA Command, SWB Bit Set'
4123 062721     124     123     123  T34WDC: .ASCIZ  'TSSR Not Correct After WRITE DATA Command, Check For Tape Offline'
4124 063023     103     126     103  T34VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
4125 063076     124     123     102  T34BA:  .ASCIZ  'TSBA Not Correct After WRITE DATA Command'
4126 063150     127     122     111  T34WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
4127 063237     117     160     145  TST34ID:        .ASCIZ  'Operations At EOT'
4128                                        .EVEN
4129                                ;+
4130                                ;
4131                                ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
4132                                ;WRITE SUBSYSTEM MEMORY COMMAND
4133                                ;
4134                                ;-
4135
4136 063262                          T34REST:
4137 063262                                  SAVREG                          ;SAVE THE REGISTERS
4138 063266  012701  060570                  MOV     #T34PACKET,R1           ;START OF THE PACKET
4139 063272  012721  100004                  MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK
4140 063276  012721  060600                  MOV     #T34DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
4141 063302  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
4142 063304  012721  000012                  MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
4143 063310  012721  060612                  MOV     #T34BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
4144 063314  005021                          CLR     (R1)+
4145 063316  012721  000024                  MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
4146 063322  005021                          CLR     (R1)+
4147 063324  012711  000000                  MOV     #0,(R1)                 ;SELECT DRIVE ZERO
4148 063330  012702  000030                  MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
4149 063334  012762  177777  060612  64$:    MOV     #177777,T34BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
4150 063342  005742                          TST     -(R2)                   ;BUMP DOWN TO NEXT LOCATION
4151 063344  020227  000000                  CMP     R2,#0                   ;R2 AT ZERO YET
4152 063350  001371                          BNE     64$                     ;KEEP GOING UNTIL DONE
4153 063352  000207                          RTS     PC                      ;RETURN
```

TEST 6: OPERATIONS AT EOT

```
4154
4155 063354                                T34RT2:
4156 063354                                        SAVREG                          ;SAVE THE REGISTERS
4157 063360  012701  060700                        MOV     #T34PK2,R1              ;START OF THE PACKET
4158 063364  012721  100006                        MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK
4159 063370  012721  060726                        MOV     #T34BF2,(R1)+           ;ADDRESS OF DATA BLOCK
4160 063374  005021                                CLR     (R1)+                   ;EXTENDED ADDRESS
4161 063376  012721  000006                        MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
4162 063402  012701  060726                        MOV     #T34BF2,R1              ;POINT TO DATA SEL AREA
4163 063406  005021                                CLR     (R1)+
4164 063410  005021                                CLR     (R1)+
4165 063412  005011                                CLR     (R1)
4166 063414  000207                                RTS     PC                      ;RETURN
4167 063416                                T34RT3:
4168 063416                                        SAVREG                          ;SAVE THE REGISTERS
4169 063422  012701  060710                        MOV     #T34PK3,R1              ;START OF THE PACKET
4170 063426  012721  100005                        MOV     #100005,(R1)+           ;WRITE  TAPE, WITH ACK
4171 063432  005021                                CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
4172 063434  005021                                CLR     (R1)+                   ;EXTENDED ADDRESS
4173 063436  005011                                CLR     (R1)                    ;SIZE OF DATA BLOCK
4174 063440  000207                                RTS     PC                              ;RETURN
4175 063442                                        ENDTST
     063442                                                                                  L10061:
     063442  104401                                                                                TRAP    C$ETST
4176                                       .SBTTL  TEST  7: EXTENDED MODE FEATURES
4177                                ;+
4178                                ;
4179                                ;       THIS TEST VERIFIES THE OPERATION OF COMMANDS ONLY AVAILABLE WHEN
4180                                ;       THE CONTROLLER IS IN THE EXTENDED FEATURES MODE.  THESE COMMANDS
4181                                ;       ARE:
4182                                ;
4183                                ;               REWIND WITH IMMEDIATE INTERRUPT
4184                                ;
4185                                ;       IF THE CONTROLLER IS NOT ALREADY IN EXTENDED FEATURES MODE, IT
4186                                ;       IS PLACED THERE VIA A WRITE SUBSYSTEM MEMORY COMMAND.
4187                                ;
4188                                ;
4189                                ;
4190                                ;THE TEST CONSISTS OF THE FOLLOWING 7 SUBTESTS
4191                                ;
4192                                ;
4193                                ;
4194                                ;-
4195 063444                                        BGNTST
     063444                                                                             T7::
4196 063444  012737  006354  002172                MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
4201 063452  012700  073163                        MOV     #TST35ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
4202 063456  004737  016570                        JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
4203 063462  012737  000005  002210                MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
4204 063470  005037  067566                        CLR     T35CNT                  ;CLEAR TAPE RECORD COUNTER
4205                                ;+
4206                                ;
4207                                ;TEST 7, SUBTEST 1
4208                                ;
4209                                ;
4210                                ;       VERIFIES THAT A REWIND WITH IMMEDIATE INTERRUPT COMMAND, ISSUED
4211                                ;       WITH THE INTERRUPT ENABLE (IE) BIT CLEAR (0), CAUSES AN INIT
```

```
4212                                    ;       IMMEDIATE TERMINATION BUT NO INTERRUPT.  STATUS IN THE MESSAGE
4213                                    ;       BUFFER IS CHECKED TO VERIFY THAT THE MOTION (MOT) AND OPERATION
4214                                    ;       IN PROGRESS (OPM) STATUS BITS ARE BOTH SET.
4215                                    ;
4216                                    ;
4217                                    ;
4218                                    ;
4219                                    ;
4220                                    ;
4221
4222 063474                            T35LOOP:
4223 063474                                    BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      063474                                                                                T7.1:
      063474  104402                                                                          TRAP    C$BSUB
4224 063476  004737  073214                    JSR     PC,T35REST              ;SET COMMAND PACKET
4225 063502  005037  002216                    CLR     INTRECV                 ;CLEAR INTERRUPT RECEIVED FLAG
4226 063506  004737  073306                    JSR     PC,T35RT2               ;SET UP OTHER COMMAND PACKET
4227 063512  004737  073350                    JSR     PC,T35RT3               ;SET UP OTHER COMMAND PACKET
4228 063516  012737  176750  067572            MOV     #65000.,T35DLY          ;SET UP DELAY COUNTER
4229 063524  005037  067566                    CLR     T35CNT                  ;CLEAR COUNTER
4230 063530  004737  016054            10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
4231 063534  103426                            BCS     20$                     ;BR IF INIT WAS OK
4232 063536                                    DELAY   250                     ;DELAY ABOUT .25 SEC
      063536  012727  000250                                                                  MOV     #250,(PC)+
      063542  000000                                                                          .WORD   0
      063544  013727  002116                                                                  MOV     L$DLY,(PC)+
      063550  000000                                                                          .WORD   0
      063552  005367  177772                                                                  DEC     -6(PC)
      063556  001375                                                                          BNE     .-4
      063560  005367  177756                                                                  DEC     -22(PC)
      063564  001367                                                                          BNE     .-20
4233 063566  005337  067572                    DEC     T35DLY                  ;BUMP COUNTER
4234 063572  001356                            BNE     10$                     ;BR. IF COUNTER NOT DONE
4235 063574  005237  002214                    INC     FATFLG                          ;ERROR COUNT
4239 063600  010001                            MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
4240 063602                                    ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      063602  104455                                                                          TRAP    C$ERDF
      063604  001275                                                                          .WORD   701
      063606  003646                                                                          .WORD   SFIERR
      063610  012114                                                                          .WORD   SFIMSG
4241 063612  013737  002174  067440    20$:    MOV     UNITN,T35DSW            ;SET UP DRIVE NUMBER
4242 063620  012704  067420                    MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4243 063624  004737  010742                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4244 063630  103407                            BCS     25$                     ;BR. IF COMMAND ISSUED OK
4245 063632  005237  002214                    INC     FATFLG                          ;ERROR COUNT
4249 063636  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4250 063640                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      063640  104456                                                                          TRAP    C$ERHRD
      063642  001276                                                                          .WORD   702
      063644  005052                                                                          .WORD   WRTMSG
      063646  012114                                                                          .WORD   SFIMSG
4251 063650                            25$:    CKLOOP                          ;LOOP IF SELECTED
      063650  104406                                                                          TRAP    C$CLP1
4252 063652  004737  011074                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4253 063656  103411                            BCS     30$                     ;BR. IF NO PROBLEM
4254 063660  010004                            MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
4255 063662  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR FOR PRINTOUT
```

```
4256 063666  005237  002214                    INC     FATFLG                          ;ERROR COUNT
4260 063672                                    ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
     063672  104456                                                                    TRAP    C$ERHRD
     063674  001277                                                                    .WORD   703
     063676  070674                                                                    .WORD   T35RWN
     063700  012126                                                                    .WORD   PKTSSR
4261 063702                            30$:     CKLOOP                          ;LOOP IF SELECTED
     063702  104406                                                                    TRAP    C$CLP1
4262 063704  013701  067450                    MOV     T35BFR+6,R1             ;PICK UP XSTO
4263 063710  010102                            MOV     R1,R2                   ;SET UP EXPECTED
4264 063712  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4265 063716  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
4266 063720  001406                            BEQ     40$                     ;BR, IF EQUAL (OK)
4267 063722  005237  002214                    INC     FATFLG                          ;ERROR COUNT
4271 063726                                    ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     063726  104456                                                                    TRAP    C$ERHRD
     063730  001300                                                                    .WORD   704
     063732  070370                                                                    .WORD   T35BOT
     063734  015554                                                                    .WORD   EXPREC
4272 063736                            40$:     CKLOOP                          ;LOOP IF SELECTED
     063736  104406                                                                    TRAP    C$CLP1
4273 063740  012703  000024                    MOV     #20.,R3                 ;NUMBER OF RECORDS
4274 063744  012737  000400  067546            MOV     #256.,T35SZ             ;SET UP RECORD SIZE
4275 063752  013737  003116  067542            MOV     FREE,T35WB              ;ADDRESS OF WRITE BUFFER
4276
4277                                           ;*****************************************
4278                                           ;
4279                                           ;WRITE DATA,ACK,CVC=1 COMMAND
4280                                           ;
4281                                           ;*****************************************
4282
4283 063760  012737  140005  067540                    MOV     #140005,T35PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
4284 063766  012704  067540                            MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4285 063772  010465  000000                    50$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4286 063776  004737  016330                            JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4287 064002  016501  000002                            MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4288 064006  012702  000200                            MOV     #SSR,R2                 ;SET UP EXPECTED
426  064012  020102                                    CMP     R1,R2                   ;ARE THEY EQUAL
4290 064014  001406                                    BEQ     60$                     ;BR, IF OK
4291 064016  005237  002214                            INC     FATFLG                          ;ERROR COUNT
4295 064022                                            ERRHRD  ERRNO,T35WDE,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     064022  104456                                                                            TRAP    C$ERHRD
     064024  001301                                                                            .WORD   705
     064026  070316                                                                            .WORD   T35WDE
     064030  012126                                                                            .WORD   PKTSSR
4296 064032                                    60$:    CKLOOP                          ;LOOP IF SELECTED
     064032  104406                                                                            TRAP    C$CLP1
4297 064034  005303                                    DEC     R3                      ;BUMP RECORD COUNTER
4298 064036  001355                                    BNE     50$                     ;BR, IF MORE RRECORDS TO COUNT
4299
4300                                           ;*****************************************
4301                                           ;
4302                                           ;WAIT FOR TAPE TO STOP ALL MOTION
4303                                           ;
4304                                           ;*****************************************
4305
4306 064040  012737  000012  067572                    MOV     #10.,T35DLY             ;SET UP DELAY COUNTER
```

```
4307 064046                                70$:    DELAY   250                     ;WAIT ABOUT .25 SEC
     064046  012727  000250                                                                MOV     #250,(PC)+
     064052  000000                                                                       .WORD   0
     064054  013727  002116                                                                MOV     L$DLY,(PC)+
     064060  000000                                                                       .WORD   0
     064062  005367  177772                                                                DEC     -6(PC)
     064066  001375                                                                       BNE     .-4
     064070  005367  177756                                                                DEC     -22(PC)
     064074  001367                                                                       BNE     .-20
4308 064076  005337  067572                        DEC     T35DLY                  ;BUMP COUNTER DOWN
4309 064102  001361                                BNE     70$                     ;BR, IF MORE TO DELAY
4310 064104  005737  002220                        TST     EXTFEA                  ;CHECK FOR EXTENDED FEATURES SW SWITCH
4311 064110  001042                                BNE     110$                    ;BR IF SWITCH IS ON
4312 064112  112737  000200  067551                MOVB    #200,T35BS1             ;WRITE MISCELLANEOUS CONT/READ STATUS
4313 064120  112737  000010  067550                MOVB    #10,T35BS0              ;FUNCTION SELECTION BIT (TURN ON EXTFEA HW SWITCH)
4314 064126  012704  067530                        MOV     #T35PK2,R4              ;WRITE SUBSYS MEM PACKET
4315 064132  010465  000000                        MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4316 064136  004737  016416                        JSR     PC,CHKTSSR              ;WAIT FOR SSR
4317 064142  103407                                BCS     90$                     ;BR, IF NO ERROR
4318 064144  010001                                MOV     R0,R1                   ;ERROR, SAVE TSSR
4319 064146  005237  002214                        INC     FATFLG                          ;ERROR COUNT
4323 064152                                        ERRHRD  ERRNO,T35SSR,PKTSSR     ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
     064152  104456                                                                TRAP    C$ERHRD
     064154  001302                                                                .WORD   706
     064156  072452                                                                .WORD   T35SSR
     064160  012126                                                                .WORD   PKTSSR
4324 064162                                90$:    CKLOOP                          ;LOOP IF SELECTED
     064162  104406                                                                TRAP    C$CLP1
4325 064164  012704  067420                        MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4326 064170  004737  010742                        JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4327 064174  103407                                BCS     100$                    ;BR, IF COMMAND ISSUED OK
4328 064176  005237  002214                        INC     FATFLG                          ;ERROR COUNT
4332 064202  010001                                MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4333 064204                                        ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     064204  104456                                                                TRAP    C$ERHRD
     064206  001303                                                                .WORD   707
     064210  005052                                                                .WORD   WRTMSG
     064212  012114                                                                .WORD   SFIMSG
4334 064214                                100$:   CKLOOP                          ;SCOPE LOOP
     064214  104406                                                                TRAP    C$CLP1
4335 064216  012737  176750  067572        110$:   MOV     #65000.,T35DLY          ;SET UP DELAY COUNTER
4336 064224  005037  067566                        CLR     T35CNT                  ;DELAY COUNTER
4337
4338                                       ;*****************************************
4339                                       ;
4340                                       ;REWIND IMED. INTERRUPT,ACK,CVC=1,IE=0 COMMAND
4341                                       ;
4342                                       ;*****************************************
4343
4344 064230  012737  142012  067540                MOV     #142012,T35PK3          ;REWIND IMED. INTERRUPT,ACK,CVC=1,IE=0 COMMAND
4345 064236  012704  067540                        MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4346 064242  010465  000000                        MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4347 064246  016501  000002                120$:   MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4348 064252  032701  000200                        BIT     #SSR,R1                 ;CHECK FOR SSR SET
4349 064256  001021                                BNE     130$                    ;BR, WHEN SSR IS SET
4350 064260  005237  067566                        INC     T35CNT                  ;BUMP THE CYCLE COUNTER
4351 064264                                        DELAY   1                       ;DELAY TO KEEP COUNTER DOWN
```

```
        064264  012727  000001                                                  MOV     #1,(PC)+
        064270  000000                                                          .WORD   0
        064272  013727  002116                                                  MOV     L$DLY,(PC)+
        064276  000000                                                          .WORD   0
        064300  005367  177772                                                  DEC     -6(PC)
        064304  001375                                                          BNE     .-4
        064306  005367  177756                                                  DEC     -22(PC)
        064312  001367                                                          BNE     .-20
4352    064314  005337  067572                  DEC     T35DLY                  ;DROP DEAD TIMER BUMP DOWN
4353    064320  001352                          BNE     120$                    ;BR, IF MORE TIME TO GO
4354    064322  012702  000200          130$:   MOV     #SSR,R2                 ;SET UP EXPECTED
4355    064326  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4356    064330  001406                          BEQ     140$                    ;BR, IF OK
4357    064332  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4361    064336                                  ERRHRD  ERRNO,T35RWE,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        064336  104456                                                          TRAP    C$ERHRD
        064340  001304                                                          .WORD   708
        064342  073020                                                          .WORD   T35RWE
        064344  012126                                                          .WORD   PKTSSR
4362    064346                  140$:   CKLOOP                                  ;LOOP IF SELECTED
        064346  104406                                                          TRAP    C$CLP1
4363    064350  005737  002216                  TST     INTRECV                 ;CHECK FOR INTERRUPTS
4364    064354  001410                          BEQ     150$                    ;BR, IF NO INTERRUPTS DETECTED
4365    064356  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR STATUS FOR PRINTOUT
4366    064362  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4370    064366                                  ERRHRD  ERRNO,T35INT,PKTSSR     ;INTERRUPT RECEIVED (BAD)
        064366  104456                                                          TRAP    C$ERHRD
        064370  001305                                                          .WORD   709
        064372  072631                                                          .WORD   T35INT
        064374  012126                                                          .WORD   PKTSSR
4371    064376                  150$:   CKLOOP                                  ;LOOP IF SELECTED
        064376  104406                                                          TRAP    C$CLP1
4372
4373                            ;*****************************************
4374                            ;
4375                            ;NOW CHECK FOR THE MOTTON BITS SET
4376                            ;
4377                            ;*****************************************
4378
4379    064400  013701  067450                  MOV     T35BFR+6,R1             ;PICK UP XSTO
4380    064404  010102                          MOV     R1,R2                   ;SET UP EXPECTED
4381    064406  052702  000200                  BIS     #BIT7,R2                ;SET MOT BIT IN EXPECTED
4382    064412  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
4383    064414  001406                          BEQ     160$                    ;BR, IF EQUAL (OK)
4384    064416  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4388    064422                                  ERRHRD  ERRNO,T35MOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        064422  104456                                                          TRAP    C$ERHRD
        064424  001306                                                          .WORD   710
        064426  072533                                                          .WORD   T35MOT
        064430  015554                                                          .WORD   EXPREC
4389    064432                  160$:   CKLOOP                                  ;LOOP IF SELECTED
        064432  104406                                                          TRAP    C$CLP1
4390    064434  013701  067454                  MOV     T35BFR+12,R1            ;PICK UP XST2
4391    064440  010102                          MOV     R1,R2                   ;SET UP EXPECTED
4392    064442  052702  100000                  BIS     #BIT15,R2               ;SET OPM BIT IN EXPECTED
4393    064446  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
4394    064450  001406                          BEQ     170$                    ;BR, IF EQUAL (OK)
```

TEST 7: EXTENDED MODE FEATURES SEQ 0180

```
4395 064452  005237  002214                  INC     FATFLG                  ;ERROR COUNT
4399 064456                                  ERRHRD  ERRNO,T350PM,EXPREC     ;OPM BIT NOT SET
     064456  104456                                                          TRAP    C$ERHRD
     064460  001307                                                          .WORD   711
     064462  072722                                                          .WORD   T350PM
     064464  015554                                                          .WORD   EXPREC
4400 064466                          170$:   CKLOOP                          ;LOOP IF SELECTED
     064466  104406                                                          TRAP    C$CLP1
4401 064470  012737  000027  067572          MOV     #25.,T35DLY             ;SET UP DELAY COUNTER
4402 064476                          175$:   DELAY   250                     ;START DELAY
     064476  012727  000250                                                  MOV     #250,(PC)+
     064502  000000                                                          .WORD   0
     064504  013727  002116                                                  MOV     L$DLY,(PC)+
     064510  000000                                                          .WORD   0
     064512  005367  177772                                                  DEC     -6(PC)
     064516  001375                                                          BNE     .-4
     064520  005367  177756                                                  DEC     -22(PC)
     064524  001367                                                          BNE     .-20
4403 064526  005337  067572                  DEC     T35DLY                  ;BUMP DELAY COUNTER
4404 064532  001361                          BNE     175$                    ;BR, IF MORE DELAY
4405 064534                                  ENDSUB
     064534                                                          L10064:
     064534  104403                                                          TRAP    C$ESUB
4406 064536  023727  002214  000017          CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
4407 064544  103402                          BLO     999$                    ;BR, IF LESS THAN 25
4408 064546  004737  017262                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
4409 064552                          999$:
4410                                 ;*
4411                                 ;
4412                                 ;TEST 7: SUBTEST 2
4413                                 ;
4414                                 ;       WITH THE INTERRUPT ENABLE (IE) BIT SET (1), CAUSES ALMOST
4415                                 ;       IMMEDIATE TERMINATION AND AN INTERRUPT.  STATUS IN THE MESSAGE
4416                                 ;       BUFFER IS CHECKED TO VERIFY THAT THE MOTION (MOT) AND OPERATION
4417                                 ;       IN PROGRESS (OPM) STATUS BITS ARE BOTH SET.
4418                                 ;
4419                                 ;
4420                                 ;
4421                                 ;
4422                                 ;
4423                                 ;
4424                                 ;
4425                                 ;-
4426 064552                                  BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     064552                                                                          T7.2:
     064552  104402                                                          TRAP    C$BSUB
4427 064554                                  SETPRI  #PRI00          ;ENABLE INTERRUPTS.
     064554  012700  000000                                                  MOV     #PRI00,R0
     064560  104441                                                          TRAP    C$SPRI
4428 064562  004737  073214                  JSR     PC,T35REST              ;SET COMMAND PACKET
4429 064566  005037  002216                  CLR     INTRECV                 ;CLEAR INTERRUPT RECEIVED FLAG
4430 064572  004737  073306                  JSR     PC,T35RT2               ;SET UP OTHER COMMAND PACKET
4431 064576  004737  073350                  JSR     PC,T35RT3               ;SET UP OTHER COMMAND PACKET
4432 064602  012737  176750  067572          MOV     #65000.,T35DLY          ;SET UP DELAY COUNTER
4433 064610  005037  067566                  CLR     T35CNT                  ;CLEAR COUNTER
4434 064614  004737  016054          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
4435 064620  103426                          BCS     20$                     ;BR IF INIT WAS OK
```

TEST 7: EXTENDED MODE FEATURES

