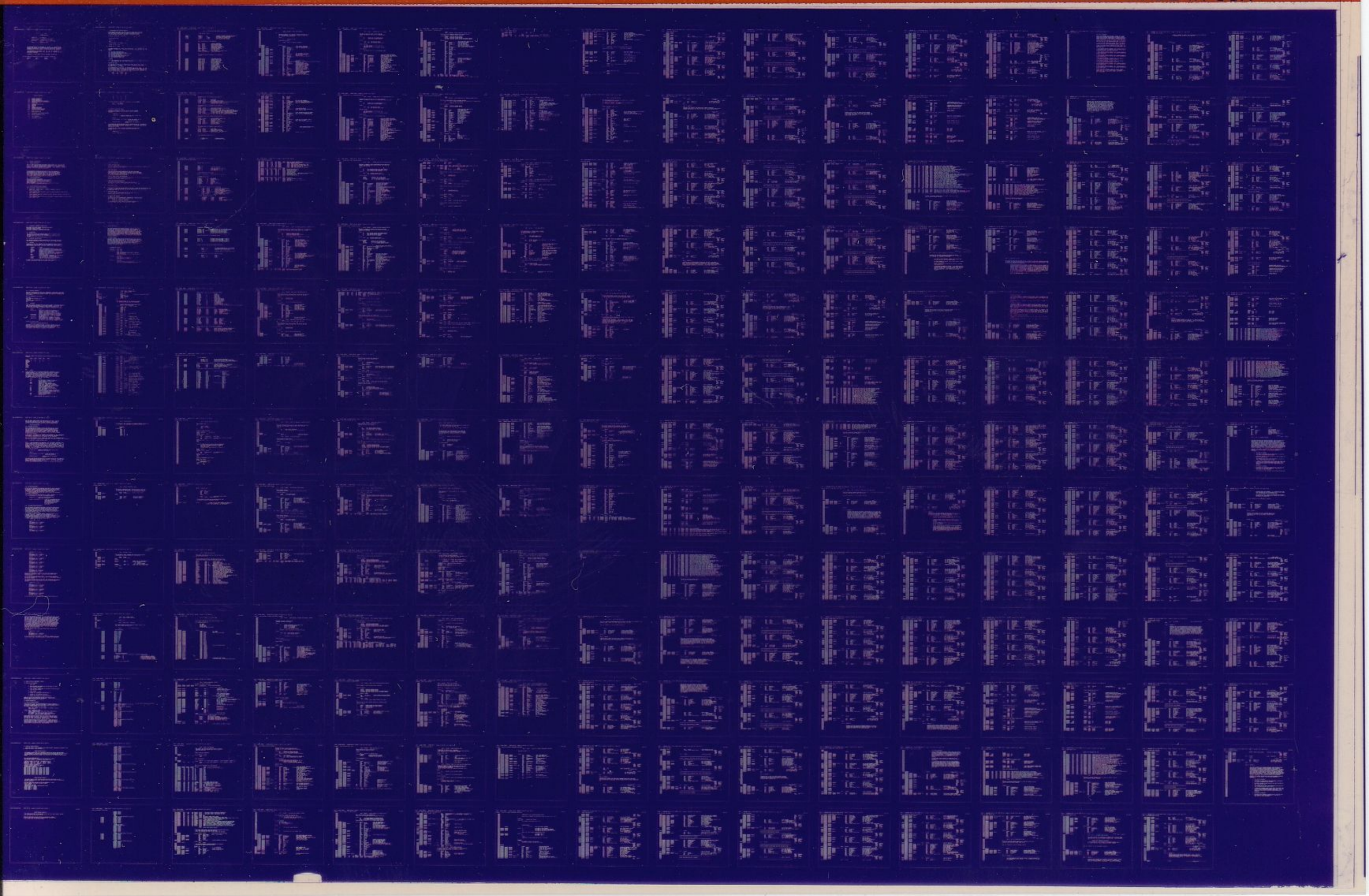
TSV05

TSV05 CONTROL PART 4
CVTSDD0

AH-T100D-MC
1 OF 2 JAN 1986
 MADE IN USA

digital



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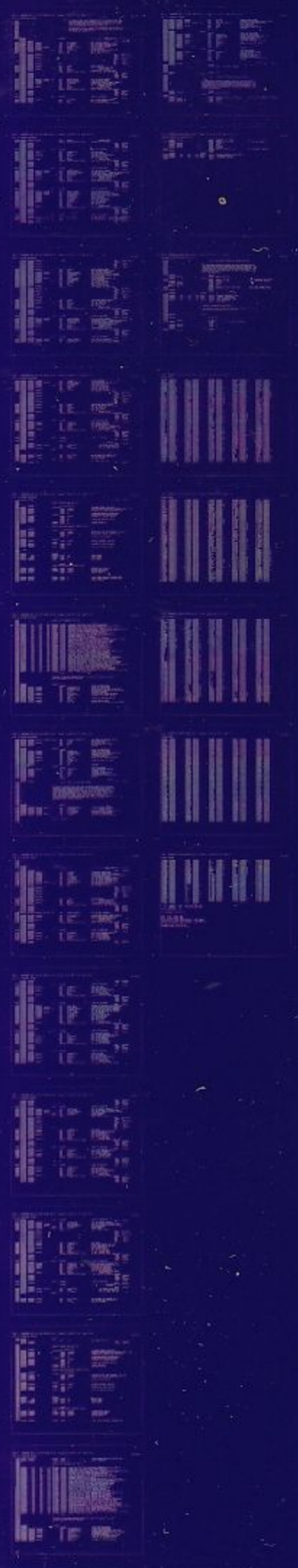

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IDENTIFICATION

PRODUCT ID: AC-T099D-MC

PRODUCT TITLE: CVTSDDO TSV05 CTRL PART 4

DEPARTMENT: COMPUTER SPECIAL SYSTEMS/PGG

DATE: AUGUST 23, 1985

TABLE OF CONTENTS

1.0 GENERAL INFORMATION

1.1 PROGRAM ABSTRACT

THIS IS A PDP-11/23 RESIDENT DIAGNOSTIC WHICH CHECKS THE FUNCTIONALITY OF A TSV05 MAGTAPE SUBSYSTEM WHILE CONNECTED TO A PDP-11//23 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 DOCUMENT.

1.2 SYSTEM REQUIREMENTS

PDP-11/23 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 (HSAAA.SYS VERSION 34 OR LATER)
PDP-11 DIAGNOSTIC LOADER/MONITOR (XXDP+)

1.3 RELATED DOCUMENTS AND STANDARDS

DIGITAL EQUIPMENT CORPORATION DOCUMENTS:

1. CHQUS XXDP+ USERS MANUAL; DOCUMENT NUMBER AC-F348E-MC
   DATE: 14 JULY 1980.
2. TSV05 TRANSPORT SUBSYSTEM USER'S GUIDE; DOCUMENT NUMBER EK-TSV05 UG-001
   DATE: AUGUST 1982
3. TSV05 TRANSPORT SUBSYSTEM TECHNICAL MANUAL; DOCUMENT NUMBER EK-TSV05-TM-001
   DATE: AUGUST 1982
4. TSV05 TRANSPORT SUBSYSTEM INSTALLATION MANUAL; DOCUMENT NUMBER EK-TSV05-IN-001
   DATE: AUGUST 1982

1.4 DIAGNOSTIC HIERARCY PREREQUISITES

FUNCTIONAL PDP-11/23 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 TS05 TRANSPORT IS A KNOWN GOOD REEL OF TAPE.
CVTSAA,CVTSBA AND CVTSCA 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 (CHQUS).

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 PDP-11/23 DIAGNOSTIC SUPERVISOR COMPATIBLE PROGRAM. ALL LOADING AND RUNTIME INSTRUCTIONS CAN BE REFERENCED IN THE CHQUS XXDP+ USERS MANUAL, DOCUMENT NUMBER AC-F348E-MC. THE USER ENTRY IS IN QUOTES.

BOOT THE DIAGNOSTIC XXDP MEDIA

```
.R VTSD??
DIAG. RUN-TIME SERVICES REV D. APR 79
CVTSD-B-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, .O 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 DIAGNOSTIC WILL RUN USING THE DEFAULT VALUES FOR ALL QUESTIONS. THE DEFAULT ADDRESS AND VECTOR ARE:

```
TSBA/TSDB = 172520, VECTOR = 224
```

ON A "Y" (YES) RESPONSE TO THE QUESTION, THE FOLLOWING QUESTIONS WILL THEN BE ASKED TO ALLOW THE OPERATOR TO SELECT THE UNITS TO BE TESTED. A VALUE, IF PRESENT, LOCATED TO THE LEFT OF THE QUESTION MARK IS THE 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) 172520 ? <ENTER THE ADDRESS OF THE
                              TSBA/TSDB REGISTER>

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

THE ADDRESS AND VECTOR QUESTIONS WILL BE ASKED FOR EACH OF THE NUMBER OF UNITS (CONTROLLERS) SPECIFIED IN THE "# UNITS?" QUESTION. LOGICAL UNIT NUMBERS ARE ASSIGNED IN ORDER, BEGINNING AT 0. UP TO FOUR UNITS CAN BE SELECTED FOR TESTING AS FOLLOWS:
UP TO 4 TSV05 CONTROLLERS PER 11/23 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 (O) ?  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 (0) 0 ?  <CR>

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

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

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

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

        UNIT 8
        CSR ADDRESS (0)  160000<CR>
        SUB-DEVICE # (0) ?  7<CR>
        Q-FACTOR (0) 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 (0) ?  160000<CR>
        SUB-DEVICE # (0) ?  0,1<CR>
        Q-FACTOR (0) 0 ?  1.0<CR>

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

        UNIT 7
        CSR ADDRESS (0) ?  160000<CR>
        SUB-DEVICE # (0) ?  6,7<CR>
        Q-FACTOR (0) 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) O ?  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 PRIOVIDES 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
CVTSD HRD ERR 01610 ON UNIT 00 TST 016 SUB 002 PC: 040624
FIFO STATUS (IN WORD  9) INCORRECT AFTER WRITE FIFO

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

ERROR MESSAGE EXAMPLE 2

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

```
CVTSD 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.

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

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 (PDP-11/23)

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

 UNITS (D) ?  1

 UNIT 0

 DEVICE ADDRESS  (O) 172520 ? <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 PDP-11/23 PROCESSOR WITH A LA34 CONSOLE.

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

TEST NUMBER	N/I SECS.	NUMBER ITER	DEF SECS.
1	1	2	1
2	1	1	0

3	1	1	0
4	1	1	0
5	1	1	0
6	1	1	0
7	1	1	0
8	1	1	0

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

Q.V.	15 SECONDS
DEFAULT	16 SECONDS

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

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

THE ADDRESS AND VECTOR QUESTIONS WILL BE ASKED FOR EACH OF THE NUMBER OF UNITS (CONTROLLERS) SPECIFIED IN THE "# UNITS?" QUESTION. LOGICAL UNIT NUMBERS ARE ASSIGNED IN ORDER, BEGINNING AT 0. UP TO 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 5 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.

REVISION C - JUNE 1984

MINOR CHANGES FOR "ORION" CPU
ELIMINATED CPU ID MESSAGE.

REVISION D - JUNE 1985

CHANGES MADE TO ALLOW DIAGNOSTICS TO WORK WITH XXDP+ V2.1 (DRSXM) EXTENDED MONITOR.

```
                                        .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  002000                          BGNMOD  TSV2
002000                          TSV2::

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

                                        POINTER BGNSW,BGNSFT,BGNAU,BGNDU,BGNRPT
002000                                  HEADER  CVTSD,D,0,655.,0
002000                          L$NAME::                ;DIAGNOSTIC NAME
002000      103                         .ASCII /C/
002001      126                         .ASCII /V/
002002      124                         .ASCII /T/
002003      123                         .ASCII /S/
002004      104                         .ASCII /D/
002005      000                         .BYTE   0
002006      000                         .BYTE   0
002007      000                         .BYTE   0
002010                          L$REV::                 ;REVISION LEVEL
002010      104                         .ASCII  /D/
002011                          L$DEPO::                ;0
002011      060                         .ASCII  /0/
002012                          L$UNIT::                ;NUMBER OF UNITS
002012  000000                          .WORD   0
002014                          L$TIML::                ;LONGEST TEST TIME
002014  001217                          .WORD   655.
002016                          L$HPCP::                ;POINTER TO H.W. QUES.
002016  105446                          .WORD   L$HARD
002020                          L$SPCP::                ;POINTER TO S.W. QUES.
002020  105600                          .WORD   L$SOFT
002022                          L$HPTP::                ;PTR. TO DEF. H.W. PTABLE
002022  002150                          .WORD   L$HW
002024                          L$SPTP::                ;PTR. TO S.W. PTABLE
002024  002160                          .WORD   L$SW
002026                          L$LADP::                ;DIAG. END ADDRESS
002026  106404                          .WORD   L$LAST
002030                          L$STA::                 ;RESERVED FOR APT STATS
002030  000000                          .WORD   0
002032                          L$CO::
002032  000000                          .WORD   0
002034                          L$DTYP::                ;DIAGNOSTIC TYPE
002034  000000                          .WORD   0
002036                          L$APT::                 ;APT EXPANSION
002036  000000                          .WORD   0
002040                          L$DTP::                 ;PTR. TO DISPATCH TABLE
002040  002124                          .WORD   L$DISPATCH
002042                          L$PRIO::                ;DIAGNOSTIC RUN PRIORITY
```

PROGRAM HEADER

```
002042  000000                  .WORD   0
002044                  L$ENVI::                ;FLAGS DESCRIBE HOW IT WAS SETUP
002044  000000                  .WORD   0
002046                  L$EXP1::                ;EXPANSION WORD
002046  000000                  .WORD   0
002050                  L$MREV::                ;SVC REV AND EDIT #
002050     003                  .BYTE   C$REVISION
002051     003                  .BYTE   C$EDIT
002052                  L$EF::                  ;DIAG. EVENT FLAGS
002052  000000                  .WORD   0
002054  000000                  .WORD   0
002056                  L$SPC::
002056  000000                  .WORD   0
002060                  L$DEVP::                ; POINTER TO DEVICE TYPE LIST
002060  003374                  .WORD   L$DVTYP
002062                  L$REPP::                ;PTR. TO REPORT CODE
002062  022650                  .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  022336                  .WORD   L$AU
002072                  L$DUT::                 ;PTR. TO DROP UNIT CODE
002072  022434                  .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  021542                  .WORD   L$INIT
002106                  L$CCP::                 ;PTR. TO CLEAN-UP CODE
002106  022622                  .WORD   L$CLEAN
002110                  L$ACP::                 ;PTR. TO AUTO CODE
002110  022542                  .WORD   L$AUTO
002112                  L$PRT::                 ;PTR. TO PROTECT TABLE
002112  021532                  .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

```
    840                                         .SBTTL  DISPATCH TABLE
    841
    842                                 ;++
    843                                 ; THE DISPATCH TABLE CONTAINS THE STARTING ADDRESS OF EACH TEST.
    844                                 ; IT IS USED BY THE SUPERVISOR TO DISPATCH TO EACH TEST.
    845                                 ;--
    846
    847 002122                                  DISPATCH 9
        002122  000011                          .WORD   9
        002124                          L$DISPATCH::
        002124  023432                          .WORD   T1
        002126  032234                          .WORD   T2
        002130  041332                          .WORD   T3
        002132  046670                          .WORD   T4
        002134  052746                          .WORD   T5
        002136  055742                          .WORD   T6
        002140  063314                          .WORD   T7
        002142  073244                          .WORD   T8
        002144  101020                          .WORD   T9
    848
```

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  172520                          .WORD   172520          ; 1ST (OF 2) REGISTERS.
002152  000224                          .WORD   224             ; INTERRUPT VECTOR
002154  000200                          .WORD   PRI04           ; INTERRUPT PRIORITY.
002156                                  ENDHW
002156                          L10000:
```

SOFTWARE P-TABLE

```
                                        .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
```

SOFTWARE P-TABLE

```
                                        .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
                                ;
                        000040  EF.START==      32.             ; START COMMAND WAS ISSUED
                        000037  EF.RESTART==    31.             ; RESTART COMMAND WAS ISSUED
                        000036  EF.CONTINUE==   30.             ; CONTINUE COMMAND WAS ISSUED
                        000035  EF.NEW==        29.             ; A NEW PASS HAS BEEN STARTED
                        000034  EF.PWR==        28.             ; A POWER-FAIL/POWER-UP OCCURRED
                                ;
                                ;
                                ; PRIORITY LEVEL DEFINITIONS
```

GLOBAL EQUATES SECTION

```
                        ;
000340                  PRI07== 340
000300                  PRI06== 300
000240                  PRI05== 240
000200                  PRI04== 200
000140                  PRI03== 140
000100                  PRI02== 100
000040                  PRI01== 40
000000                  PRI00== 0
                        ;
                        ;OPERATOR FLAG BITS
                        ;
000004                  EVL==        4
000010                  LOT==       10
000020                  ADR==       20
000040                  IDU==       40
000100                  ISR==      100
000200                  UAM==      200
000400                  BOE==      400
001000                  PNT==     1000
002000                  PRI==     2000
004000                  IXE==     4000
010000                  IBE==    10000
020000                  IER==    20000
040000                  LOE==    40000
100000                  HOE==   100000
916
917 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
                        .ENDC
```

MEMORY MANAGEMENT DEFINITIONS

```
                        ;*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 DESCPIPTOR 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
```

MEMORY MANAGEMENT DEFINITIONS

```
                                SDPAR4= 172270
                                SDPAR5= 172272
                                SDPAR6= 172274
                                SDPAR7= 172276
                                .ENDC
                                .ENDC
                                ;*KERNEL "I" PAGE DESCRIPTOR REGISTERS
172300                          KIPDR0= 172300
172302                          KIPDR1= 172302
172304                          KIPDR2= 172304
172306                          KIPDR3= 172306
172310                          KIPDR4= 172310
172312                          KIPDR5= 172312
172314                          KIPDR6= 172314
172316                          KIPDR7= 172316
                                .IF NB
                                ;*KERNEL "D" PAGE
                                 DESCRIPTOR REGISTERS
                                KDPDR0= 172320
                                KDPDR1= 172322
                                KDPDR2= 172324
                                KDPDR3= 172326
                                KDPDR4= 172330
                                KDPDR5= 172332
                                KDPDR6= 172334
                                KDPDR7= 172336
                                .ENDC
                                ;*KERNEL "I" PAGE ADDRESS REGISTERS
172340                          KIPAR0= 172340
172342                          KIPAR1= 172342
172344                          KIPAR2= 172344
172346                          KIPAR3= 172346
172350                          KIPAR4= 172350
172352                          KIPAR5= 172352
172354                          KIPAR6= 172354
172356                          KIPAR7= 172356
                                .IF NB
                                ;*KERNEL "D" PAGE ADDRESS REGISTERS
                                KDPAR0= 172360
                                KDPAR1= 172362
                                KDPAR2= 172364
                                KDPAR3= 172366
                                KDPAR4= 172370
                                KDPAR5= 172372
                                KDPAR6= 172374
                                KDPAR7= 172376
                                .ENDC
```

```
                                .SBTTL  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= BIT6            ;TRANSPORT ON LINE
000040                  XSOIE=  BIT5            ;INTERRUPT ENABLE
000020                  XSOVCK= BIT4            ;VOLUME CHECK BIT
000010                  XSOPED= BIT3            ;PHASE ENCODED DRIVE
000004                  XSOWLK= BIT2            ;WRITE LOCKED
000002                  XSOBOT= BIT1            ;BEGINNING OF TAPE
000001                  XSOEOT= BIT0            ;END OF TAPE
```

TSV05 REGISTER AND PACKET DEFINITIONS

```
                                ;+
                                ;BIT DEFINITIONS FOR EXTENDED STATUS REGISTER 1
                                ;(XST1)
                                ;-
100000                          X1.DLT  = BIT15         ;DATA LATE
040000                          X1.SPARE= BIT14         ;NOT USED
020000                          X1.COR  = BIT13         ;CORRECTABLE DATA ERROR
017375                          X1.MBZ  = BIT12+BIT11+BIT10+BIT9+BIT7+BIT6+BIT5+BIT4+BIT3+BIT2+BIT0 ;ALWAYS 0
000400                          X1.RBP  = BIT8          ;READ BUS PARITY ERROR
000002                          X1.UNC  = BIT1          ;UNCORRECTABLE DATA OR HARD ERROR

                                ;+
                                ;BIT DEFINITIONS FOR EXTENDED STATUS REGISTER 2
                                ;(XST2)
                                ;-
100000                          X2.OPM  = BIT15         ;OPERATION IN PROGRESS (TAPE MOVING)
040000                          X2.RCE  = BIT14         ;RAM CHECKSUM ERROR
035400                          X2.SPARE= BIT13+BIT12+BIT11+BIT9+BIT8   ;NOT USED BY TSV05 (ALWAYS=0)
002000                          X2.WCF  = BIT10         ;WRITE CLOCK FAILURE (FIFO NOT EMPTIED BY TRANSPORT)
000200                          X2.EXTF = BIT7          ;IF WRITE CHAR CMD THEN = EXTENDED FEATURES ENABLED
000100                          X2.BUFE = BIT6          ;IF WRITE CHAR CMD THEN = BUFFERING ENABLED
000077                          X2.REV  = 000077        ;IF WRITE CHAR CMD THEN = MICROCODE REVISION LEVEL
000007                          X2.UNIT = BIT2+BIT1+BIT0 ;IF GET STATUS THEN = CURRENTLY SELECTED UNIT NO.

                                ;+
                                ;BIT DEFINITIONS FOR EXTENDED STATUS REGISTER 3
                                ;(XST3)
                                ;-
177400                          X3.MDE  = 177400        ;MICRO-DIAGNOSTIC ERROR CODE
000200                          X3.SPARE= BIT7          ;NOT USED BY TSV05
000100                          X3.OPI  = BIT6          ;OPERATION INCOMPLETE
000040                          X3.REV  = BIT5          ;REVERSE
000020                          X3.TRF  = BIT4          ;TRANSPORT RESPONSE FAILURE
000010                          X3.DCK  = BIT3          ;DENSITY CHECK
000006                          X3.MBZ  =BIT2+BIT1      ;NOT USED ALWAYS 0
000001                          X3.RIB  = BIT0          ;REVERSE INTO BOT

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

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

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

TSV05 REGISTER AND PACKET DEFINITIONS

```
                                ;*
                                ;
                                ;DEVICE REGISTER OFFSETS
                                ;
                                ;-

000000                          TSBA== 0
000000                          TSDB== 0                ;TSDB/TSBA REGISTER
000001                          TSBAH== 1
000001                          TSDBH== 1               ;TSDB/TSBA REGISTER HIGH BYTE
000002                          TSSR== 2                ;TSSR REGISTER
000003                          TSSRH== 3               ;TSSR REGISTER HIGH BYTE

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

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

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

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

TSV05 REGISTER AND PACKET DEFINITIONS

```
1081                                ;+
1082                                ; CONTROLLER RAM DEFINITIONS
1083                                ;-
1084    000167                      RMCHBEG = 167           ;CHARACTERISTICS IO DATA BEGIN RAM ADDRESS
1085    000200                      RMCHEND = 200           ;CHARACTERISTICS IO DATA END RAM ADDRESS
1086    000201                      RMPKTBEG= 201           ;COMMAND PACKET BEGIN RAM ADDRESS
1087    000210                      RMPKTEND= 210           ;COMMAND PACKET END RAM ADDRESS
1088    000215                      RMMSGBEG= 215           ;MESSAGE BUFFER BEGIN RAM ADDRESS
1089    000234                      RMMSGEND= 234           ;MESSAGE BUFFER END RAM ADDRESS
1090                                ;+
1091                                ;
1092                                ;REGISTER DEFINITIONS IN THE MESSAGE BUFFER
1093                                ;
1094                                ;-
1095
1096    000006                      XST0==  6               ;EXTENDED STATUS REGISTER 0 (WORD 4)
1097    000010                      XST1==  8.              ;EXTENDED STATUS REGISTER 1 (WORD 5)
1098    000012                      XST2==  10.             ;EXTENDED STATUS REGISTER 2 (WORD 6)
1099    C00014                      XST3==  12.             ;EXTENDED STATUS REGISTER 3 (WORD 7)
1100    000016                      XST4==  14.             ;EXTENDED STATUS REGISTER 4 (WORD 8)
1101
1102                                ;+
1103                                ;
1104                                ;OFFSETS TO WORD LOCATIONS IN PACKET DEFINITIONS
1105                                ;
1106                                ;-
1107
1108    000002                              PKLOW   = 2             ;LOW ORDER CHARACTERISTIC DATA POINTER
1109    000004                              PKHI    = 4             ;HIGH ORDER CHARACTERISTIC DATA POINTER
1110    000006                              PKBCNT  = 6             ;NUMBER OF BYTES IN DATA PACKET
1111
1112    000010                              EXBCNT=10               ;NUMBER OF BYTES IN EXTENDED DATA PACKET
1113
1114                                ;+
1115                                ;DATA PACKET OFFSETS FOR WRITE SUBSYTEM COMMAND
1116                                ;-
1117    000000                              BSEL0   = 0             ;BYTE 0
1118    000001                              BSEL1   = 1             ;BYTE 1
1119    000002                              SEL2    = 2             ;WORD 2
1120    000004                              SELDATA = 4             ;WORD 3
```

TSV05 REGISTER AND PACKET DEFINITIONS

```
1122                                    ;*
1123                                    ;BSELO SELECT CODES FOR WRITE SUBSYSTEM COMMAND
1124                                    ;-
1125        000000                      PW.NOP          = 0             ;NO-OP
1126        000001                      PW.RDRAM        = 1             ;READ RAM
1127        000002                      PW.WTRAM        = 2             ;WRITE RAM
1128        000003                      PW.RFIFO        = 3             ;READ FIFO
1129        000004                      PW.WFIFO        = 4             ;WRITE FIFO
1130        000005                      PW.RDSTAT       = 5             ;READ STATUS
1131        000006                      PW.WCTL         = 6             ;WRITE TAPE CONTROL
1132        000007                      PW.WFMT         = 7             ;WRITE TAPE FORMAT
1133        000010                      PW.WMISC        = 10            ;WRITE MISCELLANEOUS
1134        000011                      PW.WNPR         = 11            ;WRITE NPR CONTROL
1135        000020                      PW.D22          = 20            ;DO MICROTEST 22
1136        000021                      PW.D11          = 21            ;DO MICROTEST 11
1137        000022                      PW.D13          = 22            ;DO MICROTEST 13
1138        000023                      PW.NO1311       = 23            ;DISABLE MICROTEST 11 AND 13
1139        000024                      PW.RDEXT        = 24            ;READ EXT. TAPE STATUS (NOT SUPPORTED BY ALL TRANSPORTS
1140
1141                                    ;*
1142                                    ;BSEL1 CODES FOR WRITE TAPE CONTROL
1143                                    ;-
1144        000200                      WC.IFAD         = BIT7          ;IFAD - FORMATTER ADDRESS
1145        000100                      WC.IOTAD        = BIT6          ;ITADO  - TRANSPORT ADDRESS BIT 0
1146        000040                      WC.I1TAD        = BIT5          ;ITAD1  - TRANSPORT ADDRESS BIT 1
1147        000020                      WC.I5RESV       = BIT4          ;IRESV5 - RESERVED #5
1148        000010                      WC.IREW         = BIT3          ;IREW   - REWIND
1149        000004                      WC.IRWU         = BIT2          ;IRWU   - REWIND AND UNLOAD
1150        000002                      WC.IFEN         = BIT1          ;IFEN   - FORMATTER ENABLE
1151        000001                      WC.IGO          = BIT0          ;GO
1152
1153                                    ;*
1154                                    ;BSEL1 CODES FOR WRITE FORMAT
1155                                    ;-
1156        000200                      WF.IHISP        = BIT7          ;IHISP  - HIGH SPEED
1157        000100                      WF.IWRT         = BIT6          ;IWRT   - WRITE
1158        000040                      WF.IREV         = BIT5          ;IREV   - REVERSE
1159        000020                      WF.IWFM         = BIT4          ;IWFM   - WRITE FILE MARK
1160        000010                      WF.IEDIT        = BIT3          ;IEDIT  - EDIT
1161        000004                      WF.IERASE       = BIT2          ;IERASE - ERASE
1162        000002                      WF.I3RESV       = BIT1          ;IRESV3 - RESERVED #3
1163        000001                      WF.I4RESV       = BIT0          ;IRESV4 - RESERVED #4
1164
1165                                    ;*
1166                                    ;BSEL1 CODES FOR WRITE MISCELLANEOUS SUBCOMMAND
1167                                    ;-
1168        000200                      MS.EXT          = BIT7          ;INVERT SENSE OF EXTENDED FEATURES SWITCH
1169        000020                      MS.RSFIFO       = BIT4          ;RESET FIFO AND INPUT PARITY ERRORR
1170        000010                      MS.RSTAPE       = BIT3          ;RESET TAPE STATUS IN 2 FLIP-FLOPS
1171        000006                      MS.ATTN         = BIT2!BIT1     ;ATTENTION TRIGGER FIELD
1172        000001                      MS.RSD          = BIT0          ;RESET TIMER A,B THEN DELAY TIMES IN SEL2
```

TSV05 REGISTER AND PACKET DEFINITIONS

```
                                ;*
                                ; 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
                                ;-
C00200                          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
000100                          S0.IRDY         = BIT6          ;               IRDY L
000040                          S0.IONL         = BIT5          ;               IONL L
000020                          S0.ILDP         = BIT4          ;               ILDP L
000010                          S0.IDBY         = BIT3          ;               IDBY L
000004                          S0.IRWD         = BIT2          ;               IRWD L
000002                          S0.IFBY         = BIT1          ;               IFBY L
000001                          S0.IFPT         = BIT0          ;               IFPT L
```

```
                        .SBTTL  SPECIAL MACROS AND OPDEFS.

                ;+
                ;SAVE GENERAL REGS 1 TO 5
                ;-

                        .MACRO  SAVREG
                        JSR     R5,REGSAV
                        .ENDM

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

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

SPECIAL MACROS AND OPDEFS.

```
                                ;+
                                ;MACRO TO PERFORM XOR
                                ;-

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

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

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

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.
```

GLOBAL DATA SECTION

```
                                        .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   PRI04   ;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
002276  000000                  RCVHIADD::      .WORD   0       ;RECEIVED BUFFER HIGH ADDRESS
002300  000000                  RCVLOADD::      .WORD   0       ;RECEIVED BUFFER LOW ADDRESS
002302  000000                  COUNT::         .WORD   0       ;TEST COUNT PATTERN
002304  000000                  DATA::          .WORD   0       ;TEST DATA
002306  000000                  TSTFLAG::       .WORD   0       ;TEST FLAG WORD
002310  000000                  TSTPTR::        .WORD   0       ;TSTBLK POINTER
002312  000000                  PRMNO::         .WORD   0       ;PRINT ROUTINE TEMP
002314                          EXPMSG::        .BLKB   100.    ;EXPECTED MESSAGE BUFFER DATA
002460                          RECMSG::        .BLKB   100.    ;RECEIVED MESSAGE BUFFER DATA
002624                          TMPBFR::        .BLKB   80.     ;TEMPORARY STORAGE FOR PRINT
```

```
                                        .SBTTL  TSTBLK  - TEST DATA TABLE

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

002744                          TSTBLK::
002744  000000                          .WORD   0               ;ALL ZEROS
002746  177777                          .WORD   177777          ;ALL ONES
002750  000001                          .WORD   BIT0            ;DATA FOR WALKING ONES
002752  000002                          .WORD   BIT1
002754  000004                          .WORD   BIT2
002756  000010                          .WORD   BIT3
002760  000020                          .WORD   BIT4
002762  000040                          .WORD   BIT5
002764  000100                          .WORD   BIT6
002766  000200                          .WORD   BIT7
002770  000400                          .WORD   BIT8
002772  001000                          .WORD   BIT9
002774  002000                          .WORD   BIT10
002776  004000                          .WORD   BIT11
003000  010000                          .WORD   BIT12
003002  020000                          .WORD   BIT13
003004  040000                          .WORD   BIT14
003006  100000                          .WORD   BIT15
003010  177776                          .WORD   ^CBIT0          ;DATA FOR WALKING ZEROS
003012  177775                          .WORD   ^CBIT1
003014  177773                          .WORD   ^CBIT2
003016  177767                          .WORD   ^CBIT3
003020  177757                          .WORD   ^CBIT4
003022  177737                          .WORD   ^CBIT5
003024  177677                          .WORD   ^CBIT6
003026  177577                          .WORD   ^CBIT7
003030  177377                          .WORD   ^CBIT8
003032  176777                          .WORD   ^CBIT9
003034  175777                          .WORD   ^CBIT10
003036  173777                          .WORD   ^CBIT11
003040  167777                          .WORD   ^CBIT12
003042  157777                          .WORD   ^CBIT13
003044  137777                          .WORD   ^CBIT14
003046  077777                          .WORD   ^CBIT15
003050  125252                          .WORD   125252          ;ALTERNATING ONES, ZEROS
003052  052525                          .WORD   052525          ;ALTERNATING ONES, ZERO OPPOSITE FROM ABOVE
003054                          TBLEND==.
```

GLOBAL ENVIRONMENT STORAGE

```
                                        .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                  NODEV::         .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                  T238::          .WORD   0               ;11/238 FLAG
003142  000000                  T38FLG::        .WORD   0               ;TEST 38 FLAG ↑O
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.
003370  000000                  ERTABE:         .WORD   0

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: %O6/
004014     045     101     040  TSSX:   .ASCII  /%A  TSBA,TSSR EXP'D: %O6%A,%O6%N/
004054     045     101     040          .ASCIZ  /%A  TSBA,TSSR REC'D: %O6%A,%O6/
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/
004215     040     040     116  NOINTR: .ASCIZ  /  NO INTERRUPT WAS GENERATED/
004252     040     040     111  IFAULT: .ASCIZ  /  INTERRUPT FAULT/
004274     045     101     040  INTX:   .ASCIZ  /%A  CPU PC: %O6%A  TSBA: %O6/
```

GLOBAL TEXT MESSAGES

```
1516 004331 040      040      042  NOINIT: .ASCIZ  /  "BUS-INIT" DIDN'T INITIALIZE CONTROLLER/
1517 004403 040      040      042  NSINIT: .ASCIZ  /  "SOFT-INIT" DIDN'T INITIALIZE THE DPU/
1518 004453 040      040      042  BRINIT: .ASCIZ  /  "BUS-RESET" DIDN'T INITIALIZE THE DPU/
1519 004523 000                    NUL:    .ASCIZ  //
1520 004524 045      116      000  NULCR:  .ASCIZ  /<N>/
1521 004527 045      101      040  EXPGOT: .ASCIZ  /<A EXP'D: <06><A, REC'D: <06>/
1522 004563 045      116      045  EXPGT2: .ASCIZ  /<N><A EXP'D: <06><A, <06><N><A REC'D: <0><A, <06>/
1523 004637 045      101      040  DUAD12: .ASCIZ  /<A REG(W) WRITTEN TO: <06><A REG(R) READ; EXP'D: <06><A, REC'D: <06>/
1524 004741 122      101      115  PKTRAM::        .ASCIZ  'RAM Contents Do Not Match Packet Sent'
1525 005007 040      040      103  SCME:   .ASCIZ  /  CONFIG DOESN'T MATCH MFG. MASTER/
1526 005052 127      122      111  WRTMSG: .ASCIZ  'WRITE CHARACTERISTICS Failed'
1527 005107 124      123      123  WRTERR: .ASCIZ  'TSSR Incorrect After WRITE Command, More Bits Set Than SSR'
1528 005202 124      123      123  RDERR:  .ASCIZ  'TSSR Incorrect After READ Command, More Bits Set Than SSR'
1529 005274 106      101      124  SCHERR: .ASCIZ  'FATAL ERROR IN SUBTEST - CHECK TAPE,CABLES,TRANSPORT etc.'
1530 005366 105      122      122  RETERR: .ASCIZ  'ERROR IN SUBTEST - WRITE DATA RETRY FIVE TIMES FAILED'
1531 005454 045      116      045  NOMEM:  .ASCIZ  '<N><A ***** NO NXM ADDRESS--CANNOT TEST NXM TIMEOUT. *****<N>'
1532 005550 045      116      045  M8186:  .ASCIZ  '<N><A ****************** 11/23A SYSTEM ******************<N>'
1533 005641 045      116      045  M8189:  .ASCIZ  '<N><A ****************** 11/23B SYSTEM ******************<N>'
1534                               .EVEN
1535                               .SBTTL  GLOBAL ERROR REPORT SECTION
1536
1537                               ;++
1538                               ; THE GLOBAL ERROR REPORT SECTION CONTAINS THE PRINTB AND PRINTX
1539                               ; CALLS THAT ARE USED IN MORE THAN ONE TEST.
1540                               ; ASCII TEXT STRINGS ARE FOUND IN THE GLOBAL TEXT SECTION.
1541                               ;--
1542 005732                               BGNMSG  NXRERR          ;NON-EXISTANT DEVICE REGISTER.
     005732                        NXRERR::
1543 005732                               PRINTX  @NXRX,NODEV     ;NODEV = NEXM ADDRESS.
     005732 013746 003106                MOV     NODEV,-(SP)
     005736 012746 003773                MOV     @NXRX,-(SP)
     005742 012746 000002                MOV     #2,-(SP)
     005746 010600                       MOV     SP,R0
     005750 104415                       TRAP    C$PNTX
     005752 062706 000006                ADD     #6,SP
1544 005756 004737 005764                JSR     PC,EXTEND       ; PRINT EXTENSION IF REQUIRED.
1545 005762                              ENDMSG
     005762                        L10002:
     005762 104423                       TRAP    C$MSG
1546                               ;
1547                               ; THIS ROUTINE APPENDS A UNIQUE EXTENSION (IF REQUIRED)
1548                               ; TO ANY OF THE ABOVE ERROR SIGNATURES.
1549                               ;
1550 005764 005727                EXTEND: TST     (PC)+
1551 005766 000000                EXTA:   0                       ; 0 = NO EXTENSION.
1552 005770 001402                        BEQ     1$
1553 005772 004777 177770                 JSR     PC,@EXTA        ; APPEND EXTENSION TEXT.
1554 005776                        1$:    PRINTX  @NULCR          ; PRINT A BLANK LINE
     005776 012746 004524                MOV     @NULCR,-(SP)
     006002 012746 000001                MOV     #1,-(SP)
     006006 010600                       MOV     SP,R0
     006010 104415                       TRAP    C$PNTX
     006012 062706 000004                ADD     #4,SP
1555 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 DEFINITION
006134  112022          11$:    MOVB    (R0)+,(R2)+     ;MOVE ASCIZ TO BUFFER
006136  001376                  BNE     11$             ;MOVE ALL BITS
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 BITS
006152  105042          15$:    CLRB    -(R2)           ;TERMINATE THE LINE
006154                          PRINTX  @TSSDEF,@TMPBFR ;PRINT THE BIT DEFINITIONS
006154  012746  002624          MOV     @TMPBFR,-(SP)
006160  012746  006664          MOV     @TSSDEF,-(SP)
```

PRITSSR - PRINT TSSR CONTENTS

```
        006164  012746  000002                  MOV     #2,-(SP)
        006170  010600                           MOV     SP,R0
        006172  104415                           TRAP    C$PNTX
        006174  062706  000006                  ADD     #6,SP
   1601
   1602 006200  010403                  20$:    MOV     R4,R3           ;GET THE TSSR CONTENTS
   1603 006202  042703  177761                  BIC     #^CTERCLS,R3    ;CLEAR ALL BUT TERMINATION
   1604 006206  016303  006754                  MOV     TCOCOD(R3),R3   ;GET THE TERMINATION CODE MEANING
   1605 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$PNTX
        006230  062706  000006                  ADD     #6,SP
   1606 006234  010403                          MOV     R4,R3           ;TSSR CONTENTS AGAIN
   1607 006236  042703  177717                  BIC     #^CFATERR,R3    ;CLEAR ALL BUT FATAL TERMINATION
   1608 006242  001416                          BEQ     25$             ;DON'T PRINT IF ZERO
   1609 006244  C06203                          ASR     R3
   1610 006246  006203                          ASR     R3
   1611 006250  006203                          ASR     R3              ;ALINE TERMINATION CODE FOR INDEX
   1612 006252  016303  007314                  MOV     TSFCOD(R3),R3   ;GET THE FATAL TERMINATION CODE
   1613 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$PNTX
        006274  062706  000006                  ADD     #6,SP
   1614 006300  042704  176377          25$:    BIC     #^CHIADDR,R4    ;CLEAR ALL BUT EXTENDED ADDRESS
   1615 006304  001411                          BEQ     30$             ;DON'T PRINT IF ZERO
   1616 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$PNTX
        006324  062706  000006                  ADD     #6,SP
   1617 006330  013703  002172          30$:    MOV     EPRTSW,R3               ;PRINT MEAASGE BUFFER ADDRESS
   1618 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
   1619 006352  000207                          RTS     PC              ;RETURN TO CALLER
```

PRITSSR - PRINT TSSR CONTENTS

```
1635 006354     045     116     045  EPRT1:   .ASCIZ  '%N%A *****CHECK TRANSPORT*****'
1636 006413     045     116     045  EPRT2:   .ASCIZ  '%N%A *****CHECK PARITY SWITCH IN TRANSPORT*****'
1638 006473     045     116     045  TSSRFOR:         .ASCIZ  '%N%A TSSR = %O6'
1639 006513     045     116     045  TEXASC:          .ASCIZ  '%N%A Extended Address Bits = %O6'
1640 006554     045     116     045  TCOASC:          .ASCIZ  '%N%A Termination Class Code = %T'
1641 006615     045     116     045  TFCASC:          .ASCIZ  '%N%A Fatal Termination Class Code = %T'
1642 006664     045     116     045  TSSDEF:          .ASCIZ  '%N%A TSSR Bits Set: %T'
1643 006713     045     116     045  AMBTSSR:         .ASCIZ  '%N%A TSSR Contents Are Ambiguous'
1644                                                  .EVEN
1645 006754  006774  007017  007045  TCOCOD:  .WORD   1$,2$,3$,4$,5$,6$,7$,8$
1646 006774     116     157     162  1$:      .ASCIZ  'Normal Termination'
1647 007017     124     145     162  2$:      .ASCIZ  'Termination Condition'
1648 007045     124     141     160  3$:      .ASCIZ  'Tape Status Alert'
1649 007067     106     165     156  4$:      .ASCIZ  'Function Reject'
1650 007107     122     145     143  5$:      .ASCIZ  'Recoverable Error - Tape Position One Record Down'
1651 007171     122     145     143  6$:      .ASCIZ  'Recoverable Error - Tape Was Not Moved'
1652 007240     125     156     162  7$:      .ASCIZ  'Unrecoverable Error'
1653 007264     106     141     164  8$:      .ASCIZ  'Fatal Controller Error'
1654                                          .EVEN
1655
1656 007314  007324  007360  007371  TSFCOD:  .WORD   1$,2$,3$,4$
1657 007324     111     156     164  1$:      .ASCIZ  'Internal Diagnostic Failure'
1658 007360     122     145     163  2$:      .ASCIZ  'Reserved'
1659 007371     102     165     163  3$:      .ASCIZ  'Bus Interface or Sanity Check Error'
1660 007435     122     145     163  4$:      .ASCIZ  'Reserved'
1661                                          .EVEN
```

PRIPKT - PRINT THE ADDRESS/CONTENTS OF COMMAND PACKET

```
                                        .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  C05737  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
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$PNTB
007560  062706  000010                  ADD     #10,SP
007564  005201                          INC     R1                      ;NEXT WORD NUMBER
007566  020105                          CMP     R1,R5                   ;DONE ALL PACKET WORDS?
007570  002762                          BLT     25$                     ;LOOP TILL ALL DONE
007572  000207                          RTS     PC                      ;RETURN

007574  045  116  045  PKTFRM: .ASCIZ  '%N%A Packet Word #%D1%A = %06'
007632  045  116  045  PKTADD: .ASCIZ  '%N%A Packet Address = %01%05'
                                .EVEN
```

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

                                ;+
                                ;PRINT EXPECTED DATA, RECEIVED DATA, AND XOR OF THE DATA BYTE
                                ;THIS ROUTINE IS NORMALLY CALLED ONLY FOR PRINT ROUTINES.
                                ;
                                ;INPUTS:
                                ;
                                ;       R1      RECEIVED DATA
                                ;       R2      EXPECTED DATA
                                ;
                                ;OUTPUT:
                                ;
                                ;       R0      XOR OF EXPECTED/RECEIVED DATA
                                ;-
007670                          PRIBXOR::
007670                                  SAVREG                          ;SAVE THE REGISTERS
007674  010203                          MOV     R2,R3                   ;EXPECTED DATA
007676                                  XOR     R1,R3                   ;FORM THE EXCLUSIVE OR
007706  012700  177400                  MOV     #^C<377>,R0             ;BYTE MASK
007712  040001                          BIC     R0,R1                   ;SAVE LOW BYTE RECV
007714  040002                          BIC     R0,R2                   ;SAVE LOW BYTE EXPD
007716  040003                          BIC     R0,R3                   ;SAVE LOW BYTE XOR
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
007746  010300                          MOV     R3,R0                   ;R0 HAS XOR ON RETURN
007750  000207                          RTS     PC                      ;RETURN TO CALLER

007752      045     116     045 XORBFOR:        .ASCIZ  '<N><A EXPD: <03><A RECV: <03><A XOR: <03'
                                        .EVEN
                                        .SBTTL  PRIXOR  - PRINT EXPD, RECV AND XOR
                                ;+
                                ;
                                ;PRINT EXPECTED DATA, RECEIVED DATA, AND XOR OF THE TWO
                                ;THIS ROUTINE IS NORMALLY CALLED ONLY FOR PRINT ROUTINES.
                                ;
                                ;INPUTS:
                                ;
                                ;       R1      RECEIVED DATA
                                ;       R2      EXPECTED DATA
                                ;
                                ;OUTPUT:
                                ;
                                ;       R0      XOR OF EXPECTED/RECEIVED DATA
                                ;-
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
```