```
4436 064622                                DELAY   250                     ;DELAY ABOUT .25 SEC
     064622  012727  000250                                                        MOV     #250,(PC)+
     064626  000000                                                                .WORD   0
     064630  013727  002116                                                        MOV     L$DLY,(PC)+
     064634  000000                                                                .WORD   0
     064636  005367  177772                                                        DEC     -6(PC)
     064642  001375                                                                BNE     .-4
     064644  005367  177756                                                        DEC     -22(PC)
     064650  001367                                                                BNE     .-20
4437 064652  005337  067572                DEC     T35DLY                  ;BUMP COUNTER
4438 064656  001356                        BNE     10$                     ;BR, IF COUNTER NOT DONE
4439 064660  005237  002214                INC     FATFLG                          ;ERROR COUNT
4443 064664  010001                        MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
4444 064666                                ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     064666  104455                                                                TRAP    C$ERDF
     064670  001310                                                                .WORD   712
     064672  003646                                                                .WORD   SFIERR
     064674  012114                                                                .WORD   SFIMSG
4445 064676  013737  002174  067440  20$:   MOV     UNITN,T35DSW            ;SET UP DRIVE NUMBER
4446 064704  012704  067420                MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4447 064710  004737  010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4448 064714  103407                        BCS     25$                     ;BR, IF COMMAND ISSUED OK
4449 064716  005237  002214                INC     FATFLG                          ;ERROR COUNT
4453 064722  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4454 064724                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     064724  104456                                                                TRAP    C$ERHRD
     064726  001311                                                                .WORD   713
     064730  005052                                                                .WORD   WRTMSG
     064732  012114                                                                .WORD   SFIMSG
4455 064734                        25$:    CKLOOP                          ;LOOP IF SELECTED
     064734  104406                                                                TRAP    C$CLP1
4456 064736  004737  011074                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4457 064742  103411                        BCS     30$                     ;BR, IF NO PROBLEM
4458 064744  010004                        MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
4459 064746  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4460 064752  005237  002214                INC     FATFLG                          ;ERROR COUNT
4464 064756                                ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
     064756  104456                                                                TRAP    C$ERHRD
     064760  001312                                                                .WORD   714
     064762  070674                                                                .WORD   T35RWN
     064764  012126                                                                .WORD   PKTSSR
4465 064766                        30$:    CKLOOP                          ;LOOP IF SELECTED
     064766  104406                                                                TRAP    C$CLP1
4466 064770  013701  067450                MOV     T35BFR+6,R1             ;PICK UP XSTO
4467 064774  010102                        MOV     R1,R2                   ;SET UP EXPECTED
4468 064776  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4469 065002  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
4470 065004  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
4471 065006  005237  002214                INC     FATFLG                          ;ERROR COUNT
4475 065012                                ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     065012  104456                                                                TRAP    C$ERHRD
     065014  001313                                                                .WORD   715
     065016  070370                                                                .WORD   T35BOT
     065020  015554                                                                .WORD   EXPREC
4476 065022                        40$:    CKLOOP                          ;LOOP IF SELECTED
     065022  104406                                                                TRAP    C$CLP1
4477 065024  012703  000024                MOV     #20.,R3                 ;NUMBER OF RECORDS
```

```
4478 065030  012737  000400  067546          MOV     #256.,T35S7             ;SET UP RECORD SIZE
4479 065036  013737  003116  067542          MOV     FREE,T35WB              ;ADDRESS OF WRITE BUFFER
4480
4481                                 ;*************************************
4482                                 ;
4483                                 ;WRITE DATA,ACK,CVC=1 COMMAND
4484                                 ;
4485                                 ;*************************************
4486
4487 065044  012737  140005  067540          MOV     #140005,T35PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
4488 065052  012704  067540                  MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4489 065056  010465  000000          50$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4490 065062  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4491 065066  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4492 065072  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
4493 065076  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4494 065100  001406                          BEQ     60$                     ;BR, IF OK
4495 065102  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4499 065106                                  ERRHRD  ERRNO,T35WDE,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     065106  104456                                                                  TRAP    C$ERHRD
     065110  001314                                                                  .WORD   716
     065112  070316                                                                  .WORD   T35WDE
     065114  012126                                                                  .WORD   PKTSSR
4500 065116                          60$:    CKLOOP                          ;LOOP IF SELECTED
     065116  104406                                                                  TRAP    C$CLP1
4501
4502                                 ;*************************************
4503                                 ;
4504                                 ;WAIT FOR TAPE TO STOP ALL MOTION
4505                                 ;
4506                                 ;*************************************
4507
4508 065120  012737  000012  067572          MOV     #10.,T35DLY             ;SET UP DELAY COUNTER
4509 065126                          70$:    DELAY   250                     ;WAIT ABOUT .25 SEC
     065126  012727  000250                                                          MOV     #250,(PC)+
     065132  000000                                                                  .WORD   0
     065134  013727  002116                                                          MOV     L$DLY,(PC)+
     065140  000000                                                                  .WORD   0
     065142  005367  177772                                                          DEC     -6(PC)
     065146  001375                                                                  BNE     .-4
     065150  005367  177756                                                          DEC     -22(PC)
     065154  001367                                                                  BNE     .-20
4510 065156  005337  067572                  DEC     T35DLY                  ;BUMP COUNTER DOWN
4511 065162  001361                          BNE     70$                     ;BR, IF MORE TO DELAY
4512 065164  005737  002220                  TST     EXTFEA                  ;CHECK FOR EXTENDED FEATURES SW SWITCH
4513 065170  001042                          BNE     110$                    ;BR IF SWITCH IS ON
4514 065172  112737  000200  067551          MOVB    #200,T35BS1             ;WRITE MISCELLANEOUS CONT/READ STATUS
4515 065200  112737  000010  067550          MOVB    #10,T35BSO              ;FUNCTION SELECTION BIT (TURN ON EXTFEA HW SWITCH)
4516 065206  012704  067530                  MOV     #T35PK2,R4              ;WRITE SUBSYS MEM PACKET
4517 065212  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4518 065216  004737  016416                  JSR     PC,CHKTSSR              ;WAIT FOR SSR
4519 065222  103407                          BCS     90$                     ;BR, IF NO ERROR
4520 065224  010001                          MOV     R0,R1                   ;ERROR, SAVE TSSR
4521 065226  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4525 065232                                  ERRHRD  ERRNO,T35SSR,PKTSSR     ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
     065232  104456                                                                  TRAP    C$ERHRD
     065234  001315                                                                  .WORD   717
```

```
     065236  072452                                                                                .WORD   T35SSR
     065240  012126                                                                                .WORD   PKTSSR
4526 065242                                  90$:    CKLOOP                          ;LOOP IF SELECTED
     065242  104406                                                                                TRAP    C$CLP1
4527 065244  012704  067420                          MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4528 065250  004737  010742                          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4529 065254  103407                                  BCS     100$                    ;BR, IF COMMAND ISSUED OK
4530 065256  005237  002214                          INC     FATFLG                          ;ERROR COUNT
4534 065262  010001                                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4535 065264                                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     065264  104456                                                                                TRAP    C$ERHRD
     065266  001316                                                                                .WORD   718
     065270  005052                                                                                .WORD   WRTMSG
     065272  012114                                                                                .WORD   SFIMSG
4536 065274                                  100$:   CKLOOP                          ;SCOPE LOOP
     065274  104406                                                                                TRAP    C$CLP1
4537 065276  012737  176750  067572          110$:   MOV     #65000.,T35DLY          ;SET UP DELAY COUNTER
4538 065304  005037  067566                          CLR     T35CNT                  ;DELAY COUNTER
4539
4540                                         ;****************************************
4541                                         ;
4542                                         ;REWIND IMMEDIATE,ACK,CVC=1,IE=1 COMMAND
4543                                         ;
4544                                         ;****************************************
4545
4546 065310  012737  142212  067540                  MOV     #142212,T35PK3          ;REWIND IMMEDIATE,ACK,CVC=1,IE=1 COMMAND
4547 065316  012704  067540                          MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4548 065322  010465  000000                          MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4549 065326  016501  000002          120$:   MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4550 065332  032701  000200                          BIT     #SSR,R1                 ;CHECK FOR SSR SET
4551 065336  001021                                  BNE     130$                    ;BR, WHEN SSR IS SET
4552 065340  005237  067566                          INC     T35CNT                  ;BUMP THE CYCLE COUNTER
4553 065344                                          DELAY   1                       ;DELAY TO KEEP COUNTER DOWN
     065344  012727  000001                                                                        MOV     #1,(PC)+
     065350  000000                                                                                .WORD   0
     065352  013727  002116                                                                        MOV     L$DLY,(PC)+
     065356  000000                                                                                .WORD   0
     065360  005367  177772                                                                        DEC     -6(PC)
     065364  001375                                                                                BNE     .-4
     065366  005367  177756                                                                        DEC     -22(PC)
     065372  001367                                                                                BNE     .-20
4554 065374  005337  067572                          DEC     T35DLY                  ;DROP DEAD TIMER BUMP DOWN
4555 065400  001352                                  BNE     120$                    ;BR, IF MORE TIME TO GO
4556 065402  012702  000200          130$:   MOV     #SSR,R2                 ;SET UP EXPECTED
4557 065406  020102                                  CMP     R1,R2                   ;ARE THEY EQUAL
4558 065410  001406                                  BEQ     140$                    ;BR, IF OK
4559 065412  005237  002214                          INC     FATFLG                          ;ERROR COUNT
4563 065416                                          ERRHRD  ERRNO,T35RWE,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     065416  104456                                                                                TRAP    C$ERHRD
     065420  001317                                                                                .WORD   719
     065422  073020                                                                                .WORD   T35RWE
     065424  012126                                                                                .WORD   PKTSSR
4564 065426                                  140$:   CKLOOP                          ;LOOP IF SELECTED
     065426  104406                                                                                TRAP    C$CLP1
4565 065430  005737  002216                          TST     INTRECV                 ;CHECK FOR INTERRUPTS
4566 065434  001010                                  BNE     150$                    ;BR, IF INTERRUPTS DETECTED
4567 065436  016501  000002                          MOV     TSSR(R5),R1             ;GET TSSR STATUS FOR PRINTOUT
```

```
4568 065442  005237  002214          INC     FATFLG                  ;ERROR COUNT
4572 065446                          ERRHRD  ERRNO,T35NIN,PKTSSR     ;INTERRUPT NOT RECEIVED (BAD)
     065446  104456                                                  TRAP    C$ERHRD
     065450  001320                                                  .WORD   720
     065452  073106                                                  .WORD   T35NIN
     065454  012126                                                  .WORD   PKTSSR
4573 065456                     150$:   CKLOOP                       ;LOOP IF SELECTED
     065456  104406                                                  TRAP    C$CLP1
4574
4575                            ;*****************************************
4576                            ;
4577                            ;NOW CHECK FOR THE MOTION BITS SET
4578                            ;
4579                            ;*****************************************
4580
4581 065460  013701  067450          MOV     T35BFR+6,R1             ;PICK UP XST0
4582 065464  010102                  MOV     R1,R2                   ;SET UP EXPECTED
4583 065466  052702  000200          BIS     #BIT7,R2                ;SET MOT BIT IN EXPECTED
4584 065472  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
4585 065474  001406                  BEQ     160$                    ;BR, IF EQUAL (OK)
4586 065476  005237  002214          INC     FATFLG                  ;ERROR COUNT
4590 065502                          ERRHRD  ERRNO,T35MOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     065502  104456                                                  TRAP    C$ERHRD
     065504  001321                                                  .WORD   721
     065506  072533                                                  .WORD   T35MOT
     065510  015554                                                  .WORD   EXPREC
4591 065512                     160$:   CKLOOP                       ;LOOP IF SELECTED
     065512  104406                                                  TRAP    C$CLP1
4592 065514  013701  067454          MOV     T35BFR+12,R1            ;PICK UP XST2
4593 065520  010102                  MOV     R1,R2                   ;SET UP EXPECTED
4594 065522  052702  100000          BIS     #BIT15,R2               ;SET OPM BIT IN EXPECTED
4595 065526  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
4596 065530  001406                  BEQ     170$                    ;BR, IF EQUAL (OK)
4597 065532  005237  002214          INC     FATFLG                  ;ERROR COUNT
4601 065536                          ERRHRD  ERRNO,T35OPM,EXPREC     ;OPM BIT NOT SET
     065536  104456                                                  TRAP    C$ERHRD
     065540  001322                                                  .WORD   722
     065542  072722                                                  .WORD   T35OPM
     065544  015554                                                  .WORD   EXPREC
4602 065546                     170$:   CKLOOP                       ;LOOP IF SELECTED
     065546  104406                                                  TRAP    C$CLP1
4603 065550  012737  000027  067572          MOV     #23.,T35DLY     ;SET UP DELAY COUNTER
4604 065556                     175$:   DELAY   250                  ;START DELAY
     065556  012727  000250                                          MOV     #250,(PC)+
     065562  000000                                                  .WORD   0
     065564  013727  002116                                          MOV     L$DLY,(PC)+
     065570  000000                                                  .WORD   0
     065572  005367  177772                                          DEC     -6(PC)
     065576  001375                                                  BNE     .-4
     065600  005367  177756                                          DEC     -22(PC)
     065604  001367                                                  BNE     .-20
4605 065606  005337  067572          DEC     T35DLY                  ;BUMP DELAY COUNTER
4606 065612  001361                  BNE     175$                    ;BR, IF MORE DELAY
4607 065614                          ENDSUB
     065614                                                      L10005:
     065614  104403                                                  TRAP    C$ESUB
4608 065616  023727  002214  000017          CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
```

TEST 7: EXTENDED MODE FEATURES

```
4609 065624  103402                          BLO     999$                    ;BR, IF LESS THAN 25
4610 065626  004737  017262                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
4611 065632                          999$:
4612                                 ;*
4613                                 ;
4614                                 ;TEST 7, SUBTEST 3
4615                                 ;
4616                                 ;       VERIFIES THAT THE NON-TAPE MOTION COMMAND GET STATUS, ISSUED
4617                                 ;       IMMEDIATATELY AFTER TERMINATION OF A REWIND WITH IMMEDIATE
4618                                 ;       INTERRUPT COMMAND, TERMINATES PROPERLY AND PROVIDES PROPER
4619                                 ;       STATUS.  FIRST, A NUMBER OF DATA RECORDS ARE WRITTEN FROM BOT.
4620                                 ;       THEN THE REWIND WITH IMMEDIATE INTERRUPT COMMAND IS ISSUED AND
4621                                 ;       TERMINATION VERIFIED.  THEN THE GET STATUS COMMAND IS ISSUED.
4622                                 ;       THE GET STATUS SHOULD TERMINATE ALMOST IMMEDIATELY AND SHOW
4623                                 ;       MOT=1 AND OPM=1 IN THE MESSAGE BUFFER.  AFTER A DELAY LONG
4624                                 ;       ENOUGH TO ALLOW THE REWIND TO COMPLETE AND THE TAPE COME TO
4625                                 ;       REST, GET STATUS IS AGAIN ISSUED AND THE STATUS CHECKED;  BOTH
4626                                 ;       MOT AND OPM SHOULD BE CLEAR.
4627                                 ;
4628                                 ;
4629                                 ;
4630                                 ;
4631                                 ;*
4632 065632                          BGNSUB                                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      065632                                                                                      T7.3:
      065632  104402                                                                                TRAP    C$BSUB
4633 065634  004737  073214                  JSR     PC,T35REST              ;SET COMMAND PACKET
4634 065640  004737  073306                  JSR     PC,T35RT2               ;SET UP OTHER COMMAND PACKET
4635 065644  004737  073350                  JSR     PC,T35RT3               ;SET UP OTHER COMMAND PACKET
4636 065650  004737  016054                  JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
4637 065654  103407                          BCS     20$                     ;BR IF INIT WAS OK
4638 065656  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4642 065662  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
4643 065664                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      065664  104455                                                                              TRAP    C$ERDF
      065666  001323                                                                              .WORD   723
      065670  003646                                                                              .WORD   SFIERR
      065672  012114                                                                              .WORD   SFIMSG
4644 065674  013737  002174  067440  20$:    MOV     UNITN,T35DSW            ;SET UP UNIT NUMBER IN PACKET
4645 065702  012704  067420                  MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4646 065706  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4647 065712  103407                          BCS     23$                     ;BR, IF COMMAND ISSUED OK
4648 065714  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4652 065720  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4653 065722                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      065722  104456                                                                              TRAP    C$ERHRD
      065724  001324                                                                              .WORD   724
      065726  005052                                                                              .WORD   WRTMSG
      065730  012114                                                                              .WORD   SFIMSG
4654 065732                          23$:    CKLOOP                          ;LOOP IF SELECTED
      065732  104406                                                                              TRAP    C$CLP1
4655 065734  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4656 065740  103411                          BCS     30$                     ;BR, IF NO PROBLEM
4657 065742  010004                          MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
4658 065744  016501  000002                  MOV     TSSR(R5),R1             ;GET CONTENTS FOR CALL
4659 065750  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4663 065754                                  ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
```

TEST 7: EXTENDED MODE FEATURES

```
        065754  104456                                                                  TRAP    C$ERHRD
        065756  001325                                                                  .WORD   725
        065760  070674                                                                  .WORD   T35RWN
        065762  012126                                                                  .WORD   PKTSSR
  4664  065764                          30$:    CKLOOP                          ;LOOP IF SELECTED
        065764  104406                                                                  TRAP    C$CLP1
  4665  065766  013701  067450                  MOV     T35BFR+6,R1             ;PICK UP XSTG
  4666  065772  010102                          MOV     R1,R2                   ;SET UP EXPECTED
  4667  065774  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
  4668  066000  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
  4669  066002  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
  4670  066004  005237  002214                  INC     FATFLG                          ;ERROR COUNT
  4674  066010                                  ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        066010  104456                                                                  TRAP    C$ERHRD
        066012  001326                                                                  .WORD   726
        066014  070370                                                                  .WORD   T35BOT
        066016  015554                                                                  .WORD   EXPREC
  4675  066020                          40$:    CKLOOP                          ;LOOP IF SELECTED
        066020  104406                                                                  TRAP    C$CLP1
  4676  066022  012703  000024                  MOV     #20.,R3                 ;STARTING RECORD SIZE
  4677  066026  013737  003116  067542          MOV     FREE,T35WB              ;STARTING WRITE BUFFER ADDRESS
  4678
  4679                                  ;*****************************************
  4680                                  ;
  4681                                  ;WRITE DATA,CVC=1,ACK COMMAND
  4682                                  ;
  4683                                  ;*****************************************
  4684
  4685  066034  012737  140005  067540  65$:    MOV     #140005,T35PK3          ;WRITE DATA,CVC=1,ACK COMMAND
  4686  066042  012704  067540                  MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
  4687  066046  010300                          MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
  4688  066050  004737  017502                  JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
  4689  066054  010337  067546                  MOV     R3,T35SZ                ;SET UP RECORD SIZE IN PACKET
  4690  066060  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
  4691  066064  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
  4692  066070  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
  4693  066074  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
  4694  066100  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
  4695  066102  001406                          BEQ     80$                     ;BR, IF OK
  4696  066104  005237  002214                  INC     FATFLG                          ;ERROR COUNT
  4700  066110                                  ERRHRD  ERRNO,T35WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        066110  104456                                                                  TRAP    C$ERHRD
        066112  001327                                                                  .WORD   727
        066114  071230                                                                  .WORD   T35WDC
        066116  012126                                                                  .WORD   PKTSSR
  4701  066120                          80$:    CKLOOP                          ;LOOP IF SELECTED
        066120  104406                                                                  TRAP    C$CLP1
  4702
  4703                                  ;*****************************************
  4704                                  ;
  4705                                  ;WRITE DATA RETRY,CVC=1,ACK COMMAND
  4706                                  ;
  4707                                  ;*****************************************
  4708
  4709  066122  012737  141005  067540          MOV     #141005,T35PK3          ;WRITE DATA RETRY,CVC=1,ACK COMMAND
  4710  066130  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
  4711  066134  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
```

TEST 7: EXTENDED MODE FEATURES

```
4712 066140  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4713 066144  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
4714 066150  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
4715 066152  001406                        BEQ     90$                     ;BR, IF OK
4716 066154  005237  002214                INC     FATFLG                          ;ERROR COUNT
4720 066160                                ERRHRD  ERRNO,T35WRF,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA RETRY
     066160  104456                                                                TRAP    C$ERHRD
     066162  001330                                                                .WORD   728
     066164  072275                                                                .WORD   T35WRF
     066166  012126                                                                .WORD   PKTSSR
4721 066170                        90$:    CKLOOP                          ;LOOP IF SELECTED
     066170  104406                                                                TRAP    C$CLP1
4722 066172  005723                        TST     (R3)+                   ;BUMP RECORD SIZE COUNTER
4723 066174  020327  000052                CMP     R3,#42.                 ;AT 42 SIZE YET
4724 066200  001315                        BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
4725 066202  004737  011074                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4726 066206  103411                        BCS     230$                    ;BR, IF NO PROBLEM
4727 066210  010001                        MOV     R0,R1                   ;SAVE TSSR
4728 066212  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4729 066216  005237  002214                INC     FATFLG                          ;ERROR COUNT
4733 066222                                ERRHRD  ERRNO,T35RWN,EXPREC     ;REWIND NOT ACCEPTED
     066222  104456                                                                TRAP    C$ERHRD
     066224  001331                                                                .WORD   729
     066226  070674                                                                .WORD   T35RWN
     066230  015554                                                                .WORD   EXPREC
4734 066232                        230$:   CKLOOP                          ;LOOP IF SELECTED
     066232  104406                                                                TRAP    C$CLP1
4735 066234  013701  067450                MOV     T35BFR+6,R1             ;PICK UP XSTO
4736 066240  010102                        MOV     R1,R2                   ;SET UP EXPECTED
4737 066242  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4738 066246  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
4739 066250  001406                        BEQ     240$                    ;BR, IF EQUAL (OK)
4740 066252  005237  002214                INC     FATFLG                          ;ERROR COUNT
4744 066256                                ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     066256  104456                                                                TRAP    C$ERHRD
     066260  001332                                                                .WORD   730
     066262  070370                                                                .WORD   T35BOT
     066264  015554                                                                .WORD   EXPREC
4745 066266                        240$:   CKLOOP                          ;LOOP IF SELECTED
     066266  104406                                                                TRAP    C$CLP1
4746 066270  012703  000024                MOV     #20.,R3                 ;STARTING RECORD SIZE
4747 066274  013737  003116  067542        MOV     FREE,T35RB              ;STARTING READ BUFFER ADDRESS
4748
4749                                       ;****************************************
4750                                       ;
4751                                       ;READ DATA,ACK COMMAND
4752                                       ;
4753                                       ;****************************************
4754
4755 066302  012737  100001  067540  265$:   MOV     #100001,T35PK3          ;READ DATA,ACK COMMAND
4756 066310  012704  067540                MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4757 066314  012700  177777                MOV     #177777,R0              ;SET PATTERN IN CORRECT REGISTER
4758 066320  004737  017502                JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
4759 066324  010337  067546                MOV     R3,T35SZ                ;SET UP RECORD SIZE IN PACKET
4760 066330  010465  000000                MOV     R4,TSD3(R5)             ;ISSUE COMMAND
4761 066334  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4762 066340  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
```

```
4763 066344  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
4764 066350  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
4765 066352  001406                        BEQ     280$                    ;BR, IF OK
4766 066354  005237  002214                INC     FATFLG                          ;ERROR COUNT
4770 066360                                ERRHRD  ERRNO,T35RDF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     066360  104456                                                                TRAP    C$ERHRD
     066362  001333                                                                .WORD   731
     066364  067662                                                                .WORD   T35RDF
     066366  012126                                                                .WORD   PKTSSR
4771 066370                        280$:   CKLOOP                          ;LOOP IF SELECTED
     066370  104406                                                                TRAP    C$CLP1
4772 066372  013702  003116                MOV     FREE,R2                 ;GET BUFFER ADDRESS
4773 066376  010304                        MOV     R3,R4                   ;GET RECORD SIZE
4774 066400  162704  000024                SUB     #20.,R4                 ;POINT BACK TO 1ST RECORD
4775 066404  060204                285$:   ADD     R2,R4                   ;POINT TO 1ST LOC IN BUFFER
4776 066406  021403                        CMP     (R4),R3                 ;DATA WRITTEN = READ
4777 066410  001410                        BEQ     290$                    ;BR, IF DATA OK (GOOD)
4778 066412  011401                        MOV     (R4),R1                 ;PICK UP BAD DATA
4779 066414  010302                        MOV     R3,R2                   ;SET UP EXPECTED
4780 066416  005237  002214                INC     FATFLG                          ;ERROR COUNT
4784 066422                                ERRHRD  ERRNO,T35DTA,EXPREC     ;DATA IN BUFFER NOT CORRECT
     066422  104456                                                                TRAP    C$ERHRD
     066424  001334                                                                .WORD   732
     066426  072355                                                                .WORD   T35DTA
     066430  015554                                                                .WORD   EXPREC
4785 066432                        290$:   CKLOOP                          ;LOOP IF SELECTED
     066432  104406                                                                TRAP    C$CLP1
4786 066434  005724                        TST     (R4)+                   ;BUMP TO NEXT ADDRESS
4787 066436  160204                        SUB     R2,R4                   ;BACK TO RECORD SIZE
4788 066440  020403                        CMP     R4,R3                   ;AT END OF RECORD YET
4789 066442  001360                        BNE     285$                    ;BR, IF MORE DATA TO CHECK
4790 066444  005723                        TST     (R3)+                   ;BUMP RECORD SIZE
4791 066446  020327  000050                CMP     R3,#40.                 ;DONE YET
4792 066452  001313                        BNE     265$                    ;BR, IF NOT DONE YET (MORE READS)
4793 066454                        300$:   CKLOOP                          ;LOOP IF SELECTED
     066454  104406                                                                TRAP    C$CLP1
4794 066456                        330$:
4795 066456                                ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     066456                                                                  L10066:
     066456  104403                                                                TRAP    C$ESUB
4796 066460  023727  002214  000017                CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
4797 066466  103402                                BLO     999$                            ;BR, IF LESS THAN 25
4798 066470  004737  017262                        JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
4799 066474                        999$:
4800                               ;*
4801                               ;
4802                               ;TEST 7, SUBTEST 4
4803                               ;
4804                               ;       VERIFIES THAT A TAPE-MOTION COMMAND (READ, WRITE, POSITION),
4805                               ;       ISSUED IMMEDIATATELY AFTER TERMINATION OF A REWIND WITH
4806                               ;       IMMEDIATE INTERRUPT COMMAND, IS "QUEUED" BY THE CONTROLLER AND
4807                               ;       THEN EXECUTES PROPERLY.
4808                               ;
4809                               ;
4810                               ;
4811                               ;-
4812 066474                                BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
```

```
                066474
                066474  104402                                                          T7.4:
                                                                                                TRAP    C$BSUB
 4813 066476    004737  073214                  JSR     PC,T35REST      ;SET COMMAND PACKET
 4814 066502    004737  073306                  JSR     PC,T35RT2       ;SET UP OTHER COMMAND PACKET
 4815 066506    004737  073350                  JSR     PC,T35RT3       ;SET UP OTHER COMMAND PACKET
 4816 066512    012737  176750  067572          MOV     #65000.,T35DLY  ;SET UP DELAY COUNTER
 4817 066520    004737  016054          10$:    JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
 4818 066524    103426                  BCS     20$             ;BR IF INIT WAS OK
 4819 066526                            DELAY   250             ;DELAY ABOUT .25 SEC
                066526  012727  000250                                                          MOV     #250,(PC)+
                066532  000000                                                                  .WORD   0
                066534  013727  002116                                                          MOV     T$DLY,(PC)+
                066540  000000                                                                  .WORD   0
                066542  005367  177772                                                          DEC     -6(PC)
                066546  001375                                                                  BNE     .-4
                066550  005367  177756                                                          DEC     -22(PC)
                066554  001367                                                                  BNE     .-20
 4820 066556    005337  067572                  DEC     T35DLY          ;BUMP COUNTER
 4821 066562    001356                  BNE     10$             ;BR, IF COUNTER NOT DONE
 4822 066564    005237  002214                  INC     FATFLG                  ;ERROR COUNT
 4826 066570    010001                  MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
 4827 066572                            ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
                066572  104455                                                                  TRAP    C$ERDF
                066574  001335                                                                  .WORD   733
                066576  003646                                                                  .WORD   SFIERR
                066600  012114                                                                  .WORD   SFIMSG
 4828 066602    013737  002174  067440  20$:    MOV     UNITN,T35DSW    ;SET UP UNIT (DRIVE) NUMBER
 4829 066610    012704  067420                  MOV     #T35PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
 4830 066614    004737  010742                  JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
 4831 066620    103407                  BCS     23$             ;BR, IF COMMAND ISSUED OK
 4832 066622    005237  002214                  INC     FATFLG                  ;ERROR COUNT
 4836 066626    010001                  MOV     R0,R1           ;SAVE CONTENTS OF TSSR
 4837 066630                            ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
                066630  104456                                                                  TRAP    C$ERHRD
                066632  001336                                                                  .WORD   734
                066634  005052                                                                  .WORD   WRTMSG
                066636  012114                                                                  .WORD   SFIMSG
 4838 066640                    23$:    CKLOOP                          ;LOOP IF SELECTED
                066640  104406                                                                  TRAP    C$CLP1
 4839 066642    004737  011074                  JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
 4840 066646    103411                  BCS     30$             ;BR, IF NO PROBLEM
 4841 066650    016501  000002                  MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
 4842 066654    010004                  MOV     R0,R4           ;GET PACKET ADDRESS
 4843 066656    005237  002214                  INC     FATFLG                  ;ERROR COUNT
 4847 066662                            ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
                066662  104456                                                                  TRAP    C$ERHRD
                066664  001337                                                                  .WORD   735
                066666  070674                                                                  .WORD   T35RWN
                066670  012126                                                                  .WORD   PKTSSR
 4848 066672                    30$:    CKLOOP                          ;LOOP IF SELECTED
                066672  104406                                                                  TRAP    C$CLP1
 4849 066674    013701  067450                  MOV     T35BFR+6,R1     ;PICK UP XSTO
 4850 066700    010102                  MOV     R1,R2           ;SET UP EXPECTED
 4851 066702    052702  000002                  BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
 4852 066706    020102                  CMP     R1,R2           ;DOES EXP = REC'D
 4853 066710    001406                  BEQ     40$             ;BR, IF EQUAL (OK)
 4854 066712    005237  002214                  INC     FATFLG                  ;ERROR COUNT
```

```
4858 066716                                ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     066716  104456                                                                TRAP    C$ERHRD
     066720  001340                                                                .WORD   736
     066722  070370                                                                .WORD   T35BOT
     066724  015554                                                                .WORD   EXPREC
4859 066726                          40$:  CKLOOP                                  ;LOOP IF SELECTED
     066726  104406                                                                TRAP    C$CLP1
4860 066730  012703  000024                 MOV     #20.,R3                       ;STARTING RECORD SIZE
4861 066734  013737  003116  067542         MOV     FREE,T35WB                    ;STARTING WRITE BUFFER ADDRESS
4862
4863                                 ;*****************************************
4864                                 ;
4865                                 ;WRITE DATA,CVC-1,ACK COMMAND
4866                                 ;
4867                                 ;*****************************************
4868
4869 066742  012737  140005  067540  65$:  MOV     #140005,T35PK3                ;WRITE DATA,CVC-1,ACK COMMAND
4870 066750  012704  067540                 MOV     #T35PK3,R4                    ;SET UP R4 WITH PACKET ADDRESS
4871 066754  010300                         MOV     R3,R0                         ;SET PATTERN IN CORRECT REGISTER
4872 066756  004737  017502                 JSR     PC,FILLMEM                    ;FILL MEMORY WITH RECORD SIZE
4873 066762  010337  067546                 MOV     R3,T35SZ                      ;SET UP RECORD SIZE IN PACKET
4874 066766  010465  000000                 MOV     R4,TSDB(R5)                   ;ISSUE COMMAND
4875 066772  004737  016330                 JSR     PC,WAITF                      ;WAIT FOR SSR TO SET
4876 066776  016501  000002                 MOV     TSSR(R5),R1                   ;GET TSSR CONTENTS
4877 067002  012702  000200                 MOV     #SSR,R2                       ;SET UP EXPECTED
4878 067006  020102                         CMP     R1,R2                         ;ARE THEY EQUAL
4879 067010  001406                         BEQ     80$                           ;BR. IF OK
4880 067012  005237  002214                 INC     FATFLG                                ;ERROR COUNT
4884 067016                                ERRHRD  ERRNO,T35WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     067016  104456                                                                TRAP    C$ERHRD
     067020  001341                                                                .WORD   737
     067022  071230                                                                .WORD   T35WDC
     067024  012126                                                                .WORD   PKTSSR
4885 067026                          80$:  CKLOOP                                  ;LOOP IF SELECTED
     067026  104406                                                                TRAP    C$CLP1
4886
4887                                 ;*****************************************
4888                                 ;
4889                                 ;WRITE DATA RETRY,ACK,SWB-1 COMMAND
4890                                 ;
4891                                 ;*****************************************
4892
4893 067030  012737  111005  067540         MOV     #111005,T35PK3                ;WRITE DATA RETRY,ACK,SWB-1 COMMAND
4894 067036  010465  000000                 MOV     R4,TSDB(R5)                   ;ISSUE COMMAND
4895 067042  004737  016330                 JSR     PC,WAITF                      ;WAIT FOR SSR TO SET
4896 067046  016501  000002                 MOV     TSSR(R5),R1                   ;GET TSSR CONTENTS
4897 067052  012702  000200                 MOV     #SSR,R2                       ;SET UP EXPECTED
4898 067056  020102                         CMP     R1,R2                         ;ARE THEY EQUAL
4899 067060  001406                         BEQ     90$                           ;BR. IF OK
4900 067062  005237  002214                 INC     FATFLG                                ;ERROR COUNT
4904 067066                                ERRHRD  ERRNO,T35WRF,EXPREC     ;TSSR INCORRECT AFTER WRITE DATA RETRY
     067066  104456                                                                TRAP    C$ERHRD
     067070  001342                                                                .WORD   738
     067072  072275                                                                .WORD   T35WRF
     067074  015554                                                                .WORD   EXPREC
4905 067076                          90$:  CKLOOP                                  ;LOOP IF SELECTED
     067076  104406                                                                TRAP    C$CLP1
```

TEST 7: EXTENDED MODE FEATURES

```
4906 067100  005723                        TST     (R3)+                   ;BUMP RECORD SIZE COUNTER
4907 067102  020327  000052                CMP     R3,#42.                 ;AT 42 SIZE YET
4908 067106  001315                        BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
4909 067110  004737  011074                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4910 067114  103411                        BCS     230$                    ;BR, IF NO PROBLEM
4911 067116  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4912 067122  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
4913 067124  005237  002214                INC     FATFLG                          ;ERROR COUNT
4917 067130                                ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
     067130  104456                                                                TRAP    C$ERHRD
     067132  001343                                                                .WORD   739
     067134  070674                                                                .WORD   T35RWN
     067136  012126                                                                .WORD   PKTSSR
4918 067140                        230$:   CKLOOP                          ;LOOP IF SELECTED
     067140  104406                                                                TRAP    C$CLP1
4919 067142  013701  067450                MOV     T35BFR+6,R1             ;PICK UP XSTO
4920 067146  010102                        MOV     R1,R2                   ;SET UP EXPECTED
4921 067150  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4922 067154  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
4923 067156  001406                        BEQ     240$                    ;BR, IF EQUAL (OK)
4924 067160  005237  002214                INC     FATFLG                          ;ERROR COUNT
4928 067164                                ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     067164  104456                                                                TRAP    C$ERHRD
     067166  001344                                                                .WORD   740
     067170  070370                                                                .WORD   T35BOT
     067172  015554                                                                .WORD   EXPREC
4929 067174                        240$:   CKLOOP                          ;LOOP IF SELECTED
     067174  104406                                                                TRAP    C$CLP1
4930 067176  012703  000024                MOV     #20.,R3                 ;STARTING RECORD SIZE
4931 067202  013737  003116  067542        MOV     FREE,T35RB              ;STARTING READ BUFFER ADDRESS
4932
4933                               ;*****************************************
4934                               ;
4935                               ;READ DATA,ACK COMMAND
4936                               ;
4937                               ;*****************************************
4938
4939 067210  012737  100001  067540  265$:   MOV     #100001,T35PK3          ;READ DATA,ACK COMMAND
4940 067216  012704  067540                MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4941 067222  010337  067546                MOV     R3,T35SZ                ;SET UP RECORD SIZE IN PACKET
4942 067226  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4943 067232  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4944 067236  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4945 067242  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
4946 067246  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
4947 067250  001406                        BEQ     280$                    ;BR, IF OK
4948 067252  005237  002214                INC     FATFLG                          ;ERROR COUNT
4952 067256                                ERRHRD  ERRNO,T35RDF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     067256  104456                                                                TRAP    C$ERHRD
     067260  001345                                                                .WORD   741
     067262  067662                                                                .WORD   T35RDF
     067264  012126                                                                .WORD   PKTSSR
4953 067266                        280$:   CKLOOP                          ;LOOP IF SELECTED
     067266  104406                                                                TRAP    C$CLP1
4954 067270  013702  003116                MOV     FREE,R2                 ;GET BUFFER ADDRESS
4955 067274  010304                        MOV     R3,R4                   ;GET RECORD SIZE
4956 067276  162704  000024                SUB     #20.,R4                 ;POINT BACK TO 1ST RECORD
```

SEQ 0192

TEST 7: EXTENDED MODE FEATURES

```
4957 067302  060204                285$:   ADD     R2,R4                   ;POINT TO 1ST LOC IN BUFFER
4958 067304  000303                        SWAB    R3                      ;SWAP BYTES SWB*1 ETC.
4959 067306  021403                        CMP     (R4),R3                 ;DATA WRITTEN = READ
4960 067310  001410                        BEQ     290$                    ;BR, IF DATA OK (GOOD)
4961 067312  011401                        MOV     (R4),R1                 ;PICK UP BAD DATA
4962 067314  010302                        MOV     R3,R2                   ;SET UP EXPECTED
4963 067316  005237  002214                INC     FATFLG                          ;ERROR COUNT
4967 067322                                ERRHRD  ERRNO,T35DTA,EXPREC     ;DATA IN BUFFER NOT CORRECT
     067322  104456                                                                TRAP    C$ERHRD
     067324  001346                                                                .WORD   742
     067326  072355                                                                .WORD   T35DTA
     067330  015554                                                                .WORD   EXPREC
4968 067332                        290$:   CKLOOP                          ;LOOP IF SELECTED
     067332  104406                                                                TRAP    C$CLP1
4969 067334  005724                        TST     (R4)+                   ;BUMP TO NEXT ADDRESS
4970 067336  160204                        SUB     R2,R4                   ;BACK TO RECORD SIZE
4971 067340  000303                        SWAB    R3                      ;PUT R3 BACK INTO SHAPE
4972 067342  020403                        CMP     R4,R3                   ;AT END OF RECORD YET
4973 067344  001356                        BNE     285$                    ;BR, IF MORE DATA TO CHECK
4974 067346  005723                        TST     (R3)+                   ;BUMP RECORD SIZE
4975 067350  020327  000050                CMP     R3,#40.                 ;DONE YET
4976 067354  001315                        BNE     265$                    ;BR, IF NOT DONE YET (MORE READS)
4977 067356                        300$:   CKLOOP                          ;LOOP IF SELECTED
     067356  104406                                                                TRAP    C$CLP1
4978 067360                                ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     067360                                                                L10067:
     067360  104403                                                                TRAP    C$ESUB
4979 067362  023727  002214  000017        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
4980 067370  103402                        BLO     999$                            ;BR, IF LESS THAN 25
4981 067372  004737  017262                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
4982 067376                        999$:
4983                               ;
4984                               ;
4985                               ;
4986 067376  004737  016536                JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
4987 067402  103002                        BCC     163$                    ;BR, IF NO LOOP REQUIRED
4988 067404  000137  063474                JMP     T35LOOP                 ;EXECUTE AGAIN
4989 067410                        163$:   EXIT    TST                     ;ALL DONE THIS TEST
     067410  104436                                                                TRAP    C$EXIT
     067412  003760                                                                .WORD   L10063-.
4990
4991                               ;+
4992                               ;LOCAL STORAGE FOR THIS TEST
4994        067420                 ;-
                                           .=<.+10>&177770
4996 067420                        T35PACKET:
4997 067420  100004                        .WORD   100004                  ;COMMAND PACKET FOR TEST
4998 067422  067430                        .WORD   T35DATA                 ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
4999 067424  000000                        .WORD   0                       ;ADDRESS OF CHARACTERISTICS BLOCK
5000 067426  000012                        .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
5001 067430                        T35DATA:                                ;CHARACTERISTICS DATA BLOCK
5002 067430  067442                        .WORD   T35BFR                  ;ADDRESS OF MESSAGE BUFFER
5003 067432  000000                        .WORD   0
5004 067434  000024                        .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
5005 067436  000000                        .WORD   0
5006 067440  000000                T35DSW: .WORD   0                       ;SELECT DRIVE 0
5007 067442                        T35BFR: .BLKW   25.                     ;MESSAGE BUFFER
5008                               ;
```

```
5009                                    ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
5010                                    ;
5012            067530                          .=<.+10>&177770
5014 067530                             T35PK2:
5015 067530     100006                          .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
5016 067532     067550                          .WORD   T35BF2          ;ADDRESS OF SELECT BLOCK DATA
5017 067534     000000                          .WORD   0
5018 067536     000006                          .WORD   6.              ;SIZE OF DATA PACKET
5019
5023 067540                             T35PK3:
5024 067540     100005                          .WORD   100005          ;REREAD COMMAND, AND ACK
5025 067542                             T35RB:
5026 067542     003116                  T35WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
5027 067544     000000                          .WORD   0
5028 067546     000000                  T35SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
5029                                            .EVEN
5030                                    ;
5031                                    ;
5032                                    ;
5033 067550                             T35BF2:
5034 067550        010                  T35BS0: .BYTE   10              ;BSEL0 AREA
5035 067551        200                  T35BS1: .BYTE   200             ;BSEL1 AREA
5036 067552     000000                  T35S2:  .WORD   0               ;SEL 2 AREA
5037 067554     000000                  T35S3:  .WORD   0               ;DATA AREA
5038                                    ;
5039                                    ;
5040                                            .EVEN
5041                                    ;TAPE MOTION PACKET COMMAND VALUES
5042
5043 067556     100205                  T35RN:  .WORD   100205          ;REREAD DATA (NEXT)
5044 067560     100605                  T35WDR: .WORD   100605          ;REREAD DATA RETRY
5045 067562     102205                  T35CON: .WORD   102205          ;WRITE CONTINOUS
5046 067564     177777                          .WORD   177777          ;END OF DATA
5047
5048                                    ;
5049 067566     000000                  T35CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
5050 067570     000000                  T35CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
5051 067572     000000                  T35DLY: .WORD   0               ;DELAY COUNTER
5052                                    ;+
5053                                    ;LOCAL TEXT MESSAGES FOR TEST
5054                                    ;-
5055
5056 067574        124     141     160  T35WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP-1)'
5057 067662        124     123     123  T35RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
5058 067731        122     105     122  T35RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
5059 070026        120     117     123  T35SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
5060 070110        122     111     102  T35LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
5061 070160        124     123     123  T35WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
5062 070235        111     154     154  T35LOG: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
5063 070316        124     123     123  T35WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA Command'
5064 070370        124     141     160  T35BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XSTO)
5065 070463        127     122     111  T35TIM: .ASCIZ  'WRITE DATA RETRY'S Erase Tape Not Long Enough'
5066 070540        122     105     122  T35EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
5067 070617        124     123     123  T35TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
5068 070674        122     145     167  T35RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
5069 070743        122     101     115  T35RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
5070 071016        124     123     123  T35AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
```