PRIXOR - PRINT EXPD, RECV AND XOR

```
        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
  1755  010064  010300                          MOV     R3,R0           ;R0 HAS XOR ON RETURN
  1756  010066  000207                          RTS     PC              ;RETURN TO CALLER
  1757
  1758  010070     045     116     045  XORFOR: .ASCIZ  '%N%A EXPD: %06%A RECV: %06%A XOR: %06'
  1759                                          .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.
                                ;
                                ;INPUTS:
                                ;
                                ;       R4      RAM ADDRESS
                                ;
                                ;-
010144                          PRIRAM:
010144                                  SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
010150                                  PRINTB  @RAMFOR,R4      ;PRINT RAM ADDRESS IN ERROR
010150  010446                          MOV     R4,-(SP)
010152  012746  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
010172  000207                         RTS     PC                      ;RETURN

010174      045     116     045 RAMFOR: .ASCIZ  '%N%A CONTROLLER RAM ADDRESS = %06'
                                        .EVEN
```

```
                                        .SBTTL  PRIADD  - PRINT MEMORY ERROR ADDRESS
                                ;+
                                ;
                                ;PRINT MEMORY ADDRESS
                                ;THIS ROUTINE IS NORMALLY CALLED ONLY FROM PRINT ROUTINES.
                                ;
                                ; IMPLICIT INPUTS
                                ;
                                ;       ERRHI   - HIGH ORDER ADDRESS
                                ;       ERRLO   - LOW ORDER ADDRESS
                                ;
                                ;-
010236                          PRIADD:
010236                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
010242  013700  002230                  MOV     ERRHI,R0                ;GET HIGH ADDRESSS
010246  013701  002232                  MOV     ERRLO,R1                ;GET LOW ADDRESS
010252  010102                          MOV     R1,R2                   ;COPY LOW ADDRESS
010254  006101                          ROL     R1                      ;SHIFT BIT 15 TO C BIT
010256  006100                          ROL     R0                      ;SHIFT INTO HIGH ORDER
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
010304  000207                          RTS     PC                      ;RETURN

010306  045  116  045          PRIA0:  .ASCIZ  '%N%A MEMORY ERROR ADDRESS = %01%05'
                                        .EVEN

                                        .SBTTL  PRITADD - PRINT MEMORY TEST ADDRESS
                                ;+
                                ;
                                ;PRINT MEMORY ADDRESS
                                ;THIS ROUTINE IS NORMALLY CALLED ONLY FROM PRINT ROUTINES.
                                ;
                                ; IMPLICIT INPUTS
                                ;
                                ;       ERRHI   - HIGH ORDER ADDRESS
                                ;       ERRLO   - LOW ORDER ADDRESS
                                ;
                                ;-
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
```

PRITADD - PRINT MEMORY TEST ADDRESS

```
        010404  062706  000006                  ADD     #6,SP
   1843 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
   1844 010432  000207                          RTS     PC              ;RETURN
   1845
   1846 010434     045     116     045  PRIT0:  .ASCIZ  '<N><A MEMORY TEST ADDRESS LOW = <06>'
   1847 010477     045     116     045  PRIT1:  .ASCIZ  '<N><A MEMORY TEST ADDRESS HIGH = <06>'
   1848                                         .EVEN
```

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

                                ;+
                                ;
                                ;ROUTINE TO ISSUE A SPACE RECORDS
                                ;COMMAND (FORWARD OR REVERSE)
                                ;
                                ;INPUT:
                                ;
                                ;       R3      NUMBER OF RECORDS TO BE SPACED OVER
                                ;               BIT15 CONTROLS DIRECTION
                                ;               BIT15 = 0 IS FORWARD
                                ;               BIT15 = 1 IS REVERSE
                                ;       R5      FIRST DEVICE UNIBUS ADDRESS
                                ;
                                ;       REQUIRES A WRITE CHARACTERISTICS DONE PREVIOUSLY
                                ;
                                ;OUTPUT:
                                ;
                                ;       CARRY   SET - SPACE RECORDS COMMAND OK
                                ;               CLR - SPACE RECORDS FAILED
                                ;
                                ;
                                ;       R0      THE CONTENTS OF R4 IS MOVED TO R0
                                ;
                                ;
                                ;IMPLICIT OUTPUT:
                                ;
                                ;       TAPE HAS BEEN MOVED
                                ;
                                ;SIDE EFFECTS:
                                ;
                                ;
                                ;-
                                SPACE::
010544                                  SAVREG
010544                                  MOV     #500.,SDELAY            ;SET UP DELAY
010550  012737  000764  010740          MOV     #140010,80$             ;SET UP COMMAND, SPACE FORWARD
010556  012737  140010  010730          TST     R3                      ;CHECK FOR DIRECTION
010564  005703                          BMI     5$                      ;BR, IF REVERSE INDICATED
010566  100403                          MOV     R3,90$                  ;LOAD UP NUMBER OF RECORDS TO SPACE
010570  010337  010732                  BR      10$                     ;GO DO COMMAND
010574  000407                  5$:     BIC     #BIT15,R3               ;CLEAR DIRECTION BIT
010576  042703  100000                  MOV     R3,90$                  ;LOAD UP NUMBER OF RECORDS TO SPACE
010602  010337  010732                  BIS     #BIT8,80$               ;SET REVERSE BIT IN COMMAND PACKET
010606  052737  000400  010730          MOV     #80$,R4                 ;SET UP R4 WITH PACKET ADDRESS
010614  012704  010730          10$:    MOV     R4,TSDB(R5)             ;SEND OUT COMMAND
010620  010465  000000                  JSR     PC,WAITF                ;WAIT FOR SSR
010624  004737  016330          15$:    BCS     20$                     ;BR, IF SSR IS SET AND OK
010630  103420                          DELAY   250             ;DELAY ABOUT .25 SECONDS
010632                                  MOV     #250.,(PC)+
010632  012727  000250                  .WORD   0
010636  000000                          MOV     L$DLY,(PC)+
010640  013727  002116                  .WORD   0
010644  000000                          DEC     -6(PC)
010646  005367  177772                  BNE     .-4
010652  001375
```

SPACE - SPACE RECORDS (FORWARD AND REVERSE) COMMAND

```
        010654  005367  177756                  DEC     -22(PC)
        010660  001367                          BNE     .-20
   1901 010662  005337  010740                  DEC     SDELAY                  ;BUMP DELAY COUNTER DOWN
   1902 010666  001356                          BNE     15$                     ;BR, IF MORE DELAY
   1903 010670  000411                          BR      60$                     ;BR IF TROUBLE CARRY = CLEAR
   1904 010672  016501  000002          20$:    MOV     TSSR(R5),R1             ;READ TSSR
   1905 010676  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
   1906 010702  020201                  25$:    CMP     R2,R1                   ;ARE THEY OK
   1907 010704  001401                          BEQ     40$                     ;BR, IF EQUAL = OK
   1908 010706  000402                          BR      60$                     ;TROUBLE EXIT
   1909 010710  000261                  40$:    SEC                             ;SET CARRY NO TROUBLE
   1910 010712  000401                          BR      70$                     ;EXIT
   1911 010714  000241                  60$:    CLC                             ;CARRY CLEAR = ERROR
   1912 010716                          70$:
   1913 010716  010400                          MOV     R4,R0                   ;PASS PACKET ADDRESS
   1914 010720  000207                          RTS     PC                      ;RETURN
   1915                                 ;
   1916                                 ;
   1917                                 ;
   1918                                 ;PACKET FOR SPACE COMMAND
   1919                                 ;
   1921         010730                          .=<.+10>&177770
   1923                                 ;
   1924                                 ;COMMAND WORD
   1925 010730  000000                  80$:    .WORD
   1926                                 ;NUMBER OF RECORDS TO BE SPACED OVER WORD
   1927 010732  000000                  90$:    .WORD
   1928 010734  000000                          .WORD
   1929 010736  000000                          .WORD
   1930 010740  000000                  SDELAY: .WORD   0                       ;DELAY COUNTER
   1931                                         .EVEN
   1932                                         .SBTTL  WRTCHR  - WRITE CHARACTERISTICS COMMAND
```

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  002222                          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$                     ;BR IF TROUBLE CARRY = CLEAR
010772  016501  000002          20$:    MOV     TSSR(R5),R1             ;READ TSSR
010776  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
011002  032701  000100                  BIT     #OFL,R1                 ;WAS OFF LINE SET IN TSSR
011006  001402                          BEQ     25$                     ;BR, IF NO OFL SET
011010  052702  000100                  BIS     #OFL,R2                 ;MAKE THEM LOOK ALIKE
011014  020201                  25$:    CMP     R2,R1                   ;ARE THEY OK
011016  001401                          BEQ     40$                     ;BR, IF EQUAL = OK
011020  000421                          BR      60$                     ;TROUBLE EXIT
011022  062704  000010          40$:    ADD     #8.,R4                  ;POINT TO WRT CHARA DATA PACKET
011026  011403                          MOV     (R4),R3                 ;GET ADDRESS OF MESSAGE BUFFER
011030  032763  000200  000012          BIT     #X2.EXTF,XST2(R3)       ;EXTENDED FEATURES BIT SET?
011036  001402                          BEQ     45$                     ;BR IF NO
011040  005237  002220                  INC     EXTFEA                  ;SET EXTENDED FEATURES SW SWITCH
011044                          45$:
011044  032763  000100  000012          BIT     #X2.BUFE,XST2(R3)       ;BUFFER ENABLE SWITCH SET
011052  001402                          BEQ     50$                     ;BR, IF SWITCH NOT SET
011054  005237  002222                  INC     BENBSW                  ;SET SOFTWARE SWITCH FOR ENABLED
011060                          50$:
011060  000261                          SEC                             ;SET CARRY NO TROUBLE
011062  000401                          BR      70$                     ;EXIT
011064  000241                  60$:    CLC                             ;CARRY CLEAR = ERROR
011066  016500  000002          70$:    MOV     TSSR(R5),R0             ;RETURN TSSR CONTENTS
011072  000207                          RTS     PC                      ;RETURN
```

```
                                        .SBTTL  REWIND  - POSITION TAPE (REWIND) COMMAND
                                ;+
                                ;
                                ;THIS ROUTINE WILL REWIND THE SELECTED TAPE.
                                ;
                                ;       CAUTION: THE ROUTINE DOES NOT WAIT FOR BOT
                                ;                TO ARRIVE. ALSO THE CALLER MUST CHECK FOR
                                ;                SSR TO SET IN THE TSSR
                                ;
                                ;
                                ;CALLING SEQUENCE:
                                ;
                                ;       DO A SOFT INIT
                                ;       DO A WRITE CHARACTERISTICS
                                ;       JSR     PC,REWIND
                                ;
                                ;INPUT:
                                ;
                                ;       R5      FIRST DEVICE UNIBUS ADDRESS
                                ;
                                ;
                                ;OUTPUT
                                ;
                                ;       R0      THE CONTENTS OF R4 IS PASSED TO R0
                                ;
                                ;
                                ;-
011074                          REWIND::
011074                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
011100  012704  011170                  MOV     @RWPACK,R4              ;GET PACKET ADDRESS
011104  010465  000000                  MOV     R4,TSDB(R5)             ;SEND PACKET ADDRESS TO EXECUTE
011110  012703  000550                  MOV     @360.,R3                ;ENOUGH TIME FOR 2400' REEL TO REWIND
011114  004737  016330          10$:    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
011120  103417                          BCS     20$                     ;LEAVE WHEN SSR IS SET
011122                                  DELAY   250.                    ;WAIT FOR .25 SECONDS
011122  012727  000372                  MOV     @250.,(PC)+
011126  000000                          .WORD   0
011130  013727  002116                  MOV     L$DLY,(PC)+
011134  000000                          .WORD   0
011136  005367  177772                  DEC     -6(PC)
011142  001375                          BNE     .-4
011144  005367  177756                  DEC     -22(PC)
011150  001367                          BNE     .-20
011152  005303                          DEC     R3                      ;BUMP COUNTER DOWN
011154  001357                          BNE     10$                     ;KEEP GOING
011156  000241                          CLC                             ;CLEAR CARRY TO SET ERROR
011160  010400                  20$:    MOV     R4,R0                   ;PASS THE PACKET ADDRESS
011162  000207                          RTS     PC                      ;RETURN
                                ;
011170                                  .=<.+10>&177770
011170                          RWPACK:
011170  102010                          .WORD   102010                  ;POSTION COMMAND (REWIND)
011172  000000                          .WORD   0                       ;NOT USED
```

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

                        CKRAM::
011174                          SAVREG                          ;SAVE THE GENERAL REGISTERS
011174  012701  002234          MOV     #RAMDATA,R1             ;ADDRESS TO SAVE THE RAM DATA
011200  012702  000201          MOV     #RMPKTBEG,R2            ;BYTE ADDRESS OF FIRST RAM DATA
011204  005003                  CLR     R3                      ;CLEAR THE ERROR FLAG
011210  004737  016416          JSR     PC,CHKTSSR              ;WAIT FOR SSR
011212  112765  000000  000000  MOVB    #0,TSDB(R5)             ;SET MAINTENANCE MODE
011216  004737  016416  10$:    JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
011224  010265  000000          MOV     R2,TSDB(R5)             ;SELECT NEXT RAM ADDRESS
011230  004737  016416          JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
011234  116511  000000          MOVB    TSBA(R5),(R1)           ;READ THE RAM DATA
011240  122124                  CMPB    (R1)+,(R4)+             ;COMPARE TO EXPECTED
011244  001401                  BEQ     20$                     ;BRANCH IF OK
011246  005203                  INC     R3                      ;SET ERROR FLAG
011250  005202          20$:    INC     R2                      ;ADDRESS OF NEXT RAM LOCATION
011252  020227  000210          CMP     R2,#RMPKTEND            ;REACHED END YET ?
011254  003761                  BLE     10$                     ;BRANCH TILL ALL READ
011260  005703                  TST     R3                      ;WAS AN ERROR FOUND ?
011262  001402                  BEQ     30$                     ;BRANCH IF NOT
011264  000241                  CLC                             ;CLEAR CARRY TO SHOW ERROR
011266  000401                  BR      50$                     ;AND EXIT
011270  000261          30$:    SEC                             ;SHOW GOOD COMPARE
011272  012737  000010  002274  50$:    MOV     #8.,RAMSIZ      ;SETUP RAMSIZ FOR PRAMPKT ROUTINE
011274  000207                  RTS     PC                      ;RETURN
011302
```

```
                                        .SBTTL  CKRAM2  - COMPARE RAM TO I/O CHARACTERISTICS DATA
                                ;+
                                ;
                                ;ROUTINE TO READ THE FIRST 8 OR 10 BYTES FROM RAM
                                ;MEMORY AND COMPARE THIS DATA TO A CHARACTERISTICS DATA BLOCK.
                                ;
                                ;INPUT:
                                ;
                                ;       R4      ADDRESS OF THE CHARACTERISTICS DATA
                                ;       R5      FIRST DEVICE UNIBUS ADDRESS
                                ;
                                ;OUTPUT:
                                ;
                                ;       CARRY   SET - RAM MATCHES PACKET
                                ;               CLR - RAM DOES NOT MATCH PACKET
                                ;
                                ;IMPLICIT OUTPUT:
                                ;
                                ;       THE TABLE RAMDATA IS FILLED WITH THE
                                ;       DATA HELD IN RAM.
                                ;       RAMSIZ IS SET TO 8. OR 10. FOR PRAMPKT ROUTINE
                                ;
                                ;SIDE EFFECTS:
                                ;
                                ;       THE SUBSYSTEM IS LEFT IN MAINTENANCE MODE
                                ;-
011304                          CKRAM2::
011304                                  SAVREG                          ;SAVE THE GENERAL REGISTERS
011310  012701  002234                  MOV     #RAMDATA,R1             ;ADDRESS TO SAVE THE RAM DATA
011314  012702  000167                  MOV     #RMCHBEG,R2             ;BYTE ADDRESS OF FIRST RAM DATA
011320  005003                          CLR     R3                      ;CLEAR THE ERROR FLAG
011322  004737  016416                  JSR     PC,CHKTSSR              ;WAIT FOR SSR
011326  112765  000000  000000          MOVB    #0,TSDB(R5)             ;SET MAINTENANCE MODE
011334  004737  016416          10$:    JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
011340  010265  000000                  MOV     R2,TSDB(R5)             ;SELECT NEXT RAM ADDRESS
011344  004737  016416                  JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
011350  116511  000000                  MOVB    TSBA(R5),(R1)           ;READ THE RAM DATA
011354  122124                          CMPB    (R1)+,(R4)+             ;COMPARE TO EXPECTED
011356  001401                          BEQ     20$                     ;BRANCH IF OK
011360  005203                          INC     R3                      ;SET ERROR FLAG
011362  005202                  20$:    INC     R2                      ;ADDRESS OF NEXT RAM LOCATION
011364  012737  000010  002274          MOV     #8.,RAMSIZ              ;ASSUME EXTFEA NOT SET
011372  005737  002220                  TST     EXTFEA                  ;IS THE SOFTWARE EXTENDED FEATURES SET
011376  001407                          BEQ     25$                     ;BR, IF NOT SET
011400  012737  000012  002274          MOV     #10.,RAMSIZ             ;SET RAMSIZ FOR EXTEND FEATURES
011406  020227  000200                  CMP     R2,#RMCHEND             ;AT END OF EXTENDED BUFFER
011412  003750                          BLE     10$                     ;BR, IF NOT AT END YET
011414  000403                          BR      27$                     ;AT END BRANCH
011416  020227  000176          25$:    CMP     R2,#RMCHEND-2           ;REACHED END YET ?
011422  003744                          BLE     10$                     ;BRANCH TILL ALL READ
011424  005703                  27$:    TST     R3                      ;WAS AN ERROR FOUND ?
011426  001402                          BEQ     30$                     ;BRANCH IF NOT
011430  000241                          CLC                             ;CLEAR CARRY TO SHOW ERROR
011432  000401                          BR      50$                     ;AND EXIT
011434  000261                  30$:    SEC                             ;SHOW GOOD COMPARE
011436  000207                  50$:    RTS     PC                      ;RETURN
```

```
                                        .SBTTL  CKMSG   - COMPARE WRITE CHAR. MESSAGE BUFFERS
                                ;*
                                ;
                                ;ROUTINE TO COMPARE A WRITE CHARACTERISTICS EXPD AND RECV
                                ;BUFFER. THE EXPECTED AND RECEIVED BUFFERS ARE STORED FOR
                                ;ERROR PRINT ROUTINES.
                                ;
                                ;INPUT:
                                ;
                                ;       R0      RECV MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       R1      RECV MESSAGE BUFFER LOW ORDER ADDRESS
                                ;       R2      EXPD MESSAGE BUFFER ADDRESS
                                ;OUTPUT:
                                ;
                                ;       CARRY   SET - MESSAGE BUFFERS MATCH
                                ;               CLR -MESSAGE BUFFERS DON'T MATCH
                                ;
                                ;IMPLICIT OUTPUT:
                                ;
                                ;       EXPMSG          BUFFER IS SET TO EXPD DATA
                                ;       RECMSG          BUFFER IS SET TO RECV DATA
                                ;       RCVHIADD        SET TO HIGH ORDER ADDRESS OF RECV
                                ;       RCVLOADD        SET TO LOW ORDER ADDRESS OF RECV
                                ;
                                ;-
011440                          CKMSG::
011440                                  SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
011444  010037  002276                  MOV     R0,RCVHIADD     ;SAVE RECV HIGH ADDRESS
011450  010137  002300                  MOV     R1,RCVLOAD      ;SAVE RECV LOW ADDRESS
011454  005737  003126                  TST     KTENABLE        ;TESTING ABOVE 28K?
011460  001403                          BEQ     10$             ;BR IF NO
011462  004737  017376                  JSR     PC,SETMAP       ;RETURN ADDRESS BIASED TO PAR6 IN R0
011466  010001                          MOV     R0,R1           ;GET RETURNED ADDRESS BIASED TO PAR6
011470  005004                  10$:    CLR     R4              ;WORD IN BUFFER
011472  005003                          CLR     R3              ;CLEAR ERROR SEEN FLAG
011474  010205                          MOV     R2,R5           ;GET EXPD BUFFER ADDRESS
011476  011264  002314          15$:    MOV     (R2),EXPMSG(R4) ;SAVE EXPD FOR ERROR REPORT
011502  011164  002460                  MOV     (R1),RECMSG(R4) ;SAVE RECV FOR ERROR REPORT
011506  022221                          CMP     (R2)+,(R1)+     ;EXPD EQUAL RECV?
011510  001401                          BEQ     25$             ;BR IF YES
011512  005203                          INC     R3              ;SET ERROR SEEN FLAG
011514  062704  000002          25$:    ADD     #2,R4           ;POINT TO NEXT WORD ADDRESS
011520  020427  000014                  CMP     R4,#14          ;DONE FIRST 7 WORDS?
011524  003764                          BLE     15$             ;BR IF NO
011526  032765  000200  000012          BIT     #X2.EXTF,XST2(R5);IS EXTENDED FEATURES SET IN EXPD?
011534  001403                          BEQ     50$             ;BR IF NO
011536  020427  000016                  CMP     R4,#16          ;DONE EXTENDED FEATURES WORD?
011542  003755                          BLE     15$             ;BR IF NO
011544  005703                  50$:    TST     R3              ;ANY ERRORS SEEN?
011546  001402                          BEQ     55$             ;BR IF NO
011550  000241                          CLC                     ;SET FAILURE
011552  000401                          BR      60$             ;
011554  000261                  55$:    SEC                     ;SET SUCCESS
011556  000207                  60$:    RTS     PC              ;RETURN
```

```
                                        .SBTTL  CKMSG2  - COMPARE EXPD RECV MESSAGE BUFFERS
                                ;+
                                ;ROUTINE TO COMPARE AN EXPECTED AND RECEIVED MESSAGE
                                ;BUFFER. THE EXPECTED AND RECEIVED BUFFERS ARE STORED FOR
                                ;ERROR PRINT ROUTINES.
                                ;
                                ;INPUT:
                                ;       R0      RECV MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       R1      RECV MESSAGE BUFFER LOW ORDER ADDRESS
                                ;       R2      EXPD MESSAGE BUFFER ADDRESS
                                ;       R3      NUMBER OF BYTES TO COMPARE
                                ;
                                ;OUTPUT:
                                ;       CARRY   SET - MESSAGE BUFFERS MATCH
                                ;               CLR - MESSAGE BUFFERS DON'T MATCH
                                ;
                                ;IMPLICIT OUTPUT:
                                ;       EXPMSG          BUFFER IS SET TO EXPD DATA
                                ;       RECMSG          BUFFER IS SET TO RECV DATA
                                ;       RCVHIADD        SET TO HIGH ORDER ADDRESS OF RECV
                                ;       RCVLOADD        SET TO LOW ORDER ADDRESS OF RECV
                                ;-
011560                          CKMSG2::
011560                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
011564  020327  000144                   CMP     R3,#RECMSG-EXPMSG;@@D IS COUNT ABOVE MAX ALLOWED?
011570  003412                          BLE     5$                      ;@@D BR IF NO
011572  012703  000144                   MOV     #RECMSG-EXPMSG,R3;@@D
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$PNTF
011612  062706  000004                   ADD     #4,SP
011616  010037  002276          5$:     MOV     R0,RCVHIADD             ;SAVE RECV HIGH ADDRESS
011622  010137  002300                   MOV     R1,RCVLOAD              ;SAVE RECV LOW ADDRESS
011626  005737  003126                   TST     KTENABLE                ;TESTING ABOVE 28K?
011632  001403                          BEQ     10$                     ;BR IF NO
011634  004737  017376                   JSR     PC,SETMAP               ;RETURN ADDRESS BIASED TO PAR6 IN R0
011640  010001                          MOV     R0,R1                   ;GET RETURNED ADDRESS BIASED TO PAR6
011642  005004                  10$:    CLR     R4                      ;WORD IN BUFFER
011644  005005                          CLR     R5                      ;CLEAR ERROR SEEN FLAG
011646  111264  002314          15$:    MOVB    (R2),EXPMSG(R4)         ;SAVE EXPD FOR ERROR REPORT
011652  111164  002460                   MOVB    (R1),RECMSG(R4)         ;SAVE RECV FOR ERROR REPORT
011656  122221                          CMPB    (R2)+,(R1)+             ;EXPD EQUAL RECV?
011660  001401                          BEQ     25$                     ;BR IF YES
011662  005205                          INC     R5                      ;SET ERROR SEEN FLAG
011664  062704  000001          25$:    ADD     #1,R4                   ;POINT TO NEXT BYTE
011670  020403                          CMP     R4,R3                   ;DONE ALL BYTES?
011672  002001                          BGE     50$                     ;BR IF YES
011674  000764                          BR      15$                     ;DO NEXT BYTE
011676  005705                  50$:    TST     R5                      ;ANY ERRORS SEEN?
011700  001402                          BEQ     55$                     ;BR IF NO
011702  000241                          CLC                             ;SET FAILURE
011704  000401                          BR      60$                     ;
011706  000261                  55$:    SEC                             ;SET SUCCESS
011710  000207                  60$:    RTS     PC                      ;RETURN
```

CKMSG2 - COMPARE EXPD RECV MESSAGE BUFFERS

```
2254 011712     120     122     117  DEBUGMSG: .ASCIZ 'PROGRAM INTERNAL ERROR -CKMSG2 MESSAGE BUFFER EXCEEDED-';@@D
2255 012002     045     116     045  FERCM:   .ASCII  /%N%A  %%%/
2256 012013     040     040     124  ERCM:    .ASCIZ  /  TSSR ERROR CODE REC'D = /
2257 012046     056     056     056  SIMSG:   .ASCIZ  /.... AFTER DOING SOFT INIT/
2258 012101     124     105     123  TINERR:  .ASCIZ  /TEST: .../
2259                                          .EVEN
2260                                 ;+
2261                                 ;
2262                                 ;PRINT ROUTINE TO FATAL SOFT INIT ERRORS
2263                                 ;
2264                                 ;INPUT:
2265                                 ;
2266                                 ;       R1      CONTENTS OF TSSR AT ERROR
2267                                 ;
2268                                 ;SIDE EFFECTS:
2269                                 ;
2270                                 ;       EXECUTES DROP UNIT TO CEASE TESTING
2271                                 ;
2272                                 ;-
2273
2274 012114                                      BGNMSG  SFIMSG
     012114                          SFIMSG::
2275 012114  004737  006020                      JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
2276 012120  004737  017262                      JSR     PC,CKDROP       ;DROP UNIT, IF ALLOWED
2277 012124                                      ENDMSG
     012124                          L10003:
     012124  104423                              TRAP    C$MSG
2278
2279                                 ;+
2280                                 ;PRINT ROUTINE TO PRINT THE CONTENTS OF
2281                                 ;TSSR AND A COMMAND PACKET OTHER THAN GET STATUS COMMAND PACKET.
2282                                 ;
2283                                 ;INPUTS:
2284                                 ;
2285                                 ;       R1      TSSR CONTENTS
2286                                 ;       R4      ADDRESS OF COMMAND PACKET
2287                                 ;
2288                                 ;-
2289
2290 012126                                      BGNMSG  PKTSSR
     012126                          PKTSSR::
2291 012126  004737  006020                      JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
2292 012132  012700  000004                      MOV     #4,R0           ;NO. OF WORDS IN PACKET
2293 012136  004737  007446                      JSR     PC,PRIPKT       ;PRINT THE CONTENTS OF COMMAND PACKET
2294 012142                                      ENDMSG
     012142                          L10004:
     012142  104423                              TRAP    C$MSG
```

```
                                        ;+
                                        ;PRINT ROUTINE TO PRINT THE CONTENTS OF
                                        ;TSSR AND A GET STATUS COMMAND PACKET.
                                        ;
                                        ;INPUTS:
                                        ;
                                        ;       R1      TSSR CONTENTS
                                        ;       R4      ADDRESS OF COMMAND PACKET
                                        ;-
                                                BGNMSG  PKTGETS
                                        PKTGETS::
012144  004737  006020                          JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
012150  012700  000002                          MOV     #2,R0           ;NO. OF WORDS IN GET STATUS PACKET
012154  004737  007446                          JSR     PC,PRIPKT       ;PRINT THE CONTENTS OF COMMAND PACKET
012160                                          ENDMSG
                                        L10005:
012160  104423                                  TRAP    C$MSG
                                        ;+
                                        ;PRINT TSSR ERRORS FOR INITIALIZATION TESTS
                                        ;
                                        ;INPUTS:
                                        ;       R1      TSSR CONTENTS
                                        ;       R4      ADDRESS OF COMMAND PACKET
                                        ;-
                                                BGNMSG  SFFMSG
                                        SFFMSG::
012162  004737  006020                          JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
012166                                          ENDMSG
                                        L10006:
012166  104423                                  TRAP    C$MSG
                                                .SBTTL  PKTMES  - PRINT TSSR AND MESSAGE BUFFER
                                        ;+
                                        ;PRINT ROUTINE TO PRINT THE CONTENTS OF TSSR AND MESSAGE
                                        ;BUFFER FOR ERROR REPORTS
                                        ;
                                        ;INPUTS:
                                        ;
                                        ;       R1      CONTENTS OF TSSR
                                        ;       R2      LOW ORDER MESSAGE BUFFER
                                        ;       R3      HIGH ORDER MESSAGE BUFFER ADDRESS
                                        ;       NOTE: R3 IS IGNORED IF KTENABLE FLAG IS CLEAR
                                        ;-
                                                BGNMSG  PKTMES
                                        PKTMES::
012170  004737  006020                          JSR     PC,PRITSSR              ;PRINT CONTENTS OF TSSR
012174  010200                                  MOV     R2,R0                   ;LOW ORDER ADDRESS
012176  010301                                  MOV     R3,R1                   ;HIGH ORDER ADDRESS
012200  004737  014322                          JSR     PC,PRMESS               ;PRINT THE MESSAGE BUFFER
012204                                          ENDMSG
                                        L10007:
012204  104423                                  TRAP    C$MSG
```

```
                                        .SBTTL  ADDSSR  - PRINT TEST ADDRESS AND TSSR
                                ;+
                                ;PRINT ROUTINE TO PRINT THE CONTENTS OF
                                ;TSSR AND A MEMORY TEST ADDRESS
                                ;
                                ;INPUTS:
                                ;
                                ;       R5      FIRST DEVICE UNIBUS ADDRESS
                                ;       ERRHI   HIGH ORDER MEMORY TEST ADDRESS
                                ;       ERRLO   LOW ORDER MEMORY TEST ADDRESS
                                ;-
                                        BGNMSG  ADDSSR
012206                          ADDSSR::
012206  004737  010352                  JSR     PC,PRITADD      ;PRINT MEMORY TEST ADDRESS
012212  016501  000002                  MOV     TSSR(R5),R1     ;GET CURRENT TSSR
012216  004737  006020                  JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
012222                                  ENDMSG
012222                          L10010:
012222  104423                          TRAP    C$MSG

                                        .SBTTL  MSGEXP - PRINT WRITE CHAR. EXPD-RECV MESSAGE BUFFERS
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT WRITE CHARACTERISTIC MESSAGE BUFFER
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                ;-
                                        BGNMSG  MSGEXP
012224                          MSGEXP::
012224  012700  000007                  MOV     #7,R0           ;ASSUME NO EXT FEATURES
012230  005737  002220                  TST     EXTFEA          ;EXT FEATURES SET?
012234  001402                          BEQ     5$              ;BR IF NO
012236  012700  000010                  MOV     #8.,R0          ;EXT FEATURE BUFFER IS 8 WORDS
012242  004737  014632          5$:     JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
012246                                  ENDMSG
012246                          L10011:
012246  104423                          TRAP    C$MSG
```

```
                                        .SBTTL  FIFEXP  - PRINT FIFO EXP/RECV DATA
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT FIFO EXP/RECV DATA
                                ;
                                ;       R1      - BYTE COUNT
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER (CONTAINS FIFO DATA ONLY
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER (CONTAINS FIFO DATA ONLY)
                                ;-
012250                                  BGNMSG  FIFEXP
012250                          FIFEXP::
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  C10600                          MOV     SP,R0
012264  104415                          TRAP    C$PNTX
012266  062706  000006                  ADD     #6,SP
012272                                  PRINTX  #FIF2MSG        ;PRINT HEADER MSG
012272  012746  012371                  MOV     #FIF2MSG,-(SP)
012276  012746  000001                  MOV     #1,-(SP)
012302  010600                          MOV     SP,R0
012304  104415                          TRAP    C$PNTX
012306  062706  000004                  ADD     #4,SP
012312  010100                          MOV     R1,R0           ;GET BYTE COUNT
012314  004737  015202                  JSR     PC,PRBYTEXP     ;PRINT FIFO BYTES IN ERROR
012320                                  ENDMSG
012320                          L10012:
012320  104423                          TRAP    C$MSG
012322     045     116     045  FIF1MSG:        .ASCIZ  '#N#A NUMBER OF BYTES TRANSFERRED = #D2'
012371     045     116     045  FIF2MSG:        .ASCIZ  '#N#A FIFO DATA BYTES IN ERROR:'
                                        .EVEN
```

```
                                        .SBTTL  MSGSTAT - PRINT STATUS HEADER AND MESSAGE BUFFERS
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT MESSAGE BUFFER EXPD/RECV
                                ;
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                ;-
012430                                  BGNMSG  MSGSTAT
012430                          MSGSTAT::
012430  012701  012472                    MOV     #STATCOD,R1     ;ASCII ADDRESS TABLE
012434  012100                  10$:      MOV     (R1)+,R0        ;DONE ALL MSG LINES?
012436  001410                            BEQ     20$             ;BR IF YES
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$PNTX
012452  062706  000004                    ADD     #4,SP
012456  000766                            BR      10$             ;DO ANOTHER MSG LINE
012460  012700  000012          20$:      MOV     #10.,R0         ;NUMBER OF WORDS IN A READ STATUS BUFFER
012464  004737  014632                    JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
012470                                    ENDMSG
012470                          L10013:
012470  104423                            TRAP    C$MSG

012472  012510  012552  012643  STATCOD:        .WORD   1$,2$,3$,4$,5$,6$,0
012510    045     116     045   1$:.ASCIZ  '<N><A Tape Bus Signals in Word #8:'
012552    045     116     045   2$:.ASCIZ  '<N><A       PARERR<15>  IEOT  <12>  IFMK  <9>  IRDY<6>  IRWD<2>'
012643    045     116     045   3$:.ASCIZ  '<N><A       IRESV2<14>  IIDENT<11>  IHER  <8>  IONL<5>  IFBY<1>'
012734    045     116     045   4$:.ASCIZ  '<N><A       IRESV1<13>  ICER  <10>  ISPEED<7>  ILDP<4>  IFPT<0>'
013025    045     116     045   5$:.ASCIZ  '<N><A Tape Bus Signals in Word #9:'
013067    045     116     045   6$:.ASCIZ  '<N><A       DATMIS<7>  ILW<6>  OUTRDY<5>  INRDY<4>'
                                        .EVEN
```

MSGLOOP - PRINT LOOPBACK HEADER AND MESSAGE BUFFERS

```
                                        .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
                                ;-
013144                                  BGNMSG  MSGLOOP
013144                          MSGLOOP:
013144  012701  013206                  MOV     #LOOPCOD,R1     ;ASCII ADDRESS TABLE
013150  012100                  10$:    MOV     (R1)+,R0        ;DONE ALL MSG LINES?
013152  001410                          BEQ     20$             ;BR IF YES
013154                                  PRINTX  R0              ;PRINT STATUS BIT NAMES
013154  C10046                          MOV     R0,-(SP)
013156  012746  000001                  MOV     #1,-(SP)
013162  010600                          MOV     SP,R0
013164  104415                          TRAP    C$PNTX
013166  062706  000004                  ADD     #4,SP
013172  000766                          BR      10$             ;DO ANOTHER MSG LINE
013174  012700  000012          20$:    MOV     #10.,R0         ;NUMBER OF WORDS IN A READ STATUS BUFFER
013200  004737  014632                  JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
013204                                  ENDMSG
013204                          L10014:
013204  104423                          TRAP    C$MSG

013206  013226  013301  013400  LOOPCOD:        .WORD   1$,2$,3$,4$,5$,6$,7$,0
013226    045     116     045   1$:.ASCIZ  '<NL>A Tape Bus Loopback Signals in Word #8:'
013301    045     116     045   2$:.ASCIZ  '<NL>A      PARERR<15>          IRESV2<14>          IRESV1<13>'
013400    045     116     045   3$:.ASCIZ  '<NL>A IHISP=>IEOT<12>    IWRT=>IIDENT<11>    IREV  =>ICER  <10>'
013477    045     116     045   4$:.ASCIZ  '<NL>A IWFM =>IFMK<09>    IEDIT=>IHER <08>    IFAD  =>ISPEED<07>'
013576    045     116     045   5$:.ASCIZ  '<NL>A ITADO=>IRDY<06>    ITAD1=>IONL <05>    IERASE=>ILDP  <04>'
013675    045     116     045   6$:.ASCIZ  '<NL>A IREW =>IDBY<03>    IRWU =>IRWD <02>    IFEN  =>IFBY  <01>'
013774    045     116     045   7$:.ASCIZ  '<NL>A IGO  =>IFPT<00>'
                                        .EVEN
```

```
                                        .SBTTL  MSGSUB - PRINT WRITE SUBSYSTEM MESSAGE BUFFER
                                ;*
                                ;
                                ;PRINT ROUTINE TO PRINT MESSAGE BUFFER EXPD/RECV
                                ;
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                ;-
014022                          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
                                ;-
014034                          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
                                ;-
014056                          PRAMPKT:
014056                                  SAVREG                                  ;SAVE R1-R5 UNTIL NEXT RETURN
014062  C12701  002234                  MOV     @RAMDATA,R1                     ;DATA FROM THE RAM
014066  005002                          CLR     R2                              ;INIT BYTE NUMBER
014070  122124                  5$:     CMPB    (R1)+,(R4)+                     ;COMPARE EXPECTED, RECEIVED
014072  001005                          BNE     7$                              ;BR IF NO MATCH
014074                                  FORCERROR       7$,NOTSSR
014104  000436                          BR      10$                             ;BRD
014106  116105  177777          7$:     MOVB    -1(R1),R5                       ;GET RECV RAM DATA
014112  116403  177777                  MOVB    -1(R4),R3                       ;GET EXPD PACKET DATA
014116                                  XOR     R5,R3                           ;XOR EXPD/RECV
014126  042703  177400                  BIC     #177400,R3                      ;LOW BYTE ONLY
014132  116137  177777  002226          MOVB    -1(R1),RECV                     ;GET RECEIVED RAM DATA
014140  116437  177777  002224          MOVB    -1(R4),EXPD                     ;GET EXPECTED RAM DATA
014146                                  PRINTB  #RAMASC,R2,RECV,EXPD,R3
014146  010346                          MOV     R3,-(SP)
014150  013746  002224                  MOV     EXPD,-(SP)
014154  013746  002226                  MOV     RECV,-(SP)
014160  010246                          MOV     R2,-(SP)
014162  012746  014236                  MOV     #RAMASC,-(SP)
014166  012746  000005                  MOV     #5,-(SP)
014172  010600                          MOV     SP,R0
014174  104414                          TRAP    C$PNTB
014176  062706  000014                  ADD     #14,SP
014202  005202                  10$:    INC     R2                              ;UPDATE BYTE COUNT
014204  005737  002274                  TST     RAMSIZ                          ;DEFAULT TO 8.?
014210  001404                          BEQ     15$                             ;BR IF YES
014212  020237  002274                  CMP     R2,RAMSIZ                       ;DONE ALL BYTES?
014216  003724                          BLE     5$                              ;BR IF NO
014220  000403                          BR      25$                             ;
014222  020227  000010          15$:    CMP     R2,#8.                          ;DONE DEFAULT NUMBER OF BYTES?
014226  002720                  20$:    BLT     5$                              ;BR IF NO
014230  005037  002274          25$:    CLR     RAMSIZ                          ;SET DEFAULT RAMSIZ
014234  000207                          RTS     PC                              ;RETURN

014236     045     116     045  RAMASC: .ASCIZ  '<N><A  BYTE: <02><A RAM: <03><A Packet: <03><A XOR:<03>'
                                        .EVEN
```

```
                                        .SBTTL  PRMESS  - PRINT CONTENTS OF MESSAGE BUFFER
                                ;+
                                ;THIS ROUTINE PRINTS THE CONTENTS OF
                                ;THE 7 OR 8 WORD MESSAGE BUFFER RETURNED BY THE TSV-05.
                                ;
                                ;INPUT:
                                ;       R0      LOW ORDER ADDRESS OF MESSAGE BUFFER
                                ;       R1      HIGH ORDER ADDRESS OF MESSAGE BUFFER
                                ;       NOTE: R1 IS IGNORED IF KTENABLE FLAG IS CLEAR
                                ;THIS ROUTINE IS NORMALLY CALLED FROM A PRINT ROUTINE
                                ;-
014322                          PRMESS: SAVREG                  ;SAVE THE REGISTERS
014326  010005                          MOV     R0,R5           ;SAVE LOW ORDER ADDRESS
014330  005737  003126                  TST     KTENABLE        ;ADDRESS ABOVE 28K?
014334  001001                          BNE     10$             ;BR IF YES
014336  005001                          CLR     R1              ;SET HIGH ORDER ADDRESS TO 0
014340  010103                  10$:    MOV     R1,R3           ;SAVE HIGH ORDER ADDRESS
014342  006100                          ROL     R0              ;SHIFT BIT15 TO C BIT
014344  006101                          ROL     R1              ;SHIFT TO HIGH ORDER FOR PRINTOUT
014346                                  PRINTX  #PROASC,R1,R5   ;PRINT MESSAGE BUFFER ADDRESS
014346  010546                          MOV     R5,-(SP)
014350  010146                          MOV     R1,-(SP)
014352  012746  014500                  MOV     #PROASC,-(SP)
014356  012746  000003                  MOV     #3,-(SP)
014362  010600                          MOV     SP,R0
014364  104415                          TRAP    C$PNTX
014366  062706  000010                  ADD     #10,SP
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$PNTX
014406  062706  000004                  ADD     #4,SP
014412  005004                          CLR     R4              ;NUMBER OF THE NEXT WORD
014414  010501                          MOV     R5,R1           ;COPY LOW ORDER ADDRESS
014416  010300                          MOV     R3,R0           ;COPY HIGH ORDER ADDRESS
014420  001403                          BEQ     20$             ;BR IF NOT ABOVE 28K
014422  004737  017376                  JSR     PC,SETMAP       ;SETUP PAR ADDRESS IN R0
014426  010005                          MOV     R0,R5           ;GET PAR FORMAT ADDRESS ABOVE 28K
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
014454  005204                          INC     R4              ;NUMBER OF THE NEXT
014456  020427  000007                  CMP     R4,#7           ;DONE ALL YET ?
014462  003005                          BGT     50$             ;BRANCH IF ALL DONE
014464  002761                          BLT     20$             ;PRINT FIRST 7 WORDS
014466  032763  000200  000012          BIT     #X2.EXTF,XST2(R3);EXTENDED FEATUTES ON ?
014474  001355                          BNE     20$             ;PRINT EXTENDED STATUS WORD
014476  000207                  50$:    RTS     PC              ;RETURN
014500     045     116     045  PROASC: .ASCIZ  '%N%A Message Buffer Address = %O1%O5'
014545     045     116     045  PR1ASC: .ASCIZ  '%N%A Message Buffer Contents:'
014603     045     116     045  PRASC:  .ASCIZ  '%N%A    Word%O1%A: %O'
```

```
                                        .EVEN
                                        .SBTTL  PRMSGEXP - PRINT EXPD/RECV MESSAGE BUFFERS
                                ;+
                                ;ROUTINE TO PRINT EXPECTED AND RECEIVED MESSAGE BUFFERS
                                ;       R0      - NUMBER OF WORDS IN BUFFER
                                ;IMPLICIT INPUTS:
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                ;-
014632                          PPRMSGEXP::
014632                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
014636  010005                          MOV     R0,R5                   ;SAVE NUMBER OF WORDS
014640  013700  002300                  MOV     RCVLOADD,R0             ;GET RECV LOW ADDRESS
014644  010004                          MOV     R0,R4                   ;COPY LOW ADDRESS
014646  013701  002276                  MOV     RCVHIADD,R1             ;GET RECV HIGH ADDRESS
014652  006100                          ROL     R0                      ;SHIFT BIT15 TO C BIT
014654  006101                          ROL     R1                      ;SHIFT TO HIGH ORDER FOR PRINTOUT
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$PNTX
014676  062706  000010                  ADD     #10,SP
014702                                  PRINTX  #PRMSG1                 ;PRINT HEADER FOR CONTENTS
014702  012746  015057                  MOV     #PRMSG1,-(SP)
014706  012746  000001                  MOV     #1,-(SP)
014712  010600                          MOV     SP,R0
014714  104415                          TRAP    C$PNTX
014716  062706  000004                  ADD     #4,SP
014722  005004                          CLR     R4                      ;NUMBER OF THE CURRENT WORD
014724  012701  002314                  MOV     #EXPMSG,R1              ;GET EXPD BUFFER ADDRESS
014730  012702  002460                  MOV     #RECMSG,R2              ;GET RECV BUFFER ADDRESS
014734  011100                  20$:    MOV     (R1),R0                 ;GET EXPD
014736  011203                          MOV     (R2),R3                 ;GET RECV
014740                                  XOR     R0,R3                   ;XOR EXPD/RECV
014750                                  PRINTX  #PRMSG2,R4,(R1)+,(R2)+,R3
014750  010346                          MOV     R3,-(SP)
014752  012246                          MOV     (R2)+,-(SP)
014754  012146                          MOV     (R1)+,-(SP)
014756  010446                          MOV     R4,-(SP)
014760  012746  015115                  MOV     #PRMSG2,-(SP)
014764  012746  000005                  MOV     #5,-(SP)
014770  010600                          MOV     SP,R0
014772  104415                          TRAP    C$PNTX
014774  062706  000014                  ADD     #14,SP
015000  005204                          INC     R4                      ;NUMBER OF THE NEXT
015002  020405                          CMP     R4,R5                   ;DONE ALL YET?
015004  002001                          BGE     50$                     ;BR IF YES
015006  000752                          BR      20$                     ;DO ANOTHER
015010  000207                  50$:    RTS     PC                      ;RETURN
015012     045     116     045  PRMSG0: .ASCIZ  '<N><A Message Buffer Address = <01><05>'
015057     045     116     045  PRMSG1: .ASCIZ  '<N><A Message Buffer Contents:'
015115     045     116     045  PRMSG2: .ASCIZ  '<N><A   WORD #<D2><A  EXPD: <06><A  RECV: <06><A  XOR: <06>'
```