```
5071 071065      104      162      151  T35OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
5072 071140      124      123      123  T35WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
5073 071230      124      123      123  T35WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
5074 071303      103      126      103  T35VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
5075 071356      124      123      102  T35BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
5076 071431      127      122      111  T35WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
5077 071520      122      145      141  T35LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XST0'
5078 071602      122      145      141  T35LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XST0'
5079 071664      122      145      163  T35PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
5080 071752      122      145      141  T35TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert
5081 072040      127      122      111  T35NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
5082 072136      124      123      123  T35SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
5083 072213      124      123      123  T35TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
5084 072275      124      123      123  T35WRF: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command'
5085 072355      104      141      164  T35DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
5086 072452      124      123      123  T35SSR: .ASCIZ  'TSSR Incorrect After WRITE MISCELLANEOUS Command'
5087 072533      115      117      124  T35MOT: .ASCIZ  'MOT Bit (XST0) Not Set During Rewind (Extended Features Mode)'
5088 072631      111      156      164  T35INT: .ASCIZ  'Interrupt Received After REWIND Command (IE Bit Not Set)'
5089 072722      117      120      115  T35OPM: .ASCIZ  'OPM Bit (XST2) Not Set During Rewind (Extended Features Mode)'
5090 073020      124      123      123  T35RWE: .ASCIZ  'TSSR Incorrect After Extended Features REWIND Command'
5091 073106      116      157      040  T35NIN: .ASCIZ  'No Interrupt Detected After REWIND IMMEDIATE'
5092 073163      105      170      164  TST35ID:        .ASCIZ  'Extended Mode Functions'
5093                                                    .EVEN
5094                                                ;+
5095                                                ;
5096                                                ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
5097                                                ;WRITE SUBSYSTEM MEMORY COMMAND
5098                                                ;
5099                                                ;-
5100
5101 073214                                         T35REST:
5102 073214                                                 SAVREG                          ;SAVE THE REGISTERS
5103 073220  012701  067420                                 MOV     #T35PACKET,R1           ;START OF THE PACKET
5104 073224  012721  100004                                 MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
5105 073230  012721  067430                                 MOV     #T35DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
5106 073234  005021                                         CLR     (R1)+                   ;EXTENDED ADDRESS
5107 073236  012721  000012                                 MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
5108 073242  012721  067442                                 MOV     #T35BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
5109 073246  005021                                         CLR     (R1)+
5110 073250  012721  000024                                 MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
5111 073254  005021                                         CLR     (R1)+
5112 073256  012711  000000                                 MOV     #0,(R1)                 ;SELECT DRIVE ZERO
5113 073262  012702  000030                                 MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
5114 073266  012762  177777  067442  64$:    MOV     #177777,T35BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
5115 073274  005742                                         TST     -(R2)                   ;NEXT LOCATION
5116 073276  022702  000000                                 CMP     #0,R2                   ;AT END OF LOOP YET
5117 073302  001371                                         BNE     64$                     ;KEEP GOING UNTIL DONE
5118 073304  000207                                         RTS     PC                      ;RETURN
5119
5120 073306                                         T35RT2:
5121 073306                                                 SAVREG                          ;SAVE THE REGISTERS
5122 073312  012701  067530                                 MOV     #T35PK2,R1              ;START OF THE PACKET
5123 073316  012721  100006                                 MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
5124 073322  012721  067550                                 MOV     #T35BF2,(R1)+           ;ADDRESS OF DATA BLOCK
5125 073326  005021                                         CLR     (R1)+                   ;EXTENDED ADDRESS
5126 073330  012721  000006                                 MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
5127 073334  005021                                         CLR     (R1)+
```

TEST 7: EXTENDED MODE FEATURES

```
5128 073336  012701  067550                MOV     #T358F2,R1              ;POINT TO DATA SEL AREA
5129 073342  005021                        CLR     (R1)+
5130 073344  005011                        CLR     (R1)
5131 073346  000207                        RTS     PC                      ;RETURN
5132 073350                         T35RT3:
5133 073350                                SAVREG                          ;SAVE REGISTERS
5134 073354  012701  067540                MOV     #T35PK3,R1              ;SET UP POINTER ADDRESS
5135 073360  005021                        CLR     (R1)+                   ;COMMAND SPACE
5136 073362  005021                        CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
5137 073364  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
5138 073366  005011                        CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
5139 073370  000207                        RTS     PC                      ;RETURN
5140 073372                                ENDTST
     073372                                                          L10063:
     073372  104401                                                          TRAP    C$ETST
5141                                       .SBTTL  TEST  8: RECORD BUFFERING
5142                                ;+
5143                                ;
5144                                ;
5145                                ;       THIS TEST VERIFIES THAT RECORD BUFFERING, USED FOR WRITE DATA
5146                                ;       AND READ NEXT COMMANDS, OPERATES PROPERLY AND IS PROPERLY
5147                                ;       CONTROLLED BY THE EXTENDED CHARACTERISTICS DATA WORD.  IF THE
5148                                ;       M7196 CONTROLLER MODULE IS NOT ALREADY IN EXTENDED FEATURES MODE
5149                                ;       (AS CONTROLLED BY THE DIP SWITCH ON THE MODULE), IT IS PLACED
5150                                ;       INTO THAT MODE BY INVERTING THE SENSE OF THE SWITCH USING THE
5151                                ;       WRITE SUBSYSTEM MEMORY COMMAND.  NOTE THAT RECORD BUFFERING HAS
5152                                ;       BEEN ENABLED IN PREVIOUS TESTS OF READ AND WRITE AND SO HAS BEEN
5153                                ;       PARTIALLY TESTED ALREADY.  THIS TEST VERIFIES THAT BUFFERING IS
5154                                ;       ACTUALLY OPERATING.  THE FOLLOWING SUBTESTS ARE PERFORMED:
5155                                ;
5156                                ;       VERIFIES THAT NORMAL BUFFERING ON WRITE DATA COMMANDS OPERATES
5157                                ;       PROPERLY AT LOW TAPE SPEED.  THE FOLLOWING SEQUENCE IS
5158                                ;       PERFORMED:
5159                                ;
5160                                ;            1.  THE TAPE IS REWOUND.
5161                                ;
5162                                ;            2.  BUFFERING IS DISABLED AND LOW TAPE SPEED IS SELECTED
5163                                ;                (VIA WRITE CHARACTERISTICS COMMAND).
5164                                ;
5165                                ;            3.  AN INITIAL RECORD IS WRITTEN ONTO THE TAPE IN ORDER TO
5166                                ;                MOVE THE TAPE OFF BOT.
5167                                ;
5168                                ;            4.  THE PROGRAM DELAYS FOR A TIME SUFFICIENT TO ALLOW THE
5169                                ;                TAPE TO REPOSITION AND COME TO REST.
5170                                ;
5171                                ;            5.  A WRITE DATA COMMAND, WITH A BYTE COUNT LESS THAN 3.5K,
5172                                ;                IS ISSUED, AND THE PROGRAM COUNTS, IN A WAIT LOOP, THE
5173                                ;                TIME IT TAKES TO RECEIVE COMMAND TERMINATION.  THIS
5174                                ;                SHOULD BE A RELATIVELY LONG TIME SINCE BUFFERING IS
5175                                ;                DISABLED.
5176                                ;
5177                                ;            6.  BUFFERING IS ENABLED.
5178                                ;
5179                                ;            7.  THE WRITE DATA COMMAND IS AGAIN ISSUED, WITH THE SAME
5180                                ;                BYTE COUNT AS THAT USED PREVIOUSLY.  THE TIME TO
5181                                ;                COMPLETION IS AGAIN MEASURED.
5182                                ;
```

```
                                        ;             8.   THE COMPLETION TIMES MEASURED FOR THE NON BUFFERED AND
                                        ;                  BUFFERED CASES ARE COMPARED.  IT IS VERIFIED THAT THE
                                        ;                  TIME MEASURED FOR THE NON BUFFERED CASE IS MUCH LARGER
                                        ;                  THAN THAT MEASURED FOR THE BUFFERED CASE.
                                        ;
                                        ;             9.   THE PREVIOUS STEPS, EXCEPT FOR REWINDING AND WRITING A
                                        ;                  RECORD OFF BOT, ARE REPEATED FOR VARIOUS BYTE COUNTS IN
                                        ;                  THE RANGE 20 THROUGH 3.5K.
                                        ;
                                        ;
                                        ;THE TEST CONSISTS OF THE FOLLOWING 2 SUBTESTS
                                        ;
                                        ;
                                        ;
                                        ;-
073374                                          BGNTST
073374                                                                                  T8::
073374  012737  006354  002172              MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
073402  004737  017354                      JSR     PC,KTOFF                ;TURN OFF KT11
073406  012700  100747                      MOV     #TST36ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
073412  004737  016570                      JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
073416  012737  000005  002210              MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
073424  005037  075756                      CLR     T36CNT                  ;CLEAR TAPE RECORD COUNTER
                                        ;*
                                        ;
                                        ;TEST 8, 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.
                                        ;
                                        ;
                                        ;
073430                                  T36LOOP:
073430                                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
073430                                                                                  T8.1:
073430  104402                                                                          TRAP    C$BSUB
073432  004737  100770                      JSR     PC,T36REST              ;SET COMMAND PACKET
073436  004737  101062                      JSR     PC,T36RT2               ;SET UP OTHER COMMAND PACKET
073442  004737  101124                      JSR     PC,T36RT3               ;SET UP OTHER COMMAND PACKET
073446  012737  176750  075762              MOV     #65000.,T36DLY          ;SET UP DELAY COUNTER
073454  005037  075756                      CLR     T36CNT                  ;CLEAR COUNTER
073460  004737  016054          10$:        JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
073464  103426                              BCS     20$                     ;BR IF INIT WAS OK
073466                                          DELAY   250                     ;DELAY ABOUT .25 SEC
073466  012727  000250                                                              MOV     #250,(PC)+
073472  000000                                                                      .WORD   0
073474  013727  002116                                                              MOV     @$DLY,(PC)+
073500  000000                                                                      .WORD   0
073502  005367  177772                                                              DEC     -6(PC)
073506  001375                                                                      BNE     .-4
073510  005367  177756                                                              DEC     -22(PC)
073514  001367                                                                      BNE     .-20
073516  005337  075762                      DLC     T36DLY                  ;BUMP COUNTER
```

TEST 8: RECORD BUFFERING

```
5233 073522  001356                        BNE     10$                     ;BR. IF COUNTER NOT DONE
5234 073524  005237  002214                INC     FATFLG                          ;ERROR COUNT
5238 073530  010001                        MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
5239 073532                                ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     073532  104455                                                                TRAP    C$ERDF
     073534  001441                                                                .WORD   801
     073536  003646                                                                .WORD   SFIERR
     073540  012114                                                                .WORD   SFIMSG
5240 073542  013737  002174  075630  20$:    MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
5241 073550  012704  075610                MOV     #T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5242 073554  004737  010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5243 073560  103407                        BCS     25$                     ;BR. IF COMMAND ISSUED OK
5244 073562  005237  002214                INC     FATFLG                          ;ERROR COUNT
5248 073566  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5249 073570                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     073570  104456                                                                TRAP    C$ERHRD
     073572  001442                                                                .WORD   802
     073574  005052                                                                .WORD   WRTMSG
     073576  012114                                                                .WORD   SFIMSG
5250 073600                        25$:    CKLOOP                          ;LOOP IF SELECTED
     073600  104406                                                                TRAP    C$CLP1
5251 073602  004737  011074                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5252 073606  103407                        BCS     30$                     ;BR. IF NO PROBLEM
5253 073610  010004                        MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
5254 073612  005237  002214                INC     FATFLG                          ;ERROR COUNT
5258 073616                                ERRHRD  ERRNO,T36RWN,PKTSSR     ;REWIND NOT ACCEPTED
     073616  104456                                                                TRAP    C$ERHRD
     073620  001443                                                                .WORD   803
     073622  077171                                                                .WORD   T36RWN
     073624  012126                                                                .WORD   PKTSSR
5259 073626                        30$:    CKLOOP                          ;LOOP IF SELECTED
     073626  104406                                                                TRAP    C$CLP1
5260 073630  013701  075640                MOV     T36BFR+6,R1             ;PICK UP XSTO
5261 073634  010102                        MOV     R1,R2                   ;SET UP EXPECTED
5262 073636  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5263 073642  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
5264 073644  001406                        BEQ     40$                     ;BR. IF EQUAL (OK)
5265 073646  005237  002214                INC     FATFLG                          ;ERROR COUNT
5269 073652                                ERRHRD  ERRNO,T36BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     073652  104456                                                                TRAP    C$ERHRD
     073654  001444                                                                .WORD   804
     073656  076665                                                                .WORD   T36BOT
     073660  015554                                                                .WORD   EXPREC
5270 073662                        40$:    CKLOOP                          ;LOOP IF SELECTED
     073662  104406                                                                TRAP    C$CLP1
5271 073664  013737  002174  075630          MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
5272 073672  052737  000030  075630          BIS     #BIT3!BIT4,T36DSW       ;25-APR-83 REV B - TURN ON THE BUFFERING
5273 073700  012704  075610                MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5274 073704  004737  010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5275 073710  103407                        BCS     50$                     ;BR. IF COMMAND ISSUED OK
5276 073712  005237  002214                INC     FATFLG                          ;ERROR COUNT
5280 073716  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5281 073720                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     073720  104456                                                                TRAP    C$ERHRD
     073722  001445                                                                .WORD   805
     073724  005052                                                                .WORD   WRTMSG
     073726  012114                                                                .WORD   SFIMSG
```

TEST 8: RECORD BUFFERING

```
5282 073730                          50$:    CKLOOP                          ;LOOP IF SELECTED
     073730  104406                                                                  TRAP    C$CLP1
5283 073732  012737  003720  075736          MOV     #2000.,T36SZ            ;SET UP RECORD SIZE
5284 073740  013737  003116  075732          MOV     FREE,T36WB              ;ADDRESS OF WRITE BUFFER
5285 073746  012737  140005  075730          MOV     #140005,T36PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
5286 073754  012704  075730                  MOV     #T36PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5287 073760  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5288 073764  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5289 073770  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5290 073774  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
5291 074000  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
5292 074002  001406                          BEQ     60$                     ;BR. IF OK
5293 074004  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5297 074010                                  ERRHRD  ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     074010  104456                                                                  TRAP    C$ERHRD
     074012  001446                                                                  .WORD   806
     074014  005107                                                                  .WORD   WRTERR
     074016  012126                                                                  .WORD   PKTSSR
5298 074020                          60$:    CKLOOP                          ;LOOP IF SELECTED
     074020  104406                                                                  TRAP    C$CLP1
5299 074022  012737  000005  075762          MOV     #5.,T36DLY              ;25-APR-83 REV B - DELAY FOR TAPE TO STOP
5300 074030                          70$:    DELAY   1                       ;25-APR-83 REV B - DELAY ROUTINE CALL
     074030  012727  000001                                                          MOV     #1,(PC)+
     074034  000000                                                                  .WORD   0
     074036  013727  002116                                                          MOV     L$DLY,(PC)+
     074042  000000                                                                  .WORD   0
     074044  005367  177772                                                          DEC     -6(PC)
     074050  001375                                                                  BNE     .-4
     074052  005367  177756                                                          DEC     -22(PC)
     074056  001367                                                                  BNE     .-20
5301 074060  005337  075762                  DEC     T36DLY                  ;BUMP COUNTER DOWN
5302 074064  001361                          BNE     70$                     ;BR. IF MORE DELAY TO GO
5303 074066  012737  006642  075736          MOV     #3490.,T36SZ            ;SET SIZE OF TRANSFER
5304 074074  012737  140005  075730          MOV     #140005,T36PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
5305 074102  012704  075730                  MOV     #T36PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5306 074106  005037  075756                  CLR     T36CNT                  ;CLEAR COUNTER
5307 074112  012737  001750  075762          MOV     #1000.,T36DLY           ;SET DROP DEAD COUNTER VALUE
5308 074120  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5309 074124  016501  000002          80$:    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5310 074130  032701  000200                  BIT     #SSR,R1                 ;CHECK FOR SSR SET
5311 074134  001021                          BNE     90$                     ;BR. IF SSR IS SET
5312 074136  005237  075756                  INC     T36CNT                  ;BUMP CYCLE COUNTER
5313 074142                                  DELAY   1                       ;CUT NUMBER OF LOOPS DOWN
     074142  012727  000001                                                          MOV     #1,(PC)+
     074146  000000                                                                  .WORD   0
     074150  013727  002116                                                          MOV     L$DLY,(PC)+
     074154  000000                                                                  .WORD   0
     074156  005367  177772                                                          DEC     -6(PC)
     074162  001375                                                                  BNE     .-4
     074164  005367  177756                                                          DEC     -22(PC)
     074170  001367                                                                  BNE     .-20
5314 074172  005337  075762                  DEC     T36DLY                  ;BUMP DROP DEAD COUNTER
5315 074176  001352                          BNE     80$                     ;BR. IF THERE IS STILL TIME
5316 074200  012702  000200          90$:    MOV     #SSR,R2                 ;SET UP EXPECTED
5317 074204  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
5318 074206  001406                          BEQ     100$                    ;BR. IF OK
5319 074210  005237  002214                  INC     FATFLG                          ;ERROR COUNT
```

TEST 8: RECORD BUFFERING

```
5323 074214                                    ERRHRD  ERRNO,T36WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     074214  104456                                                                TRAP    C$ERHRD
     074216  001447                                                                .WORD   807
     074220  076613                                                                .WORD   T36WDE
     074222  012126                                                                .WORD   PKTSSR
5324 074224                                100$:   CKLOOP                          ;LOOP IF SELECTED
     074224  104406                                                                TRAP    C$CLP1
5325 074226  013737  002174  075630               MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
5326 074234  052737  000010  075630               BIS     #BIT3,T36DSW            ;25-APR-83 REV B   TURN OFF BUFFERING
5327 074242  012704  075610                       MOV     #T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5328 074246  004737  010742                       JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5329 074252  103407                               BCS     110$                    ;BR. IF COMMAND ISSUED OK
5330 074254  005237  002214                       INC     FATFLG                          ;ERROR COUNT
5334 074260  010001                               MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5335 074262                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     074262  104456                                                                TRAP    C$ERHRD
     074264  001450                                                                .WORD   808
     074266  005052                                                                .WORD   WRTMSG
     074270  012114                                                                .WORD   SFIMSG
5336 074272                                110$:   CKLOOP                          ;LOOP IF SELECTED
     074272  104406                                                                TRAP    C$CLP1
5337 074274  012737  006642  075736               MOV     #3490.,T36SZ            ;SET SIZE OF TRANSFER
5338 074302  012737  140005  075730               MOV     #140005,T36PKS          ;WRITE DATA,ACK,CVC+1 COMMAND
5339 074310  012704  075730                       MOV     #T36PKS,R4              ;SET UP R1 WITH PACKET ADDRESS
5340 074314  005037  075760                       CLR     T36CNU                  ;CLEAR COUNTER
5341 074320  012737  001750  075762               MOV     #1000.,T36DLY           ;SET DROP DEAD COUNTER VALUE
5342 074326  010465  000000                       MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5343 074332  016501  000002            120$:   MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5344 074336  032701  000200                       BIT     #SSR,R1                 ;CHECK FOR SSR SET
5345 074342  001021                               BNE     130$                    ;BR. IF SSR IS SET
5346 074344  005237  075760                       INC     T36CNU                  ;BUMP CYCLE COUNTER
5347 074350                                    DELAY   1                       ;CUT NUMBER OF LOOPS DOWN
     074350  012727  000001                                                            MOV     #1,(PC)+
     074354  000000                                                                    .WORD   0
     074356  013727  002116                                                            MOV     L$DLY,(PC)+
     074362  000000                                                                    .WORD   0
     074364  005367  177772                                                            DEC     -6(PC)
     074370  001375                                                                    BNE     .-4
     074372  005367  177756                                                            DEC     -42(PC)
     074376  001367                                                                    BNE     .-20
5348 074400  005337  075762                       DEC     T36DLY                  ;BUMP DROP DEAD COUNTER
5349 074404  001352                               BNE     120$                    ;BR. IF THERE IS STILL TIME
5350 074406  012702  000200            130$:   MOV     #SSR,R2                 ;SET UP EXPECTED
5351 074412  020102                               CMP     R1,R2                   ;ARE THEY EQUAL
5352 074414  001406                               BEQ     140$                    ;BR. IF OK
5353 074416  005237  002214                       INC     FATFLG                          ;ERROR COUNT
5357 074422                                    ERRHRD  ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     074422  104456                                                                TRAP    C$ERHRD
     074424  001451                                                                .WORD   809
     074426  005107                                                                .WORD   WRTERR
     074430  012126                                                                .WORD   PKTSSR
5358 074432                                140$:   CKLOOP                          ;LOOP IF SELECTED
     074432  104406                                                                TRAP    C$CLP1
5359 074434  013701  075756                       MOV     T36CNT,R1               ;GET FIRST COUNTER
5360 074440  013702  075760                       MOV     T36CNU,R2               ;GET SECOND COUNTER
5361 074444  020102                               CMP     R1,R2                   ;25-APR-83 REV B - COMPARE EM
5362 074446  003406                               BLE     300$                    ;BR. IF VALUES ARE CORRECT (OK)
```

TEST 8: RECORD BUFFERING

```
5363 074450  005237  002214                    INC     FATFLG                          ;ERROR COUNT
5367 074454                                    ERRHRD  ERRNO,T36NAS,EXPREC     ;TAPE NOT AT CORRECT SPEED
     074454  104456                                                                    TRAP    C$ERHRD
     074456  001452                                                                    .WORD   810
     074460  075764                                                                    .WORD   T36NAS
     074462  015554                                                                    .WORD   EXPREC
5368 074464                            300$:   CKLOOP                          ;LOOP IF SELECTED
     074464  104406                                                                    TRAP    C$CLP1
5369 074466                                    ENDSUB
     074466                                                                  L10071:
     074466  104405                                                                    TRAP    C$ESUB
5370 074470  023727  002214  000017            CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
5371 074476  103402                            BLO     999$                    ;BR, IF LESS THAN 25
5372 074500  004737  017262                    JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
5373 074504                            999$:
5374                                   ;*
5375                                   ;
5376                                   ;TEST 8, SUBTEST 2
5377                                   ;
5378                                   ;
5379                                   ;       THIS TEST VERIFIES THAT RECORD BUFFERING, USED FOR WRITE DATA
5380                                   ;       AND READ NEXT COMMANDS, OPERATES PROPERLY AND IS PROPERLY
5381                                   ;       CONTROLLED BY THE EXTENDED CHARACTERISTICS DATA WORD.  IF THE
5382                                   ;       M7196 CONTROLLER MODULE IS NOT ALREADY IN EXTENDED FEATURES MODE
5383                                   ;       (AS CONTROLLED BY THE DIP SWITCH ON THE MODULE), IT IS PLACED
5384                                   ;       INTO THAT MODE BY INVERTING THE SENSE OF THE SWITCH USING THE
5385                                   ;       WRITE SUBSYSTEM MEMORY COMMAND.  NOTE THAT RECORD BUFFERING HAS
5386                                   ;       BEEN ENABLED IN PREVIOUS TESTS OF READ AND WRITE AND SO HAS BEEN
5387                                   ;       PARTIALLY TESTED ALREADY.  THIS TEST VERIFIES THAT BUFFERING IS
5388                                   ;       ACTUALLY OPERATING.  THE FOLLOWING SUBTESTS ARE PERFORMED:
5389                                   ;
5390                                   ;       VERIFIES THAT NORMAL BUFFERING ON WRITE DATA COMMANDS OPERATES
5391                                   ;       PROPERLY AT LOW TAPE SPEED.  THE FOLLOWING SEQUENCE IS
5392                                   ;       PERFORMED:
5393                                   ;
5394                                   ;            1.  THE TAPE IS REWOUND.
5395                                   ;
5396                                   ;            2.  BUFFERING IS DISABLED AND LOW TAPE SPEED IS SELECTED
5397                                   ;                (VIA WRITE CHARACTERISTICS COMMAND).
5398                                   ;
5399                                   ;            3.  AN INITIAL RECORD IS WRITTEN ONTO THE TAPE IN ORDER TO
5400                                   ;                MOVE THE TAPE OFF BOT.
5401                                   ;
5402                                   ;            4.  THE PROGRAM DELAYS FOR A TIME SUFFICIENT TO ALLOW THE
5403                                   ;                TAPE TO REPOSITION AND COME TO REST.
5404                                   ;
5405                                   ;            5.  A WRITE DATA COMMAND, WITH A BYTE COUNT LESS THAN 3.5K,
5406                                   ;                IS ISSUED, AND THE PROGRAM COUNTS, IN A WAIT LOOP, THE
5407                                   ;                TIME IT TAKES TO RECEIVE COMMAND TERMINATION.  THIS
5408                                   ;                SHOULD BE A RELATIVELY LONG TIME SINCE BUFFERING IS
5409                                   ;                DISABLED.
5410                                   ;
5411                                   ;            6.  BUFFERING IS ENABLED.
5412                                   ;
5413                                   ;            7.  THE WRITE DATA COMMAND IS AGAIN ISSUED, WITH THE SAME
5414                                   ;                BYTE COUNT AS THAT USED PREVIOUSLY.  THE TIME TO
5415                                   ;                COMPLETION IS AGAIN MEASURED.
```

TEST 8: RECORD BUFFERING

```
5416                                    ;
5417                                    ;           8.  THE COMPLETION TIMES MEASURED FOR THE NON BUFFERED AND
5418                                    ;               BUFFERED CASES ARE COMPARED.  IT IS VERIFIED THAT THE
5419                                    ;               TIME MEASURED FOR THE NON-BUFFERED CASE IS MUCH LARGER
5420                                    ;               THAN THAT MEASURED FOR THE BUFFERED CASE.
5421                                    ;
5422                                    ;           9.  THE PREVIOUS STEPS, EXCEPT FOR REWINDING AND WRITING A
5423                                    ;               RECORD OFF BOT, ARE REPEATED FOR VARIOUS BYTE COUNTS IN
5424                                    ;               THE RANGE 20 THROUGH 3.5K.
5425                                    ;
5426                                    ;
5427                                    ;
5428                                    ;-
5429 074504                                BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      074504                                                                        T8.2:
      074504  104402                                                                TRAP    C$BSUB
5430 074506  004737  100770                JSR     PC,T36REST              ;SET COMMAND PACKET
5431 074512  004737  101062                JSR     PC,T36RT2               ;SET UP OTHER COMMAND PACKET
5432 074516  004737  101124                JSR     PC,T36RT3               ;SET UP OTHER COMMAND PACKET
5433 074522  012737  176750  075762        MOV     #65000.,T36DLY          ;SET UP DELAY COUNTER
5434 074530  005037  075756                CLR     T36CNT                  ;CLEAR COUNTER
5435 074534  004737  016054          10$:  JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
5436 074540  103426                      BCS     20$                     ;BR IF INIT WAS OK
5437 074542                                DELAY   250                     ;DELAY ABOUT .25 SEC
      074542  012727  000250                                                       MOV     #250,(PC)+
      074546  000000                                                               .WORD   0
      074550  013727  002116                                                       MOV     L$DLY,(PC)+
      074554  000000                                                               .WORD   0
      074556  005367  177772                                                       DEC     -6(PC)
      074562  001375                                                               BNE     .-4
      074564  005367  177756                                                       DEC     -22(PC)
      074570  001367                                                               BNE     .-20
5438 074572  005337  075762                DEC     T36DLY                  ;BUMP COUNTER
5439 074576  001356                      BNE     10$                     ;BR, IF COUNTER NOT DONE
5440 074600  005237  002214                INC     FATFLG                          ;ERROR COUNT
5444 074604  010001                      MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
5445 074606                                ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      074606  104455                                                               TRAP    C$ERDF
      074610  001453                                                               .WORD   811
      074612  003646                                                               .WORD   SFIERR
      074614  012114                                                               .WORD   SFIMSG
5446 074616  013737  002174  075630  20$:  MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
5447 074624  052737  000040  075630        BIS     #BIT5,T36DSW            ;TURN ON HIGH SPEED
5448 074632  012704  075610                MOV     #T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5449 074636  004737  010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5450 074642  103407                      BCS     25$                     ;BR, IF COMMAND ISSUED OK
5451 074644  005237  002214                INC     FATFLG                          ;ERROR COUNT
5455 074650  010001                      MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5456 074652                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      074652  104456                                                               TRAP    C$ERHRD
      074654  001454                                                               .WORD   812
      074656  005052                                                               .WORD   WRTMSG
      074660  012114                                                               .WORD   SFIMSG
5457 074662                          25$:  CKLOOP                          ;LOOP IF SELECTED
      074662  104406                                                               TRAP    C$CLP1
5458 074664  004737  011074                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5459 074670  103407                      BCS     30$                     ;BR, IF NO PROBLEM
```

```
5460 074672  010004                                  MOV     R0,R4                    ;SET UP REWIND PACKET ADDRESS
5461 074674  005237  002214                          INC     FATFLG                          ;ERROR COUNT
5465 074700                                          ERRHRD  ERRNO,T36RWN,PKTSSR      ;REWIND NOT ACCEPTED
     074700  104456                                                                                       TRAP    C$ERHRD
     074702  001455                                                                                       .WORD   813
     074704  077171                                                                                       .WORD   T36RWN
     074706  012126                                                                                       .WORD   PKTSSR
5466 074710                                  30$:    CKLOOP                           ;LOOP IF SELECTED
     074710  104406                                                                                       TRAP    C$CLP1
5467 074712  013701  075640                          MOV     T36BFR+6,R1              ;PICK UP XSTO
5468 074716  010102                                  MOV     R1,R2                    ;SET UP EXPECTED
5469 074720  052702  000002                          BIS     #BIT1,R2                 ;SET BOT BIT IN EXPECTED
5470 074724  020102                                  CMP     R1,R2                    ;DOES EXP = REC'D
5471 074726  001406                                  BEQ     40$                      ;BR, IF EQUAL (OK)
5472 074730  005237  002214                          INC     FATFLG                          ;ERROR COUNT
5476 074734                                          ERRHRD  ERRNO,T36BOT,EXPREC      ;TAPE NOT AT BOT AFTER REWIND
     074734  104456                                                                                       TRAP    C$ERHRD
     074736  001456                                                                                       .WORD   814
     074740  076665                                                                                       .WORD   T36BOT
     074742  015554                                                                                       .WORD   EXPREC
5477 074744                                  40$:    CKLOOP                           ;LOOP IF SELECTED
     074744  104406                                                                                       TRAP    C$CLP1
5478 074746  013737  002174  075630                  MOV     UNITN,T36DSW             ;SET UP DRIVE NUMBER
5479 074754  052737  000030  075630                  BIS     #BIT3!BIT4,T36DSW        ;25 APR 83 REV B   TURN ON THE BUFFERING
5480 074762  012704  075610                          MOV     #T36PACKET,R4            ;SUBROUTINE NEEDS PACKET ADDRESS
5481 074766  004737  010742                          JSR     PC,WRTCHR                ;ISSUE WRITE CHARACTERISTICS
5482 074772  103407                                  BCS     50$                      ;BR, IF COMMAND ISSUED OK
5483 074774  005237  002214                          INC     FATFLG                          ;ERROR COUNT
5487 075000  010001                                  MOV     R0,R1                    ;SAVE CONTENTS OF TSSR
5488 075002                                          ERRHRD  ERRNO,WRTMSG,SFIMSG      ;WRITE CHARACTERISTISC FAILED
     075002  104456                                                                                       TRAP    C$ERHRD
     075004  001457                                                                                       .WORD   815
     075006  005052                                                                                       .WORD   WRTMSG
     075010  012114                                                                                       .WORD   SFIMSG
5489 075012                                  50$:    CKLOOP                           ;LOOP IF SELECTED
     075012  104406                                                                                       TRAP    C$CLP1
5490 075014  012737  003720  075736                  MOV     #2000.,T36SZ             ;SET UP RECORD SIZE
5491 075022  013737  003116  075732                  MOV     FREE,T36WB               ;ADDRESS OF WRITE BUFFER
5492 075030  012737  140005  075730                  MOV     #140005,T36PK3           ;WRITE DATA,ACK,CVC=1 COMMAND
5493 075036  012704  075730                          MOV     #T36PK3,R4               ;SET UP R4 WITH PACKET ADDRESS
5494 075042  010465  000000                          MOV     R4,TSDB(R5)              ;ISSUE COMMAND
5495 075046  004737  016330                          JSR     PC,WAITF                 ;WAIT FOR SSR TO SET
5496 075052  016501  000002                          MOV     TSSR(R5),R1              ;GET TSSR CONTENTS
5497 075056  012702  000200                          MOV     #SSR,R2                  ;SET UP EXPECTED
5498 075062  020102                                  CMP     R1,R2                    ;ARE THEY EQUAL
5499 075064  001406                                  BEQ     60$                      ;BR, IF OK
5500 075066  005237  002214                          INC     FATFLG                          ;ERROR COUNT
5504 075072                                          ERRHRD  ERRNO,WRTERR,PKTSSR      ;TSSR INCORRECT AFTER READ DATA
     075072  104456                                                                                       TRAP    C$ERHRD
     075074  001460                                                                                       .WORD   816
     075076  005107                                                                                       .WORD   WRTERR
     075100  012126                                                                                       .WORD   PKTSSR
5505 075102                                  60$:    CKLOOP                           ;LOOP IF SELECTED
     075102  104406                                                                                       TRAP    C$CLP1
5506 075104  012737  000005  075762                  MOV     #05.,T36DLY              ;25 APR 83 REV B - DELAY FOR TAPE TO STOP
5507 075112                                  70$:    DELAY   1                        ;25-APR-83 REV B - DELAY ROUTINE CALL
     075112  012727  000001                                                                               MOV     #1,(PC)+
```

TEST 8: RECORD BUFFERING

```
        075116  000000
        075120  013727  002116
        075124  000000
        075126  005367  177772
        075132  001375
        075134  005367  177756
        075140  001367
5508 075142  005337  075762          DEC     T36DLY                  ;BUMP COUNTER DOWN
5509 075146  001361                  BNE     70$                     ;BR, IF MORE DELAY TO GO
5510 075150  012737  006642  075736  MOV     #3490.,T36SZ            ;SET SIZE OF TRANSFER
5511 075156  012737  140005  075730  MOV     #140005,T36PK3          ;WRITE DATA,ACK,CYC-1 COMMAND
5512 075164  012704  075730          MOV     #T36PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5513 075170  005037  075756          CLR     T36CNT                  ;CLEAR COUNTER
5514 075174  012737  001750  075762  MOV     #1000.,T36DLY           ;SET DROP DEAD COUNTER VALUE
5515 075202  010465  000000          MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5516 075206  016501  000002  80$:    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5517 075212  032701  000200          BIT     #SSR,R1                 ;CHECK FOR SSR SET
5518 075216  001021                  BNE     90$                     ;BR, IF SSR IS SET
5519 075220  005237  075756          INC     T36CNT                  ;BUMP CYCLE COUNTER
5520 075224                          DELAY   1                       ;CUT NUMBER OF LOOPS DOWN
        075224  012727  000001                  MOV     #1,(PC)+
        075230  000000                          .WORD   0
        075232  013727  002116                  MOV     T$DLY,(PC)+
        075236  000000                          .WORD   0
        075240  005367  177772                  DEC     -6(PC)
        075244  001375                          BNE     .-4
        075246  005367  177756                  DEC     -22(PC)
        075252  001367                          BNE     .-20
5521 075254  005337  075762          DEC     T36DLY                  ;BUMP DROP DEAD COUNTER
5522 075260  001352                  BNE     80$                     ;BR, IF THERE IS STILL TIME
5523 075262  012702  000200  90$:    MOV     #SSR,R2                 ;SET UP EXPECTED
5524 075266  020102                  CMP     R1,R2                   ;ARE THEY EQUAL
5525 075270  001406                  BEQ     100$                    ;BR, IF OK
5526 075272  005237  002214          INC     FATFLG                          ;ERROR COUNT
5530 075276                          ERRHRD  ERRNO,T36WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
        075276  104456                          TRAP    C$ERHRD
        075300  001461                          .WORD   817
        075302  076613                          .WORD   T36WDE
        075304  012126                          .WORD   PKTSSR
5531 075306                  100$:   CKLOOP                          ;LOOP IF SELECTED
        075306  104406                          TRAP    C$CLP1
5532 075310  013737  002174  075630  MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
5533 075316  052737  000010  075630  BIS     #BIT3,T36DSW            ;25-APR-83 REV B - TURN OFF BUFFERING
5534 075324  012704  075610          MOV     #T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5535 075330  004737  010742          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5536 075334  103407                  BCS     110$                    ;BR, IF COMMAND ISSUED OK
5537 075336  005237  002214          INC     FATFLG                          ;ERROR COUNT
5541 075342  010001                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5542 075344                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        075344  104456                          TRAP    C$ERHRD
        075346  001462                          .WORD   818
        075350  005052                          .WORD   WRTMSG
        075352  012114                          .WORD   SFIMSG
5543 075354  104406          110$:   CKLOOP                          ;LOOP IF SELECTED
        075356  104406                          TRAP    C$CLP1
5544 075356  012737  006642  075736  MOV     #3490.,T36SZ            ;SET SIZE OF TRANSFER
5545 075364  012737  140005  075730  MOV     #140005,T36PK3          ;WRITE DATA,ACK,CYC-1 COMMAND
```

TEST 8: RECORD BUFFERING SEQ 0204

```
5546 075372  012704  075730                MOV     #T36PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
5547 075376  005037  075760                CLR     T36CNU              ;CLEAR COUNTER
5548 075402  012737  001750  075762        MOV     #1000.,T36DLY       ;SET DROP DEAD COUNTER VALUE
5549 075410  010465  000000                MOV     R4,TSDB(R5)         ;ISSUE COMMAND
5550 075414  016501  000002        120$:   MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
5551 075420  032701  000200                BIT     #SSR,R1             ;CHECK FOR SSR SET
5552 075424  001021                        BNE     130$                ;BR, IF SSR IS SET
5553 075426  005237  075760                INC     T36CNU              ;BUMP CYCLE COUNTER
5554 075432                                DELAY   1                   ;CUT NUMBER OF LOOPS DOWN
     075432  012727  000001                                                    MOV     #1,(PC)+
     075436  000000                                                            .WORD   0
     075440  013727  002116                                                    MOV     L$DLY,(PC)+
     075444  000000                                                            .WORD   0
     075446  005367  177772                                                    DEC     -6(PC)
     075452  001375                                                            BNE     .-4
     075454  005367  177756                                                    DEC     -22(PC)
     075460  001367                                                            BNE     .-20
5555 075462  005337  075762                DEC     T36DLY              ;BUMP DROP DEAD COUNTER
5556 075466  001352                        BNE     120$                ;BR, IF THERE IS STILL TIME
5557 075470  012702  000200        130$:   MOV     #SSR,R2             ;SET UP EXPECTED
5558 075474  020102                        CMP     R1,R2               ;ARE THEY EQUAL
5559 075476  001406                        BEQ     140$                ;BR, IF OK
5560 075500  005237  002214                INC     FATFLG                  ;ERROR COUNT
5564 075504                                ERRHRD  ERRNO,WRTERR,PKTSSR ;TSSR INCORRECT AFTER WRITE DATA
     075504  104456                                                            TRAP    C$ERHRD
     075506  001463                                                            .WORD   819
     075510  005107                                                            .WORD   WRTERR
     075512  012126                                                            .WORD   PKTSSR
5565 075514                        140$:   CKLOOP                      ;LOOP IF SELECTED
     075514  104406                                                            TRAP    C$CLP1
5566 075516  013701  075756                MOV     T36CNT,R1           ;GET FIRST COUNTER
5567 075522  013702  075760                MOV     T36CNU,R2           ;GET SECOND COUNTER
5568 075526  020102                        CMP     R1,R2               ;25-APR-83 REV B - COMPARE EM
5569 075530  003406                        BLE     300$                ;BR, IF VALUES ARE CORRECT (OK)
5570 075532  005237  002214                INC     FATFLG                  ;ERROR COUNT
5574 075536                                ERRHRD  ERRNO,T36NAS,EXPREC ;TAPE NOT AT CORRECT SPEED
     075536  104456                                                            TRAP    C$ERHRD
     075540  001464                                                            .WORD   820
     075542  075764                                                            .WORD   T36NAS
     075544  015554                                                            .WORD   EXPREC
5575 075546                        300$:   CKLOOP                      ;LOOP IF SELECTED
     075546  104406                                                            TRAP    C$CLP1
5576 075550                                ENDSUB
     075550                                                         L10072:
     075550  104403                                                            TRAP    C$ESUB
5577 075552  023727  002214  000017        CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
5578 075560  103402                        BLO     999$                    ;BR, IF LESS THAN 25
5579 075562  004737  017262                JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
5580 075566                        999$:
5581                                       ;
5582                                       ;
5583                                       ;
5584 075566  004737  016536                JSR     PC,TSTLOOP          ;DO WE NEED TO ITERATE TEST
5585 075572  103002                        BCC     163$                ;BR, IF NO LOOP REQUIRED
5586 075574  000137  073430                JMP     T36LOOP             ;EXECUTE AGAIN
5587 075600                        163$:
5588 075600                                EXIT    TST                 ;ALL DONE THIS TEST
```

TEST 8: RECORD BUFFERING