```
                                        .EVEN
                                        .SBTTL  PRBYTEXP - PRINT ERROR BYTES IN EXP/REC MESSAGE BUFFER
                                ;+
                                ;
                                ;ROUTINE TO PRINT ERROR BYTES IN MESSAGE BUFFERS
                                ;       ONLY THE FIRST 8 ERRORS ENCOUNTERED ARE PRINTED DUE TO SCREEN SPACE
                                ;
                                ;       R0      - NUMBER OF BYTES IN BUFFER
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;-
015202                          PRBYTEXP::
015202                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
015206  010005                          MOV     R0,R5                   ;SAVE NUMBER OF BYTES
015210  005037  002312                  CLR     PRMNO                   ;INIT ERROR COUNT
015214  C05004                          CLR     R4                      ;NUMBER OF THE CURRENT BYTE
015216  012701  002314                  MOV     #EXPMSG,R1              ;GET EXPD BUFFER ADDRESS
015222  012702  002460                  MOV     #RECMSG,R2              ;GET RECV BUFFER ADDRESS
015226  111100                  20$:    MOVB    (R1),R0                 ;GET EXPD BYTE
015230  042700  177400                  BIC     #^C<377>,R0             ;CLEAR UPPER BYTE
015234  110037  015550                  MOVB    R0,PRBEXP               ;SAVE FOR ERROR REPORT
015240  111203                          MOVB    (R2),R3                 ;GET RECV BYTE
015242  042703  177400                  BIC     #^C<377>,R3             ;CLEAR UPPER BYTE
015246  110337  015552                  MOVB    R3,PRBREC               ;FOR ERROR REPORT
015252                                  XOR     R0,R3                   ;XOR EXPD/RECV
015262  122122                          CMPB    (R1)+,(R2)+             ;EXPD = RECV?
015264  001431                          BEQ     30$                     ;BR IF YES
015266  005237  002312                  INC     PRMNO                   ;UPDATE ERROR COUNT
015272  023727  002312  000010          CMP     PRMNO,#8.               ;PRINTED 8?
015300  101023                          BHI     30$                     ;BR IF YES
015302                          27$:    PRINTX  #PRBMSG,R4,PRBEXP,PRBREC,R3
015302  010346                          MOV     R3 -(SP)
015304  013746  015552                  MOV     PRBREC,-(SP)
015310  013746  015550                  MOV     PRBEXP,-(SP)
015314  010446                          MOV     R4,-(SP)
015316  012746  015416                  MOV     #PRBMSG,-(SP)
015322  012746  000005                  MOV     #5,-(SP)
015326  010600                          MOV     SP,R0
015330  104415                          TRAP    C$PNTX
015332  062706  000014                  ADD     #14,SP
015336                                  FORCEXIT        50$             ;@@D
015346  000404                          BR      35$                     ;@@D
015350                          30$:
015350                                  FORCERROR  27$,NOTSSR           ;@@D
015360                          35$:                                    ;@@D
015360  005204                          INC     R4                      ;NUMBER OF THE NEXT
015362  020405                          CMP     R4,R5                   ;DONE ALL YET?
015364  002001                          BGE     50$                     ;BR IF YES
015366  000717                          BR      20$                     ;DO ANOTHER
015370                          50$:    PRINTX  #PRBTOT,PRMNO           ;PRINT TOTAL ERROR COUNT
015370  013746  002312                  MOV     PRMNO,-(SP)
015374  012746  015503                  MOV     #PRBTOT,-(SP)
015400  012746  000002                  MOV     #2,-(SP)
015404  010600                          MOV     SP,R0
```

PRBYTEXP - PRINT ERROR BYTES IN EXP/REC MESSAGE BUFFER

```
        015406  104415                          TRAP    C$PNTX
        015410  062706  000006                  ADD     #6,SP
  2666  015414  000207                          RTS     PC                  ;RETURN
  2667
  2668  015416     045     116     045  PRBMSG: .ASCIZ  '<N><A>   BYTE #<D2><A>  EXPD: #<03><A>  RECV: #<03><A>  XOR: #<03>
  2669  015503     045     116     045  PRBTOT: .ASCIZ  '<N><A> NUMBER OF BYTES IN ERROR = <D2>'
  2670                                           .EVEN
  2671  015550  000000                  PRBEXP: .WORD   0                   ;EXPD
  2672  015552  000000                  PRBREC: .WORD   0                   ;RECV
  2673                                          .SBTTL  EXPREC  - PRINT EXPD/RECV WORD DATA
  2674                                  ;+
  2675                                  ;
  2676                                  ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
  2677                                  ;
  2678                                  ;INPUTS:
  2679                                  ;
  2680                                  ;       R1      RECEIVED DATA
  2681                                  ;       R2      EXPECTED DATA
  2682                                  ;
  2683                                  ;-
  2684
  2685  015554                                  BGNMSG  EXPREC
        015554                          EXPREC::
  2686  015554  004737  010020                  JSR     PC,PRIXOR               ;PRINT THE DATA
  2687  015560                                  ENDMSG
        015560                          L10017:
        015560  104423                          TRAP    C$MSG
  2688                                          .SBTTL  EXPBREC - PRINT EXPD/RECV BYTE DATA
  2689                                  .+
  2690                                  ;
  2691                                  ;PRINT ROUTINE TO DISPLAY BYTE EXPD/RECV DATA
  2692                                  ;
  2693                                  ;
  2694                                  ;INPUTS:
  2695                                  ;
  2696                                  ;       R1      RECEIVED DATA BYTE
  2697                                  ;       R2      EXPECTED DATA BYTE
  2698                                  ;
  2699                                  ;-
  2700
  2701  015562                                  BGNMSG  EXPBREC
        015562                          EXPBREC::
  2702  015562  004737  007670                  JSR     PC,PRIBXOR              ;PRINT THE DATA
  2703  015566                                  ENDMSG
        015566                          L10020:
        015566  104423                          TRAP    C$MSG
  2704
  2705
  2706                                          .SBTTL  RAMERR  - PRINT RAM AND PACKET DATA
  2707                                  ;+
  2708                                  ;
  2709                                  ;PRINT ROUTINE TO DISPLAY RAM/PACKET DATA
  2710                                  ;
  2711                                  ;INPUTS:
  2712                                  ;
  2713                                  ;       R4      POINTER TO COMMAND PACKET
  2714                                  ;
```

RAMERR - PRINT RAM AND PACKET DATA

```
                                        ;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
                                        ;-
                                        
015570                                  BGNMSG  RAMERR
015570                                  RAMERR::
015570  004737  014056                  JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
015574                                  ENDMSG
015574                                  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
                                        ;-
                                        
015576                                  BGNMSG  RAMTADD
015576                                  RAMTADD::
015576  004737  010352                  JSR     PC,PRITADD      ;PRINT TEST ADDRESS
015602  004737  014056                  JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
015606                                  ENDMSG
015606                                  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
```

RAMEXP - PRINT RAM EXPD/RECV DATA

```
                                        ;       R4      CONTROLLER RAM ADDRESS
                                        ;-

                                                BGNMSG  RAMEXP
                                        RAMEXP::
                                                BIC     #^C<377>,R1             ;SAVE EXPD RAM DATA BYTE
                                                BIC     #^C<377>,R2             ;SAVE EXPD RAM DATA BYTE
                                                JSR     PC,PRIRAM               ;PRINT THE RAM ADDRESS
                                                JSR     PC,PRIXOR               ;PRINT THE DATA
                                                ENDMSG
                                        L10023:
                                                TRAP    C$MSG

                                                .SBTTL  TIMEXP  - PRINT TIMER A,B AND EXP/REC
                                        ;+
                                        ;
                                        ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
                                        ;AND TIMER A,B HEADER MESSAGE
                                        ;
                                        ;INPUTS:
                                        ;
                                        ;       R1      RECEIVED DATA
                                        ;       R2      EXPECTED DATA
                                        ;-

                                                BGNMSG  TIMEXP
                                        TIMEXP::
                                                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$PNTX
015646  062706  000004                        ADD     #4,SP
2790 015652  004737  010020                    JSR     PC,PRIXOR               ;PRINT THE DATA
2791 015656                                    ENDMSG
015656                                  L10024:
015656  104423                                TRAP    C$MSG

2793 015660     045     116     045    TIMSGO: .ASCIZ  '<N><A TIMER A STATUS IS IN BIT 3<N><A TIMER B STATUS IS IN BIT 2'
                                        .EVEN
                                                .SBTTL  BADSSR - PRINT TSSR ERRORS ON DATA TRANSFERS

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

                                                BGNMSG  BADSSR
                                        BADSSR::
2809 015760  010246                             MOV     R2,-(SP)                ;SAVE DATA TRANSFERRED
2810 015762  042702  177400                     BIC     #177400,R2              ;GET JUST ONE BYTE
```

BADSSR - PRINT TSSR ERRORS ON DATA TRANSFERS

```
   2811 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  104414                          TRAP    C$PNTB
        016004  062706  000006                  ADD     #6,SP
   2812 016010  012602                          MOV     (SP)+,R2                ;RESTORE R2
   2813 016012  004737  006020                  JSR     PC,PRITSSR              ;DECODE TSSR CONTENTS
   2814 016016                                  ENDMSG
        016016                          L10025:
        016016  104423                          TRAP    C$MSG
   2815 016020     045     116     045  XFERASC:        .ASCIZ  '%N%A Data Transferred = %03'
```

GLOBAL SUBROUTINES SECTION

```
                                .SBTTL  GLOBAL SUBROUTINES SECTION

                                ;+
                                ; THE GLOBAL SUBROUTINES SECTION CONTAINS THE SUBROUTINES
                                ; THAT ARE USED IN MORE THAN ONE TEST.
                                ;--
                                        .SBTTL  SOFINIT - SOFT INITIALIZE OF CONTROLLER

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

016054                          SOFINIT::
016054                                  SAVREG                  ; SAVE THE REGISTERS
016060  012765  000000  000002          MOV     #0,TSSR(R5)     ; DO THE INIT.
016066  004737  016330                  JSR     PC,WAITF        ; WAIT FOR SSR
016072  016500  000002                  MOV     TSSR(R5),R0     ;GET THE TSSR REGISTER
016076  010004                          MOV     R0,R4           ;TSSR CONTENTS
016100  042704  176277                  BIC     #^C<HIADDR!OFL>,R4
016104  052704  002200                  BIS     #SSR!NBA,R4     ;R4 HAS EXPECTED CONTENTS
016110  020400                          CMP     R4,R0           ;ONLY EXPECTED BITS SET ?
016112  001402                          BEQ     5$              ;BRANCH IF OKAY
016114  000241                          CLC                     ;CLEAR THE CARRY FOR ERROR
016116  000401                          BR      10$             ;GO TO EXIT
016120  000261                  5$:     SEC                     ;SET THE CARRY BIT
016122  000207                  10$:    RTS     PC              ;RETURN TO CALLER
```

```
                                .SBTTL  CHKAMB  - CHECK TSSR FOR AMBIGUITY

                                ;+
                                ;
                                ;THIS ROUTINE TESTS THE CONTENTS OF THE TSSR REGISTER
                                ;FOR AMBIGUITY
                                ;
                                ;INPUT:
                                ;
                                ;       R0      CONTENTS OF TSSR
                                ;
                                ;OUTPUT:
                                ;
                                ;       R0      CONTENTS OF TSSR
                                ;
                                ;       CARRY   SET - NO AMBIGUITY
                                ;               CLR - AMBIGUOUS CONTENTS
                                ;
                                ;-

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 CPU REGISTERS AND DISMISS.
                                ;

                                ; BIT DEFINITIONS FOR "INTMASK" AND "INTFLAG" BYTES:
                                ;
 000200                                 IOKCKIN=BIT7    ; DON'T CHECK FOR BAD INTERRUPTS -- TEST WILL.
 000001                                 IOKSTP=BIT0     ; EXPECT "STOP" INTERRUPT.
                                ;
                                ;INTERRUPT MASK -- SAYS EXPECTING INTERRUPTS
016224    000                   INTMASK:        .BYTE   0
                                ;INTERRUPT FLAG -- SAYS WE GOT ONE (IF POSITIVE)
016225    000                   INTFLAG:        .BYTE   0

                                ;SAVED INTERRUPT VECTOR:
016226  000000                  INTVEC: .WORD   0
                                ;SAVE CPU PC
016230  000000                  INTCPC: .WORD   0

                                ;SUBROUTINE TO ENABLE INTERRUPTS:
016232  010046                  ENAINT: MOV     R0,-(SP)        ;SAVE R0
016234  013700  002202                  MOV     IVEC,R0         ;GET POINTER TO VECTORS
016240  012720  016276                  MOV     #INT?,(R0)+     ;SET UP INTERRUPT VECTOR
016244  012720  000340                  MOV     #PRI07,(R0)+
016250  012600                          MOV     (SP)+,R0        ;RESTORE R0
016252  011646                          MOV     (SP),-(SP)
016254  012766  000000  000002          MOV     #0,2(SP)        ;SET CPU TO LEVEL 0
016262  000002                          RTI

                                ;SUBROUTINE TO DISABLE INTERRUPTS (RAISE PRIORITY TO LEVEL 7)
016264  011646                  DSBINT: MOV     (SP),-(SP)
016266  012766  000340  000002          MOV     #PRI07,2(SP)
016274  000002                          RTI
                                        .SBTTL  INTR    - INTERRUPT HANDLERS

                                        BGNSRV  INTR            ;DEFINE INTERRUPT ENTRY
016276
016276                          INTR::
016276  012737  000001  002216          MOV     #1,INTRECV      ;SET FLAG TO SHOW INTERRUPT RECEIVED
016304  105037  016225                  CLRB    INTFLAG         ;CLEAR FLAG TO SAY WE GOT INTERRUPT
016310  132737  000001  016224          BITB    #IOKSTP,INTMASK ;EXPECTING STOP INTERRUPT?
016316  001003                          BNE     1$              ;BR IF YES
016320  152737  000001  016225          BISB    #IOKSTP,INTFLAG ;NO. SET THE ERROR FLAG.

                                ;SAVE REGISTERS, MSG BUFFER, ETC.
016326                          1$:
016326                                  ENDSRV
016326                          L10026:
016326  000002                          RTI
```

```
                                        .SBTTL  WAITF   - WAIT FOR SUBSYSTEM READY
                                ;
                                ; SUBROUTINE TO WAIT FOR THE SUBSYSTEM READY FLAG
                                ;
                                ;INPUTS:
                                ;
                                ;       R5      ADDRESS OF FIRST DEVICE REGISTER
                                ;
                                ;OUTPUTS:
                                ;
                                ;       R0      CONTENTS OF LAST TSSR READ
                                ;       CARRY   SET - READY BIT SET
                                ;               CLR - TIMEOUT WAITING FOR READY
                                ;
016330  000401                  WAITF:: BR      1$                      ;NOP WHEN SUPER FIXED
016332                                  BREAK                           ; DO A SUPVSR BREAK FIRST.
016332  104422                          TRAP    C$BRK
016334  012746  011000          1$:     MOV     #11000,-(SP)            ;25-APRIL-83 REV B  - 1100 MSEC TIMER
016340  016500  000002          2$:     MOV     TSSR(R5),R0             ;READ THE TSSR REGISTER
016344  105700                          TSTB    R0                      ;TEST FOR READY BIT SET
                                ;
016346  100420                          BMI     3$                      ; EXIT ON STOP FLAG.
016350                                  DELAY   1                       ; WAIT 100 USEC
016350  012727  000001                  MOV     #1,(PC)+
016354  000000                          .WORD   0
016356  013727  002116                  MOV     L$DLY,(PC)+
016362  000000                          .WORD   0
016364  005367  177772                  DEC     -6(PC)
016370  001375                          BNE     .-4
016372  005367  177756                  DEC     -22(PC)
016376  001367                          BNE     .-20
016400  005316                          DEC     (SP)                    ;REDUCE DELAY COUNT
016402  001356                          BNE     2$                      ;RETRY UNTIL TIMER EXPIRES
016404  000241                          CLC                             ; C = 0, CONTROLLER STILL RUNNING...
016406  000401                          BR      4$                      ;...OR HUNG-UP AFTER 300 MSEC.
016410  000261                  3$:     SEC                             ; C = 1, CONTROLLER IS STOPPED.
016412  005326                  4$:     DEC     (SP)+                   ;RESTORE STACK WITHOUT CHANGING CARRY BIT
016414  000207                          RTS     PC
```

```
                                .SBTTL  CHKTSSR - CHECK TSSR FOR READY
                                ;+
                                ;THIS ROUTINE WAITS FOR READY IN THE TSSR
                                ;AND TESTS FOR AMBIGUOUS BIT SETTINGS IN TSSR.
                                ;
                                ;INPUT:
                                ;       R5      ADDRESS OF CSR REGISTERS
                                ;
                                ;OUTPUT:
                                ;       R0      CONTENTS OF TSSR
                                ;       CARRY   SET - OKAY
                                ;               CLR - NOT READY AMBIGUOUS, OR SC SET
                                ;-
016416                          CHKTSSR:
016416  004737  016330                  JSR     PC,WAITF                ;WAIT FOR READY
016422  103014                          BCC     20$                     ;BRANCH IF TIME OUT
016424  004737  016124                  JSR     PC,CHKAMB               ;TSSR AMBIGOUS?
016430  103006                          BCC     10$                     ;BR IF YES
016432  032700  100000                  BIT     #SC,R0                  ;SPECIAL CONDITION SET?
016436  001405                          BEQ     15$                     ;BR IF NO
016440  032700  074000                  BIT     #<SCE!BIE!RMR!NXM>,R0   ;ANY ERROR BITS SET?
016444  001402                          BEQ     15$                     ;BR IF NO
016446  000241                  10$:    CLC                             ;SET FAILURE
016450  000401                          BR      20$                     ;
016452  000261                  15$:    SEC                             ;SET SUCCESS
016454  000207                  20$:    RTS     PC                      ;RETURN TO CALLER
                                        .SBTTL  XNXM    - CHECK FOR NONEXISTENT MEMORY
                                ;+
                                ; ROUTINE TO TEST FOR A NEXM IN THE RANGE (R1) THRU (R2).
                                ; ON RETURN, IF "C" = 1, (R1) = NEXM ADDRESS.
                                ;               "C" = 0, ALL ADDRESSES OK.
                                ;
                                ;CALL:  MOV ADR1,R1
                                ;       MOV ADR2,R2
                                ;       JSR PC,NXM
                                ;       RETURN          ;TEST "C" AND PROCEED.
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
                                ;
                                ;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
                                ;
                                ;-
                                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
```

TSTSETUP - PRINT TEST NAME AND INIT ERROR COUNTS

```
3101 016630  052760  160000  003170          BIS     #160000,ERTABL(R0) ; FLAG ERROR IN THE ERROR TABLE
3102 016636                                  ERRDF   1,NXR,NXRERR    ; NO DEVICE HERE -- PRINT IT
     016636  104455                          TRAP    C$ERDF
     016640  000001                          .WORD   1
     016642  003734                          .WORD   NXR
     016644  005732                          .WORD   NXRERR
3103 016646  000407                          BR      2$
3104 016650  052760  160001  00317C  3$:     BIS     #160001,ERTABL(R0)      ; FLAG ERROR IN THE ERROR TABLE
3105 016656                                  ERRDF   2,NOINIT        ; DEVICE NOT IDLE
     016656  104455                          TRAP    C$ERDF
     016660  000002                          .WORD   2
     016662  004331                          .WORD   NOINIT
     016664  000000                          .WORD   0
3106 016666  012737  177777  003104  2$:     MOV     #-1,DUFLG       ; DROP THE UNIT
3107 016674                                  DODU    UNITN
     016674  013700  002174                  MOV     UNITN,R0
     016700  104451                          TRAP    C$DODU
3108 016702                                  DOCLN                   ; ABORT THE PASS
     016702  104444                          TRAP    C$DCLN
3109 016704  000423                          BR      5$
3110
3111 016706                          4$:     RFLAGS  R0              ; GET THE OPERATOR FLAGS.
     016706  104421                          TRAP    C$RFLA
3112 016710  032700  001000                  BIT     #PNT,R0         ; PRINT THE TEST NUMBERS?
3113 016714  001412                          BEQ     1$              ; BR IF NO
3114 016716  011600                          MOV     (SP),R0         ;GET THE ID MESSAGE
3115 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
     016734  104417                          TRAP    C$PNTF
     016736  062706  000006                  ADD     #6,SP
3116 016742  005237  002206          1$:     INC     TSTCNT          ; BUMP TEST COUNTER.
3117 016746                                  SETPRI  IPRI            ;PRIORITY THAT OF DEVICE
     016746  013700  002204                  MOV     IPRI,R0
     016752  104441                          TRAP    C$SPRI
3118 016754  005726                  5$:     TST     (SP)+           ;FIX UP THE STACK
3119 016756  013705  002200                  MOV     CSRADDR,R5      ; ADDRESS OF TSV REGISTERS ON UNIBUS
3120 016762  000207                          RTS     PC
3121 016764     045     123     045  TNAM:   .ASCIZ  '%S%T%A Test'
3122                                         .EVEN
3123                                         .SBTTL  TSTEND  - PRINT ERRORS RECEIVED
3124                                 ;
3125                                 ; AT END OF EACH TEST, PRINT THE NUMBER OF ERRORS RECEIVED
3126                                 ; IF NORMAL ERROR REPORTING IS DISABLED (FLA:IER).
3127                                 ;
3128 017000                          TSTEND: RFLAGS  R0
     017000  104421                          TRAP    C$RFLA
3129 017002  030027  020000                  BIT     R0,#IER
3130 017006  001412                          BEQ     1$              ; BR IF "IER" NOT SET.
3131 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
```

TSTEND - PRINT ERRORS RECEIVED

```
        017030  062706  000006                  ADD     #6,SP
   3132 017034  000207                  1$:     RTS     PC
   3133
   3134 017036  000000                  ERRK:   0                       ; LOCAL ERROR COUNT.
   3135 017040     045     101     040  ESUM:   .ASCIZ  /%A %D%A ERRORS/
   3136 017057     105     122     122  EMAXDU: .ASCIZ  /ERROR LIMIT REACHED -- DROPPING UNIT/
   3137                                 .EVEN
```

```
                                        .SBTTL  INCERK  - INCREMENT LOCAL ERROR COUNT
                                ;+
                                ; ROUTINES TO INCREMENT LOCAL ERROR COUNT AND CHECK FOR LIMIT:
                                ;-
017124  005237  017036        INCERK: INC     ERRK            ; INCREMENT LOCAL ERROR COUNT
017130  010046                        MOV     R0,-(SP)        ; SAVE R0
017132  013700  002174                MOV     UNITN,R0        ; GET UNIT NUMBER,
017136  006300                        ASL     R0              ; ... AND MAKE IT A WORD OFFSET.
017140  062700  003170                ADD     #ERTABL,R0      ; R0 GETS ADDRESS OF ERROR TABLE ENTRY.
017144  005210                        INC     (R0)            ; INCREMENT THE DEVICE ERROR COUNT
017146  032710  007777                BIT     #7777,(R0)      ; DID WE OVERFLOW THE FIELD?
017152  001001                        BNE     1$              ; BR IF NO.
017154  005310                        DEC     (R0)            ; YES -- BACK IT UP TO 7777.
017156  012600                1$:     MOV     (SP)+,R0        ; RESTORE R0
017160  000207                        RTS     PC              ; RETURN TO CALLER.

017162  010046                CKEMAX: MOV     R0,-(SP)        ; SAVE R0
017164  013700  002174                MOV     UNITN,R0        ; GET UNIT NUMBER
017170  C06300                        ASL     R0              ; ... AND MAKE IT A WORD OFFSET
017172  016000  003170                MOV     ERTABL(R0),R0   ; GET ERROR TABLE ENTRY
017176  042700  170000                BIC     #170000,R0      ; EXTRACT ERROR COUNT FIELD
017202  020037  002166                CMP     R0,GERRMAX      ; IS GLOBAL LIMIT EXCEEDED FOR THIS UNIT?
017206  103004                        BHIS    1$              ; BR IF YES
017210  023737  017036  002164        CMP     ERRK,LERRMAX    ; IS LOCAL LIMIT EXCEEDED FOR THIS TEST?
017216  103417                        BLO     2$              ; BR IF NO
017220                          1$:     RFLAGS  R0              ; GET OPERATOR FLAGS
017220  104421                        TRAP    C$RFLA
017222  032700  000040                BIT     #IDU,R0         ; IS DROPPING INHIBITED?
017226  001013                        BNE     2$              ; BR IF YES.
017230  012737  177777  003104        MOV     #-1,DUFLG       ; NO -- DROP THE UNIT
017236                                  ERRDF   4,EMAXDU
017236  104455                        TRAP    C$ERDF
017240  000004                        .WORD   4
017242  017057                        .WORD   EMAXDU
017244  000000                        .WORD   0
017246                                  DODU    UNITN
017246  013700  002174                MOV     UNITN,R0
017252  104451                        TRAP    C$DODU
017254                                  DOCLN
017254  104444                        TRAP    C$DCLN
017256  012600                  2$:     MOV     (SP)+,R0        ; RESTORE R0
017260  000207                        RTS     PC              ; RETURN TO CALLER
```

```
                                        .SBTTL  CKDROP  - CHECK IF UNIT SHOULD BE DROPPED
                                ;+
                                ; CHECK IF UNIT SHOULD BE DROPPED
                                ;-
017262  010046                  CKDROP: MOV     R0,-(SP)
017264                                  FORCERROR       1$,NOTSSR
017274                                  RFLAGS  R0
017274  104421                          TRAP    C$RFLA
017276  032700  000040                  BIT     #IDU,R0
017302  001010                          BNE     1$
017304  011600                          MOV     (SP),R0
017306  012737  177777  003104          MOV     #-1,DUFLG
017314                                  DODU    UNITN
017314  013700  002174                  MOV     UNITN,R0
017320  104451                          TRAP    C$DODU
017322                                  DOCLN                   ;ABORT THE PASS
017322  104444                          TRAP    C$DCLN
017324  012600                  1$:     MOV     (SP)+,R0
017326  000207                          RTS     PC

                                        .SBTTL  CONFIG  - DETERMINE CONFIGURATION OF SYSTEM
                                ;
                                ; SUBROUTINE   DETERMINE CONFIGURATION OF TSV05 SYSTEM.
                                ;
017330                          CONFIG:
017330  004737  016054                  JSR     PC,SOFINIT
017334  000207                          RTS     PC
                                        .SBTTL  KTON,KTOFF      ENABLE/DISABLE MEMORY MANAGEMENT
                                ;
                                ; SUBROUTINE - ENABLE MEM MGT.
                                ;
017336  005737  003124          KTON:   TST     KTFLG           ; GOT KT?
017342  001403                          BEQ     1$              ; NO.
017344  012737  000001  177572          MOV     #1,SR0          ; YES. ENABLE KT11.
017352  000207                  1$:     RTS     PC

                                ;
                                ; 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 ~AGE
                                ;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  020127  006000                  CMP     R1,#6000                ;HIGHER THAN EXISTING MEMORY?
017452  103011                          BHIS    10$                     ;BR IF YES
017454  010137  172352                  MOV     R1,@#KIPAR5             ;SETUP MAPPING REGISTER PAR5
017460  042702  160000                  BIC     #160000,R2              ;SETUP DISP_ACEMENT IN PAGE
017464  062702  120000                  ADD     #120000,R2              ;ADD IN PAR5 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.
                                ;
                                ; OUTPUTS:
                                ;
                                ;       NONE
                                ;-
                                ;
017502                          FILLMEM:
017502                                  SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
017506  004737  017354                  JSR     PC,KTOFF        ;DISABLE KT.
```

FILLMEM - FILL MEMORY WITH BACKGROUND PATTERN

```
3274 017512  010003                        MOV     R0,R3           ;COPY TEST PATTERN
3275 017514  013701  003116                MOV     FREE,R1         ;GET FIRST FREE LOCATION
3276 017520  013702  003120                MOV     FRESIZ,R2       ;SIZE OF FREE SPACE BELOW 28K.
3277 017524  010321              10$:      MOV     R3,(R1)+        ;STORE A BACKGROUND WORD
3278 017526  005302                        DEC     R2              ;DONE ALL MEMORY IN FREE SPACE?
3279 017530  003375                        BGT     10$             ;BR IF NO
3280 017532  005737  003124                TST     KTFLG           ; GOT KT?
3281 017536  001477                        BEQ     55$             ; NO. GET OUT.
3282 017540  004737  017336                JSR     PC,KTON         ; YES. ENABLE KT.
3283 017544  005000                        CLR     R0              ;HIGH ORDER ADDRESS START
3284 017546  013701  003144                MOV     PST32W,R1       ;GET >28K START ADDRESS (IN 32W BLOCKS)
3285         000006                        .REPT   6
3286                                       CLC                     ;CLEAR C BIT
3287                                       ROL     R1              ;CONVERT BLOCKS TO WORDS
3288                                       ROL     R0              ;MAKE IT DOUBLE PRECISION
3289                                       .ENDR
3290 017616  004737  017376                JSR     PC,SETMAP       ;SETUP PAR6 MAPPING REGISTER
3291 017622  010320              30$:      MOV     R3,(R0)+        ;STORE TEST PATTERN IN >28K ADDRESS
3292 017624  C20027  140000                CMP     R0,#140000      ;END OF PAR5 MAPPING AREA?
3293 017630  103774                        BLO     30$             ;BR IF NO
3294 017632  162700  020000                SUB     #20000,R0       ;BACKUP INTO PAR5 MAPPING BEGIN
3295 017636  062737  000200  172352        ADD     #200,@#KIPAR5   ;POINT TO NEXT 4K BLOCK >28K.
3296 017644  023727  172352  006000        CMP     @#KIPAR5,#6000  ;END OF MEMORY?
3297 017652  001427                        BEQ     50$             ;BR IF YES
3298 017654  005737  003136                TST     T23A            ;11/23A?
3299 017660  001407                        BEQ     35$             ;NO KEEP GOING
3300 017662  013704  177572                MOV     SR0,R4          ;GET SR0 CONTENTS
3301 017666  042704  177761                BIC     #177761,R4      ;CLEAR ALL BUT PAGE NUMBER
3302 017672  022704  000016                CMP     #16,R4          ;SEE IF PAGE 7
3303 017676  001415                        BEQ     50$             ;EXIT IF THERE
3304 017700  005737  003140        35$:    TST     T23B            ;11/23B?
3305 017704  001410                        BEQ     45$             ;NO KEEP GOING
3306 017706  023727  172352  007600        CMP     @#KIPAR5,#7600  ;REACHED 18 BITS?
3307 017714  103001                        BHIS    40$             ;YES
3308 017716  000403                        BR      45$             ;NO KEEP GOING
3309 017720  012737  000020  172516  40$:  MOV     #20,SR3         ;SET 22 BIT RELOCATION
3310 017726  000137  017622        45$:    JMP     30$             ;KEEP GOING ON ETC.
3311 017732  004737  017354        50$:    JSR     PC,KTOFF        ; DISABLE KT.
3312 017736  000207              55$:      RTS     PC
```

```
                                        .SBTTL  CMPMEM  - COMPARE MEMORY TO BACKGROUND PATTERN
                                ;*
                                ; COMPARE MEMORY WITH A BACKGROUND PATTERN
                                ;
                                ; INPUTS:
                                ;
                                ;       R0 = BACKGROUND PATTERN
                                ;       FREE    = FIRST LOCATION AVAILABLE TO DIAGNOSTIC
                                ;       KTFLG   = SET TO HIGHEST MEMORY LOCATION IF > 28K.
                                ;
                                ; OUTPUTS:
                                ;
                                ;       CARRY   - SET IF NO ERROR
                                ;       CARRY   - CLR IF ERROR
                                ;
                                ; IMPLICIT OUTPUTS:
                                ;
                                ;       ERRHI   - ERROR HIGH ADDRESS
                                ;       ERRLO   - ERROR LOW ADDRESS
                                ;       EXPD    - EXPECTED DATA
                                ;       RECV    - RECEIVED DATA
                                ;-
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
```

CMPMEM - COMPARE MEMORY TO BACKGROUND PATTERN

```
3371 020120  010137  002232                  MOV     R1,ERRLO        ;SAVE LOW ORDER IN ERROR
3372 020124  010337  002224                  MOV     R3,EXPD         ;SAVE EXPD FOR ERROR REPORT
3373 020130  011437  002226                  MOV     (R4),RECV       ;SAVE RECV FOR ERROR REPORT
3374 020134  000421                          BR      50$             ;
3375 020136  062701  000002          32$:    ADD     #2,R1           ;UPDATE NON PAR6 ADDRESS
3376 020142  005500                          ADC     R0              ;MAKE IT DOUBLE PRECISION ADD
3377 020144  062704  000002                  ADD     #2,R4           ;UPDATE PAR FORMAT ADDRESS
3378 020150  020427  140000                  CMP     R4,#140000      ;END OF PAR5 MAPPING AREA?
3379 020154  103755                          BLO     30$             ;BR IF NO
3380 020156  162704  020000                  SUB     #20000,R4       ;BACKUP INTO PAR6 MAPPING BEGIN
3381 020162  062737  000200  172352          ADD     #200,@#KIPAR5   ;POINT TO NEXT 4K BLOCK >28K.
3382 020170  023737  172352  003124          CMP     @#KIPAR5,KTFLG  ;END OF MEMORY?
3383 020176  101744                          BLOS    30$             ;BR IF NO
3384 020200  004737  017354          50$:    JSR     PC,KTOFF        ;TURN OFF MEMORY MAPPING
3385 020204  000241                          CLC                     ;SET FAILURE
3386 020206  000403                          BR      60$             ;
3387 020210  004737  017354          55$:    JSR     PC,KTOFF        ;TURN OFF MEMORY MAPPING
3388 020214  000261                          SEC                     ;SET SUCCESS
3389 020216  000207                  60$:    RTS     PC
3390                                         .SBTTL  REGSAV  - SAVE R1-R5 ON STACK
3391                                 ;+
3392                                 ;
3393                                 ;ROUTINE TO
3394                                 ;SAVE R1 THROUGH R5 ON THE STACK
3395                                 ;
3396                                 ;CALLING SEQUENCE:
3397                                 ;
3398                                 ;       JSR     R5,REGSAV
3399                                 ;
3400                                 ;THIS IS A COOROUTINE WHICH TRANSFER CONTROL BACK TO
3401                                 ;THE CALLING ROUTINE. AT THE END OF THE CALLING ROUTINE,
3402                                 ;THE RTS PC RETURNS CONTROL TO THIS ROUTINE TO RESTORE
3403                                 ;REGISTERS.
3404                                 ;
3405                                 ;THIS ROUTINE SHOULD ONLY BE CALLED FROM ROUTINES WHICH ARE
3406                                 ;CALLED VIA A JSR PC INSTRUCTION
3407                                 ;
3408                                 ;-
3409
3410 020220                          REGSAV:
3411 020220  010446                          MOV     R4,-(SP)
3412 020222  010346                          MOV     R3,-(SP)
3413 020224  010246                          MOV     R2,-(SP)
3414 020226  010146                          MOV     R1,-(SP)
3415 020230  010546                          MOV     R5,-(SP)
3416 020232  016605  000012                  MOV     10.(SP),R5
3417 020236  004736                          JSR     PC,@(SP)+
3418 020240  012601                          MOV     (SP)+,R1
3419 020242  012602                          MOV     (SP)+,R2
3420 020244  012603                          MOV     (SP)+,R3
3421 020246  012604                          MOV     (SP)+,R4
3422 020250  012605                          MOV     (SP)+,R5
3423 020252  000207                          RTS     PC
```

```
                                        .SBTTL  GETPAT  - GET 8 BIT PATTERN FROM OPERATOR
                                ;+
                                ;ROUTINE TO REQUEST AN 8 BIT DATA PATTERN FROM THE OPERATOR
                                ;
                                ;INPUTS:        NONE.
                                ;
                                ;OUTPUTS:
                                ;       R0      OCTAL NUMBER FROM THE OPERATOR
                                ;
                                ;CALLING SEQUENCE:
                                ;       JSR     PC,GETPAT
                                ;-
020254                          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  C00022                          .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$:     MOV     R2,R3                   ;START OF MENU S' ING
020346  005713                  2$:     TST     (R3)                    ;END OF ASCII ?
020350  001412                          BEQ     3$                      ;BRANCH IF ALL LINES DISPLAYED
020352                                  PRINTF  #SELASC,(R3)+           ;DISPLAY THE MENU
020352  C12346                          MOV     (R3)+,-(SP)
020354  012746  020522                  MOV     #SELASC,-(SP)
020360  012746  000002                  MOV     #2,-(SP)
020364  010600                          MOV     SP,R0
020366  104417                          TRAP    C$PNTF
020370  062706  000006                  ADD     #6,SP
020374  000764                          BR      2$
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$HILIM
020416                          10001$:
020416                                  BNCOMPLETE      1$              ;RETRY IF ERROR
020416  103352                          BCC     1$
020420  013700  020556                  MOV     MENRES,R0               ;GET THE OPERATOR'S REPLY
020424  020001                          CMP     R0,R1                   ;COMPARE TO MAXIMUM ALLOWED
020426  101411                          BLOS    5$                      ;BRANCH IF OK
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$PNTF
020444  062706  000004                  ADD     #4,SP
020450  000735                          BR      1$                      ;RETRY
020452  000207                  5$:     RTS     PC                      ;RETURN TO CALLER
020454     045     116     045  MENERR: .ASCIZ   '%N%A *** Menu Selection Too Large ***'
020522     045     116     045  SELASC: .ASCIZ   '%N%T'
020527     105     156     164  MENASC: .ASCIZ   'Enter Menu Selection: '
                                .EVEN
020556  000000                  MENRES.         .WORD   0
```

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

020560                          CHKMAN::
020560                                  SAVREG                  ;SAVE THE REGISTERS
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$:     SUB     #7,FRESIZ       ; TAKE AWAY 7 WORDS PER UNIT
020750  005302                          DEC     R2
020752  001373                          BNE     10$
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  000423                          BR      40$             ;RETURN WITH FLAGS CLEAR
021020  013701  177520          15$:    MOV     BDVPCR,R1       ;SAVE PCR CONTENTS
021024  062701  000001                  ADD     #1,R1           ;ADD ONE TO IT
021030  012702  177520                  MOV     #BDVPCR,R2      ;GET BDV11 PCR ADDRESS
021034  005212                          INC     (R2)            ;TRY TO WRITE TO IT
021036  013703  177520                  MOV     BDVPCR,R3       ;GET RESULTS
021042  020103                          CMP     R1,R3           ;DID IT CHANGE?
021044  001006                          BNE     20$             ;NO, MUST BE 11/23B
021046  005237  003136                  INC     T23A            ;SET THE FLAG
021052  042737  170000  002120          BIC     #170000,L$HIME  ;SUPERVISOR COULD BE WRONG
                                        NOP                     ;BR 40$ FOR RELEASE
                                ;       PRINTF  #M8186          ;TELL THE SYSTEM TYPE
021060  000402                          BR      40$             ;RETURN
021062  005237  003140          20$:    INC     T23B            ;SET THE FLAG
                                        NOP                     ;BR 40$ FOR RELEASE
                                ;       PRINTF  #M8189          ;TELL THE SYSTEM TYPE
021066                          40$:
021066  000207                          RTS     PC              ;RETURN
```

```
                                        .SBTTL  KTINIT  - SETUP KT11 MEMORY MANAGEMENT REGISTERS
                                ;+
                                ;
                                ;ROUTINE TO INIT KT-11
                                ;
                                ;-
021070                          KTINIT:
021070  005037  003124                  CLR     KTFLG           ; INIT >28K MEMORY FLAG
021074  005037  003126                  CLR     KTENABLE        ; INIT TEST >28K FLAG
021100  023727  002120  001577          CMP     L$HIME,#1577    ; GOT ENOUGH MEMORY (>28K)?
021106  101454                          BLOS    9$              ; NO.
021110  013700  000004                  MOV     @#ERRVEC,R0     ; SAVE OLD ERR VEC PTR.
021114  012737  021226  000004          MOV     #2$,@#ERRVEC    ; SET ERR VEC PTR.
021122  005737  177572                  TST     @#SR0           ; GOT KT11?
021126  000240                          NOP                     ;  (TRAP IF NO).
021130  013737  002120  003124          MOV     L$HIME,KTFLG    ; YES. SET KT FLAG.
021136  022737  007777  003124          CMP     #7777,KTFLG     ; GOT 22 BIT MACHINE?
021144  100404                          BMI     4$              ; NO
021146  042737  003777  003124          BIC     #3777,KTFLG     ; ALIGN ON BOUNDARY
021154  000403                          BR      5$
021156  042737  000177  003124  4$:     BIC     #177,KTFLG      ;
021164  010037  000004          5$:     MOV     R0,@#ERRVEC     ; RESTORE OLD ERR VEC PTR.
021170  005000                          CLR     R0              ; R0 = AR DATA.
021172  012701  172340                  MOV     #KIPAR0,R1      ; R1 = KI REGS PTR.
021176  012761  077406  177740  1$:     MOV     #77406,-40(R1)  ; SET DESCRIPTOR REG.
021204  010021                          MOV     R0,(R1)+        ; SET KIPAR REG.
021206  062700  000200                  ADD     #200,R0         ; BUMP AR DATA BY "4K".
021212  020027  002000                  CMP     R0,#2000        ; AT "I/O"?
021216  001367                          BNE     1$              ; NO.
021220  012741  177600                  MOV     #177600,-(R1)   ; YES. SET KTPAR7 FOR I/O.
021224  000405                          BR      9$
                                
021226  012716  021234          2$:     MOV     #6$,(SP)        ; SET UP RETURN
021232  000002                          RTI                     ; RTI TO NEXT LOCATION
                                
021234  010037  000004          6$:     MOV     R0,@#ERRVEC     ; RESTORE OLD ERR VEC PTR.
                                
021240  000207                  9$:     RTS     PC
```

KTINIT - SETUP KT11 MEMORY MANAGEMENT REGISTERS

```
3600                                    ;*
3601                                    ;       SUBROUTINE TO SET EXTENDED FEATURES SWITCH
3602                                    ;
3603                                    ;       Requires that SOFINIT and WRTCHR have been done previous to call.
3604                                    ;
3605                                    ;
3606                                    ;INPUTS:
3607                                    ;       R5      CURRENT UNIT NUMBER
3608                                    ;OUTPUTS:
3609                                    ;       The Extended Features Switch is set.
3610                                    ;
3611                                    ;-
3612
3613
3614                                    ;       COMMAND PACKET.
3615
3616            021244                  .       =       <.+3>&177774    ;MUST BE ON MOD 4 BOUNDRY.
3617
3618 021244  000000                     CMDPKT:: 0                      ;1ST WORD IS TSO5 COMMAND.
3619 021246  000000                              0                      ;2ND WORD IS THE BUFFER LOW ADDRESS.
3620 021250  000000                              0                      ;3RD WORD IS THE BUFFER HIGH ADDRESS.
3621 021252  000000                              0                      ;4TH WORD IS THE BYTE/RECORD/FILE COUNT.
3622
3623                                    ;       WRITE SUB-SYSTEM MEMORY CHARACTERISTIC BLOCK.
3624
3625 021254  000000                     WSMBK:: 0                       ;1ST WORD:: SEL 0
3626 021256  000000                             0                       ;2ND WORD:: SEL 2
3627 021260  000000                             0                       ;3RD WORD:: SEL 4
3628                                            .EVEN
3629                                    ;*
3630                                    ;       SUBROUTINE TO CHECK WETHER OR NOT WE'LL TEST NXM
3631                                    ;
3632                                    ;
3633                                    ;INPUTS:
3634                                    ;OUTPUTS:
3635                                    ;       The NXMFLG is set if we can test.
3636                                    ;       The NXMLO and NXMHI addresses are setup.
3637                                    ;-
3638
3639 021262                             MEMCK::
3640
3641 021262                                     SAVREG                          ;SAVE THE REGISTERS
3642 021266  005037  003130                     CLR     NXMFLG                  ;CLEAR THE FLAG
3643 021272  005037  003132                     CLR     NXMLO                   ;CLEAR THE TEST ADDRESS LO
3644 021276  005037  003134                     CLR     NXMHI                   ;CLEAR THE TEST ADDRESS HI
3645 021302  005737  003140                     TST     T23B                    ;IS IT A 11/23B?
3646 021306  001407                             BEQ     1$                      ;NO
3647 021310  023727  002120  007777             CMP     L$HIME,#7777            ; GREATER THAN 128K
3648 021316  103406                             BLO     2$                      ; NO
3649 021320  004737  021436                     JSR     PC,NXMTST               ;SETUP THE ADDRESS
3650 021324  000427                             BR      13$                     ;SET THE FLAG AND EXIT
3651 021326  005737  003136             1$:     TST     T23A                    ;IS IT A 11/23A?
3652 021332  001413                             BEQ     4$                      ;NO
3653 021334  023727  002120  005777     2$:     CMP     L$HIME,#5777            ;GREATER THAN 96K
3654 021342  101023                             BHI     14$                     ;YES,23A/25B WITH 128K MEMORY
3655 021344  023727  002120  003777             CMP     L$HIME,#3777            ;GREATER THAN 64K BUT LESS THAN 92K?
3656 021352  103403                             BLO     4$                      ;NO, CHECK 24K
```

KTINIT - SETUP KT11 MEMORY MANAGEMENT REGISTERS

```
3657 021354  004737  021436                    JSR     PC,NXMTST               ;SETUP THE ADDRESS
3658 021360  000411                            BR      13$                     ;SET THE FLAG AND EXIT
3659 021362  023727  002120  001577  4$:       CMP     L$HIME,#1577            ;GREATER THAN 24K BUT LESS THAN 64K?
3660 021370  103410                            BLO     14$                     ;NO, TELL THEM AND EXIT WITH FLAG CLEAR
3661 021372  004737  021436                    JSR     PC,NXMTST               ;SETUP THE ADDRESS
3662 021376  062737  000077  003134            ADD     #77,NXMHI               ;FOOL THE 11/02 & 11/03
3663 021404  005237  003130          13$:      INC     NXMFLG                  ;SET THE FLAG
3664 021410  000411                            BR      15$                     ;EXIT
3665 021412  000410                14$:        BR      15$                     ;NOP FOR PRINTOUT
3666 021414                                     PRINTF  #NOMEM                  ;TELL THEM & EXIT ***NO PRINT*****
     021414  012746  005454                    MOV     #NOMEM,-(SP)
     021420  012746  000001                    MOV     #1,-(SP)
     021424  010600                            MOV     SP,R0
     021426  104417                            TRAP    C$PNTF
     021430  062706  000004                    ADD     #4,SP
3667 021434  000207                15$:        RTS     PC                      ;RETURN
3668
3669                                           ;+
3670                                           ;       SUBROUTINE TO SETUP THE NXM ADDRESS FOR TESTING
3671                                           ;
3672                                           ;OUTPUTS:NXMLO,NXMHI            ;SETUP WITH NXM ADDRESS
3673                                           ;
3674                                           ;-
3675
3676 021436  013701  002120          NXMTST: MOV     L$HIME,R1               ;GET TOP OF MEMORY
3677 021442  062701  000200                  ADD     #200,R1                 ;MAKE IT I/O BLOCK OR OTHER NXM
3678 021446  042701  000177                  BIC     #177,R1
3679 021452  010102                          MOV     R1,R2                   ;RESAVE RESULTS
3680         000006                          .REPT   6
3681                                          ASL     R1                      ;PUT IN PLACE FOR XFER
3682                                          .ENDR
3683 021470  010137  003132                  MOV     R1,NXMLO                ;SAVE TEST ADDRESS LOW
3684         000012                          .REPT   10.
3685                                          ASR     R2                      ;PUT IN PLACE FOR XFER
3686                                          .ENDR
3687 021520  042702  177700                  BIC     #177700,R2              ;DON'T WANT ILA!
3688 021524  010237  003134                  MOV     R2,NXMHI                ;SAVE TEST ADDRESS HIGH
3689 021530  000207                          RTS     PC                      ;RETURN
3690
3691 021532                                   ENDMOD
3700                                          .TITLE  TSV4 - MISCELLANEOUS SECTIONS
3701
3702 021532                                   BGNMOD  TSV4
     021532                        TSV4::
3703
3709
3710
3711
3712                                          .SBTTL  PROTECTION TABLE
3713 021532                                   BGNPROT
     021532                        L$PROT::
3714 021532  177777  177777  177777          .WORD   -1, -1, -1, -1          ;NO DEVICE PROTECTION REQUIRED.
3715 021542                                   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
021542          L$INIT::
021542 005037 002220    40$:    CLR     EXTFEA
021546 005037 003130            CLR     NXMFLG
021552 012737 006354 002172     MOV     #EPRT1,EPRTSW           ;SET UP PRIMARY MESSAGE FOR REPLACEMENT
021560 005037 003146            CLR     SIFLAG                  ;CLEAR "SOFT INIT" FLAG
021564 005037 003126            CLR     KTENABLE                ;CLEAR TEST ABOVE 28K FLAG
021570 005037 002274            CLR     RAMSIZ                  ;CLEAR RAM SIZE FOR RAMERR ROUTINE
021574                          READEF  #EF.CONTINUE
021574 012700 000036            MOV     #EF.CONTINUE,R0
021600 104447                   TRAP    C$REFG
021602                          BNCOMPLETE 1$
021602 103023                   BCC     1$
021604 023737 002174 002012     CMP     UNITN,L$UNIT            ;UNIT IN RANGE?
021612 103070                   BHIS    4$                      ;BR IF NO.
021614 005737 003104            TST     DUFLG                   ;DROPPED UNIT?
021620 100472                   BMI     NXTU                    ;BR IF YES
021622 013701 002174            MOV     UNITN,R1
021626 006301                   ASL     R1
021630 005761 003170            TST     ERTABL(R1)
021634 001516                   BEQ     SETU
021636 032761 040000 003170     BIT     #BIT14,ERTABL(R1)       ;DROPPED?
021644 001060                   BNE     NXTU
021646                          EXIT    INIT                    ;DO NOTHING IF "CONTINUE".
021646 104432                   TRAP    C$EXIT
021650 000416                   .WORD   L10030-.
021652          1$:             READEF  #EF.NEW
021652 012700 000035            MOV     #EF.NEW,R0
021656 104447                   TRAP    C$REFG
021660                          BNCOMPLETE NXTU                 ;TAKE NEXT UNIT IF NOT NEW PASS.
021660 103052                   BCC     NXTU
021662                          READEF  #EF.START
021662 012700 000040            MOV     #EF.START,R0
021666 104447                   TRAP    C$REFG
021670                          BCOMPLETE 2$
021670 103404                   BCS     2$
021672                          READEF  #EF.RESTART
021672 012700 000037            MOV     #EF.RESTART,R0
021676 104447                   TRAP    C$REFG
021700                          BNCOMPLETE 31$
021700 103031                   BCC     31$
021702          2$:                                             ;1ST PASS, BUS-INIT...
021702                          BRESET                          ;BUS RESET.
021702 104433                   TRAP    C$RESET
```