```
075600  104432                                                          TRAP    C$EXIT
075602  003344                                                          .WORD   L10070-.
5589                            ;+
5590                            ;LOCAL STORAGE FOR THIS TEST
5591                            ;-
5593            075610                  .=<.+10>&177770
5595 075610                     T36PACKET:                              ;COMMAND PACKET FOR TEST
5596 075610  100004                     .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
5597 075612  075620                     .WORD   T36DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
5598 075614  000000                     .WORD   0
5599 075616  000012                     .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
5600 075620                     T36DATA:                                ;CHARACTERISTICS DATA BLOCK
5601 075620  075632                     .WORD   T36BFR                  ;ADDRESS OF MESSAGE BUFFER
5602 075622  000000                     .WORD   0
5603 075624  000024                     .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
5604 075626  000000                     .WORD   0
5605 075630  000000             T36DSW: .WORD   0                       ;SELECT DRIVE 0
5606 075632                     T36BFR: .BLKW   25.                     ;MESSAGE BUFFER
5607                            ;
5608                            ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
5609                            ;
5611            075720                  .=<.+10>&177770
5613 075720                     T36PK2:
5614 075720  100006                     .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
5615 075722  075740                     .WORD   T36BF2                  ;ADDRESS OF SELECT BLOCK DATA
5616 075724  000000                     .WORD   0
5617 075726  000006                     .WORD   6.                      ;SIZE OF DATA PACKET
5618
5622 075730                     T36PK3:
5623 075730  100005                     .WORD   100005                  ;REREAD COMMAND, AND ACK
5624 075732                     T36RB:
5625 075732  003116             T36WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
5626 075734  000000                     .WORD   0
5627 075736  000000             T36SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
5628                                    .EVEN
5629                            ;
5630                            ;
5631                            ;
5632 075740                     T36BF2:
5633 075740      010            T36BS0: .BYTE   10                      ;BSEL0 AREA
5634 075741      200            T36BS1: .BYTE   200                     ;BSEL1 AREA
5635 075742  000000             T36S2:  .WORD   0                       ;SEL 2 AREA
5636 075744  000000             T36S3:  .WORD   0                       ;DATA AREA
5637                            ;
5638                            ;
5639                                    EVEN
5640                            ;TAPE MOTION PACKET COMMAND VALUES
5641
5642 075746  100205             T36RN:  .WORD   100205                  ;REREAD DATA (NEXT)
5643 075750  100605             T36WDR: .WORD   100605                  ;REREAD DATA RETRY
5644 075752  102205             T36CON: .WORD   102205                  ;WRITE CONTINOUS
5645 075754  177777                     .WORD   177777                  ;END OF DATA
5646
5647                            ;
5648 075756  000000             T36CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
5649 075760  000000             T36CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
5650 075762  000000             T36DLY: .WORD   0                       ;DELAY COUNTER
```

TEST 8: RECORD BUFFERING

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

075764  111  155  160  T36NAS: .ASCIZ  'Improper Tape Controller Buffering Speed'
076035  124  141  160  T36WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
076123  124  123  123  T36RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
076172  122  105  122  T36RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
076267  120  117  123  T36SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
076351  122  111  102  T36LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
076421  124  123  123  T36WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
076476  111  154  154  T36LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
076557  122  105  122  T36SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
076613  124  123  123  T36WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA Command'
076665  124  141  160  T36BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
076760  127  122  111  T36TIM: .ASCIZ  'WRITE DATA RETRY''S Erase Tape Not Long Enough'
077035  122  105  122  T36EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
077114  124  123  123  T36TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
077171  122  145  167  T36RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
077240  122  101  115  T36RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
077313  124  123  123  T36AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
077362  104  162  151  T36OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
077435  124  123  123  T36WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
077525  124  123  123  T36WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
077600  103  126  103  T36VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
077653  124  123  102  T36BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
077726  127  122  111  T36WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
100015  122  145  141  T36LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XST0'
100077  122  145  141  T36LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XST0'
100161  122  145  163  T36PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
100247  122  145  141  T36TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
100335  127  122  111  T36NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
100433  124  123  123  T36SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
100510  124  123  123  T36TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
100572  124  123  123  T36WRF: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command'
100652  104  141  164  T36DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
100747  122  145  143  TST36ID:        .ASCIZ  'Record Buffering'
                             .EVEN
                        ;+
                        ;
                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                        ;WRITE SUBSYSTEM MEMORY COMMAND
                        ;
                        ;-

100770                  T36REST:
100770                          SAVREG                          ;SAVE THE REGISTERS
100774  012701  075610          MOV     #T36PACKET,R1           ;START OF THE PACKET
101000  012721  100004          MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
101004  012721  075620          MOV     #T36DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
101010  005021                  CLR     (R1)+                   ;EXTENDED ADDRESS
101012  012721  000012          MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
101016  012721  075632          MOV     #T36BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
101022  005021                  CLR     (R1)+
101024  012721  000024          MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
101030  005021                  CLR     (R1)+
101032  012711  000000          MOV     #0,(R1)                 ;SELECT DRIVE ZERO
```

SEQ 0207

TEST 8: RECORD BUFFERING

```
5708 101036  012702  000030                MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
5709 101042  012762  177777  075632  64$:  MOV     #177777,T36BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
5710 101050  005742                        TST     -(R2)                   ;NEXT LOCATION
5711 101052  022702  000000                CMP     #0,R2                   ;AT END OF LOOP YET
5712 101056  001371                        BNE     64$                     ;KEEP GOING UNTIL DONE
5713 101060  000207                        RTS     PC                      ;RETURN
5714
5715 101062                        T36RT2:
5716 101062                        SAVREG                                  ;SAVE THE REGISTERS
5717 101066  012701  075720                MOV     #T36PK2,R1              ;START OF THE PACKET
5718 101072  012721  100006                MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
5719 101076  012721  075740                MOV     #T36BF2,(R1)+           ;ADDRESS OF DATA BLOCK
5720 101102  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
5721 101104  012721  000006                MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
5722 101110  005021                        CLR     (R1)+
5723 101112  012701  075740                MOV     #T36BF2,R1              ;POINT TO DATA SEL AREA
5724 101116  005021                        CLR     (R1)+
5725 101120  005011                        CLR     (R1)
5726 101122  000207                        RTS     PC                      ;RETURN
5727 101124                        T36RT3:
5728 101124                        SAVREG                                  ;SAVE REGISTERS
5729 101130  012701  075730                MOV     #T36PK3,R1              ;SET UP POINTER ADDRESS
5730 101134  005021                        CLR     (R1)+                   ;COMMAND SPACE
5731 101136  005021                        CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
5732 101140  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
5733 101142  005011                        CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
5734 101144  000207                        RTS     PC                      ;RETURN
5735 101146                        ENDTST
     101146                                                                L10070:
     101146  104401                                                                SAP     C$ETST
5736                                .SBTTL  TEST  9: FUNCTION TIMING
5737                               ;+
5738                               ;
5739                               ;THIS TEST VERIFIES THAT THE TAPE TRANSPORT SEEMS TO BE WRITING
5740                               ;RECORDS, GAPS, AND EXTENDED GAPS OF THE PROPER LENGTH. BOTH LOW
5741                               ;AND HIGH SPEED MODES ARE TESTED. IT IS ALSO VERIFIED THAT A
5742                               ;SPACE RECORDS COMMAND WITH A RECORD COUNT OF 80 OR MORE, AND A
5743                               ;SKIP TAPE MARKS COMMAND WITH A COUNT OF 2 OF MORE, OPERATE THE
5744                               ;TAPE IN HIGH-SPEED MODE. THIS TEST CAN ONLY BE RUN IF A
5745                               ;REAL-TIME CLOCK IS AVAILIABLE ON THE SYSTEM. THE TEST OPERATES BY
5746                               ;TIMING VARIOUS TAPE-MOTION OPERATIONS, USING A NUMBER OF
5747                               ;DIFFERENT TEST RECORD LENGTHS.
5748                               ;
5749                               ;
5750                               ;-
5751 101150                        BGNTST
     101150                                                                T9::
5752 101150  012737  006354  002172        MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
5753 101156  004737  017354                JSR     PC,KTOFF                        ;TURN KT OFF
5758 101162  012700  105373                MOV     #TST37ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
5759 101166  004737  016570                JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
5760 101172  012737  000005  002210        MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
5761 101200  005037  102456                CLR     T37CNT                  ;CLEAR TAPE RECORD COUNTER
5762                               ;+
5763                               ;
5764                               ;TEST 9, SUBTEST 1
5765                               ;
```

USER DOCUMENTATION

....B1	....B5	....B9	....B13
....C1	....C5	....C9	....C13
....D1	....D5	....D9	....D13
....E1	....E5	....E9	....E13
....F1	....F5	....F9	....F13
....G1	....G5	....G9	....G13
....H1	....H5	....H9	....H13
....I1	....I5	....I9	....I13
....J1	....J5	....J9	....J13
....K1	....K5	....K9	....K13
....L1	....L5	....L9	....L13
....M1	....M5	....M9	....M13
....N1	....N5	....N9	....N13

....B2	....B6	....B10	....B14
....C2	....C6	....C10	....C14
....D2	....D6	....D10	....D14
....E2	....E6	....E10	....E14
....F2	....F6	....F10	....F14
....G2	....G6	....G10	....G14
....H2	....H6	....H10	....H14
....I2	....I6	....I10	....I14
....J2	....J6	....J10	....J14
....K2	....K6	....K10	....K14
....L2	....L6	....L10	....L14
....M2	....M6	....M10	....M14
....N2	....N6	....N10	....N14

....B3	....B7	....B11	....B15
....C3	....C7	....C11	....C15
....D3	....D7	....D11	....D15
....E3	....E7	....E11	....E15
....F3	....F7	....F11	....F15
....G3	....G7	....G11	....G15
....H3	....H7	....H11	....H15
....I3	....I7	....I11	....I15
....J3	....J7	....J11	....J15
....K3	....K7	....K11	....K15
....L3	....L7	....L11	....L15
....M3	....M7	....M11	....M15
....N3	....N7	....N11	....N15

....B4	....B8	....B12	....B16
....C4	....C8	....C12	....C16
....D4	....D8	....D12	....D16
....E4	....E8	....E12	....E16
....F4	....F8	....F12	....F16
....G4	....G8	....G12	....G16
....H4	....H8	....H12	....H16
....I4	....I8	....I12	....I16
....J4	....J8	....J12	....J16
....K4	....K8	....K12	....K16
....L4	....L8	....L12	....L16
....M4	....M8	....M12	....M16
....N4	....N8	....N12	

TEST 9: FUNCTION TIMING


```
5766                                    ;
5767                                    ;
5768                                    ;
5769                                    ;
5770
5771 101204                            T37LOOP:
5772 101204                                    BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     101204                                                                            T9.1:
     101204  104402                                                                      TRAP    C$BSUB
5773 101206  005037  002216                    CLR     INTRECV                 ;INTERRUPT INDICATOR
5774 101212  005037  102436                    CLR     T37CNT                  ;TIMER FOR WRITE DATA SPACING
5775 101216  005037  102440                    CLR     T37CNU                  ;TIMER FOR WRITE DATA RETRY SPACING
5776 101222  004737  105414                    JSR     PC,T37REST              ;SET COMMAND PACKET
5777 101226  004737  105506                    JSR     PC,T37RT2               ;SET UP OTHER COMMAND PACKET
5778 101232  004737  105550                    JSR     PC,T37RT3               ;SET UP OTHER COMMAND PACKET
5779 101236  012737  176750  102442            MOV     #65000.,T37DLY          ;SET UP DELAY COUNTER
5780 101244  004737  016054            10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
5781 101250  103426                            BCS     20$                     ;BR IF INIT WAS OK
5782 101252                                    DELAY   250                     ;DELAY ABOUT .25 SEC
     101252  012727  000250                                                           MOV     #250,(PC)+
     101256  000000                                                                   .WORD   0
     101260  013727  002116                                                           MOV     L$DLY,(PC)+
     101264  000000                                                                   .WORD   0
     101266  005367  177772                                                           DEC     6(PC)
     101272  001375                                                                   BNE     .-4
     101274  005367  177756                                                           DEC     -22(PC)
     101300  001367                                                                   BNE     .-20
5783 101302  005337  102442                    DEC     T37DLY                  ;BUMP COUNTER
5784 101306  001356                            BNE     10$                     ;BR, IF COUNTER NOT DONE
5785 101310  005237  002214                    INC     FATFLG                          ;ERROR COUNT
5789 101314  010001                            MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
5790 101316                                    ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     101316  104455                                                                   TRAP    C$ERDF
     101320  001605                                                                   .WORD   901
     101322  003646                                                                   .WORD   SFIERR
     101324  012114                                                                   .WORD   SFIMSG
5791 101326  013737  002174  102310    20$:    MOV     UNITN,T37DSW            ;SET UP UNIT NUMBER
5792
5793 101334  012704  102270                    MOV     #T37PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5794 101340  004737  010742                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5795 101344  103407                            BCS     23$                     ;BR, IF COMMAND ISSUED OK
5796 101346  005237  002214                    INC     FATFLG                          ;ERROR COUNT
5800 101352  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5801 101354                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     101354  104456                                                                   TRAP    C$ERHRD
     101356  001606                                                                   .WORD   902
     101360  005052                                                                   .WORD   WRTMSG
     101362  012114                                                                   .WORD   SFIMSG
5802 101364                            23$:    CKLOOP                          ;LOOP IF SELECTED
     101364  104406                                                                   TRAP    C$CLP1
5803 101366  004737  011074                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5804 101372  103411                            BCS     30$                     ;BR, IF NO PROBLEM
5805 101374  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5806 101400  010004                            MOV     R0,R4                   ;GET PACKET ADDRESS
5807 101402  005237  002214                    INC     FATFLG                          ;ERROR COUNT
5811 101406                                    ERRHRD  ERRNO,T37RWN,PKTSSR     ;REWIND NOT ACCEPTED
     101406  104456                                                                   TRAP    C$ERHRD
```

TEST 9: FUNCTION TIMING

```
        101410  001607                                                          .WORD   905
        101412  103615                                                          .WORD   T37RWN
        101414  012126                                                          .WORD   PKTSSR
  5812  101416                          30$:    CKLOOP                  ;LOOP IF SELECTED
        101416  104406                                                          TRAP    C$CLP1
  5813  101420  013701  102320                  MOV     T37BFR+6,R1     ;PICK UP XS10
  5814  101424  010102                  MOV     R1,R2           ;SET UP EXPECTED
  5815  101426  052702  000002                  BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
  5816  101432  020102                  CMP     R1,R2           ;DOES EXP = REC'D
  5817  101434  001406                  BEQ     40$             ;BR, IF EQUAL (OK)
  5818  101436  005237  002214                  INC     FATFLG                  ;ERROR COUNT
  5822  101442                          ERRHRD  ERRNO,T37BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        101442  104456                                                          TRAP    C$ERHRD
        101444  001610                                                          .WORD   904
        101446  103311                                                          .WORD   T37BOT
        101450  015554                                                          .WORD   EXPREC
  5823  101452                          40$:    CKLOOP                  ;LOOP IF SELECTED
        101452  104406                                                          TRAP    C$CLP1
  5824  101454  012703  000144                  MOV     #100.,R3        ;NUMBER OF RECORDS TO BE WRITTEN
  5825  101460  013737  003116  102412          MOV     FREE,T37WB      ;STARTING WRITE BUFFER ADDRESS
  5826  101466  012737  140005  102410  65$:    MOV     #140005,T37PK3  ;WRITE DATA,ACK,CVC=1 COMMAND
  5827  101474  012704  102410                  MOV     #T37PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
  5828  101500  012737  001130  102416          MOV     #600.,T37SZ     ;SET UP RECORD SIZE IN PACKET
  5829  101506  010465  000000                  MOV     R4,TSDB(R5)     ;ISSUE COMMAND
  5830  101512  004737  016330                  JSR     PC,WAITF        ;WAIT FOR SSR TO SET
  5831  101516  016501  000002                  MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
  5832  101522  012702  000200                  MOV     #SSR,R2         ;SET UP EXPECTED
  5833  101526  020102                  CMP     R1,R2           ;ARE THEY EQUAL
  5834  101530  001406                  BEQ     70$             ;BR, IF OK
  5835  101532  005237  002214                  INC     FATFLG                  ;ERROR COUNT
  5839  101536                          ERRHRD  ERRNO,T37WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        101536  104456                                                          TRAP    C$ERHRD
        101540  001611                                                          .WORD   905
        101542  104151                                                          .WORD   T37WDC
        101544  012126                                                          .WORD   PKTSSR
  5840  101546                          70$:    CKLOOP                  ;LOOP IF SELECTED
        101546  104406                                                          TRAP    C$CLP1
  5841  101550  005303                  DEC     R3              ;DEC RECORD COUNTER
  5842  101552  001345                  BNE     65$             ;BR, IF MORE RECORDS TO WRITE
  5843  101554  004737  011074                  JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
  5844  101560  103411                  BCS     130$            ;BR, IF NO PROBLEM
  5845  101562  016501  000002                  MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
  5846  101566  010004                  MOV     R0,R4           ;GET PACKET ADDRESS
  5847  101570  005237  002214                  INC     FATFLG                  ;ERROR COUNT
  5851  101574                          ERRHRD  ERRNO,T37RWN,PKTSSR     ;REWIND NOT ACCEPTED
        101574  104456                                                          TRAP    C$ERHRD
        101576  001612                                                          .WORD   906
        101600  103615                                                          .WORD   T37RWN
        101602  012126                                                          .WORD   PKTSSR
  5852  101604                          130$:   CKLOOP                  ;LOOP IF SELECTED
        101604  104406                                                          TRAP    C$CLP1
  5853  101606  013701  102320                  MOV     T37BFR+6,R1     ;PICK UP XS10
  5854  101612  010102                  MOV     R1,R2           ;SET UP EXPECTED
  5855  101614  052702  000002                  BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
  5856  101620  020102                  CMP     R1,R2           ;DOES EXP = REC'D
  5857  101622  001406                  BEQ     140$            ;BR, IF EQUAL (OK)
  5858  101624  005237  002214                  INC     FATFLG                  ;ERROR COUNT
```

```
5862 101630                                ERRHRD  ERRNO,T37BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     101630  104456                                                                TRAP    C$ERHRD
     101632  001613                                                                .WORD   907
     101634  103311                                                                .WORD   T37BOT
     101636  015554                                                                .WORD   EXPREC
5863 101640                          140$:  CKLOOP                          ;LOOP IF SELECTED
     101640  104406                                                                TRAP    C$CLP1
5864 101642  012704  102410                  MOV     #T37PK3,R4             ;SET UP PACKET ADDRESS
5865 101646  012737  000037  102412          MOV     #31.,T37RB             ;SET UP RECORDS TO SPACE OVER
5866 101654  012737  140010  102410          MOV     #140010,T37PK3         ;ACK,CVC+1,SPACE FORWARD COMMAND
5867 101662  010465  000000          150$:   MOV     R4,TSDB(R5)            ;ISSUE COMMAND
5868 101666  005237  102436          152$:   INC     T37CNT                 ;BUMP TIMER
5869 101672                                  DELAY   1                      ;DELAY ABOUT 100US
     101672  012727  000001                                                        MOV     #1,(PC)+
     101676  000000                                                                .WORD   0
     101700  013727  002116                                                        MOV     L$DLY,(PC)+
     101704  000000                                                                .WORD   0
     101706  005367  177772                                                        DEC     -6(PC)
     101712  001375                                                                BNE     .-4
     101714  005367  177756                                                        DEC     -22(PC)
     101720  001367                                                                BNE     .-20
5870 101722  016501  000002                  MOV     TSSR(R5),R1            ;GET TSSR
5871 101726  032701  000200                  BIT     #SSR,R1                ;CHECK FOR TSSR S SSR SET
5872 101732  001755                          BEQ     152$                   ;KEEP COUNTING UNTIL SET
5873 101734  012702  000200                  MOV     #SSR,R2                ;SET UP EXPECTED
5874 101740  020201                          CMP     R2,R1                  ;WAS EVERYTHING OK
5875 101742  001406                          BEQ     160$                   ;BR, IF ALL IS WELL
5876 101744  005237  002214                  INC     FATFLG                         ;ERROR COUNT
5880 101750                                  ERRHRD  ERRNO,T37SCF,PKTSSR    ;SPACE FORWARD DIDN'T WORK OUT
     101750  104456                                                                TRAP    C$ERHRD
     101752  001614                                                                .WORD   908
     101754  105057                                                                .WORD   T37SCF
     101756  012126                                                                .WORD   PKTSSR
5881 101760                          160$:   CKLOOP                         ;LOOP IF SELECTED
     101760  104406                                                                TRAP    C$CLP1
5882 101762  004737  011074                  JSR     PC,REWIND              ;CALL TAPE REWIND COMMAND
5883 101766  103411                          BCS     170$                   ;BR, IF NO PROBLEM
5884 101770  010004                          MOV     R0,R4                  ;GET PACKET ADDRESS
5885 101772  016501  000002                  MOV     TSSR(R5),R1            ;GET STATUS FROM TSSR
5886 101776  005237  002214                  INC     FATFLG                         ;ERROR COUNT
5890 102002                                  ERRHRD  ERRNO,T37RWN,PKTSSR    ;REWIND NOT ACCEPTED
     102002  104456                                                                TRAP    C$ERHRD
     102004  001615                                                                .WORD   909
     102006  103615                                                                .WORD   T37RWN
     102010  012126                                                                .WORD   PKTSSR
5891 102012                          170$:   CKLOOP                         ;LOOP IF SELECTED
     102012  104406                                                                TRAP    C$CLP1
5892 102014  013701  102320                  MOV     T378FR+6,R1            ;PICK UP XSTO
5893 102020  010102                          MOV     R1,R2                  ;SET UP EXPECTED
5894 102022  052702  000002                  BIS     #BIT1,R2               ;SET BOT BIT IN EXPECTED
5895 102026  020102                          CMP     R1,R2                  ;DOES EXP = REC'D
5896 102030  001406                          BEQ     175$                   ;BR, IF EQUAL (OK)
5897 102032  005237  002214                  INC     FATFLG                         ;ERROR COUNT
5901 102036                                  ERRHRD  ERRNO,T37BOT,EXPREC    ;TAPE NOT AT BOT AFTER REWIND
     102036  104456                                                                TRAP    C$ERHRD
     102040  001616                                                                .WORD   910
     102042  103311                                                                .WORD   T37BOT
```

```
      102044  015554                                                                          .WORD    EXPREC
      102046                            175$:    CKLOOP                      ;LOOP IF SELECTED
      102046  104406                                                                          TRAP     C$CLP1
      102050  012704  102410                     MOV     #T37PK3,R4          ;SET UP PACKET ADDRESS
      102054  012737  000121  102412             MOV     #81.,T37RB          ;SET UP RECORDS TO SPACE OVER
      102062  012737  140010  102410             MOV     #140010,T37PK3      ;ACK,CVC+1,SPACE FORWARD COMMAND
      102070  010465  000000            250$:    MOV     R4,TSDB(R5)         ;ISSUE COMMAND
      102074  005237  102440            252$:    INC     T37CNU              ;BUMP TIMER
      102100                                     DELAY   1                   ;DELAY ABOUT 100US
      102100  012727  000001                                                                  MOV      #1,(PC)+
      102104  000000                                                                          .WORD    0
      102106  013727  002116                                                                  MOV      L$DLY,(PC)+
      102112  000000                                                                          .WORD    0
      102114  005367  177772                                                                  DEC      -6(PC)
      102120  001375                                                                          BNE      .-4
      102122  005367  177756                                                                  DEC      -22(PC)
      102126  001367                                                                          BNE      .-20
      102130  016501  000002                     MOV     TSSR(R5),R1         ;GET TSSR
      102134  032701  000200                     BIT     #SSR,R1             ;CHECK FOR TSSR'S SSR SET
      102140  001755                             BEQ     252$                ;KEEP COUNTING UNTIL SET
      102142  012702  000200                     MOV     #SSR,R2             ;SET UP EXPECTED
      102146  020201                             CMP     R2,R1               ;WAS EVERYTHING OK
      102150  001406                             BEQ     260$                ;BR, IF ALL IS WELL
      102152  005237  002214                     INC     FATFLG                      ;ERROR COUNT
      102156                                     ERRHRD  ERRNO,T37SCF,PKTSSR ;SPACE FORWARD DIDN'T WORK OUT
      102156  104456                                                                          TRAP     C$ERHRD
      102160  001617                                                                          .WORD    911
      102162  105057                                                                          .WORD    T37SCF
      102164  012126                                                                          .WORD    PKTSSR
      102166                            260$:    CKLOOP                      ;LOOP IF SELECTED
      102166  104406                                                                          TRAP     C$CLP1
      102170  013701  102436                     MOV     T37CNT,R1           ;TIME FOR WRITE SPACING
      102174  013702  102440                     MOV     T37CNU,R2           ;TIME FOR WRITE RETRY SPACING
      102200  042701  000077                     BIC     #000077,R1          ;SETTING UP CONSTANTS
      102204  042702  000077                     BIC     #000077,R2          ;SETTING UP CONSTANTS
      102210  020102                             CMP     R1,R2               ;CHECK FOR DIFFERENCE
      102212  003406                             BLE     300$                ;BR, IF GOOD [illegible] CHECK [illegible]
      102214  005237  002214                     INC     FATFLG                      ;ERROR COUNT
      102220                                     ERRHRD  ERRNO,T37TIM,EXPREC ;TIME WAS NOT DIFFERENT ENOUGH
      102220  104456                                                                          TRAP     C$ERHRD
      102222  001620                                                                          .WORD    912
      102224  103404                                                                          .WORD    T37TIM
      102226  015554                                                                          .WORD    EXPREC
      102230                            300$:    CKLOOP                      ;LOOP IF SELECTED
      102230  104406                                                                          TRAP     C$CLP1
      102232                                     ENDSUB                      ;<<<<<<<<<<<<< END SUBTEST >>>>>>>>>>>>
      102232                                                                                L10074:
      102232  104403                                                                          TRAP     C$ESUB
      102234  023727  002214  000017             CMP     FATFLG,#15.                 ;IS ERROR COUNT AT 25
      102242  103402                             BLO     999$                        ;BR, IF LESS THAN 25
      102244  004737  017262                     JSR     PC,CKDROP                   ;TRY TO DROP THE UNIT
      102250                            999$:
                                        ;
                                        ;
                                        ;
      102250  004737  016536                     JSR     PC,TSTLOOP          ;DO WE NEED TO ITERATE TEST
      102254  103002                             BCC     163$                ;BR, IF NO LOOP REQUIRED
```

TEST 9: FUNCTION TIMING

```
5943 102256  000137  101204                JMP     T37LOOP                 ;EXECUTE AGAIN
5944 102262                          163$:
5945 102262                                  EXIT    TST                     ;ALL DONE THIS TEST
     102262  104432                                                                  TRAP    C$EXIT
     102264  003306                                                                  .WORD   L10073-.
5946                                 ;
5947                                 ;LOCAL STORAGE FOR THIS TEST
5948                                 ;
5950         102270                          .=<.+10>&177770
5952 102270                          T37PACKET:                              ;COMMAND PACKET FOR TEST
5953 102270  100004                          .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
5954 102272  102300                          .WORD   T37DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
5955 102274  000000                          .WORD   0
5956 102276  000012                          .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
5957 102300                          T37DATA:                                ;CHARACTERISTICS DATA BLOCK
5958 102300  102312                          .WORD   T37BFR                  ;ADDRESS OF MESSAGE BUFFER
5959 102302  000000                          .WORD   0
5960 102304  000024                          .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
5961 102306  000000                          .WORD   0
5962 102310  000000                  T37DSW: .WORD   0                       ;SELECT DRIVE 0
5963 102312                          T37BFR: .BLKW   25.                     ;MESSAGE BUFFER
5964                                 ;
5965                                 ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
5966                                 ;
5968         102400                          .=<.+10>&177770
5970 102400                          T37PK2:
5971 102400  100006                          .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
5972 102402  102420                          .WORD   T37BF2                  ;ADDRESS OF SELECT BLOCK DATA
5973 102404  000000                          .WORD   0
5974 102406  000006                          .WORD   6.                      ;SIZE OF DATA PACKET
5975
5979 102410                          T37PK3:
5980 102410  100005                          .WORD   100005                  ;REREAD COMMAND, AND ACK
5981 102412                          T37RB:
5982 102412  003116                  T37WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
5983 102414  000000                          .WORD   0
5984 102416  000000                  T37SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
5985                                         .EVEN
5986                                 ;
5987                                 ;
5988                                 ;
5989 102420                          T37BF2:
5990 102420     010                  T37BS0: .BYTE   10                      ;BSEL0 AREA
5991 102421     200                  T37BS1: .BYTE   200                     ;BSEL1 AREA
5992 102422  000000                  T37S2:  .WORD   0                       ;SEL 2 AREA
5993 102424  000000                  T37S3:  .WORD   0                       ;DATA AREA
5994                                 ;
5995                                 ;
5996                                         .EVEN
5997                                 ;TAPE MOTION PACKET COMMAND VALUES
5998
5999 102426  100205                  T37RN:  .WORD   100205                  ;REREAD DATA (NEXT)
6000 102430  100605                  T37WDR: .WORD   100605                  ;REREAD DATA RETRY
6001 102432  102205                  T37CON: .WORD   102205                  ;WRITE CONTINOUS
6002 102434  177777                          .WORD   177777                  ;END OF DATA
6003
6004                                 ;
```

TEST 9: FUNCTION TIMING

```
6005 102436  000000                T37CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
6006 102440  000000                T37CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
6007 102442  000000                T37DLY: .WORD   0                       ;DELAY COUNTER
6008                               ;*
6009                               ;LOCAL TEXT MESSAGES FOR TEST
6010                               ;*
6011
6012 102444    124   141   160   T37WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
6013 102532    124   123   123   T37RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
6014 102601    122   105   122   T37RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
6015 102676    120   117   123   T37SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
6016 102760    122   111   102   T37LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
6017 103030    124   123   123   T37WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
6018 103105    111   154   154   T37LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
6019 103166    122   105   122   T37SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
6020 103222    124   123   123   T37WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command,At BOT'
6021 103311    124   141   160   T37BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XSTO)'
6022 103404    127   122   111   T37TIM: .ASCIZ  'WRITE DATA RETRY'S Erase Tape Not Long Enough'
6023 103461    122   105   122   T37EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
6024 103540    124   123   123   T37TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
6025 103615    122   145   167   T37RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
6026 103664    122   101   115   T37RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
6027 103737    124   123   123   T37AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
6028 104006    104   162   151   T37OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
6029 104061    124   123   123   T37WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
6030 104151    124   123   123   T37WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
6031 104224    103   126   103   T37VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
6032 104277    124   123   102   T37BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
6033 104352    127   122   111   T37WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
6034 104441    122   145   141   T37LUN: .ASCIZ  'Reading Long Record Failed To Set RLU Bit In XSTO'
6035 104523    122   145   141   T37LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
6036 104605    122   145   163   T37PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
6037 104673    122   145   141   T37TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
6038 104761    127   122   111   T37NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
6039 105057    124   123   123   T37SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
6040 105134    124   123   123   T37TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
6041 105216    124   123   123   T37WRH: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command'
6042 105276    104   141   164   T37DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
6043 105373    106   165   156   TST37ID:        .ASCIZ  'Function Timing'
6044                               .EVEN
6045                               ;*
6046                               ;
6047                               ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
6048                               ;WRITE SUBSYSTEM MEMORY COMMAND
6049                               ;
6050                               ;*
6051
6052 105414                        T37REST:
6053 105414                                SAVREG                          ;SAVE THE REGISTERS
6054 105420  012701  102270                MOV     @T37PACKET,R1           ;START OF THE PACKET
6055 105424  012721  100004                MOV     @100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
6056 105430  012721  102300                MOV     @T37DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
6057 105434  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
6058 105436  012721  000012                MOV     @10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
6059 105442  012721  102512                MOV     @T37BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
6060 105446  005021                        CLR     (R1)+
6061 105450  012721  000024                MOV     @20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
```

TEST 9: FUNCTION TIMING

```
6062 105454  005021                        CLR     (R1)+
6063 105456  012711  000000                MOV     #0,(R1)                 ;SELECT DRIVE ZERO
6064 105462  012702  000030                MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
6065 105466  012762  177777  102312  64$:  MOV     #177777,T37BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
6066 105474  005742                        TST     -(R2)                   ;NEXT LOCATION
6067 105476  022702  000000                CMP     #0,R2                   ;AT END OF LOOP YET
6068 105502  001371                        BNE     64$                     ;KEEP GOING UNTIL DONE
6069 105504  000207                        RTS     PC                      ;RETURN
6070
6071 105506                        T37RT2:
6072 105506                                SAVREG                          ;SAVE THE REGISTERS
6073 105512  012701  102400                MOV     #T37PK2,R1              ;START OF THE PACKET
6074 105516  012721  100006                MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
6075 105522  012721  102420                MOV     #T37BF2,(R1)+           ;ADDRESS OF DATA BLOCK
6076 105526  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
6077 105530  012721  000006                MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
6078 105534  005021                        CLR     (R1)+
6079 105536  012701  102420                MOV     #T37BF2,R1              ;POINT TO DATA SEL AREA
6080 105542  005021                        CLR     (R1)+
6081 105544  005011                        CLR     (R1)
6082 105546  000207                        RTS     PC                      ;RETURN
6083 105550                        T37RT3:
6084 105550                                SAVREG                          ;SAVE REGISTERS
6085 105554  012701  102410                MOV     #T37PK3,R1              ;SET UP POINTER ADDRESS
6086 105560  005021                        CLR     (R1)+                   ;COMMAND SPACE
6087 105562  005021                        CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
6088 105564  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
6089 105566  005011                        CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
6090 105570  000207                        RTS     PC                      ;RETURN
6091 105572                                ENDTST
     105572                        L10073:
     105572  104401                        TRAP    C$ETST
6092 105574                        ENDMOD
```

TEST 9: FUNCTION TIMING

```
                                        .TITLE  TSV6   PARAMETER CODING


                                        BGNMOD  TSV6
                                TSV6::

                                        .SBTTL  HARDWARE PARAMETER CODING SECTION

                                ;++
                                ; THE HARDWARE 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.
                                ;--
                                        BGNHRD
105574  000010                          .WORD L10075-L$HARD/2
105576                          L$HARD::

                                        GPRMA   HPM1,0,0,160010,177776,YES      ;GET TSBA/TSDB REGISTER ADDRESS.
105576  000031                          .WORD   T$CODE
105600  105616                          .WORD   HPM1
105602  160010                          .WORD   T$LOLIM
105604  177776                          .WORD   T$HILIM
                                        GPRMA   HPM2,2,0,0,776,YES              ;GET VECTOR ADDRESS.
105606  001031                          .WORD   T$CODE
105610  105652                          .WORD   HPM2
105612  000000                          .WORD   T$LOLIM
105614  000776                          .WORD   T$HILIM
                                        ;GPRMD  HPM3,4,0,340,0,7,YES            ;GET INTERRUPT PRIORITY.
                                        ENDHRD
                                        .EVEN
105616                          L10075:
105616  104     105     126     HPM1:   .ASCIZ  'DEVICE ADDRESS (TSBA/TSDB) '
105652  111     116     124     HPM2:   .ASCIZ  'INTERRUPT VECTOR    '
105676  111     116     124     HPM3:   .ASCIZ  'INTERRUPT PRIORITY      '
                                        .EVEN
```

```
                                        .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.
                                ;--
105726                                  BGNSFT
105726  000003                          .WORD L10076-L$SOFT/2
105730                          L$SOFT::
                                ;       GPRML   SPM1,0,-1,YES                   ; GET TRANSPORT TEST FLAG.
105730                                  GPRML   SPM4,2,-1,YES                   ; GET ITERATION CONTROL.
105730  001130                          .WORD   T$CODE
105732  105766                          .WORD   SPM4
105734  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
105736                                  ENDSFT
                                        .EVEN
105736                          L10076:

105736  105  116  101  SPM1:    .ASCIZ  'ENABLE TRANSPORT TESTS '
105766  111  116  110  SPM4:    .ASCIZ  'INHIBIT ITERATIONS     '
106016  120  105  122  SPM6:    .ASCIZ  'PER TEST ERROR LIMIT   '
106046  120  105  122  SPM7:    .ASCIZ  'PER UNIT ERROR LIMIT   '
                                .SBTTL  PATCH AREA

                                ;
                                ; FINALLY A GENEROUS PATCH AREA.
                                ;
                                ; AND AN ADJUSTMENT TO ACCOUNT FOR THE "LASTAD BIT7" HACK
                                ; DESCRIBED IN "SUPPRG.MEM" (FOR REV C).
                                ;
106076                          PATCH::

106076                                  .BLKW   32.

                                        .=.!377+1
106400                                  LASTAD          ;SET LAST USED ADDRESS.
106400                                  .EVEN
106400  000000                          .WORD   0
106402  000000                          .WORD   0
106404                          L$LAST::
106404                                  ENDMOD
000001                                  .END
```

SYMBOL TABLE

```
ADDSSR  012206 G      C$AU   = 000052      DEVDRO  023504        FRESIZ  003120 G      INTFLA  016225
ADR     = 000020 G    C$AUTO= 000061       DEVNRD  023423        FUSI    004113        INTMAS  016224
AMBTSS  006713        C$BRK  = 000022      DEVNXR  023341        F$AU   = 000015       INTR    016276 G
ASSEMB= 000010        C$BSEG= 000004       DEVONL  023271        F$AUTO= 000020        INTREC  002216 G
A1716  = 000003       C$BSUB= 000002       DEVSUM  023234        F$BGN  = 000040       INTVEC  016226
BADDAT  003150 G      C$CEFG= 000045       DFPTBL  002150 G      F$CLEA= 000007        INTX    004274
BADSSR  015760 G      C$CLCK= 000062       DIAGMC= 000000        F$DU   = 000016       INVERT  021266 G
BDVPCR= 177520 G      C$CLEA= 000012       DICED  = 000001       F$END  = 000041       IOKCKI= 000200
BENBSW  002222 G      C$CLOS= 000035       DSBINT  016264        F$HARD= 000004        IOKSTP= 000001
BIE    = 040000       C$CLP1= 000006       DUAD12  004637        F$HW   = 000013       IPRI    002204 G
BIT0   = 000001 G     C$CVEC= 000036       DUFLG   003104 G      F$INIT= 000006        ISR    = 000100 G
BIT00  = 000001 G     C$DCLN= 000044       DUMMY   003054        F$JMP  = 000050       IVEC    002202 G
BIT01  = 000002 G     C$DODU= 000051       EF.CON= 000036 G      F$MOD  = 000000       IXE    = 004000 G
BIT02  = 000004 G     C$DRPT= 000024       EF.NEW= 000035 G      F$MSG  = 000011       I$AU   = 000041
BIT03  = 000010 G     C$DU   = 000053      EF.PWR= 000034 G      F$PROT= 000021        I$AUTO= 000041
BIT04  = 000020 G     C$EDIT= 000093       EF.RES= 000037 G      F$PWR  = 000017       I$CLN  = 000041
BIT05  = 000040 G     C$ERDF= 000055       EF.STA= 000040 G      F$RPT  = 000012       I$DU   = 000041
BIT06  = 000100 G     C$ERHR= 000056       EMAXDU  017057        F$SEG  = 000003       I$HRD  = 000041
BIT07  = 000200 G     C$ERRO= 000060       EN     = 000000       F$SOFT= 000005        I$INIT= 000041
BIT08  = 000400 G     C$ERSF= 000054       ENAINT  016232        F$SRV  = 000010       I$MOD  = 000041
BIT09  = 001000 G     C$ERSO= 000057       ENVIRN  020710        F$SUB  = 000002       I$MSG  = 000041
BIT1   = 000002 G     C$ESCA= 000010       EPRTSW  002172 G      F$SW   = 000014       I$PROT= 000040
BIT10  = 002000 G     C$ESEG= 000005       EPRT1   006354        F$TEST= 000001        I$PTAB= 000041
BIT11  = 004000 G     C$ESUB= 000003       EPRT2   006413        GDDAT   003152 G      I$PWR  = 000041
BIT12  = 010000 G     C$ETST= 000001       ERCM    012013        GERRMA  002166 G      I$RPT  = 000041
BIT13  = 020000 G     C$EXIT= 000032       ERRHI   002230 G      GETPAT  020254 G      I$SEG  = 000041
BIT14  = 040000 G     C$GETB= 000026       ERRK    017036        GETSEL  020336 G      I$SETU= 000041
BIT15  = 100000 G     C$GETW= 000027       ERRLO   002232 G      G$CNTO= 000200        I$SFT  = 000041
BIT2   = 000004 G     C$GMAN= 000043       ERRNO  = 001620       G$DELM= 000372        I$SRV  = 000041
BIT3   = 000010 G     C$GPHR= 000042       ERRVEC= 000004 G      G$DISP= 000003        I$SUB  = 000041
BIT4   = 000020 G     C$GPLO= 000030       ERTABE  003370        G$EXCP= 000400        I$TST  = 000041
BIT5   = 000040 G     C$GPRI= 000040       ERTABL  003170        G$HILI= 000002        J$JMP  = 000167
BIT6   = 000100 G     C$INIT= 000011       ESUM    017040        G$LOLI= 000001        KIPAR0= 172340
BIT7   = 000200 G     C$INLP= 000020       EVL    = 000004 G     G$NO   = 000000       KIPAR1= 172342
BIT8   = 000400 G     C$MANI= 000050       EXBCNT= 000010        G$OFFS= 000400        KIPAR2= 172344
BIT9   = 001000 G     C$MEM  = 000031      EXPBRE  015562 G      G$OFSI= 000376        KIPAR3= 172346
BOE    = 000400 G     C$MSG  = 000023      EXPD    002224 G      G$PRMA= 000001        KIPAR4= 172350
BRINIT  004453        C$OPEN= 000034       EXPGOT  004527        G$PRMD= 000002        KIPAR5= 172352
BSEL0  = 000000       C$PNTB= 000014       EXPGT2  004563        G$PRML= 000000        KIPAR6= 172354
BSEL1  = 000001       C$PNTF= 000017       EXPMSG  002314 G      G$RADA= 000140        KIPAR7= 172356
CHKAMB  016124        C$PNTS= 000016       EXPREC  015554 G      G$RADB= 000000        KIPDR0= 172300
CHKMAN  020560 G      C$PNTX= 000015       EXTA    005766        G$RADD= 000040        KIPDR1= 172302
CHKTSS  016416        C$QIO  = 000377      EXTEND  005764        G$RADL= 000120        KIPDR2= 172304
CKDROP  017262        C$PDBU= 000007       EXTFEA  002220 G      G$RADO= 000020        KIPDR3= 172306
CKEMAX  017162        C$REFG= 000047       E$END  = 002100       G$XFER= 000004        KIPDR4= 172310
CKMSG   011440 G      C$RESE= 000033       E$LOAD= 000035        G$YES  = 000010       KIPDR5= 172312
CKMSG2  011560 G      C$REVI= 000003       FATERR= 000060        HIADDR= 001400        KIPDR6= 172314
CKRAM   011174 G      C$RFLA= 000021       FATFLG  002214 G      HOE    = 100000 G     KIPDR7= 172316
CKRAM2  011304 G      C$RPT  = 000025      FERCH   012002        HPM1    105616        KTENAB  003126 G
CMDPKT  021340 G      C$SEFG= 000046       FIFEXP  012250 G      HPM2    105652        KTFLG   003124 G
CMPMEM  017740        C$SPRI= 000041       FIF1MS  012322        HPM3    105676        KTINIT  021134
CONFIG  017330        C$SVEC= 000037       FIF2MS  012371        IBE    = 010000 G     KTOFF   017354
COUNT   002302 G      C$TPRI= 000013       FILLME  017502        IDU    = 000040 G     KTON    017336
CSRADD  002200 G      DATA    002304 G     FNOINT  004211        IER    = 020000 G     LERRMA  002164 G
CTAB    003156 G      DATASC  020312        FORCER  002170 G      IFAULT  004252        LISTAL= 000001
CTABE   003170 G      DEBUGM  011712        FREE    003116 G      INCERR  017124        LOE    = 040000 G
CTABM   003156 G      DEVCNT  002212 G     FREEHI  003122        INTCPC  016230        LOOPCN  002210 G
```