INITIALIZE SECTION

```
3758 021704  005037  002206                    CLR     TSTCNT                  ;NUMBER OF TESTS RUN IN PASS
3759 021710  005037  002214                    CLR     FATFLG                  ;CLEAR FATAL ERROR COUNT
3760 021714  005037  003136                    CLR     T23A                    ;CLEAR 11/23A FLAG
3761 021720  005037  003140                    CLR     T23B                    ;CLEAR 11/23B FLAG
3762                                    ;       MOV     #340,-(SP)
3763                                    ;       MOV     #20$, (SP)              ;RETURN TO DEBUGGER
3764                                    ;       JMP     0.ODT           ;;@@ENTER THE DEBUGGER
3765 021724  005037  003372                    CLR     SKIPT           ;CLEAR THE SUBTEST "SKIPPER"
3766 021730                            20$:
3767 021730  012737  177777  002176            MOV     #-1,QVP                 ;...QUICK VERIFY...
3768 021736  004737  020710                    JSR     PC,ENVIRN               ;SET ENVIRONMENT.
3769 021742  004737  021070                    JSR     PC,KTINIT               ;INITIALIZE KT MEMORY MANAGEMENT
3770 021746  012700  003170                    MOV     #ERTABL,R0
3771 021752  005020                    30$:    CLR     (R0)+                   ;CLEAR THE ERROR TABLE
3772 021754  020027  003370                    CMP     R0,#ERTABE
3773 021760  103774                            BLO     30$
3774 021762  000404                            BR      4$
3775 021764  005037  002176            31$:    CLR     QVP
3776 021770  C00137  022040                    JMP     PASRPT                  ;GO REPORT THE STATUS
3777
3778 021774                            4$:
3779 021774  012737  177777  002174    NEWPAS: MOV     #-1,UNITN               ;INIT UNIT NUMBER...
3780 022002  005037  002212                    CLR     DEVCNT                  ;CLEAR COUNT OF DEVICES RUNNING
3781 022006                            NXTU:   BREAK
     022006  104422                            TRAP    C$BRK
3782 022010  005237  002174                    INC     UNITN                   ;...AND SET NEXT UNIT NUMBER.
3783 022014  023737  002174  002012            CMP     UNITN,L$UNIT
3784 022022  103423                            BLO     SETU
3785 022024  012737  177777  003104            MOV     #-1,DUFLG
3786 022032  000401                            BR      11$
3787 022034                                    DOCLN                           ;ABORT, NO MORE UNITS.
     022034  104444                            TRAP    C$DCLN
3788 022036  000240                    11$:    NOP
3789 022040                            PASRPT:
3790 022040  023727  002012  000001            CMP     L$UNIT,#1               ;HOW MANY UNITS SELECTED?
3791 022046  101752                            BLOS    NEWPAS                  ;BR IF ONLY 1
3792 022050  005737  002212                    TST     DEVCNT                  ;ARE ANY STILL RUNNING?
3793 022054  001747                            BEQ     NEWPAS                  ;BR IF NO
3794 022056                                    RFLAGS  R0
     022056  104421                            TRAP    C$RFLA
3795 022060  032700  000100                    BIT     #ISR,R0                 ;SHOULD WE PRINT STATISTICS
3796 022064  001343                            BNE     NEWPAS                  ;BR IF NO
3797
3798 022066                                    DORPT
     022066  104424                            TRAP    C$DRPT
3799 022070  000741                            BR      NEWPAS
3800 022072                            10$:
3801
3802 022072                            SETU:   GPHARD  UNITN,R0                ;GET UNIT N P-TABLE POINTER.
     022072  013700  002174                    MOV     UNITN,R0
     022076  104442                            TRAP    C$GPHRD
3803 022100                                    BNCOMPLETE NXTU                 ;BR IF UNIT NOT AVAILABLE.
     022100  103342                            BCC     NXTU
3804 022102  005037  003104                    CLR     DUFLG                   ;CLEAR "DROPPED" FLAG.
3805 022106  005237  002212                    INC     DEVCNT
3806 022112  012001                            MOV     (R0)+,R1                ;GET 1ST REGISTER ADDRESS.
3807 022114  010137  002200                    MOV     R1,CSRADDR              ;ADDRESS OF REGISTERS OF UNIT UNDER TEST
```

INITIALIZE SECTION

```
3808
3809 022120  012001                        MOV     (R0)+,R1                ;GET VECTOR ADDRESS.
3810                                        ;MOV    (R0),R2                 ;GET INTERRUPT PRIORITY
3811                                        ;MOV    R2,IPRI                 ;SET INTERRUPT PRIORITY.
3812 022122  010137  002202                MOV     R1,IVEC                 ;SET INTERRUPT VECTOR POINTER...
3813 022126  012721  016276                MOV     #INTR,(R1)+             ;...VECTOR...
3814 022132  013721  002204                MOV     IPRI,(R1)+              ;...AND PRIORITY.
3815
3816 022136                          1$:
3817                                 ;      TST     QVP             ;1ST PASS ??
3818                                 ;      BEQ     5$              ;NO, SKIP THE PASS 1 STUFF.
3819
3820                                 ;
3821                                 ;1ST PASS, CHECK THAT DEVICE ADDRESSES ARE VALID, AND
3822                                 ;THAT THE DISPLAY STATUS IS PROPERLY INITIALIZED.
3823                                 ;
3824 022136  013701  002174                MOV     UNITN,R1
3825 022142  006301                        ASL     R1
3826 022144  C52761  100000  003170        BIS     #BIT15,ERTABL(R1)       ;SAY DEVICE RUNNING
3827 022152  005037  005766                CLR     EXTA                    ;CLEAR ERROR EXTENSION FLAG.
3828 022156  023727  002012  000001        CMP     L$UNIT,#1               ;ARE WE TESTING MULTIPLE UNITS?
3829 022164  101416                        BLOS    10$                     ;BR IF NO.
3830 022166                                RFLAGS  R0                      ;YES -- GET OPERATOR FLAGS.
     022166  104421                        TRAP    C$RFLA
3831 022170  032700  001000                BIT     #PNT,R0                 ;SHOULD WE PRINT UNIT #?
3832 022174  001412                        BEQ     10$                     ;BR IF NOT.
3833 022176                                PRINTF  #PUNIT,UNITN            ;PRINT THE UNIT #
     022176  013746  002174                MOV     UNITN,-(SP)
     022202  012746  022270                MOV     #PUNIT,-(SP)
     022206  012746  000002                MOV     #2,-(SP)
     022212  010600                        MOV     SP,R0
     022214  104417                        TRAP    C$PNTF
     022216  062706  000006                ADD     #6,SP
3834 022222                          10$:
3835 022222  005037  003106                CLR     NODEV
3836 022226  013701  002200                MOV     CSRADDR,R1              ;ADDRESS OF FIRST REGISTER
3837 022232  010102                        MOV     R1,R2                   ;START OF REGISTERS
3838 022234  062702  000002                ADD     #TSSR,R2                ;ADDRESS OF TSSR REGISTER
3839 022240  004737  016456                JSR     PC,XNXM                 ;TEST BOTH CONTROLLER REGISTERS...
3840 022244  103005                        BCC     2$                      ;...AND BR IF ALL OK.
3841 022246  010137  003106                MOV     R1,NODEV                ;FLAG DEVICE AS NON-EXISTENT
3842 022252  012737  177777  003104        MOV     #-1,DUFLG               ;DROP THIS UNIT.
3843 022260                          2$:
3844                                 ;
3845                                 ;FINALLY, SET CPU PRIORITY AND WE'RE DONE.
3846                                 ;
3847 022260                          5$:    SETPRI  #PRI00          ;ENABLE INTERRUPTS.
     022260  012700  000000                MOV     #PRI00,R0
     022264  104441                        TRAP    C$SPRI
3848 022266                                ENDINIT
     022266                          L10030:
     022266  104411                        TRAP    C$INIT
3849
3850 022270     045     116     045  PUNIT: .ASCIZ  /%N%N%A***** TESTING UNIT %D2%A *****/
3851                                        .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.
                                ;--
022336                          BGNAU
022336                  L$AU::
022336  010001                  MOV     R0,R1                   ; GET UNIT TO BE ADDED (R0)
022340  006301                  ASL     R1                      ; MAKE IT A WORD INDEX
022342  052761  100000  003170  BIS     #100000,ERTABL(R1)      ; SET THE "ACTIVE" BIT
022350  042761  040000  003170  BIC     #40000,ERTABL(R1)       ; CLEAR THE "DROPPED" BIT
022356                          PRINTF  #1$,R0
022356  010046                  MOV     R0,-(SP)
022360  012746  022404          MOV     #1$,-(SP)
022364  012746  000002          MOV     #2,-(SP)
022370  010600                  MOV     SP,R0
022372  104417                  TRAP    C$PNTF
022374  062706  000006          ADD     #6,SP
022400                          EXIT    AU
022400  000167                  .WORD   J$JMP
022402  000026                  .WORD   L10031-2-.
022404    045   116   045   1$:       .ASCIZ  /%N%A  UNIT %D%A ADDED/
                                        .EVEN

022432                          ENDAU           ; UNUSED.
022432                  L10031:
022432  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.

022434                          BGNDU
022434                  L$DU::
022434  012737  177777  003104  MOV     #-1,DUFLG
022442  010001                  MOV     R0,R1
022444  006301                  ASL     R1
022446  052761  140000  003170  BIS     #140000,ERTABL(R1)      ; SAY DROPPED
022454  000240  000240  000240  240,240,240                     ; ?????????
022462                          PRINTF  #1$,R0
022462  010046                  MOV     R0,-(SP)
022464  012746  022510          MOV     #1$,-(SP)
022470  012746  000002          MOV     #2,-(SP)
022474  010600                  MOV     SP,R0
022476  104417                  TRAP    C$PNTF
022500  062706  000006          ADD     #6,SP
022504                          EXIT    DU
022504  000167                  .WORD   J$JMP
022506  000030                  .WORD   L10032-2-.
```

ADD AND DROP UNITS SECTIONS

```
3890 022510     045     116     045  1$:     .ASCIZ  /%N%A  UNIT %D%A DROPPED/
3891                                         .EVEN
3892 022540                                  ENDDU
     022540                             L10032:
     022540  104453                          TRAP    C$DU
3893                                         ;++
3894                                         ; AUTO-DROP CODE SECTION.
3895                                         ;--
3896 022542                                  BGNAUTO
     022542                             L$AUTO::
3897 022542  013705  002200                  MOV     CSRADDR,R5              ;POINT TO DEVICE REGISTER
3898 022546  012703  000550                  MOV     #360.,R3                ;ENOUGH TIME FOR 2400' REEL TO REWIND
3899 022552  004737  016330             10$: JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3900 022556  103420                          BCS     20$                     ;LEAVE WHEN SSR IS SET
3901 022560                                  DELAY   250.                    ;WAIT FOR .25 SECONDS
     022560  012727  000372                  MOV     #250.,(PC)+
     022564  000000                          .WORD   0
     022566  013727  002116                  MOV     L$DLY,(PC)+
     022572  000000                          .WORD   0
     022574  005367  177772                  DEC     -6(PC)
     022600  001375                          BNE     .-4
     022602  005367  177756                  DEC     -22(PC)
     022606  001367                          BNE     .-20
3902 022610  005303                          DEC     R3                      ;BUMP COUNTER DOWN
3903 022612  001357                          BNE     10$                     ;KEEP GOING
3904 022614  004737  017262                  JSR     PC,CKDROP               ;TRY AND DROP UNIT
3905 022620                             20$:
3906 022620                                  ENDAUTO                 ; UNUSED.
     022620                             L10033:
     022620  104461                          TRAP    C$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.
                                ;--
022622                                  BGNCLN
022622                          L$CLEAN::
022622  013705  002200                  MOV     CSRADDR,R5              ;POINT TO DEVICE REGISTER
022626  005737  003104                  TST     DUFLG           ;"DROPPED" FLAG IS SET ON...
022632  100405                          BMI     1$              ;...AND GROSS CONTROLLER FAULT...
                                                                ;...DON'T TRY TO XCT CLEANUP CODE.

022634  012765  000000  000002          MOV     #0,TSSR(R5)     ;DO SOFT INIT
022642  004737  016330                  JSR     PC,WAITF
022646                          1$:
022646                          2$:     ENDCLN
022646                          L10034:
022646  104412                          TRAP    C$CLEAN
                                ;++
                                ; THE REPORT CODING SECTION CONTAINS THE
                                ; "PRINTS" CALLS THAT GENERATE STATISTICAL REPORTS.
                                ;--
022650                                  BGNRPT
022650                          L$RPT::
022650                                  PRINTS  #DEVSUM
022650  012746  023112                  MOV     #DEVSUM,-(SP)
022654  012746  000001                  MOV     #1,-(SP)
022660  010600                          MOV     SP,R0
022662  104416                          TRAP    C$PNTS
022664  062706  000004                  ADD     #4,SP
022670  010246                          MOV     R2,-(SP)
022672  010346                          MOV     R3,-(SP)
022674  010446                          MOV     R4,-(SP)
022676  012704  003170                  MOV     #ERTABL,R4      ; GET START OF ERROR TABLE.
022702  005003                          CLR     R3              ; CLEAR UNIT NUMBER
022704  011402                  1$:     MOV     (R4),R2         ; GET ERROR TABLE ENTRY & TEST IT.
022706  001467                          BEQ     4$              ; ZERO IF UNIT NOT RUN
022710  100066                          BPL     4$
022712  032702  040000                  BIT     #BIT14,R2       ; WAS UNIT DROPPED?
022716  001015                          BNE     2$              ; BR IF YES
022720  042702  170000                  BIC     #^C7777,R2      ; GET ERROR COUNT FIELD
022724                                  PRINTS  #DEVONL,R3,R2   ; PRINT
022724  010246                          MOV     R2,-(SP)
022726  010346                          MOV     R3,-(SP)
022730  012746  023147                  MOV     #DEVONL,-(SP)
022734  012746  000003                  MOV     #3,-(SP)
022740  010600                          MOV     SP,R0
022742  104416                          TRAP    C$PNTS
022744  062706  000010                  ADD     #10,SP
022750  000446                          BR      4$
022752  020227  160000          2$:     CMP     R2,#160000      ; WAS UNIT NON-EXISTENT?
022756  001012                          BNE     3$              ; BR IF NO
022760                                  PRINTS  #DEVNXR,R3
022760  010346                          MOV     R3,-(SP)
022762  012746  023217                  MOV     #DEVNXR,-(SP)
```

CLEAN-UP AND REPORT CODING SECTIONS

```
        022766  012746  000002                  MOV     #2,-(SP)
        022772  010600                           MOV     SP,R0
        022774  104416                           TRAP    C$PNTS
        022776  062706  000006                  ADD     #6,SP
  3947  023002  000431                           BR      4$
  3948  023004  020227  160001          3$:     CMP     R2,#160001      ; WAS UNIT NOT READY AT STARTUP?
  3949  023010  001012                           BNE     30$             ; BR IF NO.
  3950  023012                                   PRINTS  #DEVNRD,R3
        023012  010346                           MOV     R3,-(SP)
        023014  012746  023301                  MOV     #DEVNRD,-(SP)
        023020  012746  000002                  MOV     #2,-(SP)
        023024  010600                           MOV     SP,R0
        023026  104416                           TRAP    C$PNTS
        023030  062706  000006                  ADD     #6,SP
  3951  023034  000414                           BR      4$
  3952  023036  042702  170000          30$:    BIC     #^C7777,R2
  3953  023042                                   PRINTS  #DEVDRO,R3,R2
        023042  010246                           MOV     R2,-(SP)
        023044  010346                           MOV     R3,-(SP)
        023046  012746  023362                  MOV     #DEVDRO,-(SP)
        023052  012746  000003                  MOV     #3,-(SP)
        023056  010600                           MOV     SP,R0
        023060  104416                           TRAP    C$PNTS
        023062  062706  000010                  ADD     #10,SP
  3954  023066  062704  000002          4$:     ADD     #2,R4
  3955  023072  005203                           INC     R3
  3956  023074  020427  003370                  CMP     R4,#ERTABE
  3957  023100  103701                           BLO     1$
  3958  023102  012604                           MOV     (SP)+,R4
  3959  023104  012603                           MOV     (SP)+,R3
  3960  023106  012602                           MOV     (SP)+,R2
  3961  023110                                   ENDRPT          ; UNUSED.
        023110                          L10035:
        023110  104425                           TRAP    C$RPT
  3962
  3963  023112     045     116     045  DEVSUM: .ASCIZ  /%N%ADEVICE STATUS SUMMARY:%N/
  3964  023147     045     101     040  DEVONL: .ASCIZ  /%A  UNIT %D3%A    ONLINE,  ERRORS = %D%N/
  3965  023217     045     101     040  DEVNXR: .ASCIZ  /%A  UNIT %D3%A    DROPPED, NON-EXISTENT REGISTER%N/
  3966  023301     045     101     040  DEVNRD: .ASCIZ  /%A  UNIT %D3%A    DROPPED, NOT READY AT STARTUP%N/
  3967  023362     045     101     040  DEVDRO: .ASCIZ  /%A  UNIT %D3%A    DROPPED, ERRORS = %D%N/
  3968                                           .EVEN
  3969
  3970  023432                                   ENDMOD
  3971
```

CLEAN-UP AND REPORT CODING SECTIONS

```
3975
3976                                        .TITLE  TEST 1 - HARDWARE TEST 1-8 TESTS
3977
3984
3985 023432                                 BGNMOD  TSV7B
     023432                          TSV7B::
3991
```

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
                                ;
                                ;
                                ;
                                ;-
                                        BGNTST
                                                                                T1::
023432  012737  006354  002172          MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
023440  012700  032017                  MOV     #TST29ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
023444  004737  016570                  JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
023450  012737  000005  002210          MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
023456  C05037  026374                  CLR     T29CNT                  ;CLEAR TAPE RECORD COUNTER
023462                          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.
                                ;
                                ;
                                ;
                                ;-
023462                                  BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
                                                                                T1.1:
023462  104402                                                                  TRAP    C$BSUB
023464  004737  032046                  JSR     PC,T29RES               ;SET COMMAND PACKET
023470  004737  032140                  JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
023474  004737  032202                  JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
023500  012737  023420  026400          MOV     #10000.,T29DLY          ;SET UP DELAY ROUTINE
023506  004737  016054          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
023512  103426                          BCS     20$                     ;BR IF INIT WAS OK
023514                                  DELAY   250                     ;DELAY ABOUT .25 SECONDS
023514  012727  000250                                                    MOV     #250.,(PC)+
023520  000000                                                            .WORD   0
023522  013727  002116                                                    MOV     L$DLY,(PC)+
023526  000000                                                            .WORD   0
023530  005367  177772                                                    DEC     -6(PC)
023534  001375                                                            BNE     .-4
023536  005367  177756                                                    DEC     -22(PC)
023542  001367                                                            BNE     .-20
023544  005337  026400                  DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
023550  001356                          BNE     10$                     ;BR, IF MORE DELAY TIME LEFT
023552  005237  002214                  INC     FATFLG                          ;ERROR COUNT
023556  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
023560                                  ERRDF   ERRNO,SFTERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
023560  104455                                                                  TRAP    C$ERDF
023562  000145                                                                  .WORD   101
023564  003646                                                                  .WORD   SFIERR
```

TEST 1: WRITE TAPE MARK RETRY

```
                023566  012114                                                                  .WORD   SFIMSG
4050            023570  013737  002174  026240  20$:    MOV     UNITN,T29DSW            ;SET UP UNIT NUMBER
4051
4052            023576  012704  026220                   MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4053            023602  004737  010742                   JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4054            023606  103407                           BCS     25$                     ;BR, IF COMMAND ISSUED OK
4055            023610  005237  002214                   INC     FATFLG                          ;ERROR COUNT
4059            023614  010001                           MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4060            023616                                   ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
                023616  104456                                                                  TRAP    C$ERHRD
                023620  000146                                                                  .WORD   102
                023622  005052                                                                  .WORD   WRTMSG
                023624  012114                                                                  .WORD   SFIMSG
4061            023626                           25$:    CKLOOP                          ;LOOP IF SELECTED
                023626  104406                                                                  TRAP    C$CLP1
4062            023630  016501  000002                   MOV     TSSR(R5),R1             ;GET THE TSSR
4063            023634  010102                           MOV     R1,R2                   ;SET UP EXPECTED
4064            023636  042702  000100                   BIC     #OFL,R2                 ;OFF LINE SHOULD NOT BE SET
4065            023642  C20102                           CMP     R1,R2                   ;THEY SHOULD BE EQUAL
4066            023644  001406                           BEQ     26$                     ;BR, IF OFL IS NOT SET
4070            023646                                   ERRDF   ERRNO,T29OFL,EXPREC     ;DRIVE IS OFF LINE
                023646  104455                                                                  TRAP    C$ERDF
                023650  000147                                                                  .WORD   103
                023652  026402                                                                  .WORD   T29OFL
                023654  015554                                                                  .WORD   EXPREC
4071            023656  004737  017262                   JSR     PC,CKDROP               ;TRY AND DROP DRIVE
4072            023662  004737  011074           26$:    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4073            023666  016501  000002                   MOV     TSSR(R5),R1             ;GET TSSR
4074            023672  012702  000200                   MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
4075            023676  103407                           BCS     30$                     ;BR, IF NO PROBLEM
4076            023700  010004                           MOV     R0,R4                   ;PACKET ADDRESS SET UP
4077            023702  005237  002214                   INC     FATFLG                          ;ERROR COUNT
4081            023706                                   ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
                023706  104456                                                                  TRAP    C$ERHRD
                023710  000150                                                                  .WORD   104
                023712  030205                                                                  .WORD   T29RWN
                023714  012126                                                                  .WORD   PKTSSR
4082            023716                           30$:    CKLOOP                          ;LOOP IF SELECTED
                023716  104406                                                                  TRAP    C$CLP1
4083            023720  013701  026250                   MOV     T29BFR+6,R1             ;PICK UP XSTO
4084            023724  010102                           MOV     R1,R2                   ;SET UP EXPECTED
4085            023726  052702  000002                   BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4086            023732  020102                           CMP     R1,R2                   ;DOES EXP = REC'D
4087            023734  001406                           BEQ     40$                     ;BR, IF EQUAL (OK)
4088            023736  005237  002214                   INC     FATFLG                          ;ERROR COUNT
4092            023742                                   ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                023742  104456                                                                  TRAP    C$ERHRD
                023744  000151                                                                  .WORD   105
                023746  027676                                                                  .WORD   T29BOT
                023750  015554                                                                  .WORD   EXPREC
4093            023752                           40$:    CKLOOP                          ;LOOP IF SELECTED
                023752  104406                                                                  TRAP    C$CLP1
4094            023754  013737  003116  026342           MOV     FREE,T29RB              ;ADDRESS OF READ BUFFER
4095            023762  012737  141011  026340           MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,CVC=1,ACK COMMAND
4096            023770  012704  026340                   MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4097            023774  010465  000000                   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4098            024000  004737  016330                   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
```

TEST 1: WRITE TAPE MARK RETRY

```
4099 024004  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4100 024010  012702  100206                MOV     #SSR!SC!BIT1!BIT2,R2    ;SET UP EXPECTED
4101 024014  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
4102 024016  001406                        BEQ     75$                     ;BR, IF OK
4103 024020  005237  002214                INC     FATFLG                          ;ERROR COUNT
4107 024024                                ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     024024  104456                                                             TRAP    C$ERHRD
     024026  000152                                                             .WORD   106
     024030  027462                                                             .WORD   T29WDE
     024032  012126                                                             .WORD   PKTSSR
4108 024034                        75$:    CKLOOP                          ;LOOP IF SELECTED
     024034  104406                                                             TRAP    C$CLP1
4109 024036  013701  026250                MOV     T29BFR+6,R1             ;GET XSTO STATUS WORD
4110 024042  010102                        MOV     R1,R2                   ;SET UP EXPECTED
4111 024044  052702  002000                BIS     #BIT10,R2               ;SET THE NEF BIT
4112 024050  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
4113 024052  001406                        BEQ     170$                    ;BR, IF EQUAL (GOOD)
4114 024054  005237  002214                INC     FATFLG                          ;ERROR COUNT
4118 024060                                ERRHRD  ERRNO,T29NEF,EXPREC     ;NEF SHOULD BE SET
     024060  104456                                                             TRAP    C$ERHRD
     024062  000153                                                             .WORD   107
     024064  026530                                                             .WORD   T29NEF
     024066  015554                                                             .WORD   EXPREC
4119 024070                        170$:
4120 024070  005103                        COM     R3                      ;RESET THE SWITCH
4121 024072  001273                        BNE     26$                     ;BR, IF FIRST TIME THROUGH HERE
4122 024074                                ENDSUB
     024074                                                                 L10037:
     024074  104403                                                             TRAP    C$ESUB
4123 024076  023727  002214  000017            CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
4124 024104  103402                            BLO     999$                            ;BR, IF LESS THAN 25
4125 024106  004737  017262                    JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
4126 024112                        999$:
4127                               ;*
4128                               ;
4129                               ;TEST 1, SUBTEST 2
4130                               ;
4131                               ;VERIFIES THAT A WRITE TAPE MARK RETRY COMMAND ISSUED WHILE THE TAPE
4132                               ;IS POSITIONED BEFORE THE FIRST RECORD ON TAPE (BUT NOT AT BOT) RESULTS IN
4133                               ;TAPE STATUS ALERT TERMINATION, WITH THE REVERSE INTO BOT (RIB) STATUS BIT
4134                               ;SET.
4135                               ;
4136                               ;
4137                               ;
4138                               ;-
4139 024112                            BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
     024112                                                                 T1.2:
     024112  104402                                                             TRAP    C$BSUB
4140 024114  004737  032046                JSR     PC,T29REST              ;SET COMMAND PACKET
4141 024120  004737  032140                JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
4142 024124  004737  032202                JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
4143 024130  004737  016C54                JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
4144 024134  103407                        BCS     20$                     ;BR IF INIT WAS OK
4145 024136  005237  002214                INC     FATFLG                          ;ERROR COUNT
4149 024142  010001                        MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
4150 024144                                ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     024144  104455                                                             TRAP    C$ERDF
```

TEST 1: WRITE TAPE MARK RETRY

```
        024146  000154                                                          .WORD   108
        024150  003646                                                          .WORD   SFIERR
        024152  012114                                                          .WORD   SFIMSG
  4151  024154  013737  002174  026240  20$:    MOV     UNITN,T29DSW            ;SET UP UNIT NUMBER
  4152
  4153  024162  012704  026220                  MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
  4154  024166  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
  4155  024172  103407                          BCS     25$                     ;BR, IF COMMAND ISSUED OK
  4156  024174  005237  002214                  INC     FATFLG                          ;ERROR COUNT
  4160  024200  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
  4161  024202                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        024202  104456                                                          TRAP    C$ERHRD
        024204  000155                                                          .WORD   109
        024206  005052                                                          .WORD   WRTMSG
        024210  012114                                                          .WORD   SFIMSG
  4162  024212                          25$:    CKLOOP                          ;LOOP IF SELECTED
        024212  104406                                                          TRAP    C$CLP1
  4163  024214  004737  011074          26$:    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
  4164  024220  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR
  4165  024224  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
  4166  024230  103407                          BCS     30$                     ;BR, IF NO PROBLEM
  4167  024232  010004                          MOV     R0,R4                   ;PACKET ADDRESS SET UP
  4170  024234  005237  002214                  INC     FATFLG                          ;ERROR COUNT
  4172  024240                                  ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
        024240  104456                                                          TRAP    C$ERHRD
        024242  000156                                                          .WORD   110
        024244  030205                                                          .WORD   T29RWN
        024246  012126                                                          .WORD   PKTSSR
  4173  024250                          30$:    CKLOOP                          ;LOOP IF SELECTED
        024250  104406                                                          TRAP    C$CLP1
  4174  024252  013701  026250                  MOV     T29BFR+6,R1             ;PICK UP XSTO
  4175  024256  010102                          MOV     R1,R2                   ;SET UP EXPECTED
  4176  024260  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
  4177  024264  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
  4178  024266  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
  4179  024270  005237  002214                  INC     FATFLG                          ;ERROR COUNT
  4183  024274                                  ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        024274  104456                                                          TRAP    C$ERHRD
        024276  000157                                                          .WORD   111
        024300  027676                                                          .WORD   T29BOT
        024302  015554                                                          .WORD   EXPREC
  4184  024304  012737  000001  026342  40$:    MOV     #1,T29RB                ;NUMBER OF RECORDS TO SPACE OVER
  4185  024312  012737  000400  026346          MOV     #256.,T29SZ             ;SET UP RECORD SIZE
  4186  024320  012737  140005  026340          MOV     #140005,T29PK3          ;WRITE FORWARD,CVC=1,ACK COMMAND
  4187  024326  012704  026340                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
  4188  024332  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
  4189  024336  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
  4190  024342  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
  4191  024346  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
  4192  024352  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
  4193  024354  001420                          BEQ     75$                     ;BR, IF OK
  4194  024356  013703  026250                  MOV     T29BFR+6,R3             ;PICK UP XTSO
  4195  024362  032703  000004                  BIT     #4,R3                   ;IS UNIT WRITE-LOCKED?
  4196  024366  001405                          BEQ     41$                     ;NO,PROCEED WITH NORMAL ERROR
  4197  024370                                  ERRDF   ERRNO,T29WLK,SFIMSG     ;TAPE IS WRITE LOCKED
        024370  104455                                                          TRAP    C$ERDF
        024372  000157                                                          .WORD   111
```

TEST 1: WRITE TAPE MARK RETRY

```
        024374  027544                                                          .WORD   T29WLK
        024376  012114                                                          .WORD   SFIMSG
   4198 024400                          DOCLN                   ;DROP IT
        024400  104444                                                          TRAP    C$DCLN
   4199 024402  005237  002214    41$:  INC     FATFLG                  ;ERROR COUNT
   4203 024406                          ERRHRD  ERRNO,T29WRT,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        024406  104456                                                          TRAP    C$ERHRD
        024410  000160                                                          .WORD   112
        024412  027631                                                          .WORD   T29WRT
        024414  012126                                                          .WORD   PKTSSR
   4204 024416                    75$:  CKLOOP                  ;LOOP IF SELECTED
        024416  104406                                                          TRAP    C$CLP1
   4205 024420  012737  000001  026342    MOV     #1,T29RB                ;NUMBER OF RECORDS TO SPACE OVER
   4206 024426  012737  140410  026340    MOV     #140410,T29PK3          ;SET UP COMMAND IN APCKET                       ;SET
 UP SPACE REVERSE
   4207 024434  012704  026340            MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
   4208 024440  010465  000000            MOV     R4,TSDB(R5)             ;ISSUE COMMAND
   4209 024444  004737  016330            JSR     PC,WAITF                ;WAIT FOR SSR TO SET
   4210 024450  016501  000002            MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
   4211 024454  012702  000200            MOV     #SSR,R2                 ;SET UP EXPECTED
   4212 024460  020102                    CMP     R1,R2                   ;ARE THEY EQUAL
   4213 024462  001406                    BEQ     175$                    ;BR, IF OK
   4214 024464  005237  002214            INC     FATFLG                  ;ERROR COUNT
   4218 024470                            ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
        024470  104456                                                          TRAP    C$ERHRD
        024472  000161                                                          .WORD   113
        024474  027462                                                          .WORD   T29WDE
        024476  012126                                                          .WORD   PKTSSR
   4219 024500                    175$:  CKLOOP                  ;LOOP IF SELECTED
        024500  104406                                                          TRAP    C$CLP1
   4220 024502  013737  003116  026342    MOV     FREE,T29RB              ;ADDRESS OF BUFFER
   4221 024510  012737  141011  026340    MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMD.
   4222 024516  012704  026340            MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
   4223 024522  010465  000000            MOV     R4,TSDB(R5)             ;ISSUE COMMAND
   4224 024526  004737  016330            JSR     PC,WAITF                ;WAIT FOR SSR TO SET
   4225 024532  016501  000002            MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
   4226 024536  012702  100204            MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
   4227 024542  020102                    CMP     R1,R2                   ;ARE THEY EQUAL
   4228 024544  001406                    BEQ     180$                    ;BR, IF OK
   4229 024546  005237  002214            INC     FATFLG                  ;ERROR COUNT
   4233 024552                            ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
        024552  104456                                                          TRAP    C$ERHRD
        024554  000162                                                          .WORD   114
        024556  027462                                                          .WORD   T29WDE
        024560  012126                                                          .WORD   PKTSSR
   4234 024562                    180$:  CKLOOP                  ;LOOP IF SELECTED
        024562  104406                                                          TRAP    C$CLP1
   4235 024564  013701  026256            MOV     T29BFR+14,R1            ;GET XST3 STATUS WORD
   4236 024570  010102                    MOV     R1,R2                   ;SET UP EXPECTED
   4237 024572  052702  000001            BIS     #BIT0,R2                ;SET THE RIB BIT
   4238 024576  020102                    CMP     R1,R2                   ;ARE THEY EQUAL
   4239 024600  001406                    BEQ     190$                    ;BR, IF EQUAL (GOOD)
   4240 024602  005237  002214            INC     FATFLG                  ;ERROR COUNT
   4244 024606                            ERRHRD  ERRNO,T29RIB,EXPREC     ;NEF SHOULD BE SET
        024606  104456                                                          TRAP    C$ERHRD
        024610  000163                                                          .WORD   115
        024612  031624                                                          .WORD   T29RIB
        024614  015554                                                          .WORD   EXPREC
```

TEST 1: WRITE TAPE MARK RETRY

```
   4245 024616                          190$:
   4246 024616                                ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
        024616                                                                       L10040:
        024616  104403                                                                TRAP    C$ESUB
   4247 024620  023727  002214  000017        CMP     FATFLG,#15.                ;IS ERROR COUNT AT 25
   4248 024626  103402                        BLO     999$                       ;BR, IF LESS THAN 25
   4249 024630  004737  017262                JSR     PC,CKDROP                  ;TRY TO DROP THE UNIT
   4250 024634                          999$:
   4251                                 ;*
   4252                                 ;
   4253                                 ;TEST 1, SUBTEST 3
   4254                                 ;
   4255                                 ;VERIFIES THAT A WRITE TAPE MARK RETRY COMMAND TERMINATES
   4256                                 ;PROPERLY AND WRITES THE TAPE MARK ONTO TAPE (BY ISSUING A READ REVERSE
   4257                                 ;COMMAND AND CHECKING FOR TAPE STATUS ALERT TERMINATION AND TMK=1).
   4258                                 ;
   4259                                 ;-
   4260 024634                                BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
        024634                                                                       T1.3:
        024634  104402                                                                TRAP    C$BSUB
   4261 024636  004737  032046                JSR     PC,T29REST                 ;SET COMMAND PACKET
   4262 024642  004737  032140                JSR     PC,T29RT2                  ;SET UP OTHER COMMAND PACKET
   4263 024646  004737  032202                JSR     PC,T29RT3                  ;SET UP OTHER COMMAND PACKET
   4264 024652  012737  023420  026400        MOV     #10000.,T29DLY             ;SET UP DELAY ROUTINE
   4265 024660  004737  016054          10$:  JSR     PC,SOFINIT                 ;DO INITIALIZE ON CONTROLLER
   4266 024664  103426                        BCS     20$                        ;BR IF INIT WAS OK
   4267 024666                                DELAY   250                        ;DELAY ABOUT .25 SECONDS
        024666  012727  000250                                                        MOV     #250.,(PC)+
        024672  000000                                                                .WORD   0
        024674  013727  002116                                                        MOV     L$DLY,(PC)+
        024700  000000                                                                .WORD   0
        024702  005367  177772                                                        DEC     -6(PC)
        024706  001375                                                                BNE     .-4
        024710  005367  177756                                                        DEC     -22(PC)
        024714  001367                                                                BNE     .-20
   4268 024716  005337  026400                DEC     T29DLY                     ;BUMP DELAY ROUTINE DOWN
   4269 024722  001356                        BNE     10$                        ;BR, IF MORE DELAY TIME LEFT
   4270 024724  005237  002214                INC     FATFLG                             ;ERROR COUNT
   4274 024730  010001                        MOV     R0,R1                      ;CONTENTS OF TSSR REGISTER
   4275 024732                                ERRDF   ERRNO,SFIERR,SFIMSG        ;FATAL ERROR TSSR WAS NOT OK
        024732  104455                                                                TRAP    C$ERDF
        024734  000164                                                                .WORD   116
        024736  003646                                                                .WORD   SFIERR
        024740  012114                                                                .WORD   SFIMSG
   4276 024742  013737  002174  026240  20$:   MOV     UNITN,T29DSW               ;SET UP DRIVE NUMBER
   4277 024750  012704  026220                MOV     #T29PACKET,R4              ;SUBROUTINE NEEDS PACKET ADDRESS
   4278 024754  004737  010742                JSR     PC,WRTCHR                  ;ISSUE WRITE CHARACTERISTICS
   4279 024760  103407                        BCS     23$                        ;BR, IF COMMAND ISSUED OK
   4280 024762  005237  002214                INC     FATFLG                             ;ERROR COUNT
   4284 024766  010001                        MOV     R0,R1                      ;SAVE CONTENTS OF TSSR
   4285 024770                                ERRHRD  ERRNO,WRTMSG,SFIMSG        ;WRITE CHARACTERISTISC FAILED
        024770  104456                                                                TRAP    C$ERHRD
        024772  000165                                                                .WORD   117
        024774  005052                                                                .WORD   WRTMSG
        024776  012114                                                                .WORD   SFIMSG
   4286 025000                          23$:   CKLOOP                          ;LOOP IF SELECTED
        025000  104406                                                                TRAP    C$CLP1
```

TEST 1: WRITE TAPE MARK RETRY

```
4287 025002  004737  011074                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4288 025006  103411                            BCS     30$                     ;BR, IF NO PROBLEM
4289 025010  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR
4290 025014  010004                            MOV     R0,R4                   ;SAVE PACKET ADDRESS
4291 025016  005237  002214                    INC     FATFLG                          ;ERROR COUNT
4295 025022                                    ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
     025022  104456                                                                    TRAP    C$ERHRD
     025024  000166                                                                    .WORD   118
     025026  030205                                                                    .WORD   T29RWN
     025030  012126                                                                    .WORD   PKTSSR
4296 025032                            30$:    CKLOOP                          ;LOOP IF SELECTED
     025032  104406                                                                    TRAP    C$CLP1
4297 025034  013701  026250                    MOV     T29BFR+6,R1             ;PICK UP XSTO
4298 025040  010102                            MOV     R1,R2                   ;SET UP EXPECTED
4299 025042  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4300 025046  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
4301 025050  001406                            BEQ     40$                     ;BR, IF EQUAL (OK)
4302 025052  005237  002214                    INC     FATFLG                          ;ERROR COUNT
4306 025056                                    ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     025056  104456                                                                    TRAP    C$ERHRD
     025060  000167                                                                    .WORD   119
     025062  027676                                                                    .WORD   T29BOT
     025064  015554                                                                    .WORD   EXPREC
4307 025066                            40$:    CKLOOP                          ;LOOP IF SELECTED
     025066  104406                                                                    TRAP    C$CLP1
4308 025070  012737  140011  026340              MOV     #140011,T29PK3          ;WRITE  APE MARK,ACK,CVC=1 COMMAND
4309 025076  012704  026340                    MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4310 025102  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4311 025106  004737  016330                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4312 025112  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4313 025116  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
4314 025122  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
4315 025124  001406                            BEQ     70$                     ;BR, IF OK
4316 025126  005237  002214                    INC     FATFLG                          ;ERROR COUNT
4320 025132                                    ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE TAPE MARK
     025132  104456                                                                    TRAP    C$ERHRD
     025134  000170                                                                    .WORD   120
     025136  030577                                                                    .WORD   T29WDC
     025140  012126                                                                    .WORD   PKTSSR
4321 025142                            70$:    CKLOOP                          ;LOOP IF SELECTED
     025142  104406                                                                    TRAP    C$CLP1
4322 025144  012703  000001            150$:   MOV     #1.,R3                  ;NUMBER OF RECORDS TO WRITE TM
4323 025150  012737  141011  026340            MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMMAND
4324 025156  012704  026340                    MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4325 025162  010465  000000            155$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4326 025166  004737  016330                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4327 025172  016501  000002                    MOV     TSSR(R5),R1             ;PICK UP TSSR
4328 025176  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
4329 025202  020102                            CMP     R1,R2                   ;WAS STATUS GOOD
4330 025204  001406                            BEQ     165$                    ;BR, IF TERMINATION WAS GOOD
4331 025206  005237  002214                    INC     FATFLG                          ;ERROR COUNT
4335 025212                                    ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     025212  104456                                                                    TRAP    C$ERHRD
     025214  000171                                                                    .WORD   121
     025216  030577                                                                    .WORD   T29WDC
     025220  012126                                                                    .WORD   PKTSSR
4336 025222                            165$:   CKLOOP                          ;LOOP IF SELECTED
```

TEST 1: WRITE TAPE MARK RETRY

```
                025222  104406                                                          TRAP    C$CLP1
 4337           025224  012737  140401  026340          MOV     #140401,T29PK3          ;READ REVERSE,ACK, COMMAND
 4338           025232  013737  003116  026342          MOV     FREE,T29RB              ;NUMBER OF RECORDS TO SPACE BACK
 4339           025240  012704  026340                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 4340           025244  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 4341           025250  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 4342           025254  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 4343           025260  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
 4344           025264  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 4345           025266  001406                          BEQ     222$                    ;BR, IF OK
 4346           025270  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 4350           025274                                  ERRHRD  ERRNO,T29RDG,PKTSSR     ;TSSR INCORRECT AFTER SPACE CMD.
                025274  104456                                                          TRAP    C$ERHRD
                025276  000172                                                          .WORD   122
                025300  031543                                                          .WORD   T29RDG
                025302  012126                                                          .WORD   PKTSSR
 4351           025304                          222$:   CKLOOP                          ;LOOP IF SELECTED
                025304  104406                                                          TRAP    C$CLP1
 4352           025306  C13701  026250                  MOV     T29BFR+6,R1             ;PICK UP XSTO
 4353           025312  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 4354           025314  052702  100000                  BIS     #BIT15,R2               ;TMK SHOULD BE SET
 4355           025320  020102                          CMP     R1,R2                   ;IS TMK SET
 4356           025322  001406                          BEQ     226$                    ;BR, IF TMK WAS SET (GOOD)
 4357           025324  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 4361           025330                                  ERRHRD  ERRNO,T29RRN,EXPREC     ;TMK NOT SET AFTER READ REV
                025330  104456                                                          TRAP    C$ERHRD
                025332  000173                                                          .WORD   123
                025334  031724                                                          .WORD   T29RRN
                025336  015554                                                          .WORD   EXPREC
 4362           025340                          226$:   CKLOOP                          ;LOOP IF SELECTED
                025340  104406                                                          TRAP    C$CLP1
 4363           025342                                  ENDSUB                  ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
                025342                                                                  L10041:
                025342  104403                                                          TRAP    C$ESUB
 4364           025344  023727  002214  000017          CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
 4365           025352  103402                          BLO     999$                            ;BR, IF LESS THAN 25
 4366           025354  004737  017262                  JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
 4367           025360                          999$:
 4368                                           ;*
 4369                                           ;
 4370                                           ;TEST 1, SUBTEST 4
 4371                                           ;
 4372                                           ;VERIFIES THAT THE SPACE-REVERSE PORTION OF THE WRITE TAPE MARK
 4373                                           ;RETRY OPERATION IS PERFORMED BY REWINDING THE TAPE, ISSUING SEVERAL
 4374                                           ;WRITE TAPE MARK RETRY COMMANDS IN SUCCESSION, THEN ISSUING TWO SPACE
 4375                                           ;RECORDS REVERSE COMMANDS IN SUCCESSION.  THE SECOND SPACE RECORDS REVERSE
 4376                                           ;COMMAND SHOULD TERMINATE WITH REVERSE INTO BOT (RIB) STATUS SET.
 4377                                           ;
 4378                                           ;-
 4379           025360                                  BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
                025360                                                                  T1.4:
                025360  104402                                                          TRAP    C$BSUB
 4380           025362  004737  032046                  JSR     PC,T29REST              ;SET COMMAND PACKET
 4381           025366  004737  032140                  JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
 4382           025372  004737  032202                  JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
 4383           025376  012737  023420  026400          MOV     #10000.,T29DLY          ;SET UP DELAY ROUTINE
 4384           025404  004737  016054          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
```

TEST 1: WRITE TAPE MARK RETRY