SYMBOL TABLE

```
LOOPCO  013206          L10001  002170          L10073  105572          O$ERRT= 000000          PST32W  003144 G
LOOPFL  003154 G        L10002  005762          L10074  102232          O$GNSW= 000001          PUNIT   022412
LOT     = 000010 G      L10003  012124          L10075  105616          O$POIN= 000001          PW.D11= 000021
L$ACP   002110 G        L10004  012142          L10076  105736          O$SETU= 000000          PW.D13= 000022
L$APT   002036 G        L10005  012160          MEMADD  014034 G        PASRPT  022162          PW.D22= 000020
L$AU    022460 G        L10006  012166          MEMCK   021356 G        PATCH   106076 G        PW.NOP= 000000
L$AUT   002070 G        L10007  012204          MENASC  020527          PATDAT  020310          PW.NO1= 000023
L$AUTO  022664 G        L10010  012222          MENERR  020454          PC.ERA= 002400          PW.RDE= 000024
L$CCP   002106 G        L10011  012246          MENRES  020556          PC.IER= 002000          PW.RDR= 000001
L$CLEA  022744 G        L10012  012320          MMVEC = 000250          PC.NOO= 001000          PW.RDS= 000005
L$CU    002032 G        L10013  012470          MSA.FR= 000006          PC.REL= 000000          PW.RFI= 000003
L$DEPO  002011 G        L10014  013204          MSA.NO= 000000          PC.REW= 000400          PW.WCT= 000006
L$DESC  003402 G        L10015  014032          MSA.NR= 000004          PKBCNT= 000006          PW.WFI= 000004
L$DESP  002076 G        L10016  014054          MSA.VO= 000002          PKHI  = 000004          PW.WFM= 000007
L$DEVP  002060 G        L10017  015560          MSGEXP  012224 G        PKLOW = 000002          PW.WMI= 000010
L$DISP  002124 G        L10020  015566          MSGLOO  013144 G        PKTADD  007632          PW.WNP= 000011
L$DLY   002116 G        L10021  015574          MSGSTA  012430 G        PKTFRM  007574          PW.WTR= 000002
L$DTP   002010 G        L10022  015600          MSGSUB  014022 G        PKTGET  012144 G        P.ACK = 100000
L$DTYP  002034 G        L10023  015630          MS.ATT= 000006          PKTMES  012170 G        P.CMD = 000037
L$DU    022556 G        L10024  015656          MS.EXT= 000200          PKTRAM  004741 G        P.CONT= 000012
L$DUT   002072 G        L10025  016016          MS.RSD= 000001          PKTSSR  012126 G        P.CVC = 040000
L$DVTY  003374 G        L10026  016326          MS.RSF= 000020          PNT   = 001000 G        P.FMT = 000140
L$EF    002052 G        L10030  022410          MS.RST= 000010          PRAMPK  014056          P.FORM= 000011
L$ENVI  002044 G        L10031  022554          M8186   005550          PRASC   014603          P.GETS= 000017
L$ETP   002102 G        L10032  022662          M8189   005641          PRBEXP  015550          P.IE  = 000200
L$EXP1  002046 G        L10033  022742          NBA   = 002000          PRBMSG  015416          P.INIT= 000013
L$EXP4  002064 G        L10034  022770          NEWPAS  022116          PRBREC  015552          P.MODE= 007400
L$EXP5  002066 G        L10035  023232          NODEV   003106 G        PRBTOT  015503          P.OPP = 020000
L$HARD  105576 G        L10036  032362          NOINIT  004331          PRBYTE  015202 G        P.POSI= 000010
L$HIME  002120 G        L10037  024216          NOINTR  004215          PRI   = 002000 G        P.READ= 000001
L$HPCP  002016 G        L10040  024740          NOITS   002162 G        PRIADD  010236          P.SWB = 010000
L$HPTP  002022 G        L10041  025464          NOMAN   020614          PRIAO   010306          P.WRIT= 000005
L$HW    002150 G        L10042  026306          NOMEM   005454          PRIBXO  007670 G        P.WRTC= 000004
L$ICP   002104 G        L10043  041460          NP.IR = 000200          PRIEQU  010136          P.WRTS= 000006
L$INIT  021636 G        L10044  033764          NP.LOO= 000040          PRIPKT  007446 G        QVP     002176 G
L$LADP  002026 G        L10045  035410          NP.OUT= 000100          PRIRAM  010144          RAMASC  014236
L$LAST  106404 G        L10046  036004          NP.WRP= 000020          PRITAD  010352          RAMDAT  002234 G
L$LOAD  002100 G        L10047  036470          NSI     004146          PRITSS  006020          RAMERR  015570 G
L$LUN   002074 G        L10050  047016          NSINIT  004403          PRITO   010434          RAMEXP  015610 G
L$MREV  002050 G        L10051  042352          NUL     004523          PRIT1   010477          RAMFOR  010174
L$NAME  002000 G        L10052  043164          NULCR   004524          PRIXOR  010020 G        RAMSIZ  002274 G
L$PRIO  002042 G        L10053  053074          NXM   = 004000          PRIO0 = 000000 G        RAMTAD  015576 G
L$PROT  021626 G        L10054  047372          NXMFLG  003130 G        PRIO1 = 000040 G        RCVHIA  002276 G
L$PRT   002112 G        L10055  050502          NXMHI   003134 G        PRIO2 = 000100 G        RCVLOA  002300 G
L$REPP  002062 G        L10056  051316          NXMLO   003132 G        PRIO3 = 000140 G        RDERR   005202
L$REV   002010 G        L10057  056070          NXMTST  021532          PRIO4 = 000200 G        RECMSG  002460 G
L$RPT   022772 G        L10060  054536          NXR     003734          PRIO5 = 000240 G        RECV    002226 G
L$SOFT  105730 G        L10061  063442          NXRERR  005732 G        PRIO6 = 000300 G        REGSAV  020220
L$SPC   002056 G        L10062  060526          NXRX    003773          PRIO7 = 000340 G        RETERR  005366
L$SPCP  002020 G        L10063  073372          NXTU    022130          PRMESS  014322          REWIND  011074 G
L$SPTP  002024 G        L10064  064534          OFL   = 000100          PRMNO   002312 G        RMCHBE= 000167
L$STA   002030 G        L10065  065614          ONEFIL= 000000          PRMSGE  014632 G        RMCHEN= 000200
L$SW    002150 G        L10066  066456          O$APTS= 000000          PRMSGO  015012          RMMSGB= 000215
L$TEST  002114 G        L10067  067360          O$AU  = 000001          PRMSG1  015057          RMMSGE= 000234
L$TIML  002014 G        L10070  101146          O$BGNR= 000001          PRMSG2  015115          RMPKTB= 000201
L$UNIT  002012 G        L10071  074466          O$BGNS= 000001          PROASC  014500          RMPKTE= 000210
L10000  002156          L10072  075550          O$DU  = 000001          PR1ASC  014545          RMR   = 010000
```

SEQ 0219

SYMBOL TABLE

```
RWPACK  011170          S2.INR= 000020          T$EXCP= 000000          T29CON  026512          T30BOT  040071
SC    = 100000          S2.OUT= 000040          T$FLAG= 000040          T29DAT  026360          T30BS0  036660
SCE   = 020000          S2.UND= 000003          T$GMAN= 000000          T29DLY  026530          T30BS1  036661
SCHERR  005274          TBLEND= 003054 G        T$HILI= 000776          T29DSW  026370          T30CNT  036700
SCME    005007          TCOASC  006554          T$LAST= 000001          T29DTA  030073          T30CNO  036702
SDELAY  010740          TCOCOD  006754          T$LOLI= 000000          T29EOT  030161          T30DAT  036540
SELASC  020522          TEMP1   003110 G        T$LSYM= 010000          T29LON  031255          T30DLY  036706
SELDAT= 000004          TEMP2   003112 G        T$LTNO= 000011          T29LOO  023604          T30DSW  036550
SEL2  = 000002          TERCLS= 000016          T$NEST= 177777          T29LOP  031337          T30DTA  041164
SETMAP  017376          TESTNO= 000011          T$NS0 = 000000          T29LOQ  027456          T30DTR  041120
SETU    022214          TEXASC  006513          T$NS1 = 000005          T29LOR  027331          T30ETM  036546
SFFMSG  012162 G        TFCASC  006615          T$NS2 = 000002          T29NEF  026660          T30FCN  036704
SFHERR  003701          TIMEXP  015632 G        T$PTNO= 000000          T29NEQ  031575          T30IBT  037061
SFIERR  003646          TIMSGO  015660          T$SAVL= 177777          T29OFL  026532          T30IBU  036710
SFIMSG  012114 G        TINERR  012101          T$SEGL= 177777          T29OF7  030545          T30IMV  036666
SFPTBL  002160 G        TMPBFR  002624 G        T$SUBN= 000001          T29PAC  026350          T30LOO  032410
SIFLAG  003146 G        TNAM    016764          T$TAGL= 177777          T29PBP  031421          T30LOQ  037660
SIMSG   012046          TRANST  002160 G        T$TAGN= 010077          T29PK2  026460          T30NEF  040626
SKIPT   003372          TSBA  = 000000 G        T$TEMP= 000000          T29PK3  026470          T30OFL  040337
SOFINI  016054 G        TSBAH = 000001 G        T$TEST= 000011          T29RB   026472          T30PAC  036530
SPACE   010544 G        TSDB  = 000000 G        T$TSTM= 177777          T29RDF  026750          T30PK2  036640
SPM1    105736          TSDBH = 000001 G        T$TSTS= 000001          T29RDG  031673          T30PK3  036650
SPM4    105766          TSFCOD  007314          T$$AU = 010031          T29RES  032176          T30PTB  037272
SPM6    106016          TSREJ = 000006          T$$AUT= 010033          T29RIB  031754          T30RB   036652
SPM7    106046          TSSDEF  006664          T$$CLE= 010034          T29RN   026506          T30RDF  037443
SR0   = 177572          TSSR  = 000002 G        T$$DU = 010032          T29RNC  030404          T30RDG  037521
SR1   = 177574          TSSRBI  003476 G        T$$HAR= 010075          T29RRF  027017          T30RES  041302
SR2   = 177576          TSSRFO  006473          T$$HW = 010000          T29RRG  027133          T30RIB  036775
SR3   = 172516          TSSRH = 000003 G        T$$INI= 010030          T29RRN  032054          T30RN   036666
SSR   = 000200          TSSX    004014          T$$MSG= 010025          T29RSZ  026526          T30RRM  040705
STATCO  012472          TSTBLK  002744 G        T$$PRO= 010027          T29RT2  032270          T30RRN  040763
SVCGBL= 000000          TSTCNT  002206 G        T$$RPT= 010035          T29RT3  032332          T30RRP  041042
SVCINS= 000000          TSTEND  017000          T$$SOF= 010076          T29RWN  030335          T30RT2  041374
SVCSUB= 000001          TSTFLA  002306 G        T$$SRV= 010026          T29SC   027247          T30RT3  041436
SVCTAG= 000000          TSTLOO  016536 G        T$$SUB= 010074          T29SSR  027537          T30RWN  040270
SVCTST= 000001          TSTPTR  002310 G        T$$SW = 010001          T29SZ   026476          T30SKM  037144
S$LSYM= 010000          TSTSET  016570 G        T$$TES= 010073          T29S2   026502          T30SSR  037741
S0.IDB= 000010          TST29I  032147          T1      023554 G        T29S3   026504          T30SZ   036656
S0.IFB= 000002          TST30I  041261          T1.1    023604          T29TM   030257          T30S2   036662
S0.IFP= 000001          TST31I  046573          T1.2    024234          T29TRL  031507          T30S3   036664
S0.ILD= 000020          TST32I  052670          T1.3    024756          T29VCK  031021          T30TM   040136
S0.ION= 000040          TST33I  055675          T1.4    025502          T29WB   026472          T30TMK  040544
S0.IRD= 000100          TST34I  063237          T2      032364 G        T29WDC  030727          T30TM2  040213
S0.IRW= 000004          TST35I  073163          T2.1    032410          T29WDD  030620          T30TPB  037363
S0.ISP= 000200          TST36I  100747          T2.2    034002          T29WDE  027612          T30VCK  040471
S1.ICE= 002000          TST37I  105373          T2.3    035426          T29WDF  027401          T30WB   036652
S1.IEO= 010000          TSV2    002000 G        T2.4    036022          T29WDR  026510          T30WDC  040412
S1.IFM= 001000          TSV3    002170 G        T23A    003136 G        T29WLK  027674          T30WDD  037220
S1.IHE= 000400          TSV4    021626 G        T23B    003140 G        T29WNG  026553          T30WDE  040012
S1.IID= 004000          TSV6    105574 G        T29AM3  030457          T29WRT  027761          T30WDF  037603
S1.I1R= 020000          TSV7B   023554 G        T29BA   031074          T29WSS  031166          T31AM3  045046
S1.I2R= 040000          TTIBFR= 177562 G        T29BFR  026372          T3      041462 G        T31BA   045406
S1.PAR= 100000          TTICSR= 177560 G        T29BF2  026500          T3BFLG  003142 G        T31BFR  043242
S2.ATI= 000010          TTIVEC= 000060 G        T29BOT  030026          T3.1    041512          T31BF2  043350
S2.BTI= 000004          T$ARGC= 000003          T29BS0  026500          T3.2    042370          T31BOT  044375
S2.DIM= 000200          T$CODE= 001130          T29BS1  026501          T30BFR  036552          T31BS0  043350
S2.ILW= 000100          T$ERRN= 001620          T29CNT  026524          T30BF2  036660          T31BS1  043351
```

SEQ 0220

SYMBOL TABLE

T31CNT	043366	T32CNU	05154(	T34BA	063076	T35CON	067562	T36BS1	075741
T31CNU	043370	T32DAT	051370	T34BFR	060612	T35DAT	067430	T36CNT	075756
T31CON	043362	T32DLY	051544	T34BF2	060726	T35DLY	067572	T36CNU	075760
T31DAT	043230	T32DSW	051400	T34BOT	061264	T35DSW	067440	T36CON	075752
T31DLY	043372	T32ECF	052505	T34BSO	060726	T35DTA	072355	T36DAT	07[illegible]
T31DSW	043240	T32EOT	051641	T34BS1	060727	T35EOT	070540	T36DLY	07[illegible]
T31DTA	046476	T32ERA	052046	T34CNT	060722	T35INT	072631	T36DSW	075630
T31EOT	044570	T32LOO	047050	T34CON	060740	T35LON	071520	T36DTA	100652
T31LON	045550	T32UPI	052633	T34DAT	060600	T35LOO	063474	T36EOT	077035
T31LOO	041512	T32PAC	051360	T34DLY	060724	T35LOP	071602	T36LON	100015
T31LOP	045632	T32PK2	051470	T34DSW	060610	T35LOQ	70235	T36LOO	073430
T31LOQ	044146	T32PK3	051500	T34EOT	062235	T35LOR	070110	T36LOP	100077
T31LOR	044021	T32RB	051502	T34ET	062146	T35MOT	072533	T36LOQ	076476
T31NEF	046070	T32RES	052730	T34ETC	061207	T35NEF	072040	T36LOR	076351
T31OFL	045115	T32RIB	052166	T34ETN	061501	T35NIN	073106	T36NAS	075764
T31PAC	043220	T32RT2	053022	T34ETO	061032	T35OFL	071065	T36NEF	100335
T31PBP	045714	T32RT3	053052	T34ETS	061560	T35OPM	072722	T36OFL	077362
T31PK2	043330	T32RWN	051730	T34ETZ	061652	T35PAC	067420	T36PAC	075610
T31PK3	043340	T32SCF	052264	T34ET2	061417	T35PBP	071664	T36PBP	100161
T31RB	043342	T32SZ	051506	T34LOO	056122	T35PK2	067530	T36PK2	075720
T31RDE	043374	T32TSA	052341	T34OFL	062557	T35PK3	067540	T36PK3	075730
T31RDF	043573	T32WB	051502	T34PAC	060570	T35RB	067542	T36RB	075732
T31RES	046640	T32WDC	052566	T34PK2	060700	T35RDF	067662	T36RDF	076123
T31RN	043356	T33BFR	054622	T34PK3	060710	T35RES	073214	T36RES	100770
T31RNC	044773	T33BF2	054730	T34POS	060744	T35RN	067556	T36RN	075746
T31RRF	043642	T33BOT	055355	T34RB	060712	T35RNC	070743	T36RNC	077240
T31RT2	046732	T33BSO	054730	T34RES	063262	T35RRF	067731	T36RRF	076172
T31RT3	046774	T33BS1	054731	T34RNC	062436	T35RT2	073306	T36RT2	101062
T31RWN	044724	T33CNT	054746	T34RRF	061116	T35RT3	073350	T36RT3	101124
T31SC	043737	T33CNU	054750	T34RSZ	060720	T35RWE	073020	T36RWN	077171
T31SCF	046211	T33CON	054742	T34RT2	063354	T35RWN	070674	T36SC	076267
T31SSR	044227	T33DAT	054610	T34RT3	063416	T35SC	070026	T36SCF	100433
T31SZ	043346	T33DLY	054752	T34RWN	062367	T35SCF	072136	T36SSR	076557
T31S2	043352	T33DSW	054620	T34SSR	062113	T35SSR	072452	T36SZ	075736
T31S3	043354	T33DTA	055600	T34STM	061730	T35SZ	067546	T36S2	075742
T31TIM	044470	T33LOO	053176	T34SZ	060716	T35S2	067552	T36S3	075744
T31TM	044647	T33PAC	054600	T34S2	060730	T35S3	067554	T36TIM	076760
T31TRL	046002	T33PK2	054710	T34S3	060732	T35TIM	070463	T36TM	077114
T31TSA	046266	T33PK3	054720	T34TM	062313	T35TM	070617	T36TRL	100247
T31VCK	045333	T33RB	054722	T34TMK	062013	T35TRL	071752	T36TSA	100510
T31WB	043342	T33RBP	054754	T34VCK	063023	T35TSA	072213	T36VCK	077600
T31WDC	045260	T33RES	055712	T34WB	060712	T35VCK	071303	T36WB	075732
T31WDD	045170	T33RN	054736	T34WD	060734	T35WB	067542	T36WDC	077525
T31WDE	044263	T33RT2	056004	T34WDC	062721	T35WDC	071230	T36WDD	077435
T31WDF	044071	T33RT3	056046	T34WDD	062632	T35WDD	071140	T36WDE	076613
T31WDR	043360	T33RWN	055450	T34WDR	060736	T35WDE	070316	T36WDF	076421
T31WNG	043521	T33SSR	055271	T34WSS	063150	T35WDF	070160	T36WDR	075750
T31WNH	043440	T33SZ	054726	T34WTM	061330	T35WDR	067560	T36WNG	076035
T31WRF	046373	T33S2	054732	T35AM3	071016	T35WNG	067574	T36WRF	100572
T31WSS	045461	T33S3	054734	T35BA	071356	T35WRF	072275	T36WSS	077726
T32AM3	051777	T33UNC	055112	T35BFR	067442	T35WSS	071431	T37AM3	103737
T32BA	052113	T33UND	055202	T35BF2	067550	T36AM3	077313	T37BA	104277
T32BFR	051402	T33WB	054722	T35BOT	070370	T36BA	077653	T37BFR	102312
T32BOE	052416	T33WDC	055517	T35BSO	067550	T36BFR	075632	T37BF2	102420
T32BOT	051546	T33WDR	054740	T35BS1	067551	T36BF2	075740	T37BOT	103311
T32CMD	051510	T33WPW	055032	T35CNT	067566	T36BOT	076665	T37BSO	102420
T32CNT	05154C	T34AM3	062511	T35CNU	067570	T36BSO	075740	T37BS1	102421

SYMBOL TABLE

```
T37CNT  102436        T37SSR  103166        T4.4    066474        WSMBK   021350 G      X$OFFS= 000400
T37CNU  102440        T37S2   102416        T8      073374 G      XFERAS  016020        X$TRUE= 000020
T37CON  102432        T37S2   102422        T8.1    073430        XNXM    016456        X1.COR= 020000
T37DAT  102300        T37S3   102424        T8.2    074504        XORBFO  007752        X1.DLT= 100000
T37DLY  102442        T37TIM  103404        T9      101150 G      XORFOR  010070        X1.MBZ= 017375
T37DSW  102310        T37TM   103540        T9.1    101204        XST0  = 000006 G      X1.RBP= 000400
T37DTA  105276        T37TRL  104673        TAM   = 000200 G      XST1  = 000010 G      X1.SPA= 040000
T37EOT  103461        T37TSA  105134        UNITN   002174 G      XST2  = 000012 G      X1.UNC= 000002
T37LON  104441        T37VCK  104224        UNREC = 000006        XST3  = 000014 G      X2.BUF= 000100
T37LOO  101204        T37WB   102412        UST     004117        XST4  = 000016 G      X2.EXT= 000200
T37LOP  104523        T37WDC  104151        WAITF   016330 G      XSOBOT= 000002        X2.OPM= 100000
T37LOQ  103105        T37WDD  104061        WC.IFA= 000200        XSOEOT= 000001        X2.RCE= 040000
T37LOR  102760        T37WDE  103222        WC.IFE= 000002        XSOIE = 000040        X2.REV= 000077
T37NEF  104761        T37WDF  103030        WC.IGO= 000001        XSOILA= 000400        X2.SPA= 035400
T37OFL  104006        T37WDR  102430        WC.IRE= 000010        XSOILC= 001000        X2.UNI= 000007
T37PAC  102270        T37WNG  102444        WC.IRW= 000004        XSOLET= 020000        X2.WCF= 002000
T37PBP  104605        T37WRF  105216        WC.IOT= 000100        XSOMOT= 000200        X3.DCK= 000010
T37PK2  102400        T37WSS  104352        WC.IIT= 000040        XSONEF= 002000        X3.MBZ= 000006
T37PK3  102410        T4      047020 G      WC.ISR= 000020        XSOONL= 000100        X3.MDE= 177400
T37RB   102412        T4.1    047050        WF.IED= 000010        XSOPED= 000010        X3.OPI= 000100
T37RDF  102532        T4.2    047710        WF.IER= 000004        XSORLL= 010000        X3.REV= 000040
T37RES  105414        T4.3    050520        WF.IHI= 000200        XSORLS= 040000        X3.RIB= 000001
T37RN   102426        T5      053076 G      WF.IRE= 000040        XSOTMK= 100000        X3.SPA= 000200
T37RNC  103664        T5.1    053126        WF.IWF= 000020        XSOVCK= 000020        X3.TRF= 000020
T37RRF  102601        T6      056072 G      WF.IWR= 000100        XSOWLE= 004000        X4.HSP= 100000
T37RT2  105506        T6.1    056122        WF.I3R= 000002        XSOWLK= 000004        X4.MBZ= 017400
T37RT3  105550        T7      063444 G      WF.I4R= 000001        XXCOMM  003114 G      X4.RCE= 040000
T37RWN  103615        T7.1    063474        WRTCHR  010742 G      X$ALWA= 000000        X4.TSM= 020000
T37SC   102676        T7.2    064552        WRTERR  005107        X$FALS= 000040        X4.WRC= 000377
T37SCF  105057        T7.3    065632        WRTMSG  005052

. ABS.   106404      000
         000000      001
ERRORS DETECTED:  0

VIRTUAL MEMORY USED:  31520 WORDS  ( 124 PAGES)
DYNAMIC MEMORY:  20060 WORDS  ( 77 PAGES)
ELAPSED TIME:  00:08:39
CNTSDAO.BIC,CNTSDAO.SEQ/-SP=SVC34/ML,TSV1D,TSV22D,TSV3B,TSV4,TSV7B,TSV6
.
```

....B1
....C1
....D1
....E1
....F1
....G1
....H1
....I1
....J1
....K1
....L1
....M1
....N1

....B2