```
4385 025410  103426                          BCS     20$                     ;BR IF TNIT WAS OK
4386 025412                                  DELAY   250                     ;DELAY ABOUT .25 SECONDS
     025412  012727  000250                                                        MOV     #250,(PC)+
     025416  000000                                                                .WORD   0
     025420  013727  002116                                                        MOV     L$DLY,(PC)+
     025424  000000                                                                .WORD   0
     025426  005367  177772                                                        DEC     -6(PC)
     025432  001375                                                                BNE     .-4
     025434  005367  177756                                                        DEC     -22(PC)
     025440  001367                                                                BNE     .-20
4387 025442  005337  026400                  DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
4388 025446  001356                          BNE     10$                     ;BR, IF MORE DELAY TIME LEFT
4389 025450  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4393 025454  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
4394 025456                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     025456  104455                                                                TRAP    C$ERDF
     025460  000174                                                                .WORD   124
     025462  003646                                                                .WORD   SFIERR
     025464  012114                                                                .WORD   SFIMSG
4395 025466  013737  002174  026240  20$:    MOV     UNITN,T29DSW            ;SET UP DRIVE NUMBER
4396 025474  012704  026220                  MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4397 025500  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4398 025504  103407                          BCS     23$                     ;BR, IF COMMAND ISSUED OK
4399 025506  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4403 025512  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4404 025514                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     025514  104456                                                                TRAP    C$ERHRD
     025516  000175                                                                .WORD   125
     025520  005052                                                                .WORD   WRTMSG
     025522  012114                                                                .WORD   SFIMSG
4405 025524                          23$:    CKLOOP                          ;LOOP IF SELECTED
     025524  104406                                                                TRAP    C$CLP1
4406 025526  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4407 025532  103411                          BCS     30$                     ;BR, IF NO PROBLEM
4408 025534  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR
4409 025540  010004                          MOV     R0,R4                   ;SAVE PACKET ADDRESS
4410 025542  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4414 025546                                  ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
     025546  104456                                                                TRAP    C$ERHRD
     025550  000176                                                                .WORD   126
     025552  030205                                                                .WORD   T29RWN
     025554  012126                                                                .WORD   PKTSSR
4415 025556                          30$:    CKLOOP                          ;LOOP IF SELECTED
     025556  104406                                                                TRAP    C$CLP1
4416 025560  013701  026250                  MOV     T29BFR+6,R1             ;PICK UP XSTO
4417 025564  010102                          MOV     R1,R2                   ;SET UP EXPECTED
4418 025566  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4419 025572  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
4420 025574  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
4421 025576  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4425 025602                                  ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     025602  104456                                                                TRAP    C$ERHRD
     025604  000177                                                                .WORD   127
     025606  027676                                                                .WORD   T29BOT
     025610  015554                                                                .WORD   EXPREC
4426 025612                          40$:    CKLOOP                          ;LOOP IF SELECTED
     025612  104406                                                                TRAP    C$CLP1
```

TEST 1: WRITE TAPE MARK RETRY

```
4427 025614  012737  140011  026340          MOV     #140011,T29PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
4428 025622  012704  026340                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4429 025626  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4430 025632  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4431 025636  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4432 025642  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
4433 025646  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4434 025650  001406                          BEQ     70$                     ;BR, IF OK
4435 025652  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4439 025656                                  ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE TAPE MARK
     025656  104456                                                                  TRAP    C$ERHRD
     025660  000200                                                                  .WORD   128
     025662  030577                                                                  .WORD   T29WDC
     025664  012126                                                                  .WORD   PKTSSR
4440 025666                          70$:    CKLOOP                          ;LOOP IF SELECTED
     025666  104406                                                                  TRAP    C$CLP1
4441 025670  012703  000012          150$:   MOV     #10.,R3                 ;NUMBER OF RECORDS TO WRITE TM
4442 025674  012737  000001  026342          MOV     #1,T29RB                ;SET UP PACKET
4443 025702  012737  141011  026340          MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMMAND
4444 025710  012704  026340                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4445 025714  010465  000000          155$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4446 025720  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4447 025724  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
4448 025730  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
4449 025734  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
4450 025736  001406                          BEQ     165$                    ;BR, IF TERMINATION WAS GOOD
4451 025740  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4455 025744                                  ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     025744  104456                                                                  TRAP    C$ERHRD
     025746  000201                                                                  .WORD   129
     025750  030577                                                                  .WORD   T29WDC
     025752  012126                                                                  .WORD   PKTSSR
4456 025754                          165$:   CKLOOP                          ;LOOP IF SELECTED
     025754  104406                                                                  TRAP    C$CLP1
4457 025756  005303                          DEC     R3                      ;BUMP COUNTER DOWN
4458 025760  001355                          BNE     155$                    ;BR, IF LESS THAN 10 TAPE MARKS
4459 025762  012737  140410  026340          MOV     #140410,T29PK3          ;SPACE REVERSE,ACK,CVC=1, COMMAND
4460 025770  012737  000001  026342          MOV     #1,T29RB                ;NUMBER OF RECORDS TO SPACE BACK
4461 025776  012704  026340                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4462 026002  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4463 026006  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4464 026012  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4465 026016  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
4466 026022  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4467 026024  001406                          BEQ     222$                    ;BR, IF OK
4468 026026  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4472 026032                                  ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER SPACE CMD.
     026032  104456                                                                  TRAP    C$ERHRD
     026034  000202                                                                  .WORD   130
     026036  027462                                                                  .WORD   T29WDE
     026040  012126                                                                  .WORD   PKTSSR
4473 026042                          222$:   CKLOOP                          ;LOOP IF SELECTED
     026042  104406                                                                  TRAP    C$CLP1
4474 026044  012737  100410  026340          MOV     #100410,T29PK3          ;SPACE REVERSE,ACK, COMMAND
4475 026052  012737  000005  026342          MOV     #5,T29RB                ;NUMBER OF RECORDS TO SPACE BACK
4476 026060  012704  026340                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4477 026064  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
```

TEST 1: WRITE TAPE MARK RETRY

```
4478 026070  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4479 026074  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4480 026100  012702  100204                MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
4481 026104  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
4482 026106  001406                        BEQ     260$                    ;BR, IF OK
4483 026110  005237  002214                INC     FATFLG                          ;ERROR COUNT
4487 026114                                ERRHRD  ERRNO,T29RDG,PKTSSR     ;TSSR INCORRECT AFTER SPACE REV CMD.
     026114  104456                                                                TRAP    C$ERHRD
     026116  000203                                                                .WORD   131
     026120  031543                                                                .WORD   T29RDG
     026122  012126                                                                .WORD   PKTSSR
4488 026124                        260$:   CKLOOP                          ;LOOP IF SELECTED
     026124  104406                                                                TRAP    C$CLP1
4489 026126  013701  026256                MOV     T29BFR+14,R1            ;PICK UP XST3
4490 026132  010102                        MOV     R1,R2                   ;SET UP EXPECTED
4491 026134  052702  000001                BIS     #BIT0,R2                ;RIB SHOULD BE SET
4492 026140  020102                        CMP     R1,R2                   ;IS RIB SET
4493 026142  001406                        BEQ     270$                    ;BR, IF RIB WAS SET (GOOD)
4494 026144  005237  002214                INC     FATFLG                          ;ERROR COUNT
4498 026150                                ERRHRD  ERRNO,T29RIB,EXPREC     ;TMK NOT SET AFTER READ REV
     026150  104456                                                                TRAP    C$ERHRD
     026152  000204                                                                .WORD   132
     026154  031624                                                                .WORD   T29RIB
     026156  015554                                                                .WORD   EXPREC
4499 026160                        270$:   CKLOOP                          ;LOOP IF SELECTED
     026160  104406                                                                TRAP    C$CLP1
4500 026162                        330$:   CKLOOP                          ;LOOP IF SELECTED
     026162  104406                                                                TRAP    C$CLP1
4501 026164                                ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     026164                                                                  L10042:
     026164  104403                                                                TRAP    C$ESUB
4502 026166  023727  002214  000017                CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
4503 026174  103402                                BLO     999$                    ;BR, IF LESS THAN 25
4504 026176  004737  017262                        JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
4505 026202                        999$:
4506                               ;
4507                               ;
4508                               ;
4509 026202  004737  016536                JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
4510 026206  103002                        BCC     163$                    ;BR, IF NO LOOP REQUIRED
4511 026210  000137  023462                JMP     T29LOOP                 ;EXECUTE AGAIN
4512 026214                        163$:   EXIT    TST                     ;ALL DONE THIS TEST
     026214  104432                                                                TRAP    C$EXIT
     026216  004014                                                                .WORD   L10036-.
4513                               ;+
4514                               ;LOCAL STORAGE FOR THIS TEST
4515                               ;-
4519 026220                        T29PACKET:                              ;COMMAND PACKET FOR TEST
4520 026220  014004                        .WORD   14004                   ;WRITE CHARACTERISTICS COMMAND, WITH CVC=1, ACK
4521 026222  026230                        .WORD   T29DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
4522 026224  000000                        .WORD   0
4523 026226  000012                        .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
4524 026230                        T29DATA:                                ;CHARACTERISTICS DATA BLOCK
4525 026230  026242                        .WORD   T29BFR                  ;ADDRESS OF MESSAGE BUFFER
4526 026232  000000                        .WORD   0
4527 026234  000024                        .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
4528 026236  000000                        .WORD   0
```

TEST 1: WRITE TAPE MARK RETRY

```
4529 026240  000000                T29DSW: .WORD   0                       ;SELECT DRIVE 0
4530 026242                        T29BFR: .BLKW   25.                     ;MESSAGE BUFFER
4531                                       ;
4532                                       ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
4533                                       ;
4535         026330                        .=<.+10>&177770
4537 026330                        T29PK2:
4538 026330  100006                       .WORD   100006                  ;WRITE SUB SYS MEM COMMAND, AND ACK
4539 026332  026350                       .WORD   T29BF2                  ;ADDRESS OF SELECT BLOCK DATA
4540 026334  000000                       .WORD   0
4541 026336  000006                       .WORD   6.                      ;SIZE OF DATA PACKET
4542
4546 026340                        T29PK3:
4547 026340  140005                       .WORD   140005                  ;WRITE TAPE MARK RETRY COMMAND, CVC=1 AND ACK
4548 026342                        T29RB:
4549 026342  003116                T29WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
4550 026344  000000                       .WORD   0
4551 026346  000000                T29SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
4552                                       .EVEN
4553                                       ;
4554                                       ;
4555                                       ;
4556 026350                        T29BF2:
4557 026350     010                T29BS0: .BYTE   10                      ;BSEL0 AREA
4558 026351     200                T29BS1: .BYTE   200                     ;BSEL1 AREA
4559 026352  000000                T29S2:  .WORD   0                       ;SEL 2 AREA
4560 026354  000000                T29S3:  .WORD   0                       ;DATA AREA
4561                                       ;
4562                                       ;
4563                                       .EVEN
4564                                       ;TAPE MOTION PACKET COMMAND VALUES
4565
4566 026356  140001                T29RN:  .WORD   140001                  ;READ DATA
4567 026360  140401                T29WDR: .WORD   140401                  ;READ DATA REVERSE
4568 026362  141001                T29CON: .WORD   141001                  ;READ PREVIOUS OPP=0
4569 026364  161001                        .WORD   161001                  ;READ PREVIOUS OPP=1
4570 026366  141401                        .WORD   141401                  ;WRITE TAPE MARK RETRY NEXT OPP=0
4571 026370  161401                        .WORD   161401                  ;WRITE TAPE MARK RETRY NEXT OPP=1
4572 026372  177777                        .WORD   177777                  ;END OF DATA
4573
4574                                       ;
4575 026374  000000                T29CNT: .WORD   0                       ;TAPE RECORD COUNTER STORAGE AREA
4576
4577 026376  000000                T29RSZ: .WORD   0                       ;RECORD STORAGE SIZE  AREA
4578 026400  000000                T29DLY: .WORD                   ;DELAY COUNTER STORAGE AREA
4579                                       ;+
4580                                       ;LOCAL TEXT MESSAGES FOR TEST
4581                                       ;-
4582
4583 026402     104     162     151  T29OFL: .ASCIZ  'Drive is OFFLINE'
4584 026423     124     141     160  T29WNG: .ASCIZ  'Tape Position Incorrect After WRITE TAPE MARK RETRY Previous (OPP=1)'
4585 026530     127     122     111  T29NEF: .ASCIZ  'WRITE TAPE MARK RETRY, At BOT, Failed To Set NEF (XSTO)'
4586 026620     124     123     123  T29RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
4587 026667     127     122     111  T29RRF: .ASCIZ  'WRITE TAPE MARK RETRY Previous (Space Reverse, Read Forward) Command F    d
'
4588 027003     127     122     111  T29RRG: .ASCIZ  'WRITE TAPE MARK RETRY Previous (Read Forward, Space Reverse) Command Failed
'
4589 027117     120     117     123  T29SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
4590 027201     122     111     102  T29LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
```

TEST 1: WRITE TAPE MARK RETRY

```
4591 027251  124  123  123  T29WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
4592 027326  111  154  154  T29LOG: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
4593 027407  127  122  111  T29SSR: .ASCIZ  'WRITE TAPE MARK RETRY COMMAND Not Accepted'
4594 02 462  124  123  123  T29WDE: .ASCIZ  'TSSR Not Correct After SPACE REVERSE DATA Command'
4595 027544  052  052  052  T29WLK: .ASCIZ  '*****TAPE IS WRITE-LOCKED AND WILL CAUSE ERRORS*****'
4596 027631  124  123  123  T29WRT: .ASCIZ  'TSSR Not Correct After WRITE Command'
4597 027676  124  141  160  T29BOT: .ASCIZ  'Tape Not At BOT After REWIND Command'
4598 027743  104  141  164  T29DTA: .ASCIZ  'Data Written To Tape Not Equal To Data Read From Tape'
4599 030031  127  122  111  T29EOT: .ASCIZ  'WRITE TAPE MARK RETRY DATA OVER EOT GAVE NO TAPE STATUS ALERT'
4600 030127  124  123  123  T29TM:  .ASCIZ  'TSSR Not Correct After SPACE REVERSE Into BOT'
4601 030205  122  145  167  T29RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
4602 030254  122  101  115  T29RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
4603 030327  124  123  123  T29AM3: .ASCIZ  'TSSR Init. Failed After WRITE TAPE MARK RETRY COMMAND'
4604 030415  104  162  151  T29OF7: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
4605 030470  124  123  123  T29WDD: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK RETRY DATA Command, SWB Bit Set'
4606 030577  124  123  123  T29WDC: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK RETRY DATA Command'
4607 030671  103  126  103  T29VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
4608 030744  124  123  102  T29BA:  .ASCIZ  'TSBA Not Correct After WRITE TAPE MARK RETRY DATA Command'
4609 031036  127  122  111  T29WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
4610 031125  122  145  141  T29LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XSTO'
4611 031207  122  145  141  T29LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
461^ 031271  122  145  163  T29PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
461> 031357  122  145  141  T29TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
4614 031445  104  141  164  T29NEQ: .ASCIZ  'Data WRITE TAPE MARK RETRY From Tape Not Correct, After SWB=1'
4615 031543  124  123  123  T29RDG: .ASCIZ  'TSSR Incorrect After READ REVERSE Into Tape Mark'
4616 031624  127  122  111  T29RIB: .ASCIZ  'WRITE TAPE MARK RETRY At First Record, Failed To Set RIB (XST3)'
4617 031724  124  115  113  T29RRN: .ASCIZ  'TMK (XSTO) Failed To Set After READ REVERSE Into Tape Mark'
4618 032017  127  162  151  TST29ID:        .ASCIZ  'Write Tape Mark Retry'
4619                              .EVEN
4620                         ;*
4621                         ;
4622                         ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
4623                         ;WRITE SUBSYSTEM MEMORY COMMAND
4624                         ;
4625                         ;-
4626
4627 032046               T29REST:
4628 032046                       SAVREG                          ;SAVE THE REGISTERS
4629 032052  012701  026220       MOV     @T29PACKET,R1           ;START OF THE PACKET
4630 032056  012721  140004       MOV     #140004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK, CVC=1
4631 032062  012721  026230       MOV     @T29DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
4632 032066  005021               CLR     (R1)+                   ;EXTENDED ADDRESS
4633 032070  012721  00012        MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
4634 032074  012721  026242       MOV     @T29BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
4635 032100  005021               CLR     (R1)+
4636 032102  012721  000024       MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
4637 03  06  005021               CLR     (R1)+
4638 032110  012711  000000       MOV     #0,(R1)                 ;SELECT DRIVE ZERO (0)
4639 032114  012702  000030       MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
4640 032120  012762  177777  026242  64$:  MOV     #177777,T29BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
4641 032126  005742               TST     -(R2)                   ;NEXT LOCATION
4642 032130  020227  000000       CMP     R2,#0                   ;CHECK FOR END OF LOOP
4643 032134  001371               BNE     64$                     ;KEEP GOING UNTIL DONE
4644 032136  000207               RTS     PC                      ;RETURN
4645
4646 032140               T29RT2:
4647 032140                       SAVREG                          ;SAVE THE REGISTERS
```

```
TEST  1: WRITE TAPE MARK RETRY

 4648 032144  012701  026330                  MOV     #T29PK2,R1              ;START OF THE PACKET
 4649 032150  012721  140006                  MOV     #140006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,CVC=1,
 4650 032154  012721  026350                  MOV     #T29BF2,(R1)+           ;ADDRESS OF DATA BLOCK
 4651 032160  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
 4652 032162  012721  000006                  MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
 4653 032166  005021                          CLR     (R1)+
 4654 032170  012701  026350                  MOV     #T29BF2,R1              ;POINT TO DATA SEL AREA
 4655 032174  005021                          CLR     (R1)+
 4656 032176  005011                          CLR     (R1)
 4657 032200  000207                          RTS     PC                      ;RETURN
 4658 032202                          T29RT3:
 4659 032202                                  SAVREG                          ;SAVE THE REGISTERS
 4660 032206  012701  026340                  MOV     #T29PK3,R1              ;START OF THE PACKET
 4661 032212  012721  000000                  MOV     #0,(R1)+                ;WRITE SUBSYSTEM MEM. WITH ACK,
 4662 032216  012721  000000                  MOV     #0,(R1)+                ;ADDRESS OF DATA BLOCK
 4663 032222  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
 4664 032224  012711  000000                  MOV     #0,(R1)         ;SIZE OF DATA BLOCK IN BYTES
 4665 032230  000207                          RTS     PC                      ;RETURN
 4666 032232                                  ENDTST
      032232                                                                  L10036:
      032232  104401                                                                  TRAP    C$ETST
 4667                                 .SBTTL  TEST  2: SKIP TAPE MARKS
 4668                                 ;+
 4669                                 ;
 4670                                 ;THIS TEST VERIFIES PROPER OPERATION OF THE SKIP TAPE MARKS
 4671                                 ;FORWARD AND SKIP TAPE MARKS REVERSE COMMANDS. PROPER OPERATION
 4672                                 ;UNDER CONTROL OF ALL COMBINATIONS OF THE ENABLE SKIP TAPE MARKS
 4673                                 ;STOP (ESS) AND ENABLE TAPE MARKS STOP OFF BOT (ENB) BITS SPECIFIED
 4674                                 ;BY THE WRITE CHARACTERISTICS COMMAND. THE TEST CONSISTS OF THE
 4675                                 ;FOLLOWING SUBTESTS (FOR EACH SUBTEST, THE TAPE IS FIRST WRITTEN
 4676                                 ;WITH AN APPROPRIATE SERIES OF DATA RECORDS AND/OR TAPE MARKS
 4677                                 ;AND/OR DOUBLE TAPE MARKS.
 4678                                 ;
 4679                                 ;
 4680                                 ;THE TEST CONSISTS OF THE FOLLOWING 11 SUBTESTS
 4681                                 ;
 4682                                 ;
 4683                                 ;
 4684                                 ;-
 4685 032234                                  BGNTST
      032234                                                                  T2::
 4686 032234  012737  006354  002172          MOV     @EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
 4691 032242  012700  041131                  MOV     #TST30ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
 4692 032246  004737  016570                  JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
 4693 032252  012737  000005  002210          MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
 4694                                 ;+
 4695                                 ;
 4696                                 ;TEST 2, SUBTEST 1
 4697                                 ;
 4698                                 ;
 4699                                 ;VERIFIES THAT A SKIP TAPE MARKS FORWARD COMMAND WITH
 4700                                 ;A TAPE MARK COUNT OF 1 OPERATES OPERATES PROPERLY. THE TAPE
 4701                                 ;IS FIRST REWOUND, THEN WRITTEN WITH SEVERAL "FILES";
 4702                                 ;EACH FILE CONSISTS OF A NUMBER OF DATA RECORDS
 4703                                 ;FOLLOWED BY A TAPE MARK. THE FINAL FILE IS
 4704                                 ;TERMINATED BY A DOUBLE TAPE MARK. EACH DATA RECORD
 4705                                 ;CONTAINS A FILE NUMBER AND THE RECORD NUMBER WITHIN
```

TEST 2: SKIP TAPE MARKS

```
                                        ;THE FILE SO THAT TAPE POSITION CAN BE SUBSEQUENTLY
                                        ;VERIFIED BY READING THE DATA. THE TAPE IS AGAIN
                                        ;REWOUND AND A SERIES OF SKIP TAPE MARKS FORWARD
                                        ;COMMANDS ARE ISSUED AND THE RESULTS (TAPE STATUS ALERT
                                        ;TERMINATION, TMK=1 STATUS, TAPE POSITION VIA READ
                                        ;COMMAND) IS CHECKED. PRIOR TO ISSUANCE OF EACH SKIP
                                        ;COMMAND, A WRITE CHARACTERISTICS COMMAND IS ISSUED TO
                                        ;SET UP THE ESS AND ENB CONTROL BITS. ALL
                                        ;COMBINATIONS OF ESS AND ENB ARE USED (00,01,10,
                                        ;11); OPERATION SHOULD BE THE SAME IN EACH CASE FOR
                                        ;THIS SUBTEST.
                                        ;
                                        ;
                                        ;-
                                        T30LOOP:
032260                                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
032260                                                                                  T2.1:
032260  104402                                                                          TRAP    C$BSUB
032262  004737  041152                          JSR     PC,T30REST              ;SET COMMAND PACKET
032266  005037  036554                          CLR     T30FCN                  ;CLEAR FILE COUNTER
032272  004737  041244                          JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
032276  004737  041306                          JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
032302  012737  176750  036556                  MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
032310  004737  016054                  10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
032314  103426                                  BCS     20$                     ;BR IF INIT WAS OK
032316                                          DELAY   250                     ;DELAY ROUTINE CALL
032316  012727  000250                                                                  MOV     #250.,(PC)+
032322  000000                                                                          .WORD   0
032324  013727  002116                                                                  MOV     L$DLY,(PC)+
032330  000000                                                                          .WORD   0
032332  005367  177772                                                                  DEC     -6(PC)
032336  001375                                                                          BNE     .-4
032340  005367  177756                                                                  DEC     -22(PC)
032344  001367                                                                          BNE     .-20
032346  005337  036556                          DEC     T30DLY                  ;BUMP COUNTER
032352  001356                                  BNE     10$                     ;BR, IF MORE COUNTING TO DO
032354  005237  002214                          INC     FATFLG                          ;ERROR COUNT
032360  010001                                  MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
032362                                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
032362  104455                                                                          TRAP    C$ERDF
032364  000311                                                                          .WORD   201
032366  003646                                                                          .WORD   SFIERR
032370  012114                                                                          .WORD   SFIMSG
032372                                  20$:
032372  013737  002174  036420                  MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
032400  012704  036400                          MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

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

032404  004737  010742                          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
032410  103407                                  BCS     23$                     ;BR, IF COMMAND ISSUED OK
032412  005237  002214                          INC     FATFLG                          ;ERROR COUNT
```

TEST 2: SKIP TAPE MARKS

```
4755 032416  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4756 032420                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     032420  104456                                                                TRAP    C$ERHRD
     032422  000312                                                                .WORD   202
     032424  005052                                                                .WORD   WRTMSG
     032426  012114                                                                .WORD   SFIMSG
4757 032430                        23$:    CKLOOP                          ;LOOP IF SELECTED
     032430  104406                                                                TRAP    C$CLP1
4758
4759                               ;*************************************************************
4760                               ;
4761                               ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
4762                               ;
4763                               ;*************************************************************
4764
4765 032432  004737  011074                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4766 032436  103411                        BCS     30$                     ;BR, IF NO PROBLEM
4767 032440  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
4768 032442  C16501  000002                MOV     TSSP(R5),R1             ;GET STATUS REGISTER
4769 032446  005237  002214                INC     FATFLG                          ;ERROR COUNT
4773 032452                                ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     032452  104456                                                                TRAP    C$ERHRD
     032454  000313                                                                .WORD   203
     032456  040140                                                                .WORD   T30RWN
     032460  012126                                                                .WORD   PKTSSR
4774 032462                        30$:    CKLOOP                          ;LOOP IF SELECTED
     032462  104406                                                                TRAP    C$CLP1
4775
4776                               ;*************************************************************
4777                               ;
4778                               ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
4779                               ;
4780                               ;*************************************************************
4781
4782 032464  013701  036430                MOV     T30BFR+6,R1             ;PICK UP XST0
4783 032470  010102                        MOV     R1,R2                   ;SET UP EXPECTED
4784 032472  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4785 032476  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
4786 032500  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
4787 032502  005237  002214                INC     FATFLG                          ;ERROR COUNT
4791 032506                                ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     032506  104456                                                                TRAP    C$ERHRD
     032510  000314                                                                .WORD   204
     032512  037741                                                                .WORD   T30BOT
     032514  015554                                                                .WORD   EXPREC
4792 032516                        40$:    CKLOOP                          ;LOOP IF SELECTED
     032516  104406                                                                TRAP    C$CLP1
4793 032520  012737  000001  036554        MOV     #1.,T30FCN              ;SET "FILE" COUNTER AT 1 DECIMAL
4794 032526  012703  000001        64$:    MOV     #1,R3                   ;ONE RECORD  PER "FILE"
4795 032532  013737  003116  036522  65$:  MOV     FREE,T30WB              ;SET UP PACKETS'S WRITE BUFFER
4796 032540  012737  003720  036526        MOV     #2000.,T30SZ            ;SET RECORD SIZE AT 2000 BYTES
4797
4798                               ;*************************************************************
4799                               ;
4800                               ;WRITE DATA,ACK,CVC=1 COMMAND
4801                               ;
4802                               ;*************************************************************
```

TEST 2: SKIP TAPE MARKS

```
4803
4804 032546  012737  140005  036520          MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
4805 032554  012704  036520                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4806 032560  013702  036554                  MOV     T30FCN,R2               ;GET FILE COUNTER
4807 032564  000302                          SWAB    R2                      ;MOVE TO UPPER BYTE
4808 032566  010301                          MOV     R3,R1                   ;GET RECORD COUNTER
4809 032570  060201                          ADD     R2,R1                   ;FILE COUNTER IN UPPER, RECORD # LOW
4810 032572  010177  150320                  MOV     R1,@FREE                ;MOV TO OUT PUT BUFFER
4811 032576  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4812 032602  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4813 032606  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4814 032612  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
4815 032616  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4816 032620  001406                          BEQ     70$                     ;BR, IF OK
4817 032622  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4821 032626                                  ERRHRD  ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     032626  104456                                                                  TRAP    C$ERHRD
     032630  000315                                                                  .WORD   205
     032632  C37070                                                                  .WORD   T30WDD
     032634  012126                                                                  .WORD   PKTSSR
4822 032636                          70$:    CKLOOP                          ;LOOP IF SELECTED
     032636  104406                                                                  TRAP    C$CLP1
4823 032640  005203                          INC     R3                      ;COUNT THE RECORD COUNTER DOWN
4824 032642  020327  000021                  CMP     R3,#21                  ;AT 20 YET
4825 032646  001331                          BNE     65$                     ;BR, IF NOT AT 20 RECORDS WRITTEN
4826
4827                                 ;*************************************************************
4828                                 ;
4829                                 ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
4830                                 ;
4831                                 ;*************************************************************
4832
4833 032650  012737  141011  036520          MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
4834 032656  012704  036520                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4835 032662  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4836 032666  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4837 032672  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
4838 032676  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
4839 032702  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
4840 032704  001406                          BEQ     160$                    ;BR, IF TERMINATION WAS GOOD
4841 032706  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4845 032712                                  ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     032712  104456                                                                  TRAP    C$ERHRD
     032714  000316                                                                  .WORD   206
     032716  040262                                                                  .WORD   T30WDC
     032720  012126                                                                  .WORD   PKTSSR
4846 032722                          160$:   CKLOOP                          ;LOOP IF SELECTED
     032722  104406                                                                  TRAP    C$CLP1
4847 032724  005237  036554                  INC     T30FCN                  ;COUNT THE "FILE" COUNTER DOWN
4848 032730  023727  036554  000006          CMP     T30FCN,#6               ;WRITE 5 FILE TO TAPE
4849 032736  001273                          BNE     64$                     ;BR, IF NOT AT 5 FILES WRITTEN
4850
4851                                 ;*************************************************************
4852                                 ;
4853                                 ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
4854                                 ;
4855                                 ;*************************************************************
```

TEST 2: SKIP TAPE MARKS

```
4856
4857 032740  012737  141011  036520          MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
4858 032746  012704  036520                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4859 032752  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4860 032756  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4861 032762  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
4862 032766  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
4863 032772  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
4864 032774  001406                          BEQ     165$                    ;BR. IF TERMINATION WAS GOOD
4865 032776  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4869 033002                                  ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     033002  104456                                                              TRAP    C$ERHRD
     033004  000317                                                              .WORD   207
     033006  040262                                                              .WORD   T30WDC
     033010  012126                                                              .WORD   PKTSSR
4870 033012                          165$:   CKLOOP                          ;LOOP IF SELECTED
     033012  104406                                                              TRAP    C$CLP1
4871
4872                                 ;*************************************************************
4873                                 ;
4874                                 ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
4875                                 ;
4876                                 ;*************************************************************
4877
4878 033014  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4879 033020  103411                          BCS     170$                    ;BR, IF NO PROBLEM
4880 033022  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
4881 033024  016501  000002                  MOV     TSSR(R5),R1             ;GET STATUS REGISTER
4882 033030  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4886 033034                                  ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     033034  104456                                                              TRAP    C$ERHRD
     033036  000320                                                              .WORD   208
     033040  040140                                                              .WORD   T30RWN
     033042  012126                                                              .WORD   PKTSSR
4887 033044                          170$:   CKLOOP                          ;LOOP IF SELECTED
     033044  104406                                                              TRAP    C$CLP1
4888
4889                                 ;*************************************************************
4890                                 ;
4891                                 ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
4892                                 ;
4893                                 ;*************************************************************
4894
4895 033046  013701  036430                  MOV     T30BFR+6,R1             ;PICK UP XST0
4896 033052  010102                          MOV     R1,R2                   ;SET UP EXPECTED
4897 033054  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4898 033060  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
4899 033062  001406                          BEQ     180$                    ;BR, IF EQUAL (OK)
4900 033064  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4904 033070                                  ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     033070  104456                                                              TRAP    C$ERHRD
     033072  000321                                                              .WORD   209
     033074  037741                                                              .WORD   T30BOT
     033076  015554                                                              .WORD   EXPREC
4905 033100                          180$:   CKLOOP                          ;LOOP IF SELECTED
     033100  104406                                                              TRAP    C$CLP1
4906 033102  012703  036536                  MOV     #T30IMV,R3              ;SET UP POINTER TO COMMAND TABLE
```

TEST 2: SKIP TAPE MARKS

```
4907 033106  013737  002174  036420          MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
4908 033114  011337  036416          182$:   MOV     (R3),T30ETM             ;GET NEXT COMMAND
4909 033120  012704  036400                  MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4910
4911                                ;*************************************************************
4912                                ;
4913                                ;ISSUE WRITE CHARACTERISTICS COMMAND
4914                                ;
4915                                ;*************************************************************
4916
4917 033124  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4918 033130  103407                          BCS     188$                    ;BR, IF COMMAND ISSUED OK
4919 033132  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4923 033136  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4924 033140                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     033140  104456                                                                  TRAP    C$ERHRD
     033142  000322                                                                  .WORD   210
     033144  005052                                                                  .WORD   WRTMSG
     033146  012114                                                                  .WORD   SFIMSG
4925 033150                          188$:   CKLOOP                          ;LOOP IF SELECTED
     033150  104406                                                                  TRAP    C$CLP1
4926
4927                                ;*************************************************************
4928                                ;
4929                                ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
4930                                ;
4931                                ;*************************************************************
4932
4933 033152  012737  141010  036520          MOV     #141010,T30PK3          ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
4934 033160  012737  000001  036522          MOV     #1,T30RB                ;SET UP NUMBER TO SKIP
4935 033166  012704  036520                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4936 033172  010465  000000          189$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4937 033176  012737  176750  036556          MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
4938 033204  004737  016330          190$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4939 033210  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
4940 033214  032701  000200                  BIT     #SSR,R1                 ;IS SSR SET YET
4941 033220  001017                          BNE     191$                    ;BR, IF SSR IS SET
4942 033222                                  DELAY   250                     ;CALL DELAY ROUTINE
     033222  012727  000250                                                          MOV     #250.,(PC)+
     033226  000000                                                                  .WORD   0
     033230  013727  002116                                                          MOV     L$DLY,(PC)+
     033234  000000                                                                  .WORD   0
     033236  005367  177772                                                          DEC     -6(PC)
     033242  001375                                                                  BNE     .-4
     033244  005367  177756                                                          DEC     -22(PC)
     033250  001367                                                                  BNE     .-20
4943 033252  005337  036556                  DEC     T30DLY                  ;BUMP DELAY ROUTINE
4944 033256  001352                          BNE     190$                    ;BR, IF MORE DELAY TO GO
4945 033260  012702  000200          191$:   MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
4946 033264  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
4947 033266  001406                          BEQ     192$                    ;BR, IF TERMINATION WAS GOOD
4948 033270  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4952 033274                                  ERRHRD  ERRNO,T30SKM,PKTSSR     ;TSSR NOT CORRECT AFTER SKIP TAPE M.
     033274  104456                                                                  TRAP    C$ERHRD
     033276  000323                                                                  .WORD   211
     033300  037014                                                                  .WORD   T30SKM
     033302  012126                                                                  .WORD   PKTSSR
```

TEST 2: SKIP TAPE MARKS

```
4953 033304                          192$:   CKLOOP                          ;LOOP IF SELECTED
     033304  104406                                                                  TRAP    C$CLP1
4954
4955                                 ;*************************************************************
4956                                 ;
4957                                 ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
4958                                 ;
4959                                 ;*************************************************************
4960
4961 033306  013701  036430                  MOV     T30BFR+6,R1             ;PICK UP XSTO
4962 033312  010102                          MOV     R1,R2                   ;SET UP EXPECTED
4963 033314  052702  100000                  BIS     #BIT15,R2               ;SET TMK BIT IN EXPECTED
4964 033320  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
4965 033322  001406                          BEQ     195$                    ;BR, IF EQUAL (OK)
4966 033324  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4970 033330                                  ERRHRD  ERRNO,T30TMK,EXPREC     ;TMK NOT SET AFTER WRT TAPE MARK
     033330  104456                                                                  TRAP    C$ERHRD
     033332  000324                                                                  .WORD   212
     033334  040414                                                                  .WORD   T30TMK
     033336  015554                                                                  .WORD   EXPREC
4971 033340                          195$:   CKLOOP                          ;LOOP IF SELECTED
     033340  104406                                                                  TRAP    C$CLP1
4972 033342  012700  177777                  MOV     #177777,R0              ;VALUE TO WRITTEN TO MEMORY
4973 033346  004737  017502                  JSR     PC,FILLMEM              ;FILL MEM WITH ALL ONES
4974 033352  013737  003116  036522          MOV     FREE,T30RB              ;STARTING READ BUFFER ADDRESS
4975
4976                                 ;*************************************************************
4977                                 ;
4978                                 ;READ FORWARD,ACK,CVC=1 COMMAND
4979                                 ;
4980                                 ;*************************************************************
4981
4982 033360  012737  140001  036520          MOV     #140001,T30PK3          ;READ FORWARD,ACK,CVC=1 COMMAND
4983 033366  012704  036520                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4984 033372  012737  003720  036526          MOV     #2000.,T30SZ            ;SET UP RECORD SIZE IN PACKET
4985 033400  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4986 033404  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4987 033410  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4988 033414  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
4989 033420  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4990 033422  001406                          BEQ     200$                    ;BR, IF OK
4991 033424  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4995 033430                                  ERRHRD  ERRNO,T30RDF,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     033430  104456                                                                  TRAP    C$ERHRD
     033432  000325                                                                  .WORD   213
     033434  037313                                                                  .WORD   T30RDF
     033436  012126                                                                  .WORD   PKTSSR
4996 033440                          200$:   CKLOOP                          ;LOOP IF SELECTED
     033440  104406                                                                  TRAP    C$CLP1
4997 033442  017701  147450                  MOV     @FREE,R1                ;FIRST LOC IN READ BUFFER
4998 033446  012702  177777                  MOV     #177777,R2              ;EXPECTED IF NO DATA TRANS.
4999 033452  020102                          CMP     R1,R2                   ;DID ANY DATA GET TRANSFERRED
5000 033454  001006                          BNE     220$                    ;BR, IF NO DATA TRANS (GOOD)
5001 033456  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5005 033462                                  ERRHRD  ERRNO,T30DTR,EXPREC     ;DATA TRANSFERRED ON READ TAPE MARK
     033462  104456                                                                  TRAP    C$ERHRD
     033464  000326                                                                  .WORD   214
```

TEST 2: SKIP TAPE MARKS

```
        033466  040770                                                          .WORD   T30DTR
        033470  015554                                                          .WORD   EXPREC
5006    033472                          220$:   CKLOOP                          ;LOOP IF SELECTED
        033472  104406                                                          TRAP    C$CLP1
5007    033474  012702  001001                  MOV     #1001,R2                ;SET UP RECORD NUMBER EXPECTED (FILE 2)
5008    033500  017701  147412                  MOV     @FREE,R1                ;GET INFO FROM BUFFER
5009    033504  020201                          CMP     R2,R1                   ;ARE THEY EQUAL
5010    033506  001406                          BEQ     228$                    ;BR, IF EQUAL (OK)
5011    033510  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5015    033514                                  ERRHRD  ERRNO,T30PTB,EXPREC     ;RECORD POSITION WAS NOT CORRECT
        033514  104456                                                          TRAP    C$ERHRD
        033516  000327                                                          .WORD   215
        033520  037142                                                          .WORD   T30PTB
        033522  015554                                                          .WORD   EXPREC
5016    033524                          228$:   CKLOOP                          ;LOOP IF SELECTED
        033524  104406                                                          TRAP    C$CLP1
5017
5018                                    ;*************************************************************
5019                                    ;
5020                                    ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
5021                                    ;
5022                                    ;*************************************************************
5023
5024    033526  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5025    033532  103411                          BCS     230$                    ;BR, IF NO PROBLEM
5026    033534  010004                          MOV     R0,R4                   ;SAVE PACKET ADDRESS
5027    033536  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR STATUS
5028    033542  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5032    033546                                  ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
        033546  104456                                                          TRAP    C$ERHRD
        033550  000330                                                          .WORD   216
        033552  040140                                                          .WORD   T30RWN
        033554  012126                                                          .WORD   PKTSSR
5033    033556                          230$:   CKLOOP                          ;LOOP IF SELECTED
        033556  104406                                                          TRAP    C$CLP1
5034
5035                                    ;*************************************************************
5036                                    ;
5037                                    ;GET EXTENDED STATUS REGISTER ZERO (XST^) FROM MESSAGE BUFFER
5038                                    ;
5039                                    ;*************************************************************
5040
5041    033560  013701  036430                  MOV     T30BFR+6,R1             ;PICK UP XST0
5042    033564  010102                          MOV     R1,R2                   ;SET UP EXPECTED
5043    033566  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5044    033572  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
5045    033574  001406                          BEQ     240$                    ;BR, IF EQUAL (OK)
5046    033576  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5050    033602                                  ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        033602  104456                                                          TRAP    C$ERHRD
        033604  000331                                                          .WORD   217
        033606  037741                                                          .WORD   T30BOT
        033610  015554                                                          .WORD   EXPREC
5051    033612                          240$:   CKLOOP                          ;LOOP IF SELECTED
        033612  104406                                                          TRAP    C$CLP1
5052    033614  005723                          TST     (R3)+                   ;POINT TO NEXT POSITION
5053    033616  011301                          MOV     (R3),R1                 ;GET NEXT COMMAND ETC.
```

TEST 2: SKIP TAPE MARKS

```
5054 033620  020127  177777                CMP     R1,#177777              ;END OF TABLE MARKER
5055 033624  001402                         BEQ     330$                    ;BR, IF AT END OF TABLE
5056 033626  000137  033114                 JMP     182$                    ;JUMP TO MORE COMMANDS TO DO
5057 033632                         330$:   CKLOOP                          ;LOOP IF SELECTED
     033632  104406                                                                 TRAP    C$CLP1
5058 033634                         L10044: ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     033634                                                                         TRAP    C$ESUB
     033634  104403
5059 033636  023727  002214  000017         CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
5060 033644  103402                         BLO     999$                            ;BR, IF LESS THAN 25
5061 033646  004737  017262                 JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
5062 033652                         999$:
5063                                ;*
5064                                ;
5065                                ;TEST 2, SUBTEST 2
5066                                ;
5067                                ;VERIFIES THAT SKIP TAPE MARKS COMMANDS WITH A TAPE
5068                                ;MARK COUNT GREATER THAN 1 OPERATE PROPERLY. COUNTS
5069                                ;OF 2,3,8,64,256, AND 512 ARE TESTED. THE
5070                                ;TESTING SEQUENCE IS SIMILAR TO THAT USED IN SUBTEST 1.
5071                                ;
5072                                ;
5073                                ;
5074                                ;-
5075
5076 033652                         T2.2:   BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     033652                                                                         TRAP    C$BSUB
     033652  104402
5077 033654  004737  041152                 JSR     PC,T30REST              ;SET COMMAND PACKET
5078 033660  005037  036554                 CLR     T30FCN                  ;CLEAR FILE COUNTER
5079 033664  004737  041244                 JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
5080 033670  004737  041306                 JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
5081 033674  012737  176750  036556         MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
5082 033702  004737  016054         10$:    JSR     PC,S0FINIT              ;DO INITIALIZE ON CONTROLLER
5083 033706  103426                         BCS     20$                     ;BR IF INIT WAS OK
5084 033710                                 DELAY   250                     ;DELAY ROUTINE CALL
     033710  012727  000250                                                         MOV     #250.,(PC)+
     033714  000000                                                                 .WORD   0
     033716  013727  002116                                                         MOV     L$DLY,(PC)+
     033722  000000                                                                 .WORD   0
     033724  005367  177772                                                         DEC     -6(PC)
     033730  001375                                                                 BNE     .-4
     033732  005367  177756                                                         DEC     -22(PC)
     033736  001367                                                                 BNE     .-20
5085 033740  005337  036556                 DEC     T30DLY                  ;BUMP COUNTER
5086 033744  001356                         BNE     10$                     ;BR, IF MORE COUNTING TO DO
5087 033746  005237  002214                 INC     FATFLG                          ;ERROR COUNT
5091 033752  010001                         MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
5092 033754                                 ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     033754  104455                                                                 TRAP    C$ERDF
     033756  000332                                                                 .WORD   218
     033760  003646                                                                 .WORD   SFIERR
     033762  012114                                                                 .WORD   SFIMSG
5093 033764                         20$:
5094 033764  013737  002174  036420         MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
5095 033772  012704  036400                 MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5096
```

```
5097                                    ;*************************************************************
5098                                    ;
5099                                    ;ISSUE WRITE CHARACTERISTICS COMMAND
5100                                    ;
5101                                    ;*************************************************************
5102
5103 033776  004737  010742                    JSR     PC,WRTCHR               ;ISSUE WRITE CHAPACTERISTICS
5104 034002  103407                            BCS     23$                     ;BR. IF COMMAND ISSUED OK
5105 034004  005237  002214                    INC     FATFLG                          ;ERROR COUNT
5109 034010  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5110 034012                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     034012  104456                                                                    TRAP    C$ERHRD
     034014  000333                                                                    .WORD   219
     034016  005052                                                                    .WORD   WRTMSG
     034020  012114                                                                    .WORD   SFIMSG
5111 034022                            23$:    CKLOOP                          ;LOOP IF SELECTED
     034022  104406                                                                    TRAP    C$CLP1
5112
5113                                    ;*************************************************************
5114                                    ;
5115                                    ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
5116                                    ;
5117                                    ;*************************************************************
5118
5119 034024  004737  011074                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5120 034030  103411                            BCS     30$                     ;BR. IF NO PROBLEM
5121 034032  010004                            MOV     R0,R4                   ;GET PACKET ADDRESS
5122 034034  016501  000002                    MOV     TSSR(R5),R1             ;GET STATUS REGISTER
5123 034040  005237  002214                    INC     FATFLG                          ;ERROR COUNT
5127 034044                                    ERRHRD  ERRNO,T3ORWN,PKTSSR     ;REWIND NOT ACCEPTED
     034044  104456                                                                    TRAP    C$ERHRD
     034046  000334                                                                    .WORD   220
     034050  040140                                                                    .WORD   T3ORWN
     034052  012126                                                                    .WORD   PKTSSR
5128 034054                            30$:    CKLOOP                          ;LOOP IF SELECTED
     034054  104406                                                                    TRAP    C$CLP1
5129
5130                                    ;*************************************************************
5131                                    ;
5132                                    ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
5133                                    ;
5134                                    ;*************************************************************
5135
5136 034056  013701  036430                    MOV     T30BFR+6,R1             ;PICK UP XST0
5137 034062  010102                            MOV     R1,R2                   ;SET UP EXPECTED
5138 034064  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5139 034070  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
5140 034072  001406                            BEQ     40$                     ;BR. IF EQUAL (OK)
5141 034074  005237  002214                    INC     FATFLG                          ;ERROR COUNT
5145 034100                                    ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     034100  104456                                                                    TRAP    C$ERHRD
     034102  000335                                                                    .WORD   221
     034104  037741                                                                    .WORD   T30BOT
     034106  015554                                                                    .WORD   EXPREC
5146 034110                            40$:    CKLOOP                          ;LOOP IF SELECTED
     034110  104406                                                                    TRAP    C$CLP1
5147 034112  012737  000001  036554                MOV     #1.,T3OFCN              ;SET "FILE" COUNTER AT 1 DECIMAL
```

TEST 2: SKIP TAPE MARKS

```
5148 034120  012703  000001          64$:    MOV     #1,R3                   ;ONE RECORD  PER "FILE"
5149 034124  013737  003116  036522  65$:    MOV     FREE,T30WB              ;SET UP PACKETS'S WRITE BUFFER
5150 034132  012737  000024  036526          MOV     #20.,T30SZ              ;SET RECORD SIZE AT 2000 BYTES
5151
5152                                 ;*************************************************************
5153                                 ;
5154                                 ;WRITE DATA,ACK,CVC=1 COMMAND
5155                                 ;
5156                                 ;*************************************************************
5157
5158 034140  012737  140005  036520          MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
5159 034146  012704  036520              MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5160 034152  013702  036554              MOV     T30FCN,R2               ;GET FILE COUNTER
5161 034156  000302                      SWAB    R2                      ;MOVE TO UPPER BYTE
5162 034160  010301                      MOV     R3,R1                   ;GET RECORD COUNTER
5163 034162  060201                      ADD     R2,R1                   ;FILE COUNTER IN UPPER, RECORD # LOW
5164 034164  010177  146726              MOV     R1,@FREE                ;MOV TO OUT PUT BUFFER
5165 034170  010465  000000              MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5166 034174  C04737  016330              JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5167 034200  016501  000002              MOV     TSSR(R5),R1             ;C    TSSR CONTENTS
5168 034204  012702  000200              MOV     #SSR,R2                 ;SE! UP EXPECTED
5169 034210  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
5170 034212  001406                      BEQ     70$                     ;BR, IF OK
5171 034214  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5175 034220                              ERRHRD  ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     034220  104456                                                                  TRAP    C$ERHRD
     034222  000336                                                                  .WORD   222
     034224  037070                                                                  .WORD   T30WDD
     034226  012126                                                                  .WORD   PKTSSR
5176 034230                          70$:    CKLOOP                          ;LOOP IF SELECTED
     034230  104406                                                                  TRAP    C$CLP1
5177 034232  005203                      INC     R3                      ;COUNT THE RECORD COUNTER DOWN
5178 034234  020327  000021              CMP     R3,#21                  ;AT 20 YET
5179 034240  001331                      BNE     65$                     ;BR, IF NOT AT 20 RECORDS WRITTEN
5180
5181                                 ;*************************************************************
5182                                 ;
5183                                 ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
5184                                 ;
5185                                 ;*************************************************************
5186
5187 034242  012737  141011  036520          MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
5188 034250  012704  036520              MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5189 034254  010465  000000              MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5190 034260  004737  016330              JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5191 034264  016501  000002              MOV     TSSR(R5),R1             ;PICK UP TSSR
5192 034270  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
5193 034274  020102                      CMP     R1,R2                   ;WAS STATUS GOOD
5194 034276  001406                      BEQ     160$                    ;BR, IF TERMINATION WAS GOOD
5195 034300  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5199 034304                              ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     034304  104456                                                                  TRAP    C$ERHRD
     034306  000337                                                                  .WORD   223
     034310  040262                                                                  .WORD   T30WDC
     034312  012126                                                                  .WORD   PKTSSR
5200 034314                          160$:   CKLOOP                          ;LOOP IF SELECTED
     034314  104406                                                                  TRAP    C$CLP1
```

TEST 2: SKIP TAPE MARKS

```
5201 034316  005237  036554                INC     T30FCN                  ;COUNT THE "FILE" COUNTER DOWN
5202 034322  023727  036554  000031        CMP     T30FCN,#25.             ;WRITE 25 FILES TO TAPE
5203 034330  001273                        BNE     64$                     ;BR. IF NOT AT 25 FILES WRITTEN
5204
5205                                ;*************************************************************
5206                                ;
5207                                ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
5208                                ;
5209                                ;*************************************************************
5210
5211 034332  012737  141011  036520        MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
5212 034340  012704  036520                MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5213 034344  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5214 034350  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5215 034354  016501  000002                MOV     TSSR(R5),R1             ;PICK UP TSSR
5216 034360  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
5217 034364  020102                        CMP     R1,R2                   ;WAS STATUS GOOD
5218 034366  001406                        BEQ     165$                    ;BR. IF TERMINATION WAS GOOD
5219 034370  005237  002214                INC     FATFLG                          ;ERROR COUNT
5223 034374                                ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     034374  104456                                                                TRAP    C$ERHRD
     034376  000340                                                                .WORD   224
     034400  040262                                                                .WORD   T30WDC
     034402  012126                                                                .WORD   PKTSSR
5224 034404                        165$:   CKLOOP                          ;LOOP IF SELECTED
     034404  104406                                                                TRAP    C$CLP1
5225
5226                                ;*************************************************************
5227                                ;
5228                                ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
5229                                ;
5230                                ;*************************************************************
5231
5232 034406  004737  011074                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5233 034412  103411                        BCS     170$                    ;BR. IF NO PROBLEM
5234 034414  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
5235 034416  016501  000002                MOV     TSSR(R5),R1             ;GET STATUS REGISTER
5236 034422  005237  002214                INC     FATFLG                          ;ERROR COUNT
524C 034426                                ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     034426  104456                                                                TRAP    C$ERHRD
     034430  000341                                                                .WORD   225
     034432  040140                                                                .WORD   T30RWN
     034434  012126                                                                .WORD   PKTSSR
5241 034436                        170$:   CKLOOP                          ;LOOP IF SELECTED
     034436  104406                                                                TRAP    C$CLP1
5242
5243                                ;*************************************************************
5244                                ;
5245                                ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
5246                                ;
5247                                ;*************************************************************
5248
5249 034440  013701  036430                MOV     T30BFR+6,R1             ;PICK UP XST0
5250 034444  010102                        MOV     R1,R2                   ;SET UP EXPECTED
5251 034446  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5252 034452  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
5253 034454  001406                        BEQ     180$                    ;BR. IF EQUAL (OK)
```

TEST 2: SKIP TAPE MARKS

```
5254 034456  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5258 034462                                  ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     034462  104456                                                                  TRAP    C$ERHRD
     034464  000342                                                                  .WORD   226
     034466  037741                                                                  .WORD   T30BOT
     034470  015554                                                                  .WORD   EXPREC
5259 034472                          180$:   CKLOOP                          ;LOOP IF SELECTED
     034472  104406                                                                  TRAP    C$CLP1
5260 034474  012737  000002  036554          MOV     #2,T30FCN               ;SET TO NUMBER OF SKIP "FILES"
5261 034502  012703  036536                  MOV     #T30IMV,R3              ;SET UP POINTER TO COMMAND TABLE
5262 034506  013737  002174  036420          MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
5263 034514  011337  036416          182$:   MOV     (R3),T30ETM             ;GET NEXT COMMAND
5264 034520  012704  036400                  MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5265
5266                                 ;*************************************************************
5267                                 ;
5268                                 ;ISSUE WRITE CHARACTERISTICS COMMAND
5269                                 ;
5270                                 ;*************************************************************
5271
5272 034524  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5273 034530  103407                          BCS     188$                    ;BR, IF COMMAND ISSUED OK
5274 034532  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5278 034536  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5279 034540                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     034540  104456                                                                  TRAP    C$ERHRD
     034542  000343                                                                  .WORD   227
     034544  005052                                                                  .WORD   WRTMSG
     034546  012114                                                                  .WORD   SFIMSG
5280 034550                          188$:   CKLOOP                          ;LOOP IF SELECTED
     034550  104406                                                                  TRAP    C$CLP1
5281
5282                                 ;*************************************************************
5283                                 ;
5284                                 ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
5285                                 ;
5286                                 ;*************************************************************
5287
5288 034552  012737  141010  036520          MOV     #141010,T30PK3          ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
5289 034560  013737  036554  036522          MOV     T30FCN,T30RB            ;SET UP NUMBER TO SKIP
5290 034566  012704  036520                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5291 034572  010465  000000          189$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5292 034576  012737  176750  036556          MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
5293 034604  004737  016330          190$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5294 034610  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
5295 034614  032701  000200                  BIT     #SSR,R1                 ;IS SSR SET YET
5296 034620  001017                          BNE     191$                    ;BR, IF SSR IS SET
5297 034622                                  DELAY   250                     ;CALL DELAY ROUTINE
     034622  012727  000250                                                          MOV     #250.,(PC)+
     034626  000000                                                                  .WORD   0
     034630  013727  002116                                                          MOV     L$DLY,(PC)+
     034634  000000                                                                  .WORD   0
     034636  005367  177772                                                          DEC     -6(PC)
     034642  001375                                                                  BNE     .-4
     034644  005367  177756                                                          DEC     -22(PC)
     034650  001367                                                                  BNE     .-20
5298 034652  005337  036556                  DEC     T30DLY                  ;BUMP DELAY ROUTINE
```

TEST 2: SKIP TAPE MARKS

```
5299 034656  001352                    BNE     190$                    ;BR, IF MORE DELAY TO GO
5300 034660  012702  000200  191$:     MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
5301 034664  020102                    CMP     R1,R2                   ;WAS STATUS GOOD
5302 034666  001406                    BEQ     192$                    ;BR, IF TERMINATION WAS GOOD
5303 034670  005237  002214                    INC     FATFLG                          ;ERROR COUNT
5307 034674                            ERRHRD  ERRNO,T30SKM,PKTSSR     ;TSSR NOT CORRECT AFTER SKIP TAPE M.
     034674  104456                                                                    TRAP    C$ERHRD
     034676  000344                                                                    .WORD   228
     034700  037014                                                                    .WORD   T30SKM
     034702  012126                                                                    .WORD   PKTSSR
5308 034704                    192$:   CKLOOP                          ;LOOP IF SELECTED
     034704  104406                                                                    TRAP    C$CLP1
5309
5310                           ;*************************************************************
5311                           ;
5312                           ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
5313                           ;
5314                           ;*************************************************************
5315
5316 034706  013701  036430            MOV     T30BFR+6,R1             ;PICK UP XST0
5317 034712  010102                    MOV     R1,R2                   ;SET UP EXPECTED
5318 034714  052702  100000            BIS     #BIT15,R2               ;SET TMK BIT IN EXPECTED
5319 034720  020102                    CMP     R1,R2                   ;DOES EXP = REC'D
5320 034722  001406                    BEQ     195$                    ;BR, IF EQUAL (OK)
5321 034724  005237  002214                    INC     FATFLG                          ;ERROR COUNT
5325 034730                            ERRHRD  ERRNO,T30TMK,EXPREC     ;TMK NOT SET AFTER WRT TAPE MARK
     034730  104456                                                                    TRAP    C$ERHRD
     034732  000345                                                                    .WORD   229
     034734  040414                                                                    .WORD   T30TMK
     034736  015554                                                                    .WORD   EXPREC
5326 034740                    195$:   CKLOOP                          ;LOOP IF SELECTED
     034740  104406                                                                    TRAP    C$CLP1
5327 034742  012700  177777            MOV     #177777,R0              ;VALUE TO WRITTEN TO MEMORY
5328 034746  004737  017502            JSR     PC,FILLMEM              ;FILL MEM WITH ALL ONES
5329 034752  013737  003116  036522    MOV     FREE,T30RB              ;STARTING READ BUFFER ADDRESS
5330
5331                           ;*************************************************************
5332                           ;
5333                           ;READ FORWARD,ACK,CVC=1 COMMAND
5334                           ;
5335                           ;*************************************************************
5336
5337 034760  012737  140001  036520    MOV     #140001,T30PK3          ;READ FORWARD,ACK,CVC=1 COMMAND
5338 034766  012704  036520            MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5339 034772  012737  000024  036526    MOV     #20.,T30SZ              ;SET UP RECORD SIZE IN PACKET
5340 035000  010465  000000            MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5341 035004  004737  016330            JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5342 035010  016501  000002            MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5343 035014  012702  000200            MOV     #SSR,R2                 ;SET UP EXPECTED
5344 035020  020102                    CMP     R1,R2                   ;ARE THEY EQUAL
5345 035022  001406                    BEQ     200$                    ;BR, IF OK
5346 035024  005237  002214                    INC     FATFLG                          ;ERROR COUNT
5350 035030                            ERRHRD  ERRNO,T30RDF,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     035030  104456                                                                    TRAP    C$ERHRD
     035032  000346                                                                    .WORD   230
     035034  037313                                                                    .WORD   T30RDF
     035036  012126                                                                    .WORD   PKTSSR
```

TEST 2: SKIP TAPE MARKS

```
5351 035040                          200$:   CKLOOP                          ;LOOP IF SELECTED
     035040  104406                                                                  TRAP    C$CLP1
5352 035042  017701  146050                  MOV     @FREE,R1                ;FIRST LOC IN READ BUFFER
5353 035046  012702  177777                  MOV     #177777,R2              ;EXPECTED IF NO DATA TRANS.
5354 035052  020102                          CMP     R1,R2                   ;DID ANY DATA GET TRANSFERRED
5355 035054  001006                          BNE     220$                    ;BR. IF NO DATA TRANS (GOOD)
5356 035056  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5360 035062                                  ERRHRD  ERRNO,T30DTR,EXPREC     ;DATA TRANSFERRED ON READ TAPE MARK
     035062  104456                                                                  TRAP    C$ERHRD
     035064  000347                                                                  .WORD   231
     035066  040770                                                                  .WORD   T30DTR
     035070  015554                                                                  .WORD   EXPREC
5361 035072                          220$:   CKLOOP                          ;LOOP IF SELECTED
     035072  104406                                                                  TRAP    C$CLP1
5362 035074  013702  036554                  MOV     T30FCN,R2               ;GET NUMBER OF SKIPS
5363 035100  005202                          INC     R2                      ;SET TO CORRECT FILE VALUE
5364 035102  000302                          SWAB    R2                      ;SWAP BYTE HALVES
5365 035104  052702  000001                  BIS     #BIT0,R2                ;SET FOR RECORD #1
5366 035110  013701  146002                  MOV     @FREE,R1                ;GET INFO FROM BUFFER
5367 035114  020201                          CMP     R2,R1                   ;ARE THEY EQUAL
5368 035116  001406                          BEQ     228$                    ;BR. IF EQUAL (OK)
5369 035120  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5373 035124                                  ERRHRD  ERRNO,T30PTB,EXPREC     ;RECORD POSITION WAS NOT CORRECT
     035124  104456                                                                  TRAP    C$ERHRD
     035126  000350                                                                  .WORD   232
     035130  037142                                                                  .WORD   T30PTB
     035132  015554                                                                  .WORD   EXPREC
5374 035134                          228$:   CKLOOP                          ;LOOP IF SELECTED
     035134  104406                                                                  TRAP    C$CLP1
5375
5376                                 ;*****************************************************************
5377                                 ;
5378                                 ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
5379                                 ;
5380                                 ;*****************************************************************
5381
5382 035136  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5383 035142  103411                          BCS     230$                    ;BR. IF NO PROBLEM
5384 035144  010004                          MOV     R0,R4                   ;SAVE PACKET ADDRESS
5385 035146  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR STATUS
5386 035152  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5390 035156                                  ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     035156  104456                                                                  TRAP    C$ERHRD
     035160  000351                                                                  .WORD   233
     035162  040140                                                                  .WORD   T30RWN
     035164  012126                                                                  .WORD   PKTSSR
5391 035166                          230$:   CKLOOP                          ;LOOP IF SELECTED
     035166  104406                                                                  TRAP    C$CLP1
5392
5393                                 ;*****************************************************************
5394                                 ;
5395                                 ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
5396                                 ;
5397                                 ;*****************************************************************
5398
5399 035170  013701  036430                  MOV     T30BFR+6,R1             ;PICK UP XST0
5400 035174  010102                          MOV     R1,R2                   ;SET UP EXPECTED
```

TEST 2: SKIP TAPE MARKS

```
5401 035176  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5402 035202  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
5403 035204  001406                        BEQ     240$                    ;BR, IF EQUAL (OK)
5404 035206  005237  002214                INC     FATFLG                          ;ERROR COUNT
5408 035212                                ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     035212  104456                                                               TRAP    C$ERHRD
     035214  000352                                                               .WORD   234
     035216  037741                                                               .WORD   T30BOT
     035220  015554                                                               .WORD   EXPREC
5409 035222                        240$:   CKLOOP                          ;LOOP IF SELECTED
     035222  104406                                                               TRAP    C$CLP1
5410 035224  005723                        TST     (R3)+                   ;POINT TO NEXT POSITION
5411 035226  011301                        MOV     (R3),R1                 ;GET NEXT COMMAND ETC.
5412 035230  020127  177777                CMP     R1,#177777              ;END OF TABLE MARKER
5413 035234  001410                        BEQ     330$                    ;BR, IF AT END OF TABLE
5414 035236  013701  036554                MOV     T30FCN,R1               ;GET NUMBER OF SKIPS
5415 035242  000241                        CLC                             ;CLEAR THE CARRY BIT
5416 035244  006101                        ROL     R1                      ;PUSH OVER ONE POSITION
5417 035246  010137  036554                MOV     R1,T30FCN               ;PUT BACK IN COUNTER
5418 035252  000137  034514                JMP     182$                    ;JUMP TO MORE COMMANDS TO DO
5419 035256                        330$:   CKLOOP                          ;LOOP IF SELECTED
     035256  104406                                                               TRAP    C$CLP1
5420 035260                                ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     035260                                                                     L10045:
     035260  104403                                                               TRAP    C$ESUB
5421 035262  023727  002214  000017                CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
5422 035270  103402                                BLO     999$                            ;BR, IF LESS THAN 25
5423 035272  004737  017262                        JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
5424 035276                        999$:
5425                               ;+
5426                               ;
5427                               ;TEST 2, SUBTEST 3
5428                               ;
5429                               ;
5430                               ;VERIFIES THAT A SKIP TAPE MARKS REVERSE COMMAND
5431                               ;ISSUED WHILE THE TAPE IS POSITIONED AT BOT CAUSES
5432                               ;FUNCTION REJECT TERMINATION, WITH THE NON-EXECUTABLE
5433                               ;FUNCTION (NEF) ERROR BIT SET.
5434                               ;
5435                               ;
5436                               ;
5437                               ;
5438                               ;
5439                               ;-
5440 035276                                BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     035276                                                                     T2.3:
     035276  104402                                                               TRAP    C$BSUB
5441 035300  004737  041152                        JSR     PC,T30REST              ;SET COMMAND PACKET
5442 035304  005037  036554                        CLR     T30FCN                  ;CLEAR FILE COUNTER
5443 035310  004737  041244                        JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
5444 035314  004737  041306                        JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
5445 035320  012737  176750  036556                MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
5446 035326  004737  016054                10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
5447 035332  103426                                BCS     20$                     ;BR IF INIT WAS OK
5448 035334                                        DELAY   250                     ;DELAY ROUTINE CALL
     035334  012727  000250                                                               MOV     #250.,(PC)+
     035340  000000                                                                       .WORD   0
```

TEST 2: SKIP TAPE MARKS

```
        035342  013727  002116                                                          MOV     L$DLY,(PC)+
        035346  000000                                                                  .WORD   0
        035350  005367  177772                                                          DEC     -6(PC)
        035354  001375                                                                  BNE     .-4
        035356  005367  177756                                                          DEC     -22(PC)
        035362  001367                                                                  BNE     .-20
  5449  035364  005337  036556                DEC     T30DLY                  ;BUMP COUNTER
  5450  035370  001356                        BNE     10$                     ;BR. IF MORE COUNTING TO DO
  5451  035372  005237  002214                INC     FATFLG                          ;ERROR COUNT
  5455  035376  010001                        MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
  5456  035400                                ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
        035400  104455                                                          TRAP    C$ERDF
        035402  000353                                                          .WORD   235
        035404  003646                                                          .WORD   SFIERP
        035406  012114                                                          .WORD   SFIMSG
  5457  035410                        20$:
  5458  035410  013737  002174  036420        MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
  5459  035416  012704  036400                MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
  5460
  5461                                ;*************************************************************
  5462                                ;
  5463                                ;ISSUE WRITE CHARACTERISTICS COMMAND
  5464                                ;
  5465                                ;*************************************************************
  5466
  5467  035422  004737  010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
  5468  035426  103407                        BCS     23$                     ;BR. IF COMMAND ISSUED OK
  5469  035430  005237  002214                INC     FATFLG                          ;ERROR COUNT
  5473  035434  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
  5474  035436                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        035436  104456                                                          TRAP    C$ERHRD
        035440  000354                                                          .WORD   236
        035442  005052                                                          .WORD   WRTMSG
        035444  012114                                                          .WORD   SFIMSG
  5475  035446                        23$:    CKLOOP                          ;LOOP IF SELECTED
        035446  104406                                                          TRAP    C$CLP1
  5476
  5477                                ;*************************************************************
  5478                                ;
  5479                                ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
  5480                                ;
  5481                                ;*************************************************************
  5482
  5483  035450  004737  011074                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
  5484  035454  103411                        BCS     30$                     ;BR. IF NO PROBLEM
  5485  035456  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
  5486  035460  016501  000002                MOV     TSSR(R5),R1             ;GET STATUS REGISTER
  5487  035464  005237  002214                INC     FATFLG                          ;ERROR COUNT
  5491  035470                                ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
        035470  104456                                                          TRAP    C$ERHRD
        035472  000355                                                          .WORD   237
        035474  040140                                                          .WORD   T30RWN
        035476  012126                                                          .WORD   PKTSSR
  5492  035500                        30$:    CKLOOP                          ;LOOP IF SELECTED
        035500  104406                                                          TRAP    C$CLP1
  5493
  5494                                ;*************************************************************
```

```
5495                                    ;
5496                                    ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
5497                                    ;
5498                                    ;*************************************************************
5499
5500 035502  013701  036430                    MOV     T30BFR+6,R1             ;PICK UP XSTO
5501 035506  010102                            MOV     R1,R2                   ;SET UP EXPECTED
5502 035510  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5503 035514  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
5504 035516  001406                            BEQ     40$                     ;BR, IF EQUAL (OK)
5505 035520  005237  002214                    INC     FATFLG                          ;ERROR COUNT
5509 035524                                    ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     035524  104456                                                                    TRAP    C$ERHRD
     035526  000356                                                                    .WORD   238
     035530  037741                                                                    .WORD   T30BOT
     035532  015554                                                                    .WORD   EXPREC
5510 035534                            40$:    CKLOOP                          ;LOOP IF SELECTED
     035534  104406                                                                    TRAP    C$CLP1
5511 035536  012737  000001  036522            MOV     #1,T30WB                ;SET # OF TM TO SKIP
5512
5513                                    ;*************************************************************
5514                                    ;
5515                                    ;SKIP TAPE MARK REVERSE,ACK,CVC=1 COMMAND
5516                                    ;
5517                                    ;*************************************************************
5518
5519 035544  012737  141410  036520            MOV     #141410,T30PK3          ;SKIP TAPE MARK REVERSE,ACK,CVC=1 CMD
5520 035552  012704  036520                    MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5521 035556  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5522 035562  004737  016330                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5523 035566  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5524 035572  012702  100206                    MOV     #SSR!SC!BIT1!BIT2,R2    ;SET UP EXPECTED
5525 035576  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
5526 035600  001406                            BEQ     70$                     ;BR, IF OK
5527 035602  005237  002214                    INC     FATFLG                          ;ERROR COUNT
5531 035606                                    ERRHRD  ERRNO,T30IBT,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     035606  104456                                                                    TRAP    C$ERHRD
     035610  000357                                                                    .WORD   239
     035612  036731                                                                    .WORD   T30IBT
     035614  012126                                                                    .WORD   PKTSSR
5532 035616                            70$:    CKLOOP                          ;LOOP IF SELECTED
     035616  104406                                                                    TRAP    C$CLP1
5533
5534                                    ;*************************************************************
5535                                    ;
5536                                    ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
5537                                    ;
5538                                    ;*************************************************************
5539
5540 035620  013701  036430                    MOV     T30BFR+6,R1             ;PICK UP XSTO
5541 035624  010102                            MOV     R1,R2                   ;SET UP EXPECTED
5542 035626  052702  002000                    BIS     #BIT10,R2               ;SET NEF BIT IN EXPECTED
5543 035632  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
5544 035634  001406                            BEQ     180$                    ;BR, IF EQUAL (OK)
5545 035636  005237  002214                    INC     FATFLG                          ;ERROR COUNT
5549 035642                                    ERRHRD  ERRNO,T30NEF,EXPREC     ;TAPE NOT AT NEF
     035642  104456                                                                    TRAP    C$ERHRD
```

TEST 2: SKIP TAPE MARKS

```
        035644  000360                                                          .WORD   240
        035646  040476                                                          .WORD   T3ONEF
        035650  015554                                                          .WORD   EXPREC
   5550 035652                          180$:   CKLOOP                  ;LOOP IF SELECTED
        035652  104406                                                          TRAP    C$CLP1
   5551 035654                                  ENDSUB                  ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
        035654                                                                  L10046:
        035654  104403                                                          TRAP    C$ESUB
   5552 035656  023727  002214  000017          CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
   5553 035664  103402                          BLO     999$                    ;BR, IF LESS THAN 25
   5554 035666  004737  017262                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
   5555 035672                          999$:
   5556                                 ;*
   5557                                 ;
   5558                                 ;TEST 2, SUBTEST 4
   5559                                 ;
   5560                                 ;
   5561                                 ;VERIFIES THAT A SKIP TAPE MARKS REVERSE COMMAND
   5562                                 ;ISSUED WHILE THE TAPE IS POSITIONED JUST BEFORE THE
   5563                                 ;FIRST RECORD ON ON TAPE (BUT NOT AT BOT) CAUSES TAPE
   5564                                 ;STATUS ALERT TERMINATION, WITH THE REVERSE INTO BOT
   5565                                 ;(RIB) STATUS BIT SET.
   5566                                 ;
   5567                                 ;
   5568                                 ;
   5569                                 ;
   5570                                 ;
   5571                                 ;-
   5572 035672                                  BGNSUB                  ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
        035672                                                                  T2.4:
        035672  104402                                                          TRAP    C$BSUB
   5573 035674  004737  041152                  JSR     PC,T3OREST              ;SET COMMAND PACKET
   5574 035700  005037  036554                  CLR     T3OFCN                  ;CLEAR FILE COUNTER
   5575 035704  004737  041244                  JSR     PC,T3ORT2               ;SET UP OTHER COMMAND PACKET
   5576 035710  004737  041306                  JSR     PC,T3ORT3               ;SET UP OTHER COMMAND PACKET
   5577 035714  012737  176750  036556          MOV     #65000..T3ODLY          ;SET UP DELAY COUNTER
   5578 035722  004737  016054          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
   5579 035726  103426                          BCS     20$                     ;BR IF INIT WAS OK
   5580 035730                                  DELAY   250                     ;DELAY ROUTINE CALL
        035730  012727  000250                                                  MOV     #250.,(PC)+
        035734  000000                                                          .WORD   0
        035736  013727  002116                                                  MOV     L$DLY,(PC)+
        035742  000000                                                          .WORD   0
        035744  005367  177772                                                  DEC     -6(PC)
        035750  001375                                                          BNE     .-4
        035752  005367  177756                                                  DEC     -22(PC)
        035756  001367                                                          BNE     .-20
   5581 035760  005337  036556                  DEC     T3ODLY                  ;BUMP COUNTER
   5582 035764  001356                          BNE     10$                     ;BR, IF MORE COUNTING TO DO
   5583 035766  005237  002214                  INC     FATFLG                          ;ERROR COUNT
   5587 035772  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
   5588 035774                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
        035774  104455                                                          TRAP    C$ERDF
        035776  000361                                                          .WORD   241
        036000  003646                                                          .WORD   SFIERR
        036002  012114                                                          .WORD   SFIMSG
   5589 036004                          20$:
```

TEST 2: SKIP TAPE MARKS

```
5590 036004  013737  002174  036420          MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
5591 036012  012704  036400                  MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5592
5593                                 ;*************************************************************
5594                                 ;
5595                                 ;ISSUE WRITE CHARACTERISTICS COMMAND
5596                                 ;
5597                                 ;*************************************************************
5598
5599 036016  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5600 036022  103407                          BCS     23$                     ;BR, IF COMMAND ISSUED OK
5601 036024  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5605 036030  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5606 036032                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     036032  104456                                                                  TRAP    C$ERHRD
     036034  000362                                                                  .WORD   242
     036036  005052                                                                  .WORD   WRTMSG
     036040  012114                                                                  .WORD   SFIMSG
5607 036042                          23$:    CKLOOP                          ;LOOP IF SELECTED
     036042  104406                                                                  TRAP    C$CLP1
5608
5609                                 ;*************************************************************
5610                                 ;
5611                                 ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
5612                                 ;
5613                                 ;*************************************************************
5614
5615 036044  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5616 036050  103411                          BCS     30$                     ;BR, IF NO PROBLEM
5617 036052  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
5618 036054  016501  000002                  MOV     TSSR(R5),R1             ;GET STATUS REGISTER
5619 036060  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5623 036064                                  ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     036064  104456                                                                  TRAP    C$ERHRD
     036066  000363                                                                  .WORD   243
     036070  040140                                                                  .WORD   T30RWN
     036072  012126                                                                  .WORD   PKTSSR
5624 036074                          30$:    CKLOOP                          ;LOOP IF SELECTED
     036074  104406                                                                  TRAP    C$CLP1
5625
5626                                 ;*************************************************************
5627                                 ;
5628                                 ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
5629                                 ;
5630                                 ;*************************************************************
5631
5632 036076  013701  036430                  MOV     T308FR+6,R1             ;PICK UP XST0
5633 036102  010102                          MOV     R1,R2                   ;SET UP EXPECTED
5634 036104  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5635 036110  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
5636 036112  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
5637 036114  00523'  002214                  INC     FATFLG                          ;ERROR COUNT
5641 036120                                  ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     036120  104456                                                                  TRAP    C$ERHRD
     036122  000364                                                                  .WORD   244
     036124  037741                                                                  .WORD   T30BOT
     036126  015554                                                                  .WORD   EXPREC
```

TEST 2: SKIP TAPE MARKS

```
5642 036130                          40$:    CKLOOP                          ;LOOP IF SELECTED
     036130  104406                                                                  TRAP    C$CLP1
5643 036132  013737  003116  036522          MOV     FREE,T30WB              ;SET UP GOOD WRITE BUFFER
5644 036140  012737  000400  036526          MOV     #256.,T30SZ             ;SET UP SIZE
5645
5646                                 ;*****************************************************************
5647                                 ;
5648                                 ;WRITE DATA,ACK,CVC=1 COMMAND
5649                                 ;
5650                                 ;*****************************************************************
5651
5652 036146  012737  140005  036520          MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
5653 036154  012704  036520                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5654 036160  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5655 036164  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5656 036170  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5657 036174  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
5658 036200  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
5659 036202  C01406                          BEQ     70$                     ;BR, IF OK
5660 036204  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5664 036210                                  ERRHRD  ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     036210  104456                                                                  TRAP    C$ERHRD
     036212  000365                                                                  .WORD   245
     036214  037070                                                                  .WORD   T30WDD
     036216  012126                                                                  .WORD   PKTSSR
5665 036220                          70$:    CKLOOP                          ;LOOP IF SELECTED
     036220  104406                                                                  TRAP    C$CLP1
5666
5667                                 ;*****************************************************************
5668                                 ;
5669                                 ;SKIP TAPE MARK REVERSE,ACK,CVC=1 COMMAND
5670                                 ;
5671                                 ;*****************************************************************
5672
5673 036222  012737  000001  036522          MOV     #1,T30WB                ;# OF TM TO SKIP
5674 036230  012737  141410  036520          MOV     #141410,T30PK3          ;SKIP TAPE MARK REVERSE,ACK,CVC=1 CMD
5675 036236  012704  036520                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5676 036242  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5677 036246  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5678 036252  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
5679 036256  012702  100204                  MOV     #SSR!BIT2!SC,R2         ;SET UP EXPECTED (SSR AND SC ONLY)
5680 036262  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
5681 036264  001406                          BEQ     160$                    ;BR, IF TERMINATION WAS GOOD
5682 036266  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5686 036272                                  ERRHRD  ERRNO,T30IBU,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     036272  104456                                                                  TRAP    C$ERHRD
     036274  000366                                                                  .WORD   246
     036276  036560                                                                  .WORD   T30IBU
     036300  012126                                                                  .WORD   PKTSSR
5687 036302                          160$:   CKLOOP                          ;LOOP IF SELECTED
     036302  104406                                                                  TRAP    C$CLP1
5688
5689                                 ;*****************************************************************
5690                                 ;
5691                                 ;GET EXTENDED STATUS REGISTER ZERO (XST3) FROM MESSAGE BUFFER
5692                                 ;
5693                                 ;*****************************************************************
```

TEST 2: SKIP TAPE MARKS

```
5694
5695 036304  013701  036436                  MOV     T30BFR+14,R1            ;PICK UP XST3
5696 036310  010102                          MOV     R1,R2                   ;SET UP EXPECTED
5697 036312  052702  000001                  BIS     #BIT0,R2                ;SET RIB BIT IN EXPECTED
5698 036316  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
5699 036320  001406                          BEQ     170$                    ;BR, IF EQUAL (OK)
5700 036322  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5704 036326                                  ERRHRD  ERRNO,T30RIB,EXPREC     ;TAPE NOT AT RIB
     036326  104456                                                                  TRAP    C$ERHRD
     036330  000367                                                                  .WORD   247
     036332  036645                                                                  .WORD   T30RIB
     036334  015554                                                                  .WORD   EXPREC
5705 036336                          170$:   CKLOOP                          ;LOOP IF SELECTED
     036336  104406                                                                  TRAP    C$CLP1
5706 036340                                  ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     036340                                                                       L10047:
     036340  104403                                                                  TRAP    C$ESUB
5707 036342  023727  002214  000017          CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
5708 036350  103402                          BLO     999$                            ;BR, IF LESS THAN 25
5709 036352  004737  017262                  JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
5710 036356                          999$:
5711                                 ;SUBTEST END
5712                                 ;
5713                                 ;
5714 036356  004737  016536                  JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
5715 036362  103002                          BCC     400$                    ;BR, IF NO LOOP REQUIRED
5716 036364  000137  032260                  JMP     T30LOOP                 ;EXECUTE AGAIN
5717 036370                          400$:   EXIT    TST                     ;ALL DONE THIS TEST
     036370  104432                                                                  TRAP    C$EXIT
     036372  002736                                                                  .WORD   L10043-.
5718                                 ;+
5719                                 ;LOCAL STORAGE FOR THIS TEST
5720                                 ;-
5722         036400                          .=<.+10>&177770
5724 036400                          T30PACKET:                              ;COMMAND PACKET FOR TEST
5725 036400  100004                          .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
5726 036402  036410                          .WORD   T30DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
5727 036404  000000                          .WORD   0
5728 036406  000012                          .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
5729 036410                          T30DATA:                                ;CHARACTERISTICS DATA BLOCK
5730 036410  036422                          .WORD   T30BFR                  ;ADDRESS OF MESSAGE BUFFER
5731 036412  000000                          .WORD   0
5732 036414  000024                          .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
5733 036416  000000                  T30ETM: .WORD   0                       ;SKIP TAPE MARK CONTROL
5734 036420  000000                  T30DSW: .WORD   0                       ;SELECT DRIVE 0
5735 036422                          T30BFR: .BLKW   25.                     ;MESSAGE BUFFER
5736                                 ;
5737                                 ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
5738                                 ;
5740         036510                          .=<.+10>&177770
5742 036510                          T30PK2:
5743 036510  100006                          .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
5744 036512  036530                          .WORD   T30BF2                  ;ADDRESS OF SELECT BLOCK DATA
5745 036514  000000                          .WORD   0
5746 036516  000006                          .WORD   6.                      ;SIZE OF DATA PACKET
5747
5751 036520                          T30PK3:
```

TEST 2: SKIP TAPE MARKS

```
5752 036520  100205                    .WORD   100205                  ;REREAD COMMAND, IE AND ACK
5753 036522                    T30RB:
5754 036522  003116              T30WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
5755 036524  000000                    .WORD   0
5756 036526  000000              T30SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
5757                                    .EVEN
5758                           ;
5759                           ;
5760                           ;
5761 036530                    T30BF2:
5762 036530     010             T30BS0: .BYTE   10                      ;BSEL0 AREA
5763 036531     200             T30BS1: .BYTE   200                     ;BSEL1 AREA
5764 036532  000000              T30S2:  .WORD   0                       ;SEL 2 AREA
5765 036534  000000              T30S3:  .WORD   0                       ;DATA AREA
5766                           ;
5767                           ;
5768                                    .EVEN
5769                           ;TAPE MOTION PACKET COMMAND VALUES
5770
5771 036536                    T30IMV:
5772 036536                    T30RN:
5773 036536  000000                    .WORD   000000                  ;NEITHER EWB NOR ESS
5774 036540  000100                    .WORD   000100                  ;EWB SET
5775 036542  000200                    .WORD   000200                  ;ESS SET
5776 036544  000300                    .WORD   000300                  ;BOTH EWB AND ESS SET
5777 036546  177777                    .WORD   177777                  ;END OF DATA
5778
5779                           ;
5780 036550  000000              T30CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
5781 036552  000000              T30CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
5782 036554  000000              T30FCN: .WORD   0                       ;FILE NUMBER COUNTER
5783 036556  000000              T30DLY: .WORD   0                       ;DELAY COUNTER STORAGE
5784                           ;+
5785                           ;LOCAL TEXT MESSAGES FOR TEST
5786                           ;-
5787
5788 036560     124     123     123   T30IBU: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE Into BOT'
5789 036645     122     111     102   T30RIB: .ASCIZ  'RIB Bit (XST3) Failed To Set After Reverse Into BOT'
5790 036731     124     123     123   T30IBT: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE At BOT'
5791 037014     124     123     123   T30SKM: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK Command'
5792 037070     124     123     123   T30WDD: .ASCIZ  'TSSR Not Correct After WRITE DATA Command'
5793 037142     124     141     160   T30PTB: .ASCIZ  'Tape Not Positioned On Correct Record After READ REVERSE'
5794 037233     124     141     160   T30TPB: .ASCIZ  'Tape Not Positioned On Second File First Record'
5795 037313     124     123     123   T30RDF: .ASCIZ  'TSSR Incorrect After READ FORWARD Into "File"'
5796 037371     124     123     123   T30RDG: .ASCIZ  'TSSR Incorrect After SPACE Command Into TAPE MARK'
5797 037453     124     123     123   T30WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
5798 037530     111     154     154   T30LOG: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
5799 037611     127     122     111   T30SSR: .ASCIZ  'WRITE MISCELLANEOUS Command Not Accepted'
5800 037662     124     123     123   T30WDE: .ASCIZ  'TSSR Not Correct After SKIP TAPE MARKS, At BOT'
5801 037741     124     141     160   T30BOT: .ASCIZ  'Tape Not At BOT After REWIND Command'
5802 040006     124     123     123   T30TM:  .ASCIZ  'TSSR Not Correct After SPACE FORWARD Command'
5803 040063     124     123     123   T30TM2: .ASCIZ  'TSSR Not Correct After SPACE REVERSE Command'
5804 040140     122     145     167   T30RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
5805 040207     104     162     151   T30OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
5806 040262     124     123     123   T30WDC: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK Command'
5807 040341     103     126     103   T30VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
5808 040414     124     115     113   T30TMK: .ASCIZ  'TMK Not Set After WRITE TAPE MARK (RETRY) Command'
```

TEST 2: SKIP TAPE MARKS

```
5809 040476      123     113     111  T30NEF: .ASCIZ  'SKIP TAPE MARKS, At BOT, Failed To Set NEF Bit'
5810 040555      124     115     113  T30RRM: .ASCIZ  'TMK Not Set After READ REVERSE Into TAPE MARK'
5811 040633      124     115     113  T30RRN: .ASCIZ  'TMK Not Set After SPACE REVERSE Into TAPE MARK'
5812 040712      124     115     113  T30RRP: .ASCIZ  'TMK Not Set After READ FORWARD Into TAPE MARK'
5813 040770      116     117     040  T30DTR: .ASCIZ  'NO Data Transferred On READ FORWARD'
5814 041034      104     141     164  T30DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
5815 041131      123     153     151  TST30ID:        .ASCIZ  'Skip Tape Marks'
5816                                          .EVEN
5817                                  ;+
5818                                  ;
5819                                  ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
5820                                  ;WRITE SUBSYSTEM MEMORY COMMAND
5821                                  ;
5822                                  ;-
5823
5824 041152                           T30REST:
5825 041152                                   SAVREG                          ;SAVE THE REGISTERS
5826 041156  012701  036400                   MOV     #T30PACKET,R1           ;START OF THE PACKET
5827 041162  012721  100004                   MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
5828 041166  012721  036410                   MOV     #T30DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
5829 041172  005021                           CLR     (R1)+                   ;EXTENDED ADDRESS
5830 041174  012721  000012                   MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
5831 041200  012721  036422                   MOV     #T30BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
5832 041204  005021                           CLR     (R1)+
5833 041206  012721  000024                   MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
5834 041212  005021                           CLR     (R1)+
5835 041214  012711  000000                   MOV     #0,(R1)                 ;SELECT DRIVE ZERO
5836 041220  012702  000030                   MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
5837 041224  012762  177777  036422  64$:     MOV     #177777,T30BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
5838 041232  005742                           TST     -(R2)                   ;NEXT LOCATION
5839 041234  022702  000000                   CMP     #0.,R2                          ;CHECK R2 FOR DONE
5840 041240  001371                           BNE     64$                     ;KEEP GOING UNTIL DONE
5841 041242  000207                           RTS     PC                      ;RETURN
5842
5843 041244                           T30RT2:
5844 041244                                   SAVREG                          ;SAVE THE REGISTERS
5845 041250  012701  036510                   MOV     #T30PK2,R1              ;START OF THE PACKET
5846 041254  012721  100006                   MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
5847 041260  012721  036530                   MOV     #T30BF2,(R1)+           ;ADDRESS OF DATA BLOCK
5848 041264  005021                           CLR     (R1)+                   ;EXTENDED ADDRESS
5849 041266  012721  000006                   MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
5850 041272  005021                           CLR     (R1)+
5851 041274  012701  036530                   MOV     #T30BF2,R1              ;POINT TO DATA SEL AREA
5852 041300  005021                           CLR     (R1)+
5853 041302  005011                           CLR     (R1)
5854 041304  000207                           RTS     PC                      ;RETURN
5855 041306                           T30RT3:
5856 041306                                   SAVREG                          ;SAVE REGISTERS
5857 041312  012701  036520                   MOV     #T30PK3,R1              ;SET UP POINTER ADDRESS
5858 041316  005021                           CLR     (R1)+                   ;COMMAND SPACE
5859 041320  005021                           CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
5860 041322  005021                           CLR     (R1)+                   ;EXTENDED ADDRESS
5861 041324  005011                           CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
5862 041326  000207                           RTS     PC                      ;RETURN
5863 041330                                   ENDTST
     041330                                                          L10043:
     041330  104401                                                          TRAP    C$ETST
```

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

```
                                        .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
                                ;
                                ;
                                ;
                                ;-
041332                                  BGNTST
041332                                                                          T3::
041332  012737  006354  002172          MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
041340  012700  046443                  MOV     #TST31ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
041344  004737  016570                  JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
041350  012737  000005  002210          MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
041356  C05037  043236                  CLR     T31CNT                  ;CLEAR TAPE RECORD COUNTER
                                ;
                                ;-
041362                          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.
                                ;
                                ;
                                ;
                                ;
                                ;
                                ;-
041362                                  BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
041362                                                                          T3.1:
041362  104402                                                                  TRAP    C$BSUB
041364  004737  046510                  JSR     PC,T31REST              ;SET COMMAND PACKET
041370  004737  046602                  JSR     PC,T31RT2               ;SET UP OTHER COMMAND PACKET
041374  004737  046644                  JSR     PC,T31RT3               ;SET UP OTHER COMMAND PACKET
041400  012737  176750  043242          MOV     #65000.,T31DLY          ;SET UP DELAY COUNTER
041406  004737  016054          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
041412  103426                          BCS     20$                     ;BR IF INIT WAS OK
041414                                  DELAY   250                     ;DELAY ABOUT .25 SEC
041414  012727  000250                                                  MOV     #250.,(PC)+
041420  000000                                                          .WORD   0
041422  013727  0C2116                                                  MOV     L$DLY,(PC)+
```

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

```
        041426  000000                                                          .WORD   0
        041430  005367  177772                                                  DEC     -6(PC)
        041434  001375                                                          BNE     .-4
        041436  005367  177756                                                  DEC     -22(PC)
        041442  001367                                                          BNE     .-20
  5919  041444  005337  043242          DEC     T31DLY          ;BUMP COUNTER
  5920  041450  001356                  BNE     10$             ;BR, IF COUNTER NOT DONE
  5921  041452  005237  002214          INC     FATFLG                  ;ERROR COUNT
  5925  041456  010001                  MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
  5926  041460                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
        041460  104455                                                          TRAP    C$ERDF
        041462  000455                                                          .WORD   301
        041464  003646                                                          .WORD   SFIERR
        041466  012114                                                          .WORD   SFIMSG
  5927  041470  013737  002174  043110  20$:    MOV     UNITN,T31DSW    ;SET UP UNIT NUMBER IN PACKET
  5928  041476  012704  043070          MOV     #T31PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
  5929  041502  004737  010742          JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
  5930  041506  103407                  BCS     23$             ;BR, IF COMMAND ISSUED OK
  5931  041510  005237  002214          INC     FATFLG                  ;ERROR COUNT
  5935  041514  010001                  MOV     R0,R1           ;SAVE CONTENTS OF TSSR
  5936  041516                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        041516  104456                                                          TRAP    C$ERHRD
        041520  000456                                                          .WORD   302
        041522  005052                                                          .WORD   WRTMSG
        041524  012114                                                          .WORD   SFIMSG
  5937  041526                  23$:    CKLOOP                          ;LOOP IF SELECTED
        041526  104406                                                          TRAP    C$CLP1
  5938  041530  004737  011074          JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
  5939  041534  103407                  BCS     30$             ;BR, IF NO PROBLEM
  5940  041536  010004                  MOV     R0,R4           ;SET UP REWIND PACKET ADDRESS
  5941  041540  005237  002214          INC     FATFLG                  ;ERROR COUNT
  5945  041544                          ERRHRD  ERRNO,T31RWN,PKTSSR     ;REWIND NOT ACCEPTED
        041544  104456                                                          TRAP    C$ERHRD
        041546  000457                                                          .WORD   303
        041550  044574                                                          .WORD   T31RWN
        041552  012126                                                          .WORD   PKTSSR
  5946  041554                  30$:    CKLOOP                          ;LOOP IF SELECTED
        041554  104406                                                          TRAP    C$CLP1
  5947  041556  013701  043120          MOV     T31BFR+6,R1     ;PICK UP XST0
  5948  041562  010102                  MOV     R1,R2           ;SET UP EXPECTED
  5949  041564  052702  000002          BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
  5950  041570  020102                  CMP     R1,R2           ;DOES EXP = REC'D
  5951  041572  001406                  BEQ     40$             ;BR, IF EQUAL (OK)
  5952  041574  005237  002214          INC     FATFLG                  ;ERROR COUNT
  5956  041600                          ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        041600  104456                                                          TRAP    C$ERHRD
        041602  000460                                                          .WORD   304
        041604  044245                                                          .WORD   T31BOT
        041606  015554                                                          .WORD   EXPREC
  5957  041610                  40$:    CKLOOP                          ;LOOP IF SELECTED
        041610  104406                                                          TRAP    C$CLP1
  5958  041612  013737  003116  043212          MOV     FREE,T31WB      ;STARTING WRITE BUFFER ADDRESS
  5959  041620  012737  140005  043210  65$:    MOV     #140005,T31PK3  ;WRITE DATA,CVC=1,ACK COMMAND
  5960  041626  012704  043210          MOV     #T31PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
  5961  041632  012700  000144          MOV     #100.,R0                ;SET PATTERN IN CORRECT REGISTER
  5962  041636  004737  017502          JSR     PC,FILLMEM      ;FILL MEMORY WITH RECORD SIZE
  5963  041642  012737  000144  043216  MOV     #100.,T31SZ     ;SET UP RECORD SIZE IN PACKET
```

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

```
 5964 041650  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 5965 041654  004737  016330                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 5966 041660  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 5967 041664  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
 5968 041670  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
 5969 041672  001406                            BEQ     80$                     ;BR, IF OK
 5970 041674  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 5974 041700                                    ERRHRD  ERRNO,T31WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      041700  104456                                                                TRAP    C$ERHRD
      041702  000461                                                                .WORD   305
      041704  045130                                                                .WORD   T31WDC
      041706  012126                                                                .WORD   PKTSSR
 5975 041710                            80$:    CKLOOP                          ;LOOP IF SELECTED
      041710  104406                                                                TRAP    C$CLP1
 5976 041712  004737  011074                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 5977 041716  103407                            BCS     230$                    ;BR, IF NO PROBLEM
 5978 041720  010001                            MOV     R0,R1                   ;SAVE TSSR
 5979 041722  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 5983 041726                                    ERRHRD  ERRNO,T31RWN,EXPREC     ;REWIND NOT ACCEPTED
      041726  104456                                                                TRAP    C$ERHRD
      041730  000462                                                                .WORD   306
      041732  044574                                                                .WORD   T31RWN
      041734  015554                                                                .WORD   EXPREC
 5984 041736                            230$:   CKLOOP                          ;LOOP IF SELECTED
      041736  104406                                                                TRAP    C$CLP1
 5985 041740  013701  043120                    MOV     T31BFR+6,R1             ;PICK UP XSTO
 5986 041744  010102                            MOV     R1,R2                   ;SET UP EXPECTED
 5987 041746  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 5988 041752  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
 5989 041754  001406                            BEQ     240$                    ;BR, IF EQUAL (OK)
 5990 041756  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 5994 041762                                    ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      041762  104456                                                                TRAP    C$ERHRD
      041764  000463                                                                .WORD   307
      041766  044245                                                                .WORD   T31BOT
      041770  015554                                                                .WORD   EXPREC
 5995 041772                            240$:   CKLOOP                          ;LOOP IF SELECTED
      041772  104406                                                                TRAP    C$CLP1
 5996 041774  012737  041012  043210  265$:    MOV     #041012,T31PK3          ;NO-OP,CVC=1 COMMAND
 5997 042002  012704  043210                    MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 5998 042006  010337  043216                    MOV     R3,T31SZ                ;SET UP RECORD SIZE IN PACKET
 5999 042012  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 6000 042016  004737  016330                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6001 042022  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6002 042026  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
 6003 042032  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
 6004 042034  001406                            BEQ     280$                    ;BR, IF OK
 6005 042036  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 6009 042042                                    ERRHRD  ERRNO,T31RDF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      042042  104456                                                                TRAP    C$ERHRD
      042044  000464                                                                .WORD   308
      042046  043443                                                                .WORD   T31RDF
      042050  012126                                                                .WORD   PKTSSR
 6010 042052                            280$:   CKLOOP                          ;LOOP IF SELECTED
      042052  104406                                                                TRAP    C$CLP1
 6011 042054  013701  043120                    MOV     T31BFR+6,R1             ;PICK UP XSTO
 6012 042060  010102                            MOV     R1,R2                   ;SET UP EXPECTED
```

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

```
6013 042062  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
6014 042066  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
6015 042070  001406                        BEQ     285$                    ;BR, IF EQUAL (OK)
6016 042072  005237  002214                INC     FATFLG                          ;ERROR COUNT
6020 042076                                ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     042076  104456                                                                TRAP    C$ERHRD
     042100  000465                                                                .WORD   309
     042102  044245                                                                .WORD   T31BOT
     042104  015554                                                                .WORD   EXPREC
6021 042106                        285$:   CKLOOP                          ;LOOP IF SELECTED
     042106  104406                                                                TRAP    C$CLP1
6022 042110  012737  140001  043210        MOV     #140001,T31PK3          ;READ,ACK,CVC=1 COMMAND
6023 042116  012704  043210                MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6024 042122  012737  000144  043216        MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
6025 042130  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6026 042134  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6027 042140  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6028 042144  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
6029 042150  C20102                        CMP     R1,R2                   ;ARE THEY EQUAL
6030 042152  001406                        BEQ     290$                    ;BR, IF OK
6031 042154  005237  002214                INC     FATFLG                          ;ERROR COUNT
6035 042160                                ERRHRD  ERRNO,T31RDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     042160  104456                                                                TRAP    C$ERHRD
     042162  000466                                                                .WORD   310
     042164  043244                                                                .WORD   T31RDE
     042166  012126                                                                .WORD   PKTSSR
6036 042170                        290$:   CKLOOP                          ;LOOP IF SELECTED
     042170  104406                                                                TRAP    C$CLP1
6037 042172  017701  140720                MOV     @FREE,R1                ;GET DATA READ
6038 042176  012702  000144                MOV     #100.,R2                ;READ EXPECTED
6039 042202  020102                        CMP     R1,R2                   ;DID TAPE STAY POSITIONED
6040 042204  001406                        BEQ     330$                    ;BR, IF EXPD = RECD
6041 042206  005237  002214                INC     FATFLG                          ;ERROR COUNT
6045 042212                                ERRHRD  ERRNO,T31WNG,EXPREC     ;TAPE DATA NOT CORRECT
     042212  104456                                                                TRAP    C$ERHRD
     042214  000467                                                                .WORD   311
     042216  043371                                                                .WORD   T31WNG
     042220  015554                                                                .WORD   EXPREC
6046 042222                        330$:
6047 042222                                ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
     042222                                                                     L10051:
     042222  104403                                                                TRAP    C$ESUB
6048 042224  023727  002214  000017        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
6049 042232  103402                        BLO     999$                            ;BR, IF LESS THAN 25
6050 042234  004737  017262                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
6051 042240                        999$:
6052                               ;*
6053                               ;
6054                               ;TEST 3, SUBTEST 2
6055                               ;
6056                               ;
6057                               ;       VERIFIES THAT THE INITIALIZE COMMAND OPERATES AS A NO-OP.
6058                               ;       ASSUMING NO MICRODIAGNOSTIC ERRORS ARE PRESENT (THEY WOULD
6059                               ;       ALREADY HAVE BEEN DETECTED IN PREVIOUS TESTS).  THE TEST
6060                               ;       SEQUENCE IS SIMILAR TO THAT USED IN SUBTEST 1.
6061                               ;
6062                               ;
```

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

```
6063                                    ;
6064                                    ;-
6065 042240                             BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
     042240                                                                     T3.2:
     042240  104402                                                             TRAP    C$BSUB
6066 042242  004737  046510                     JSR     PC,T31REST      ;SET COMMAND PACKET
6067 042246  004737  046602                     JSR     PC,T31RT2       ;SET UP OTHER COMMAND PACKET
6068 042252  004737  046644                     JSR     PC,T31RT3       ;SET UP OTHER COMMAND PACKET
6069 042256  004737  016054                     JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
6070 042262  103407                           BCS     20$             ;BR IF INIT WAS OK
6071 042264  005237  002214                     INC     FATFLG                  ;ERROR COUNT
6075 042270  010001                           MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
6076 042272                                    ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     042272  104455                                                             TRAP    C$ERDF
     042274  000470                                                             .WORD   312
     042276  003646                                                             .WORD   SFIERR
     042300  012114                                                             .WORD   SFIMSG
6077 042302  013737  002174  043110  20$:      MOV     UNITN,T31DSW    ;SET UP UNIT NUMBER IN PACKET
6078 042310  012704  043070                     MOV     #T31PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
6079 042314  004737  010742                     JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
6080 042320  103407                           BCS     23$             ;BR, IF COMMAND ISSUED OK
6081 042322  005237  002214                     INC     FATFLG                  ;ERROR COUNT
6085 042326  010001                           MOV     R0,R1           ;SAVE CONTENTS OF TSSR
6086 042330                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     042330  104456                                                             TRAP    C$ERHRD
     042332  000471                                                             .WORD   313
     042334  005052                                                             .WORD   WRTMSG
     042336  012114                                                             .WORD   SFIMSG
6087 042340                             23$:    CKLOOP                          ;LOOP IF SELECTED
     042340  104406                                                             TRAP    C$CLP1
6088 042342  004737  011074                     JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
6089 042346  103407                           BCS     30$             ;BR, IF NO PROBLEM
6090 042350  010004                           MOV     R0,R4           ;SET UP REWIND PACKET ADDRESS
6091 042352  005237  002214                     INC     FATFLG                  ;ERROR COUNT
6095 042356                                    ERRHRD  ERRNO,T31RWN,PKTSSR     ;REWIND NOT ACCEPTED
     042356  104456                                                             TRAP    C$ERHRD
     042360  000472                                                             .WORD   314
     042362  044574                                                             .WORD   T31RWN
     042364  012126                                                             .WORD   PKTSSR
6096 042366                             30$:    CKLOOP                          ;LOOP IF SELECTED
     042366  104406                                                             TRAP    C$CLP1
6097 042370  013701  043120                     MOV     T31BFR+6,R1     ;PICK UP XSTO
6098 042374  010102                           MOV     R1,R2           ;SET UP EXPECTED
6099 042376  052702  000002                     BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
6100 042402  020102                           CMP     R1,R2           ;DOES EXP = REC'D
6101 042404  001406                           BEQ     40$             ;BR, IF EQUAL (OK)
6102 042406  005237  002214                     INC     FATFLG                  ;ERROR COUNT
6106 042412                                    ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     042412  104456                                                             TRAP    C$ERHRD
     042414  000473                                                             .WORD   315
     042416  044245                                                             .WORD   T31BOT
     042420  015554                                                             .WORD   EXPREC
6107 042422                             40$:    CKLOOP                          ;LOOP IF SELECTED
     042422  104406                                                             TRAP    C$CLP1
6108 042424  013737  003116  043212             MOV     FREE,T31WB      ;STARTING WRITE BUFFER ADDRESS
6109 042432  012737  140005  043210  65$:      MOV     #140005,T31PK3  ;WRITE DATA,CVC=1,ACK COMMAND
6110 042440  012704  043210                     MOV     #T31PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
```

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

```
6111 042444  012700  000144                    MOV     #100.,R0                ;SET PATTERN IN CORRECT REGISTER
6112 042450  004737  017502                    JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
6113 042454  012737  000144  043216            MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
6114 042462  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6115 042466  004737  016330                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6116 042472  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6117 042476  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
6118 042502  020102                           CMP     R1,R2                   ;ARE THEY EQUAL
6119 042504  001406                           BEQ     80$                     ;BR. IF OK
6120 042506  005237  002214                    INC     FATFLG                          ;ERROR COUNT
6124 042512                                    ERRHRD  ERRNO,T31WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     042512  104456                                                                    TRAP    C$ERHRD
     042514  000474                                                                    .WORD   316
     042516  045130                                                                    .WORD   T31WDC
     042520  012126                                                                    .WORD   PKTSSR
6125 042522                            80$:    CKLOOP                          ;LOOP IF SELECTED
     042522  104406                                                                    TRAP    C$CLP1
6126 042524  004737  011074                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
6127 042530  103407                           BCS     230$                    ;BR. IF NO PROBLEM
6128 042532  010001                           MOV     R0,R1                   ;SAVE TSSR
6129 042534  005237  002214                    INC     FATFLG                          ;ERROR COUNT
6133 042540                                    ERRHRD  ERRNO,T31RWN,EXPREC     ;REWIND NOT ACCEPTED
     042540  104456                                                                    TRAP    C$ERHRD
     042542  000475                                                                    .WORD   317
     042544  044574                                                                    .WORD   T31RWN
     042546  015554                                                                    .WORD   EXPREC
6134 042550                            30$:    CKLOOP                          ;LOOP IF SELECTED
     042550  104406                                                                    TRAP    C$CLP1
6135 042552  013701  043120                    MOV     T31BFR+6,R1             ;PICK UP XSTO
6136 042556  010102                           MOV     R1,R2                   ;SET UP EXPECTED
6137 042560  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
6138 042564  020102                           CMP     R1,R2                   ;DOES EXP = REC'D
6139 042566  001406                           BEQ     240$                    ;BR. IF EQUAL (OK)
6140 042570  005237  002214                    INC     FATFLG                          ;ERROR COUNT
6144 042574                                    ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     042574  104456                                                                    TRAP    C$ERHRD
     042576  000476                                                                    .WORD   318
     042600  044245                                                                    .WORD   T31BOT
     042602  015554                                                                    .WORD   EXPREC
6145 042604                            240$:   CKLOOP                          ;LOOP IF SELECTED
     042604  104406                                                                    TRAP    C$CLP1
6146 042606  012737  041012  043210  265$:   MOV     #041012,T31PK3          ;INITIALIZE,CVC=1 COMMAND
6147 042614  012704  043210                    MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6148 042620  010337  043216                    MOV     R3,T31SZ                ;SET UP RECORD SIZE IN PACKET
6149 042624  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6150 042630  004737  016330                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6151 042634  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6152 042640  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
6153 042644  020102                           CMP     R1,R2                   ;ARE THEY EQUAL
6154 042646  001406                           BEQ     280$                    ;BR. IF OK
6155 042650  005237  002214                    INC     FATFLG                          ;ERROR COUNT
6159 042654                                    ERRHRD  ERRNO,T31RDF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     042654  104456                                                                    TRAP    C$ERHRD
     042656  000477                                                                    .WORD   319
     042660  043443                                                                    .WORD   T31RDF
     042662  012126                                                                    .WORD   PKTSSR
6160 042664                            280$:   CKLOOP                          ;LOOP IF SELECTED
```

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

```
                042664  104406                                                          TRAP    C$CLP1
6161            042666  013701  043120          MOV     T31BFR+6,R1             ;PICK UP XSTO
6162            042672  010102                  MOV     R1,R2                   ;SET UP EXPECTED
6163            042674  052702  000002          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
6164            042700  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
6165            042702  001406                  BEQ     285$                    ;BR, IF EQUAL (OK)
6166            042704  005237  002214                  INC     FATFLG                          ;ERROR COUNT
6170            042710                          ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                042710  104456                                                          TRAP    C$ERHRD
                042712  000500                                                          .WORD   320
                042714  044245                                                          .WORD   T31BOT
                042716  015554                                                          .WORD   EXPREC
6171            042720                  285$:   CKLOOP                          ;LOOP IF SELECTED
                042720  104406                                                          TRAP    C$CLP1
6172            042722  012737  140001  043210  MOV     #140001,T31PK3          ;READ,ACK,CVC=1 COMMAND
6173            042730  012704  043210          MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6174            042734  012737  000144  043216  MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
6175            042742  010465  000000          MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6176            042746  004737  016330          JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6177            042752  016501  000002          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6178            042756  012702  000200          MOV     #SSR,R2                 ;SET UP EXPECTED
6179            042762  020102                  CMP     R1,R2                   ;ARE THEY EQUAL
6180            042764  001406                  BEQ     290$                    ;BR, IF OK
6181            042766  005237  002214                  INC     FATFLG                          ;ERROR COUNT
6185            042772                          ERRHRD  ERRNO,T31RDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
                042772  104456                                                          TRAP    C$ERHRD
                042774  000501                                                          .WORD   321
                042776  043244                                                          .WORD   T31RDE
                043000  012126                                                          .WORD   PKTSSR
6186            043002                  290$:   CKLOOP                          ;LOOP IF SELECTED
                043002  104406                                                          TRAP    C$CLP1
6187            043004  017701  140106          MOV     @FREE,R1                ;GET DATA READ
6188            043010  012702  000144          MOV     #100.,R2                ;READ EXPECTED
6189            043014  020102                  CMP     R1,R2                   ;DID TAPE STAY POSITIONED
6190            043016  001406                  BEQ     330$                    ;BR, IF EXPD = RECD
6191            043020  005237  002214                  INC     FATFLG                          ;ERROR COUNT
6195            043024                          ERRHRD  ERRNO,T31WNH,EXPREC     ;TAPE POSITION NOT CORRECT AFTER INIT
                043024  104456                                                                  TRAP    C$ERHRD
                043026  000502                                                                  .WORD   322
                043030  043310                                                                  .WORD   T31WNH
                043032  015554                                                                  .WORD   EXPREC
6196            043034                  330$:
6197            043034                  ENDSUB                                  ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
                043034                                                                  L10052:
                043034  104403                                                                  TRAP    C$ESUB
6198            043036  023727  002214  000017  CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
6199            043044  103402                  BLO     999$                            ;BR, IF LESS THAN 25
6200            043046  004737  017262          JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
6201            043052                  999$:
6202                                    ;
6203                                    ;
6204                                    ;
6205            043052  004737  016536          JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
6206            043056  103002                  BCC     163$                    ;BR, IF NO LOOP REQUIRED
6207            043060  000137  041362          JMP     T31LOOP                 ;EXECUTE AGAIN
6208            043064                  163$:   EXIT    TST                     ;ALL DONE THIS TEST
                043064  104432                                                          TRAP    C$EXIT
```

```
043066  003600                                                                  .WORD   L10050 .
6209                            ;*
6210                            ;LOCAL STORAGE FOR THIS TEST
6211                            ;-
6215 043070                     T31PACKET:                              ;COMMAND PACKET FOR TEST
6216 043070  100004                     .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
6217 043072  043100                     .WORD   T31DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
6218 043074  000000                     .WORD   0
6219 043076  000012                     .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
6220 043100                     T31DATA:                                ;CHARACTERISTICS DATA BLOCK
6221 043100  043112                      WORD   T31BFR                  ;ADDRESS OF MESSAGE BUFFER
6222 043102  000000                     .WORD   0
6223 043104  000024                     .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
6224 043106  000000                     .WORD   0
6225 043110  000000             T31DSW: .WORD   0                       ;SELECT DRIVE 0
6226 043112                     T31BFR: .BLKW   25.                     ;MESSAGE BUFFER
6227                            ;
6228                            ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
6229                            ;
6231    043200                          .=<.+10>&177770
6233 043200                     T31PK2:
6234 043200  100006                     .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
6235 043202  043220                     .WORD   T31BF2                  ;ADDRESS OF  SELECT BLOCK DATA
6236 043204  000000                     .WORD   0
6237 043206  000006                     .WORD   6.                      ;SIZE OF DATA PACKET
6238
6242 043210                     T31PK3:
6243 043210  100005                     .WORD   100005                  ;REREAD COMMAND, AND ACK
6244 043212                     T31RB:
6245 043212  003116             T31WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
6246 043214  000000                     .WORD   0
6247 043216  000000             T31SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
6248                                    .EVEN
6249                            ;
6250                            ;
6251                            ;
6252 043220                     T31BF2:
6253 043220     010             T31BS0: .BYTE   10                      ;BSEL0 AREA
6254 043221     200             T31BS1: .BYTE   200                     ;BSEL1 AREA
6255 043222  000000             T31S2:  .WORD   0                       ;SEL 2 AREA
6256 043224  000000             T31S3:  .WORD   0                       ;DATA AREA
6257                            ;
6258                            ;
6259                                    .EVEN
6260                            ;TAPE MOTION PACKET COMMAND VALUES
6261
6262 043226  100205             T31RN:  .WORD   100205                  ;REREAD DATA (NEXT)
6263 043230  100605             T31WDR: .WORD   100605                  ;REREAD DATA RETRY
6264 043232  102205             T31CON: .WORD   102205                  ;WRITE CONTINOUS
6265 043234  177777                     .WORD   177777                  ;END OF DATA
6266
6267                            ;
6268 043236  000000             T31CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
6269 043240  000000             T31CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
6270 043242  000000             T31DLY: .WORD   0                       ;DELAY COUNTER
6271                            ;*
6272                            ;LOCAL TEXT MESSAGES FOR TEST
```

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

```
6273                                    ;-
6274
6275 043244     124     123     123    T31RDE: .ASCIZ  'TSSR Not Correct After READ Command'
6276 043310     124     141     160    T31WNH: .ASCIZ  'Tape Position Incorrect After INITIALIZE Command'
6277 043371     124     141     160    T31WNG: .ASCIZ  'Tape Position Incorrect After NOP Command'
6278 043443     124     123     123    T31RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
6279 043512     122     105     122    T31RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
6280 043607     120     117     123    T31SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct
6281 043671     122     111     102    T31LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
6282 043741     124     123     123    T31WOF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
6283 044016     111     154     154    T31LOG: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
6284 044077     122     105     122    T31SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
6285 044133     124     123     123    T31WDE: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE Command,At BOT'
6286 044245     124     141     160    T31BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XSTO)'
6287 044340     116     117     055    T31TIM: .ASCIZ  'NO-OP ("CLEAN TAPE") AND INITIALIZE''S Erase Tape Not Long Enough'
6288 044440     122     105     122    T31EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
6289 044517     124     123     123    T31TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
6290 044574     122     145     167    T31RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
6291 044643     122     101     115    T31RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
6292 044716     124     123     123    T31AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
6293 044765     104     162     151    T31OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
6294 045040     124     123     123    T31WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
6295 045130     124     123     123    T31WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
6296 045203     103     126     103    T31VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
6297 045256     124     123     102    T31BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
6298 045331     127     122     111    T31WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
6299 045420     122     145     141    T31LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XSTO'
6300 045502     122     145     141    T31LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
6301 045564     122     145     163    T31PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
6302 045652     122     145     141    T31TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
6303 045740     116     117     055    T31NEF: .ASCIZ  'NO-OP ("CLEAN TAPE") AND INITIALIZE, At First Record, Failed To Set RIB Bit
X
6304 046061     124     123     123    T31SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
6305 046136     124     123     123    T31TSA: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE, Into BOT'
6306 046243     124     123     123    T31WRF: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE Command'
6307 046346     104     141     164    T31DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
6308 046443     116     117     055    TST31ID:        .ASCIZ  'NO-OP ('Clean Tape") And INITIALIZE'
6309                                            .EVEN
6310                                    ;*
6311                                    ;
6312                                    ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
6313                                    ;WRITE SUBSYSTEM MEMORY COMMAND
6314                                    ;
6315                                    ;
6316
6317 046510                             T31REST:
6318 046510                                     SAVREG                          ;SAVE THE REGISTERS
6319 046514     012701  043070                    MOV     #T31PACKET,R1           ;START OF THE PACKET
6320 046520     012721  100004                    MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
6321 046524     012721  043100                    MOV     #T31DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
6322 046530     005021                            CLR     (R1)+                   ;EXTENDED ADDRESS
6323 046532     012721  000012                    MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
6324 046536     012721  043112                    MOV     #T31BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
6325 046542     005021                            CLR     (R1)+
6326 046544     012721  000024                    MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
6327 046550     005021                            CLR     (R1)+
6328 046552     012711  000000                    MOV     #0,(R1)                 ;SELECT DRIVE ZERO
6329 046556     012702  000030                    MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
```

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

```
6330 046562  012762  177777  043112  64$:    MOV     #177777,T31BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
6331 046570  005742                          TST     -(R2)                   ;NEXT LOCATION
6332 046572  022702  000000                  CMP     #0,R2                   ;AT END OF LOOP YET
6333 046576  001371                          BNE     64$                     ;KEEP GOING UNTIL DONE
6334 046600  000207                          RTS     PC                      ;RETURN
6335
6336 046602                          T31RT2:
6337 046602                                  SAVREG                          ;SAVE THE REGISTERS
6338 046606  012701  043200                  MOV     #T31PK2,R1              ;START OF THE PACKET
6339 046612  012721  100006                  MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
6340 046616  012721  043220                  MOV     #T31BF2,(R1)+           ;ADDRESS OF DATA BLOCK
6341 046622  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
6342 046624  012721  000006                  MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
6343 046630  005021                          CLR     (R1)+
6344 046632  012701  043220                  MOV     #T31BF2,R1              ;POINT TO DATA SEL AREA
6345 046636  005021                          CLR     (R1)+
6346 046640  005011                          CLR     (R1)
6347 046642  000207                          RTS     PC                      ;RETURN
6348 046644                          T31RT3:
6349 046644                                  SAVREG                          ;SAVE REGISTERS
6350 046650  012701  043210                  MOV     #T31PK3,R1              ;SET UP POINTER ADDRESS
6351 046654  005021                          CLR     (R1)+                   ;COMMAND SPACE
6352 046656  005021                          CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
6353 046660  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
6354 046662  005011                          CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
6355 046664  000207                          RTS     PC                      ;RETURN
6356 046666                                  ENDTST
     046666                                                          L10050:
     046666  104401                                                          TRAP    C$ETST
6357                                 .SBTTL  TEST  4: Erase And Operation Incomplete
6358                                 ;+
6359                                 ;
6360                                 ;       VERIFIES THAT AN ERASE COMMAND ISSUED WHEN THE TAPE IS
6361                                 ;       POSITIONED AT BOT OPERATES PROPERLY AND ACTUALLY ERASES TAPE.
6362                                 ;       THE FOLLOWING TEST SEQUENCE IS PERFORMED:
6363                                 ;
6364                                 ;
6365                                 ;            1.  THE TAPE IS FIRST REWOUND, SEVERAL TEST RECORDS ARE
6366                                 ;                WRITTEN, AND THE TAPE IS REWOUND AGAIN.
6367                                 ;
6368                                 ;            2.  AN ERASE COMMAND IS ISSUED, WHICH SHOULD ERASE A NUMBER
6369                                 ;                OF THE TEST RECORDS.
6370                                 ;
6371                                 ;            3.  NORMAL TERMINATION IS VERIFIED AND STATUS IS CHECKED
6372                                 ;                (BOT SHOULD BE 0).
6373                                 ;
6374                                 ;            4.  A READ REVERSE COMMAND IS ISSUED.  IT IS VERIFIED THAT
6375                                 ;                THE COMMAND TERMINATES WITH TAPE STATUS ALERT, THAT THE
6376                                 ;                REVERSE INTO BOT (RIB) STATUS BIT IS SET, AND THAT NO
6377                                 ;                DATA IS TRANSFERRED.  THIS DEMONSTRATES THAT NO DATA
6378                                 ;                WAS ENCOUNTERED IN THE AREA ERASED BY THE ERASE
6379                                 ;                COMMAND.
6380                                 ;
6381                                 ;
6382                                 ;
6383                                 ;
6384                                 ;
```

TEST 4: Erase And Operation Incomplete

```
                                        ;
                                        ;
                                        ;THE TEST CONSISTS OF THE FOLLOWING 3 SUBTESTS
                                        ;
                                        ;
                                        ;
                                        ;-
046670                                          BGNTST
046670                                                                          T4::
046670  012737  006354  002172                  MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
046676  012700  052540                          MOV     #TST32ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
046702  004737  016570                          JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
046706  012737  000005  002210                  MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
046714  005037  051410                          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.
                                        ;
                                        ;
                                        ;-
046720                                  T32LOOP:
                                        ;
                                        ;
                                        ;-
046720                                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
046720                                                                                  T4.1:
046720  104402                                                                          TRAP    C$BSUB
046722  004737  052600                  JSR     PC,T32REST              ;SET COMMAND PACKET
046726  004737  052672                  JSR     PC,T32RT2               ;SET UP OTHER COMMAND PACKET
046732  004737  052722                  JSR     PC,T32RT3               ;SET UP OTHER COMMAND PACKET
046736  012737  176750  051414          MOV     #65000.,T32DLY          ;SET UP DELAY COUNTER
046744  004737  016054          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
046750  103426                  BCS     20$                             ;BR IF INIT WAS OK
046752                          DELAY   250                             ;DELAY ABOUT .25 SEC
046752  012727  000250                                                          MOV     #250,(PC)+
046756  000000                                                                  .WORD   0
046760  013727  002116                                                          MOV     L$DLY,(PC)+
046764  000000                                                                  .WORD   0
046766  005367  177772                                                          DEC     -6(PC)
046772  001375                                                                  BNE     .-4
046774  005367  177756                                                          DEC     -22(PC)
047000  001367                                                                  BNE     .-20
047002  005337  051414                  DEC     T32DLY                  ;BUMP COUNTER
047006  001356                  BNE     10$                             ;BR, IF COUNTER NOT DONE
047010  005237  002214                  INC     FATFLG                          ;ERROR COUNT
047014  010001                  MOV     R0,R1                           ;CONTENTS OF TSSR REGISTER
047016                          ERRDF   ERRNO,SFIERR,SFIMSG             ;FATAL ERROR TSSR WAS NOT OK
047016  104455                                                                  TRAP    C$ERDF
047020  000621                                                                  .WORD   401
047022  003646                                                                  .WORD   SFIERR
```

TEST 4: Erase And Operation Incomplete

```
                047024  012114                                                          .WORD   SFIMSG
6435            047026  013737  002174  051250  20$:    MOV     UNITN,T32DSW           ;SET UP DRIVE NUMBER
6436            047034  012704  051230                   MOV     #T32PACKET,R4          ;SUBROUTINE NEEDS PACKET ADDRESS
6437            047040  004737  010742                   JSR     PC,WRTCHR              ;ISSUE WRITE CHARACTERISTICS
6438            047044  103407                           BCS     25$                    ;BR. IF COMMAND ISSUED OK
6439            047046  005237  002214                   INC     FATFLG                         ;ERROR COUNT
6443            047052  010001                           MOV     R0,R1                  ;SAVE CONTENTS OF TSSR
6444            047054                                   ERRHRD  ERRNO,WRTMSG,SFIMSG    ;WRITE CHARACTERISTISC FAILED
                047054  104456                                                          TRAP    C$ERHRD
                047056  000622                                                          .WORD   402
                047060  005052                                                          .WORD   WRTMSG
                047062  012114                                                          .WORD   SFIMSG
6445            047064                           25$:    CKLOOP                         ;LOOP IF SELECTED
                047064  104406                                                          TRAP    C$CLP1
6446            047066  004737  011074                   JSR     PC,REWIND              ;CALL TAPE REWIND COMMAND
6447            047072  103411                           BCS     26$                    ;BR, IF NO PROBLEM
6448            047074  010004                           MOV     R0,R4                  ;SET UP REWIND PACKET ADDRESS
6449            047076  016501  000002                   MOV     TSSR(R5),R1            ;GET TSSR CONTENTS
6450            047102  005237  002214                   INC     FATFLG                         ;ERROR COUNT
6454            047106                                   ERRHRD  ERRNO,T32RWN,PKTSSR    ;REWIND NOT ACCEPTED
                047106  104456                                                          TRAP    C$ERHRD
                047110  000623                                                          .WORD   403
                047112  051600                                                          .WORD   T32RWN
                047114  012126                                                          .WORD   PKTSSR
6455            047116                           26$:    CKLOOP                         ;LOOP IF SELECTED
                047116  104406                                                          TRAP    C$CLP1
6456            047120  012703  000400                   MOV     #256.,R3               ;STARTING RECORD SIZE
6457            047124  013737  003116  051352           MOV     FREE,T32WB             ;STARTING WRITE BUFFER ADDRESS
6458            047132  012737  140005  051350           MOV     #140005,T32PK3         ;WRITE DATA,CVC=1,ACK COMMAND
6459            047140  012704  051350                   MOV     #T32PK3,R4             ;SET UP R4 WITH PACKET ADDRESS
6460            047144  010337  051356           27$:    MOV     R3,T32SZ               ;SET UP RECORD SIZE IN PACKET
6461            047150  010465  000000                   MOV     R4,TSDB(R5)            ;ISSUE COMMAND
6462            047154  004737  016330                   JSR     PC,WAITF               ;WAIT FOR SSR TO SET
6463            047160  016501  000002                   MOV     TSSR(R5),R1            ;GET TSSR CONTENTS
6464            047164  012702  000200                   MOV     #SSR,R2                ;SET UP EXPECTED
6465            047170  020102                           CMP     R1,R2                  ;ARE THEY EQUAL
6466            047172  001406                           BEQ     28$                    ;BR. IF OK
6467            047174  005237  002214                   INC     FATFLG                         ;ERROR COUNT
6471            047200                                   ERRHRD  ERRNO,T32WDC,PKTSSR    ;TSSR INCORRECT AFTER WRITE DATA
                047200  104456                                                          TRAP    C$ERHRD
                047202  000624                                                          .WORD   404
                047204  052436                                                          .WORD   T32WDC
                047206  012126                                                          .WORD   PKTSSR
6472            047210                           28$:    CKLOOP                         ;LOOP IF SELECTED
                047210  104406                                                          TRAP    C$CLP1
6473            047212  005723                           TST     (R3)+                  ;BUMP RECORD COUNTER
6474            047214  020327  001002                   CMP     R3,#514.               ;AT MAX SIZE YET
6475            047220  001351                           BNE     27$                    ;BR. IF NOT AT END OF LOOP
6476            047222  004737  011074                   JSR     PC,REWIND              ;CALL TAPE REWIND COMMAND
6477            047226  103411                           BCS     30$                    ;BR, IF NO PROBLEM
6478            047230  016501  000002                   MOV     TSSR(R5),R1            ;GET TSSR CONTENTS
6479            047234  010004                           MOV     R0,R4                  ;SET UP REWIND PACKET ADDRESS
6480            047236  005237  002214                   INC     FATFLG                         ;ERROR COUNT
6484            047242                                   ERRHRD  ERRNO,T32RWN,PKTSSR    ;REWIND NOT ACCEPTED
                047242  104456                                                          TRAP    C$ERHRD
                047244  000625                                                          .WORD   405
                047246  051600                                                          .WORD   T32RWN
```

TEST 4: Erase And Operation Incomplete

```
        047250  012126                                                          .WORD   P<TSSR
6485    047252                          30$:    CKLOOP                          ;LOOP IF SELECTED
        047252  104406                                                          TRAP    C$CLP1
6486    047254  013701  051260                  MOV     T32BFR+6,R1             ;PICK UP XSTO
6487    047260  010102                          MOV     R1,R2                   ;SET UP EXPECTED
6488    047262  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
6489    047266  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
6490    047270  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
6491    047272  005237  002214                  INC     FATFLG                          ;ERROR COUNT
6495    047276                                  ERRHRD  ERRNO,T32BOE,EXPREC     ;TAPE AT BOT AFTER ERASE
        047276  104456                                                          TRAP    C$ERHRD
        047300  000626                                                          .WORD   406
        047302  052266                                                          .WORD   T32BOE
        047304  015554                                                          .WORD   EXPREC
6496    047306                          40$:    CKLOOP                          ;LOOP IF SELECTED
        047306  104406                                                          TRAP    C$CLP1
6497    047310  012737  140411  051350          MOV     #140411,T32PK3          ;ERASE TAPE,CVC=1,ACK COMMAND
6498    047316  012704  051350                  MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6499    047322  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6500    047326  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6501    047332  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6502    047336  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
6503    047342  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
6504    047344  001406                          BEQ     50$                     ;BR, IF OK
6505    047346  005237  002214                  INC     FATFLG                          ;ERROR COUNT
6509    047352                                  ERRHRD  ERRNO,T32ERA,PKTSSR     ;TSSR INCORRECT AFTER ERASE DATA
        047352  104456                                                          TRAP    C$ERHRD
        047354  000627                                                          .WORD   407
        047356  051716                                                          .WORD   T32ERA
        047360  012126                                                          .WORD   PKTSSR
6510    047362                          50$:    CKLOOP                          ;LOOP IF SELECTED
        047362  104406                                                          TRAP    C$CLP1
6511    047364  013701  051260                  MOV     T32BFR+6,R1             ;PICK UP XSTO
6512    047370  010102                          MOV     R1,R2                   ;SET UP EXPECTED
6513    047372  042702  000002                  BIC     #BIT1,R2                ;SET BOT BIT IN EXPECTED
6514    047376  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
6515    047400  001406                          BEQ     55$                     ;BR, IF EQUAL (OK)
6516    047402  005237  002214                  INC     FATFLG                          ;ERROR COUNT
6520    047406                                  ERRHRD  ERRNO,T32BOE,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        047406  104456                                                          TRAP    C$ERHRD
        047410  000630                                                          .WORD   408
        047412  052266                                                          .WORD   T32BOE
        047414  015554                                                          .WORD   EXPREC
6521    047416                          55$:    CKLOOP                          ;LOOP IF SELECTED
        047416  104406                                                          TRAP    C$CLP1
6522    047420  013737  003116  051352          MOV     FREE,T32RB              ;ADDRESS OF BUFFER
6523    047426  012737  140401  051350          MOV     #140401,T32PK3          ;READ REVERSE,ACK,CVC=1 COMMAND
6524    047434  012737  000400  051356          MOV     #256.,T32SZ             ;SET UP THE SIZE OF RECORD
6525    047442  012704  051350                  MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6526    047446  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6527    047452  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6528    047456  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6529    047462  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED TAPE STATUS ALERT
6530    047466  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
6531    047470  001406                          BEQ     180$                    ;BR, IF OK
6532    047472  005237  002214                  INC     FATFLG                          ;ERROR COUNT
6536    047476                                  ERRHRD  ERRNO,T32TSA,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
```

TEST 4: Erase And Operation Incomplete

```
        047476  104456                                                                  TRAP    C$ERHRD
        047500  000631                                                                  .WORD   409
        047502  052211                                                                  .WORD   T32TSA
        047504  012126                                                                  .WORD   PKTSSR
  6537  047506                          180$:   CKLOOP                          ;LOOP IF SELECTED
        047506  104406                                                                  TRAP    C$CLP1
  6538  047510  013701  051266                  MOV     T32BFR+14,R1            ;GET XST3 STATUS WORD
  6539  047514  010102                          MOV     R1,R2                   ;SET UP EXPECTED
  6540  047516  052702  000001                  BIS     #BIT0,R2                ;SET THE RIB BIT
  6541  047522  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
  6542  047524  001406                          BEQ     190$                    ;BR. IF EQUAL (GOOD)
  6543  047526  005237  002214                  INC     FATFLG                          ;ERROR COUNT
  6547  047532                                  ERRHRD  ERRNO,T32RIB,EXPREC     ;RIB SHOULD BE SET
        047532  104456                                                                  TRAP    C$ERHRD
        047534  000632                                                                  .WORD   410
        047536  052036                                                                  .WORD   T32RIB
        047540  015554                                                                  .WORD   EXPREC
  6548  047542                          190$:
  6549  047542                                  ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
        047542                                                                          L10054:
        047542  104403                                                                  TRAP    C$ESUB
  6550  047544  023727  002214  000017          CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
  6551  047552  103402                          BLO     999$                            ;BR. IF LESS THAN 25
  6552  047554  004737  017262                  JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
  6553  047560                          999$:
  6554                                  ;*
  6555                                  ;
  6556                                  ;TEST 4, SUBTEST 2
  6557                                  ;
  6558                                  ;       VERIFIES THAT AN ERASE COMMAND EXECUTED WHEN THE TAPE IS NOT
  6559                                  ;       POSITIONED AT BOT OPERATES PROPERLY AND DOES NOT CORRUPT
  6560                                  ;       PREVIOUS TAPE RECORDS.  THE TEST SEQUENCE IS:
  6561                                  ;
  6562                                  ;            1.  THE TAPE IS FIRST REWOUND, SEVERAL TEST RECORDS ARE
  6563                                  ;                WRITTEN, AND THE TAPE IS REWOUND AGAIN.
  6564                                  ;
  6565                                  ;
  6566                                  ;            2.  A SPACE RECORDS FORWARD COMMAND IS ISSUED TO MOVE THE
  6567                                  ;                TAPE OFF OF BOT AND SKIP OVER THE FIRST SEVERAL
  6568                                  ;                RECORDS.
  6569                                  ;
  6570                                  ;            3.  AN ERASE COMMAND IS ISSUED, WHICH SHOULD ERASE A NUMBER
  6571                                  ;                OF THE TEST RECORDS.
  6572                                  ;
  6573                                  ;            4.  NORMAL TERMINATION IS VERIFIED AND STATUS IS CHECKED.
  6574                                  ;
  6575                                  ;            5.  A READ REVERSE COMMAND IS ISSUED.  IT IS VERIFIED THAT
  6576                                  ;                NORMAL TERMINATION IS ACCOMPLISHED AND THAT THE DATA
  6577                                  ;                TRANSFERRED CORRESPONDS TO THAT FOR THE EXPECTED
  6578                                  ;                RECORD.  THIS DEMONSTRATES THAT NO DATA WAS ENCOUNTERED
  6579                                  ;                IN THE AREA ERASED BY THE ERASE COMMAND, AND THAT THE
  6580                                  ;                PREVIOUS RECORD WAS NOT CORRUPTED.
  6581                                  ;
  6582                                  ;
  6583                                  ;
  6584                                  ;
  6585                                  ;
```

TEST 4: Erase And Operation Incomplete

```
6586                                    ;
6587                                    ;-
6588 047560                             BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     047560                                                                     T4.2:
     047560  104402                                                              TRAP    C$BSUB
6589 047562  004737  052600             JSR     PC,T32REST              ;SET COMMAND PACKET
6590 047566  004737  052672             JSR     PC,T32RT2               ;SET UP OTHER COMMAND PACKET
6591 047572  004737  052722             JSR     PC,T32RT3               ;SET UP OTHER COMMAND PACKET
6592 047576  004737  016054             JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
6593 047602  103407                     BCS     20$                     ;BR IF INIT WAS OK
6594 047604  005237  002214             INC     FATFLG                          ;ERROR COUNT
6598 047610  010001                     MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
6599 047612                             ERRDF   ERRNO,SFIERR,SFIMSG     :FATAL ERROR TSSR WAS NOT OK
     047612  104455                                                              TRAP    C$ERDF
     047614  000633                                                              .WORD   411
     047616  003646                                                              .WORD   SFIERR
     047620  012114                                                              .WORD   SFIMSG
6600 047622  013737  002174  05:250  20$:    MOV     UNITN,T32DSW            ;SET UP UNIT NUMBER IN PACKET
6601 047630  012704  051230             MOV     #T32PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
6602 047634  004737  010742             JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
6603 047640  103407                     BCS     23$                     ;BR, IF COMMAND ISSUED OK
6604 047642  005237  002214             INC     FATFLG                          ;ERROR COUNT
6608 047646  010001                     MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
6609 047650                             ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     047650  104456                                                              TRAP    C$ERHRD
     047652  000634                                                              .WORD   412
     047654  005052                                                              .WORD   WRTMSG
     047656  012114                                                              .WORD   SFIMSG
6610 047660                     23$:    CKLOOP                          ;LOOP IF SELECTED
     047660  104406                                                              TRAP    C$CLP1
6611 047662  004737  011074             JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
6612 047666  103407                     BCS     30$                     ;BR, IF NO PROBLEM
6613 047670  010004                     MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
6614 047672  005237  002214             INC     FATFLG                          ;ERROR COUNT
6618 047676                             ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
     047676  104456                                                              TRAP    C$ERHRD
     047700  000635                                                              .WORD   413
     047702  051600                                                              .WORD   T32RWN
     047704  012126                                                              .WORD   PKTSSR
6619 047706                     30$:    CKLOOP                          ;LOOP IF SELECTED
     047706  104406                                                              TRAP    C$CLP1
6620 047710  013701  051260             MOV     T32BFR+6,R1             ;PICK UP XSTO
6621 047714  010102                     MOV     R1,R2                   ;SET UP EXPECTED
6622 047716  052702  000002             BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
6623 047722  020102                     CMP     R1,R2                   ;DOES EXP = REC'D
6624 047724  001406                     BEQ     40$                     ;BR, IF EQUAL (OK)
6625 047726  005237  002214             INC     FATFLG                          ;ERROR COUNT
6629 047732                             ERRHRD  ERRNO,T32BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     047732  104456                                                              TRAP    C$ERHRD
     047734  000636                                                              .WORD   414
     047736  051416                                                              .WORD   T32BOT
     047740  015554                                                              .WORD   EXPREC
6630 047742                     40$:    CKLOOP                          ;LOOP IF SELECTED
     047742  104406                                                              TRAP    C$CLP1
6631 047744  012703  000144             MOV     #100.,R3                ;STARTING RECORD SIZE
6632 047750  010300                     MOV     R3,R0                   ;SET UP MEMORY FILL
6633 047752  004737  017502             JSR     PC,FILLMEM              ;CALL MEMORY FILLER
```

TEST 4: Erase And Operation Incomplete

```
 6634 047756  013737  003116  051352          MOV     FREE,T32WB              ;STARTING WRITE BUFFER ADDRESS
 6635 047764  012737  140005  051350  65$:    MOV     #140005,T32PK3          ;WRITE DATA,CVC=1,ACK COMMAND
 6636 047772  012704  051350                  MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 6637 047776  010300                          MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
 6638 050000  004737  017502                  JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
 6639 050004  010337  051356                  MOV     R3,T32SZ                ;SET UP RECORD SIZE IN PACKET
 6640 050010  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 6641 050014  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6642 050020  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6643 050024  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 6644 050030  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 6645 050032  001406                          BEQ     80$                     ;BR, IF OK
 6646 050034  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 6650 050040                                  ERRHRD  ERRNO,T32WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      050040  104456                                                                  TRAP    C$ERHRD
      050042  000637                                                                  .WORD   415
      050044  052436                                                                  .WORD   T32WDC
      050046  012126                                                                  .WORD   PKTSSR
 6651 050050                          80$:    CKLOOP                          ;LOOP IF SELECTED
      050050  104406                                                                  TRAP    C$CLP1
 6652 050052  005723                          TST     (R3)+                   ;BUMP RECORD SIZE COUNTER
 6653 050054  020327  000156                  CMP     R3,#110.                ;AT 160 SIZE YET
 6654 050060  001341                          BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
 6655 050062  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 6656 050066  103407                          BCS     230$                    ;BR, IF NO PROBLEM
 6657 050070  010001                          MOV     R0,R1                   ;SAVE TSSR
 6658 050072  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 6662 050076                                  ERRHRD  ERRNO,T32RWN,EXPREC     ;REWIND NOT ACCEPTED
      050076  104456                                                                  TRAP    C$ERHRD
      050100  000640                                                                  .WORD   416
      050102  051600                                                                  .WORD   T32RWN
      050104  015554                                                                  .WORD   EXPREC
 6663 050106                          230$:   CKLOOP                          ;LOOP IF SELECTED
      050106  104406                                                                  TRAP    C$CLP1
 6664 050110  013701  051260                  MOV     T32BFR+6,R1             ;PICK UP XSTO
 6665 050114  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 6666 050116  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 6667 050122  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
 6668 050124  001406                          BEQ     240$                    ;BR, IF EQUAL (OK)
 6669 050126  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 6673 050132                                  ERRHRD  ERRNO,T32BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      050132  104456                                                                  TRAP    C$ERHRD
      050134  000641                                                                  .WORD   417
      050136  051416                                                                  .WORD   T32BOT
      050140  015554                                                                  .WORD   EXPREC
 6674 050142                          240$:   CKLOOP                          ;LOOP IF SELECTED
      050142  104406                                                                  TRAP    C$CLP1
 6675 050144  012703  000001                  MOV     #1,R3                   ;SET UP FOR SPACE COMMAND
 6676 050150  004737  010544                  JSR     PC,SPACE                ;ISSUE SPACE COMMAND 1 FORWARD
 6677 050154  012737  140411  051350  265$:   MOV     #140411,T32PK3          ;ERASE DATA,ACK COMMAND
 6678 050162  012704  051350                  MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 6679 050166  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 6680 050172  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6681 050176  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6682 050202  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 6683 050206  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 6684 050210  001406                          BEQ     280$                    ;BR, IF OK
```

TEST 4: Erase And Operation Incomplete

```
6685 050212  005237  002214                INC     FATFLG                          ;ERROR COUNT
6689 050216                                ERRHRD  ERRNO,T32ERA,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     050216  104456                                                              TRAP    C$ERHRD
     050220  000642                                                              .WORD   418
     050222  051716                                                              .WORD   T32ERA
     050224  012126                                                              .WORD   PKTSSR
6690 050226                        280$:   CKLOOP                          ;LOOP IF SELECTED
     050226  104406                                                              TRAP    C$CLP1
6691 050230  013737  003116  051352        MOV     FREE,T32RB              ;ADDRESS OF BUFFER
6692 050236  012737  140401  051350        MOV     #140401,T32PK3          ;READ REVERSE,ACK,CVC=1 COMMAND
6693 050244  012737  000144  051356        MOV     #100.,T32SZ             ;SET UP THE SIZE OF RECORD
6694 050252  012704  051350                MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6695 050256  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6696 050262  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6697 050266  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6698 050272  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED TAPE STATUS ALERT
6699 050276  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
6700 050300  001406                        BEQ     290$                    ;BR, IF OK
6701 050302  005237  002214                INC     FATFLG                          ;ERROR COUNT
6705 050306                                ERRHRD  ERRNO,T32TSA,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     050306  104456                                                              TRAP    C$ERHRD
     050310  000643                                                              .WORD   419
     050312  052211                                                              .WORD   T32TSA
     050314  012126                                                              .WORD   PKTSSR
6706 050316                        290$:   CKLOOP                          ;LOOP IF SELECTED
     050316  104406                                                              TRAP    C$CLP1
6707 050320  017701  132572                MOV     @FREE,R1                ;GET DATA READ
6708 050324  012702  000144                MOV     #100.,R2                ;SHOULD BE 100
6709 050330  020102                        CMP     R1,R2                   ;CHECK'EM OUT
6710 050332  001406                        BEQ     300$                    ;BR, IF OK
6711 050334  005237  002214                INC     FATFLG                          ;ERROR COUNT
6715 050340                                ERRHRD  ERRNO,T32ECF,EXPREC     ;ERASE COMMAND DIDN'T WORK
     050340  104456                                                              TRAP    C$ERHRD
     050342  000644                                                              .WORD   420
     050344  052355                                                              .WORD   T32ECF
     050346  015554                                                              .WORD   EXPREC
6716 050350                        300$:   CKLOOP                          ;LOOP IF SELECTED
     050350  104406                                                              TRAP    C$CLP1
6717 050352                        330$:
6718 050352                                ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     050352                                                                      L10055:
     050352  104403                                                              TRAP    C$ESUB
6719 050354  023727  002214  000017        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
6720 050362  103402                        BLO     999$                            ;BR, IF LESS THAN 25
6721 050364  004737  017262                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
6722 050370                        999$:
6723                               ;*
6724                               ;
6725                               ;TEST 4, SUBTEST 3
6726                               ;
6727                               ;       VERIFIES THAT AN ERASE COMMAND ENCOUNTERING THE EOT MARKER, OR
6728                               ;       EXECUTED BEYOND THE EOT MARKER, CAUSES TAPE STATUS ALERT
6729                               ;       TERMINATION WITH THE EOT STATUS BIT SET.  ALSO VERIFIES THAT THE
6730                               ;       OTHER TAPE MOTION COMMANDS EXECUTED WHEN THE TAPE IS BLANK
6731                               ;       RESULT IN UNRECOVERABLE ERROR TERMINATION AND OPERATION
6732                               ;       INCOMPLETE STATUS.  THE FOLLOWING TEST SEQUENCE IS EXECUTED:
6733                               ;
```

TEST 4: Erase And Operation Incomplete

```
                                ;             1.  THE TAPE IS REWOUND.
                                ;
                                ;             2.  ERASE COMMANDS ARE REPEATEDLY ISSUED UNTIL EOT STATUS
                                ;                 IS SEEN.  AN ERROR IS REPORTED IF ANY TERMINATION OTHER
                                ;                 THAN NORMAL (WITH EOT=0) OR TAPE STATUS ALERT (WITH
                                ;                 EOT=1) IS ENCOUNTERED.  IF THE CONTROLLER OR TRANSPORT
                                ;                 DOES NOT DETECT THE EOT, THE TRANSPORT WILL FAULT.
                                ;                 THIS IS REPORTED AS A FATAL ERROR AND THE TEST IS
                                ;                 ABORTED.
                                ;
                                ;             3.  AN ADDITIONAL ERASE COMMAND IS ISSUED AND IT IS
                                ;                 VERIFIED THAT TAPE STATUS ALERT TERMINATION RESULTS,
                                ;                 WITH EOT=1.
                                ;
                                ;             4.  IT IS VERIFIED THAT EACH OF THE FOLLOWING COMMANDS
                                ;                 (ISSUED IN THE ORDER GIVEN) RESULTS IN UNRECOVERABLE
                                ;                 ERROR TERMINATION WITH OPI=1:  SPACE RECORDS REVERSE
                                ;                 SKIP TAPE MARKS REVERSE READ REVERSE REREAD PREVIOUS
                                ;                 (OPP=0) REREAD PREVIOUS (OPP=1) REREAD NEXT (OPP=1)
                                ;                 REREAD NEXT (OPP=0) READ NEXT SKIP TAPE MARKS REVERSE
                                ;                 SKIP TAPE MARKS FORWARD SPACE RECORDS FORWARD WRITE
                                ;                 DATA RETRY
                                ;
                                ;
                                ;
                                ;
                                ;
                                ;-
050370                                  BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
                                                                                        T4.3:
050370  104402                                                                          TRAP    C$BSUB
050372  004737  052600                  JSR     PC,T32REST              ;SET COMMAND PACKET
050376  004737  052672                  JSR     PC,T32RT2               ;SET UP OTHER COMMAND PACKET
050402  004737  052722                  JSR     PC,T32RT3               ;SET UP OTHER COMMAND PACKET
050406  012737  176750  051414          MOV     #65000.,T32DLY          ;SET UP DELAY COUNTER
050414  004737  016054          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
050420  103426                          BCS     20$                     ;BR IF INIT WAS OK
050422                                  DELAY   250                     ;DELAY ABOUT .25 SEC
050422  012727  000250                                                          MOV     #250.,(PC)+
050426  000000                                                                  .WORD   0
050430  013727  002116                                                          MOV     L$DLY,(PC)+
050434  000000                                                                  .WORD   0
050436  005367  177772                                                          DEC     -6(PC)
050442  001375                                                                  BNE     .-4
050444  005367  177756                                                          DEC     -22(PC)
050450  001367                                                                  BNE     .-20
050452  005337  051414                  DEC     T32DLY                  ;BUMP COUNTER
050456  001356                          BNE     10$                     ;BR, IF COUNTER NOT DONE
050460  005237  002214                  INC     FATFLG                          ;ERROR COUNT
050464  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
050466                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
050466  104455                                                                  TRAP    C$ERDF
050470  000645                                                                  .WORD   421
050472  003646                                                                  .WORD   SFIERR
050474  012114                                                                  .WORD   SFIMSG
050476  013737  002174  051250  20$:     MOV     UNITN,T32DSW            ;SET UP UNIT (DRIVE) NUMBER
050504  052737  000040  051250          BIS     #BIT5,T32DSW            ;TURN ON HIGH SPEED TO SAVE TIME
050512  012704  051230                  MOV     #T32PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
```

TEST 4: Erase And Operation Incomplete

```
 6780 050516  004737  010742                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 6781 050522  103407                            BCS     23$                     ;BR, IF COMMAND ISSUED OK
 6782 050524  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 6786 050530  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 6787 050532                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      050532  104456                                                                    TRAP    C$ERHRD
      050534  000646                                                                    .WORD   422
      050536  005052                                                                    .WORD   WRTMSG
      050540  012114                                                                    .WORD   SFIMSG
 6788 050542                            23$:    CKLOOP                          ;LOOP IF SELECTED
      050542  104406                                                                    TRAP    C$CLP1
 6789 050544  004737  011074                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 6790 050550  103411                            BCS     30$                     ;BR, IF NO PROBLEM
 6791 050552  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6792 050556  010004                            MOV     R0,R4                   ;GET PACKET ADDRESS
 6793 050560  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 6797 050564                                    ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
      050564  104456                                                                    TRAP    C$ERHRD
      050566  000647                                                                    .WORD   423
      050570  051600                                                                    .WORD   T32RWN
      050572  012126                                                                    .WORD   PKTSSR
 6798 050574                            30$:    CKLOOP                          ;LOOP IF SELECTED
      050574  104406                                                                    TRAP    C$CLP1
 6799 050576  013701  051260                    MOV     T32BFR+6,R1             ;PICK UP XSTO
 6800 050602  010102                            MOV     R1,R2                   ;SET UP EXPECTED
 6801 050604  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 6802 050610  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
 6803 050612  001406                            BEQ     40$                     ;BR, IF EQUAL (OK)
 6804 050614  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 6808 050620                                    ERRHRD  ERRNO,T32BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      050620  104456                                                                    TRAP    C$ERHRD
      050622  000650                                                                    .WORD   424
      050624  051416                                                                    .WORD   T32BOT
      050626  015554                                                                    .WORD   EXPREC
 6809 050630                            40$:    CKLOOP                          ;LOOP IF SELECTED
      050630  104406                                                                    TRAP    C$CLP1
 6810 050632  012737  140411  051350    65$:    MOV     #140411,T32PK3          ;ERASE DATA,CVC=1,ACK COMMAND
 6811 050640  012704  051350                    MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 6812 050644  010337  051356                    MOV     R3,T32SZ                ;SET UP RECORD SIZE IN PACKET
 6813 050650  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 6814 050654  004737  016330                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6815 050660  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6816 050664  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
 6817 050670  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
 6818 050672  001757                            BEQ     65$                     ;BR, IF OK
 6819 050674  032701  000004                    BIT     #BIT2,R1                ;CHECK FOR TAPE STATUS ALERT
 6820 050700  001006                            BNE     80$                     ;BR, IF TAPE STATUS ALERT SET
 6821 050702  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 6825 050706                                    ERRHRD  ERRNO,T32WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      050706  104456                                                                    TRAP    C$ERHRD
      050710  000651                                                                    .WORD   425
      050712  052436                                                                    .WORD   T32WDC
      050714  012126                                                                    .WORD   PKTSSR
 6826 050716                            80$:    CKLOOP                          ;LOOP IF SELECTED
      050716  104406                                                                    TRAP    C$CLP1
 6827 050720  013701  051260                    MOV     T32BFR+6,R1             ;PICK UP XSTO
 6828 050724  010102                            MOV     R1,R2                   ;SET UP EXPECTED
```

TEST 4: Erase And Operation Incomplete

```
 6829 050726  052702  000001                BIS     #BIT0,R2                ;SET EOT BIT IN EXPECTED
 6830 050732  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 6831 050734  001406                        BEQ     240$                    ;BR, IF EQUAL (OK)
 6832 050736  005237  002214                INC     FATFLG                          ;ERROR COUNT
 6836 050742                                ERRHRD  ERRNO,T32EOT,EXPREC     ;TAPE NOT AT EOT AFTER ERASE COMMANDS
      050742  104456                                                                TRAP    C$ERHRD
      050744  000652                                                                .WORD   426
      050746  051511                                                                .WORD   T32EOT
      050750  015554                                                                .WORD   EXPREC
 6837 050752                        240$:   CKLOOP                          ;LOOP IF SELECTED
      050752  104406                                                                TRAP    C$CLP1
 6838 050754  012703  051360                MOV     #T32CMD,R3              ;STARTING RECORD SIZE
 6839 050760  013737  003116  051352        MOV     FREE,T32RB              ;STARTING READ BUFFER ADDRESS
 6840 050766  011337  051350        265$:   MOV     (R3),T32PK3             ;READ DATA,ACK COMMAND
 6841 050772  012704  051350                MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 6842 050776  012700  177777                MOV     #177777,R0              ;SET PATTERN IN CORRECT REGISTER
 6843 051002  004737  017502                JSR     PC,FILLMEM              ;FILL MEMORY WITH ALL ONES
 6844 051006  012737  000144  051356        MOV     #100.,T32SZ             ;SET UP RECORD SIZE IN PACKET
 6845 051014  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 6846 051020  012737  000062  051414        MOV     #50.,T32DLY             ;SET UP DELAY COUNTER
 6847 051026  004737  016330        270$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6848 051032  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6849 051036  012702  100214                MOV     #SSR!SC!BIT2!BIT3,R2    ;SET UP EXPECTED
 6850 051042  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 6851 051044  001425                        BEQ     280$                    ;BR, IF OK
 6852 051046                                DELAY   250                     ;DELAY FOR SSR TO BE SET
      051046  012727  000250                                                        MOV     #250.,(PC)+
      051052  000000                                                                .WORD   0
      051054  013727  002116                                                        MOV     L$DLY,(PC)+
      051060  000000                                                                .WORD   0
      051062  005367  177772                                                        DEC     -6(PC)
      051066  001375                                                                BNE     .-4
      051070  005367  177756                                                        DEC     -22(PC)
      051074  001367                                                                BNE     .-20
 6853 051076  005337  051414                DEC     T32DLY                  ;COUNT DELAY ROUTINE DOWN
 6854 051102  001351                        BNE     270$                    ;BR, IF DELAY HAS NOT ENDED
 6855 051104  005237  002214                INC     FATFLG                          ;ERROR COUNT
 6859 051110                                ERRHRD  ERRNO,T32ECF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      051110  104456                                                                TRAP    C$ERHRD
      051112  000653                                                                .WORD   427
      051114  052355                                                                .WORD   T32ECF
      051116  012126                                                                .WORD   PKTSSR
 6860 051120                        280$:   CKLOOP                          ;LOOP IF SELECTED
      051120  104406                                                                TRAP    C$CLP1
 6861 051122  013701  051266                MOV     T32BFR+14,R1            ;PICK UP XST3
 6862 051126  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 6863 051130  052702  000100                BIS     #BIT6,R2                ;SET OPI BIT IN EXPECTED
 6864 051134  020102                        CMP     R1,R2                   ;IS OPI BIT SET
 6865 051136  001406                        BEQ     290$                    ;BR, IF BIT IS SET
 6866 051140  005237  002214                INC     FATFLG                          ;ERROR COUNT
 6870 051144                                ERRHRD  ERRNO,T320PI,EXPREC     ;OPI BIT NOT SET
      051144  104456                                                                TRAP    C$ERHRD
      051146  000654                                                                .WORD   428
      051150  052503                                                                .WORD   T320PI
      051152  015554                                                                .WORD   EXPREC
 6871 051154                        290$:   CKLOOP                          ;LOOP IF SELECTED
      051154  104406                                                                TRAP    C$CLP1
```

TEST 4: Erase And Operation Incomplete

```
6872 051156  005723                        TST     (R3)+                   ;BUMP COMMAND POINTER
6873 051160  021327  177777                CMP     (R3),#177777            ;AT END OF TABLE YET
6874 051164  001300                        BNE     265$                    ;BR, KEEP TRYING COMMANDS
6875 051166                                ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     051166                                                                      L10056:
     051166  104403                                                                  TRAP    C$ESUB
6876 051170  023727  002214  000017        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
6877 051176  103402                        BLO     999$                            ;BR, IF LESS THAN 25
6878 051200  004737  017262                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
6879 051204                          999$:
6880                                 ;
6881                                 ;
6882                                 ;
6883 051204  004737  016536                JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
6884 051210  103002                        BCC     163$                    ;BR, IF NO LOOP REQUIRED
6885 051212  000137  046720                JMP     T32LOOP                 ;EXECUTE AGAIN
6886 051216                          163$: EXIT    TST                     ;ALL DONE THIS TEST
     051216  104432                                                                  TRAP    C$EXIT
     051220  C01524                                                                   WORD    L10053-.
6887                                 ;+
6888                                 ;LOCAL STORAGE FOR THIS TEST
6889                                 ;-
6891         051230                          .=<.+10>&177770
6893 051230                          T32PACKET:                              ;COMMAND PACKET FOR TEST
6894 051230  100004                        .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
6895 051232  051240                        .WORD   T32DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
6896 051234  000000                        .WORD   0
6897 051236  000012                        .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
6898 051240                          T32DATA:                                ;CHARACTERISTICS DATA BLOCK
6899 051240  051252                        .WORD   T32BFR                  ;ADDRESS OF MESSAGE BUFFER
6900 051242  000000                        .WORD   0
6901 051244  000024                        .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
6902 051246  000000                        .WORD   0
6903 051250  000000                  T32DSW: .WORD   0                       ;SELECT DRIVE 0
6904 051252                          T32BFR: .BLKW   25.                     ;MESSAGE BUFFER
6905                                 ;
6906                                 ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
6907                                 ;
6909         051340                          .=<.+10>&177770
6911 051340                          T32PK2:
6912 051340  100006                        .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
6913 051342  000000                        .WORD   0                       ;ADDRESS OF SELECT BLOCK DATA
6914 051344  000000                        .WORD   0
6915 051346  000006                        .WORD   6.                      ;SIZE OF DATA PACKET
6916
6920 051350                          T32PK3:
6921 051350  100005                        .WORD   100005                  ;REREAD COMMAND, AND ACK
6922 051352                          T32RB:
6923 051352  003116                  T32WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
6924 051354  000000                        .WORD   0
6925 051356  000000                  T32SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
6926                                       .EVEN
6927                                 ;
6928                                 ;
6929                                 ;
6930                                 ;
6931                                 ;
```

```
                                        .EVEN
                                ;TAPE MOTION PACKET COMMAND VALUES
                                T32CMD:
140410                                  .WORD   140410          ;SPACE RECORDS REVERSE
141410                                  .WORD   141410          ;SKIP TAPE MARKS REVERSE
140401                                  .WORD   140401          ;READ REVERSE
141001                                  .WORD   141001          ;REREAD PREVIOUS (OPP=0)
161401                                  .WORD   161401          ;REREAD NEXT (OPP=1)
161001                                  .WORD   161001          ;REREAD PREVIOUS (OPP=1)
141401                                  .WORD   141401          ;REREAD NEXT (OPP=0)
140001                                  .WORD   140001          ;READ NEXT
141410                                  .WORD   141410          ;SKIP TAPE MARKS REVERSE
141010                                  .WORD   141010          ;SKIP RECORDS FORWARD
141005                                  .WORD   141005          ;WRITE DATA RETRY
177777                                  .WORD   177777          ;END OF DATA

                                ;
C00000                          T32CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
000000                          T32CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
000000                          T32DLY: .WORD   0               ;DELAY COUNTER
                                ;*
                                ;LOCAL TEXT MESSAGES FOR TEST
                                ;-

      124     141     160       T32BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
      124     141     160       T32EOT: .ASCIZ  'Tape Status Alert During Erase To EOT, But EOT Not Set'
      122     145     167       T32RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
      124     123     123       T32AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
      124     123     123       T32ERA: .ASCIZ  'TSSR Not Correct After ERASE Command'
      124     123     102       T32BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
      122     105     101       T32RIB: .ASCIZ  'READ REVERSE, After ERASE From BOT, Failed To Set RIB In XST3'
      124     123     123       T32SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
      124     123     123       T32TSA: .ASCIZ  'TSSR Not Correct After READ REVERSE Into BOT'
      102     117     124       T32BOE: .ASCIZ 'BOT (XST0) Still Set After Erase From Tape''s BOT Marker'
      105     122     101       T32ECF: .ASCIZ  'ERASE Failed To Clear Tape (Erase) Tape Properly'
      124     123     123       T32WDC: .ASCIZ  'TSSR Not Correct After ERASE Command'
      117     120     111       T32OPI: .ASCIZ  'OPI Bit (XST3) Failed To Set'
      105     162     141       TST32ID:        .ASCIZ  'Erase And Operation Incomplete'
                                        .EVEN
                                ;*
                                ;
                                ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                ;WRITE SUBSYSTEM MEMORY COMMAND
                                ;
                                ;-

                                T32REST:
                                        SAVREG                          ;SAVE THE REGISTERS
012701  051230                          MOV     @T32PACKET,R1           ;START OF THE PACKET
012721  100004                          MOV     @100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
012721  051240                          MOV     @T32DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
005021                                  CLR     (R1)+                   ;EXTENDED ADDRESS
012721  000012                          MOV     @10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
012721  051252                          MOV     @T32BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
005021                                  CLR     (R1)+
012721  000024                          MOV     @20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
```

TEST 4: Erase And Operation Incomplete

```
 6989 052640  005021                          CLR     (R1)+
 6990 052642  012711  000000                  MOV     #0,(R1)                 ;SELECT DRIVE ZERO
 6991 052646  012702  000030                  MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
 6992 052652  012762  177777  051252  64$:    MOV     #177777,T32BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
 6993 052660  005742                          TST     -(R2)                   ;NEXT LOCATION
 6994 052662  022702  000000                  CMP     #0,R2                   ;AT END OF LOOP YET
 6995 052666  001371                          BNE     64$                     ;KEEP GOING UNTIL DONE
 6996 052670  000207                          RTS     PC                      ;RETURN
 6997
 6998 052672                          T32RT2:
 6999 052672                          SAVREG                                  ;SAVE THE REGISTERS
 7000 052676  012701  051340                  MOV     #T32PK2,R1              ;START OF THE PACKET
 7001 052702  012721  100006                  MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
 7002 052706  005021                          CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
 7003 052710  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
 7004 052712  012721  000006                  MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
 7005 052716  005021                          CLR     (R1)+
 7006 052720  000207                          RTS     PC                      ;RETURN
 7007 052722                          T32RT3:
 7008 052722                          SAVREG                                  ;SAVE REGISTERS
 7009 052726  012701  051350                  MOV     #T32PK3,R1              ;SET UP POINTER ADDRESS
 7010 052732  005021                          CLR     (R1)+                   ;COMMAND SPACE
 7011 052734  005021                          CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
 7012 052736  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
 7013 052740  005011                          CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
 7014 052742  000207                          RTS     PC                      ;RETURN
 7015 052744                          ENDTST
      052744                                                          L10053:
      052744  104401                                                          TRAP    C$ETST
 7016                                 .SBTTL  TEST  5: DATA PARITY TEST
 7017                                 ;+
 7018                                 ;
 7019                                 ;
 7020                                 ;
 7021                                 ;
 7022                                 ;
 7023                                 ;TEST 5 -- Data Parity Test
 7024                                 ;
 7025                                 ;
 7026                                 ;This test verifies that the data parity circuitry in both the controller and the
 7027                                 ;transport  is operating properly by forcing data records with wrong parity to be
 7028                                 ;written onto tape and checking the results obtained when the data is read.   The
 7029                                 ;following test sequence is performed:
 7030                                 ;
 7031                                 ;     1.  A Write Characteristics command is issued and the resulting  status  is
 7032                                 ;         examined to determine the states of the Extended Features and Buffering
 7033                                 ;         Enable switches on the controller module.  If buffering is disabled, no
 7034                                 ;         further  actions need be taken in this step and the program proceeds to
 7035                                 ;         the next step.  If buffering is enabled, it is disabled via the  Buffer
 7036                                 ;         Control  field  in the extended characteristics data word supplied by a
 7037                                 ;         Write Characteristics command.  (The module must be in  Extended  mode,
 7038                                 ;         so  if it is not already, a Write Subsystem Memory command is issued to
 7039                                 ;         change the logical sense of the Extended Features switch.)
 7040                                 ;
 7041                                 ;     2.  The Write Subsystem Memory command is  used  to  set  the  Force  Wrong
 7042                                 ;         Parity control flip-flop.
 7043                                 ;
```

```
7044                                    ;     3.  The tape is rewound.
7045                                    ;
7046                                    ;     4.  A Write Data command is issued to write a data  record  containing  all
7047                                    ;         0's.   It  is  verified  that this command results in Recoverable Error
7048                                    ;         termination (TC=4) and that the Uncorrectable Data  Error  (UNC)  error
7049                                    ;         bit is set.
7050                                    ;
7051                                    ;     5.  The previous step is  repeated  for  each  data  value  2  through  377
7052                                    ;         (octal).
7053                                    ;
7054                                    ;     6.  The tape is rewound.
7055                                    ;
7056                                    ;     7.  A Read Next command is issued to read a record with faulty parity.   It
7057                                    ;         is  verified that this command results in Recoverable Error termination
7058                                    ;         (TC=4) and that both the Uncorrectable Data (UNC) and Read  Bus  Parity
7059                                    ;         (RBP)  error  bits are set.  It is also verified that the data actually
7060                                    ;         read is correct.
7061                                    ;
7062                                    ;     8.  A Read Reverse command with OPP=1 is issued to read,  in  reverse,  the
7063                                    ;         same  record  with  faulty  parity as read in the previous step.  It is
7064                                    ;         verified that this command results  in  Recoverable  Error  termination
7065                                    ;         (TC=4)  and  that both the Uncorrectable Data (UNC) and Read Bus Parity
7066                                    ;         (RBP) error bits are set.  It is also verified that the  data  actually
7067                                    ;         read is correct.
7068                                    ;
7069                                    ;     9.  Tape is spaced forward one record.
7070                                    ;
7071                                    ;    10.  The previous three steps are executed for each test  record  originally
7072                                    ;         written.
7073                                    ;
7074                                    ;    11.  The controller is initialized to  clear  the  special  test  conditions
7075                                    ;         previously set up.
7076                                    ;
7077                                    ;
7078                                    ;
7079                                    ;-
7080 052746                                      BGNTST
     052746                                                                    T5::
7081 052746  012737  006413  002172              MOV     #EPRT2,EPRTSW         ;SECONDARY ERROR MESSAGE
7086 052754  012700  055545                      MOV     #TST33ID,R0           ;ASCII MESSAGE TO IDENTIFY TEST
7087 052760  004737  016570                      JSR     PC,TSTSETUP           ;DO INITIAL TEST SETUP
7088 052764  012737  000005  002210              MOV     #5,LOOPCNT            ;PERFORM 5 ITERATIONS
7089 052772  005037  054616                      CLR     T33CNT                ;CLEAR TAPE RECORD COUNTER
7090                                    ;+
7091                                    ;
7092 052776                             T33LOOP:
7093 052776                                      BGNSUB                        ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     052776                                                                    T5.1:
     052776  104402                                                                    TRAP    C$BSUB
7094 053000  005037  002216                      CLR     INTRECV               ;INTERRUPT INDICATOR
7095 053004  005037  054616                      CLR     T33CNT                ;TIMER FOR WRITE DATA SPACING
7096 053010  005037  054620                      CLR     T33CNU                ;TIMER FOR WRITE DATA RETRY SPACING
7097 053014  004737  055562                      JSR     PC,T33REST            ;SET COMMAND PACKET
7098 053020  004737  055654                      JSR     PC,T33RT2             ;SET UP OTHER COMMAND PACKET
7099 053024  004737  055716                      JSR     PC,T33RT3             ;SET UP OTHER COMMAND PACKET
7100 053030  012737  176750  054622              MOV     #65000.,T33DLY        ;SET UP DELAY COUNTER
7101 053036  004737  016054              10$:    JSR     PC,SOFINIT            ;DO INITIALIZE ON CONTROLLER
```

TEST 5: DATA PARITY TEST

```
7102 053042  103426                    BCS     20$                     ;BR IF INIT WAS OK
7103 053044                            DELAY   250                     ;DELAY ABOUT .25 SEC
     053044  012727  000250                                                    MOV     #250,(PC)+
     053050  000000                                                            .WORD   0
     053052  013727  002116                                                    MOV     L$DLY,(PC)+
     053056  000000                                                            .WORD   0
     053060  005367  177772                                                    DEC     -6(PC)
     053064  001375                                                            BNE     .-4
     053066  005367  177756                                                    DEC     -22(PC)
     053072  001367                                                            BNE     .-20
7104 053074  005337  054622                    DEC     T33DLY                  ;BUMP COUNTER
7105 053100  001356                    BNE     10$                     ;BR, IF COUNTER NOT DONE
7106 053102  005237  002214                    INC     FATFLG                          ;ERROR COUNT
7110 053106  010001                    MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
7111 053110                            ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     053110  104455                                                            TRAP    C$ERDF
     053112  000765                                                            .WORD   501
     053114  003646                                                            .WORD   SFIERR
     053116  C12114                                                            .WORD   SFIMSG
7112 053120  013737  002174  054470  20$:     MOV     UNITN,T33DSW            ;SET UP UNIT NUMBER
7113
7114 053126  012704  054450                    MOV     #T33PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
7115 053132  004737  010742                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
7116 053136  103407                    BCS     23$                     ;BR, IF COMMAND ISSUED OK
7117 053140  005237  002214                    INC     FATFLG                          ;ERROR COUNT
7121 053144  010001                    MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
7122 053146                            ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     053146  104456                                                            TRAP    C$ERHRD
     053150  000766                                                            .WORD   502
     053152  005052                                                            .WORD   WRTMSG
     053154  012114                                                            .WORD   SFIMSG
7123 053156                    23$:    CKLOOP                          ;LOOP IF SELECTED
     053156  104406                                                            TRAP    C$CLP1
7124 053160  004737  011074                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
7125 053164  103411                    BCS     30$                     ;BR, IF NO PROBLEM
7126 053166  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7127 053172  010004                    MOV     R0,R4                   ;GET PACKET ADDRESS
7128 053174  005237  002214                    INC     FATFLG                          ;ERROR COUNT
7132 053200                            ERRHRD  ERRNO,T33RWN,PKTSSR     ;REWIND NOT ACCEPTED
     053200  104456                                                            TRAP    C$ERHRD
     053202  000767                                                            .WORD   503
     053204  055320                                                            .WORD   T33RWN
     053206  012126                                                            .WORD   PKTSSR
7133 053210                    30$:    CKLOOP                          ;LOOP IF SELECTED
     053210  104406                                                            TRAP    C$CLP1
7134 053212  013701  054500                    MOV     T33BFR+6,R1             ;PICK UP XSTO
7135 053216  010102                    MOV     R1,R2                   ;SET UP EXPECTED
7136 053220  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
7137 053224  020102                    CMP     R1,R2                   ;DOES EXP = REC'D
7138 053226  001406                    BEQ     40$                     ;BR, IF EQUAL (OK)
7139 053230  005237  002214                    INC     FATFLG                          ;ERROR COUNT
7143 053234                            ERRHRD  ERRNO,T33BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     053234  104456                                                            TRAP    C$ERHRD
     053236  000770                                                            .WORD   504
     053240  055225                                                            .WORD   T33BOT
     053242  015554                                                            .WORD   EXPREC
7144 053244                    40$:    CKLOOP                          ;LOOP IF SELECTED
```

TEST 5: DATA PARITY TEST

```
      053244  104406                                                          TRAP    C$CLP1
 7145 053246  005737  002220          42$:    TST     EXTFEA                  ;CHECK FOR EXTENDED FEATURES SW SWITCH
 7146 053252  001025                  BNE     55$                             ;BR IF SWITCH IS ON
 7147 053254  112737  000200  054601          MOVB    #200,T33BS1             ;WRITE MISCELLANEOUS CONT/READ STATUS
 7148 053262  112737  000010  054600          MOVB    #10,T33BSO              ;FUNC. SEL. BIT (TURN ON EXTFEA SWITCH)
 7149 053270  012704  054560                  MOV     #T33PK2,R4              ;WRITE SUBSYS MEM PACKET
 7150 053274  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 7151 053300  004737  016416                  JSR     PC,CHKTSSR              ;WAIT FOR SSR
 7152 053304  103407                          BCS     50$                     ;BR, IF NO ERROR
 7153 053306  010001                          MOV     R0,R1                   ;ERROR, SAVE TSSR
 7154 053310  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 7158 053314                                  ERRHRD  ERRNO,T33SSR,PKTSSR     ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
      053314  104456                                                          TRAP    C$ERHRD
      053316  000771                                                          .WORD   505
      053320  055141                                                          .WORD   T33SSR
      053322  012126                                                          .WORD   PKTSSR
 7159 053324                          50$:    CKLOOP                          ;LOOP IF SELECTED
      053324  104406                                                          TRAP    C$CLP1
 7160 053326  C05737  002222          55$:    TST     BENBSW                  ;CHECK FOR BUFFER ENABLED
 7161 053332  001426                  BEQ     70$                             ;BR, IF BUFFERING NOT ENABLED
 7162 053334  013737  002174  054470          MOV     UNITN,T33DSW            ;SET UP UNIT NUMBER
 7163 053342  042737  000020  054470          BIC     #BIT4,T33DSW            ;BUFFER DISABLE
 7164 053350  052737  000010  054470          BIS     #BIT3,T33DSW            ;BUFFER DISABLE SEND 01 TO BITS 4 AND 3
 7165 053356  012704  054450                  MOV     #T33PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 7166 053362  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 7167 053366  103407                          BCS     60$                     ;BR, IF COMMAND ISSUED OK
 7168 053370  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 7172 053374  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 7173 053376                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      053376  104456                                                          TRAP    C$ERHRD
      053400  000772                                                          .WORD   506
      053402  005052                                                          .WORD   WRTMSG
      053404  012114                                                          .WORD   SFIMSG
 7174 053406                          60$:    CKLOOP                          ;LOOP IF SELECTED
      053406  104406                                                          TRAP    C$CLP1
 7175 053410                          70$:
 7176 053410  112737  000100  054601          MOVB    #100,T33BS1             ;WRITE MISCELLANEOUS CONT/READ STATUS
 7177 053416  112737  000011  054600          MOVB    #11,T33BSO              ;FUNC. SEL. BIT (SET WRONG PARITY)
 7178 053424  012704  054560                  MOV     #T33PK2,R4              ;WRITE SUBSYS MEM PACKET
 7179 053430  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 7180 053434  004737  016416                  JSR     PC,CHKTSSR              ;WAIT FOR SSR
 7181 053440  103407                          BCS     80$                     ;BR, IF NO ERROR
 7182 053442  010001                          MOV     R0,R1                   ;ERROR, SAVE TSSR
 7183 053444  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 7187 053450                                  ERRHRD  ERRNO,T33SSR,PKTSSR     ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
      053450  104456                                                          TRAP    C$ERHRD
      053452  000773                                                          .WORD   507
      053454  055141                                                          .WORD   T33SSR
      053456  012126                                                          .WORD   PKTSSR
 7188 053460                          80$:    CKLOOP                          ;LOOP IF SELECTED
      053460  104406                                                          TRAP    C$CLP1
 7189 053462  012703  000026                  MOV     #22.,R3         ;NUMBER OF RECORDS TO BE WRITTEN
 7190 053466  013737  003116  054572          MOV     FREE,T33WB              ;STARTING WRITE BUFFER ADDRESS
 7191 053474  005037  054620                  CLR     T33CNU                  ;MAKE SURE ITS CLEAR
 7192 053500  012737  140005  054570  110$:   MOV     #140005,T33PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
 7193 053506  012704  054570                  MOV     #T33PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 7194 053512  012737  000024  054576          MOV     #20.,T33SZ              ;SET UP RECORD SIZE IN PACKET
```

TEST 5: DATA PARITY TEST

```
7195 053520  013777  054620  127370          MOV     T33CNU,@FREE            ;MEMORY FILLED WITH DATA IN RECORD
7196 053526  005237  054620                  INC     T33CNU                  ;READY FOR NEXT RECORD
7197 053532  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7198 053536  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7199 053542  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7200 053546  012702  100210                  MOV     #SSR!SC!BIT3,R2         ;SET UP EXPECTED
7201 053552  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
7202 053554  001406                          BEQ     120$                    ;BR, IF OK
7203 053556  005237  002214                  INC     FATFLG                          ;ERROR COUNT
7207 053562                                  ERRHRD  ERRNO,T33WPW,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     053562  104456                                                                  TRAP    C$ERHRD
     053564  000774                                                                  .WORD   508
     053566  054702                                                                  .WORD   T33WPW
     053570  012126                                                                  .WORD   PKTSSR
7208 053572                          120$:   CKLOOP                          ;LOOP IF SELECTED
     053572  104406                                                                  TRAP    C$CLP1
7209 053574  013701  054502                  MOV     T33BFR+10,R1            ;PICK UP XST1
7210 053600  010102                          MOV     R1,R2                   ;SET UP EXPECTED
7211 053602  C52702  000002                  BIS     #BIT1,R2                ;SET UNC BIT IN EXPECTED
7212 053606  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
7213 053610  001406                          BEQ     130$                    ;BR, IF EQUAL (OK)
7214 053612  005237  002214                  INC     FATFLG                          ;ERROR COUNT
7218 053616                                  ERRHRD  ERRNO,T33UNC,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     053616  104456                                                                  TRAP    C$ERHRD
     053620  000775                                                                  .WORD   509
     053622  054762                                                                  .WORD   T33UNC
     053624  015554                                                                  .WORD   EXPREC
7219 053626                          130$:   CKLOOP                          ;LOOP IF SELECTED
     053626  104406                                                                  TRAP    C$CLP1
7220 053630  005303                          DEC     R3                      ;DEC RECORD COUNTER
7221 053632  001322                          BNE     110$                    ;BR, IF MORE RECORDS TO WRITE
7222 053634  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
7223 053640  103411                          BCS     140$                    ;BR, IF NO PROBLEM
7224 053642  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7225 053646  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
7226 053650  005237  002214                  INC     FATFLG                          ;ERROR COUNT
7230 053654                                  ERRHRD  ERRNO,T33RWN,PKTSSR     ;REWIND NOT ACCEPTED
     053654  104456                                                                  TRAP    C$ERHRD
     053656  000776                                                                  .WORD   510
     053660  055320                                                                  .WORD   T33RWN
     053662  012126                                                                  .WORD   PKTSSR
7231 053664                          140$:   CKLOOP                          ;LOOP IF SELECTED
     053664  104406                                                                  TRAP    C$CLP1
7232 053666  013701  054500                  MOV     T33BFR+6,R1             ;PICK UP XST0
7233 053672  010102                          MOV     R1,R2                   ;SET UP EXPECTED
7234 053674  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
7235 053700  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
7236 053702  001406                          BEQ     150$                    ;BR, IF EQUAL (OK)
7237 053704  005237  002214                  INC     FATFLG                          ;ERROR COUNT
7241 053710                                  ERRHRD  ERRNO,T33BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     053710  104456                                                                  TRAP    C$ERHRD
     053712  000777                                                                  .WORD   511
     053714  055225                                                                  .WORD   T33BOT
     053716  015554                                                                  .WORD   EXPREC
7242 053720                          150$:   CKLOOP                          ;LOOP IF SELECTED
     053720  104406                                                                  TRAP    C$CLP1
7243 053722  005037  054620                  CLR     T33CNU                  ;CLEAR DATA VALUE IN RECORD
```

TEST 5: DATA PARITY TEST

```
7244 053726  012703  000024                MOV     #20.,R3                 ;RECORD SIZE
7245 053732  013737  003116  054572  155$: MOV     FREE,T33RB              ;STARTING WRITE BUFFER ADDRESS
7246 053740  012737  140001  054570        MOV     #140001,T33PK3          ;READ DATA,CVC=1,ACK COMMAND
7247 053746  012704  054570                MOV     #T33PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
7248 053752  012737  000024  054576        MOV     #20.,T33SZ              ;SET UP RECORD SIZE IN PACKET
7249 053760  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7250 053764  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7251 053770  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7252 053774  012702  100210                MOV     #SSR!SC!BIT3,R2         ;SET UP EXPECTED
7253 054000  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
7254 054002  001406                        BEQ     160$                    ;BR, IF OK
7255 054004  005237  002214                INC     FATFLG                          ;ERROR COUNT
7259 054010                                ERRHRD  ERRNO,T33WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     054010  104456                                                                TRAP    C$ERHRD
     054012  001000                                                                .WORD   512
     054014  055367                                                                .WORD   T33WDC
     054016  012126                                                                .WORD   PKTSSR
7260 054020                        160$:   CKLOOP                          ;LOOP IF SELECTED
     054020  104406                                                                TRAP    C$CLP1
7261 054022  013701  054502                MOV     T33BFR+10,R1            ;PICK UP XST1
7262 054026  010102                        MOV     R1,R2                   ;SET UP EXPECTED
7263 054030  052702  000002                BIS     #BIT1,R2                ;SET UNC BIT IN EXPECTED
7264 054034  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
7265 054036  001406                        BEQ     170$                    ;BR, IF EQUAL (OK)
7266 054040  005237  002214                INC     FATFLG                          ;ERROR COUNT
7270 054044                                ERRHRD  ERRNO,T33UND,EXPREC     ;UNC BIT NOT SET AFTER READ CMD.
     054044  104456                                                                TRAP    C$ERHRD
     054046  001001                                                                .WORD   513
     054050  055052                                                                .WORD   T33UND
     054052  015554                                                                .WORD   EXPREC
7271 054054                        170$:   CKLOOP                          ;LOOP IF SELECTED
     054054  104406                                                                TRAP    C$CLP1
7272 054056  013701  054502                MOV     T33BFR+10,P1            ;PICK UP XST1
7273 054062  010102                        MOV     R1,R2                   ;SET UP EXPECTED
7274 054064  052702  000400                BIS     #BIT8,R2                ;SET RBP BIT IN EXPECTED
7275 054070  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
7276 054072  001406                        BEQ     180$                    ;BR, IF EQUAL (OK)
7277 054074  005237  002214                INC     FATFLG                          ;ERROR COUNT
7281 054100                                ERRHRD  ERRNO,T33RBP,EXPREC     ;READ BUS PARITY ERROR BIT NOT SET
     054100  104456                                                                TRAP    C$ERHRD
     054102  001002                                                                .WORD   514
     054104  054624                                                                .WORD   T33RBP
     054106  015554                                                                .WORD   EXPREC
7282 054110                        180$:   CKLOOP                          ;LOOP IF SELECTED
     054110  104406                                                                TRAP    C$CLP1
7283 054112  017701  127000                MOV     @FREE,R1                ;GET DATA READ
7284 054116  013702  054620                MOV     T33CNU,R2                       ;GET PATTERN
7285 054122  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
7286 054124  001406                        BEQ     182$                    ;BR, IF OK
7287 054126  005237  002214                INC     FATFLG                          ;ERROR COUNT
7291 054132                                ERRHRD  ERRNO,T33DTA,EXPREC     ;DATA NOT CORRECT
     054132  104456                                                                TRAP    C$ERHRD
     054134  001003                                                                .WORD   515
     054136  055450                                                                .WORD   T33DTA
     054140  015554                                                                .WORD   EXPREC
7292 054142                        182$:   CKLOOP                          ;LOOP IF SELECTED
     054142  104406                                                                TRAP    C$CLP1
```

TEST 5: DATA PARITY TEST

```
7293 054144  013737  003116  054572          MOV     FREE,T33WB              ;STARTING WRITE BUFFER ADDRESS
7294 054152  012737  140401  054570  195$:   MOV     #140401,T33PK3          ;READ REVERSE DATA RETRY,ACK COMMAND
7295 054160  012704  054570                  MOV     #T33PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
7296 054164  012737  000024  054576          MOV     #20.,T33SZ              ;SET UP RECORD SIZE IN PACKET
7297 054172  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7298 054176  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7299 054202  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7300 054206  012702  100210                  MOV     #SC!SSR!BIT3,R2                 ;SET UP EXPECTED
7301 054212  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
7302 054214  001406                          BEQ     190$                    ;BR. IF OK
7303 054216  005237  002214                  INC     FATFLG                          ;ERROR COUNT
7307 054222                                  ERRHRD  ERRNO,T33WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     054222  104456                                                                  TRAP    C$ERHRD
     054224  001004                                                                  .WORD   516
     054226  055367                                                                  .WORD   T33WDC
     054230  012126                                                                  .WORD   PKTSSR
7308 054232                          190$:   CKLOOP                          ;LOOP IF SELECTED
     054232  104406                                                                  TRAP    C$CLP1
7309 054234  C13701  054502                  MOV     T33BFR+10,R1            ;PICK UP XST1
7310 054240  010102                          MOV     R1,R2                   ;SET UP EXPECTED
7311 054242  052702  000002                  BIS     #BIT1,R2                ;SET UNC BIT IN EXPECTED
7312 054246  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
7313 054250  001406                          BEQ     200$                    ;BR. IF EQUAL (OK)
7314 054252  005237  002214                  INC     FATFLG                          ;ERROR COUNT
7318 054256                                  ERRHRD  ERRNO,T33UND,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     054256  104456                                                                  TRAP    C$ERHRD
     054260  001005                                                                  .WORD   517
     054262  055052                                                                  .WORD   T33UND
     054264  015554                                                                  .WORD   EXPREC
7319 054266                          200$:   CKLOOP                          ;LOOP IF SELECTED
     054266  104406                                                                  TRAP    C$CLP1
7320 054270  013701  054502                  MOV     T33BFR+10,R1            ;PICK UP XSTO
7321 054274  010102                          MOV     R1,R2                   ;SET UP EXPECTED
7322 054276  052702  000400                  BIS     #BIT8,R2                ;SET RBP BIT IN EXPECTED
7323 054302  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
7324 054304  001406                          BEQ     210$                    ;BR. IF EQUAL (OK)
7325 054306  005237  002214                  INC     FATFLG                          ;ERROR COUNT
7329 054312                                  ERRHRD  ERRNO,T33RBP,EXPREC     ;READ BUS PARITY ERROR BIT NOT SET
     054312  104456                                                                  TRAP    C$ERHRD
     054314  001006                                                                  .WORD   518
     054316  054624                                                                  .WORD   T33RBP
     054320  015554                                                                  .WORD   EXPREC
7330 054322                          210$:   CKLOOP                          ;LOOP IF SELECTED
     054322  104406                                                                  TRAP    C$CLP1
7331 054324  017701  126566                  MOV     @FREE,R1                ;GET DATA READ
7332 054330  013702  054620                  MOV     T33CNU,R2                       ;GET PATTERN
7333 054334  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
7334 054336  001406                          BEQ     215$                    ;BR. IF OK
7335 054340  005237  002214                  INC     FATFLG                          ;ERROR COUNT
7339 054344                                  ERRHRD  ERRNO,T33DTA,EXPREC     ;DATA NOT CORRECT
     054344  104456                                                                  TRAP    C$ERHRD
     054346  001007                                                                  .WORD   519
     054350  055450                                                                  .WORD   T33DTA
     054352  015554                                                                  .WORD   EXPREC
7340 054354                          215$:   CKLOOP                          ;LOOP IF SELECTED
     054354  104406                                                                  TRAP    C$CLP1
7341 054356  010302                          MOV     R3,R2                   ;SAVE R3 FOR A MOMENT
```

TEST 5: DATA PARITY TEST

```
 7342 054360  012703  000001                MOV     #1,R3                   ;SPACE FORWARD ONE RECORD
 7343 054364  004737  010544                JSR     PC,SPACE                ;CALL ROUTINE
 7344 054370  010203                        MOV     R2,R3                   ;RESTORE R3
 7345 054372  005237  054620                INC     T33CNU                  ;BUMP TO NEXT RECORD NUMBER
 7346 054376  005303                        DEC     R3                      ;BUMP COUNTER
 7347 054400  001402                        BEQ     220$                    ;BR, IF DONE
 7348 054402  000137  053732                JMP     155$                    ;BR, IF NOT DONE YET
 7349 054406                        220$:
 7350 054406                                ENDSUB                          ;<<<<<<<<<<<<< END SUBTEST >>>>>>>>>>>>
      054406                                                                      L10060:
      054406  104403                                                                 TRAP    C$ESUB
 7351 054410  023727  002214  000017        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
 7352 054416  103402                        BLO     999$                            ;BR, IF LESS THAN 25
 7353 054420  004737  017262                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
 7354 054424                        999$:
 7355                               ;
 7356                               ;
 7357                               ;
 7358 054424  004737  016536                JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
 7359 054430  103002                        BCC     230$                    ;BR, IF NO LOOP REQUIRED
 7360 054432  000137  052776                JMP     T33LOOP                 ;EXECUTE AGAIN
 7361 054436                        230$:   EXIT    TST                     ;ALL DONE THIS TEST
      054436  104432                                                                 TRAP    C$EXIT
      054440  001300                                                                 .WORD   L10057-.
 7362                               ;+
 7363                               ;LOCAL STORAGE FOR THIS TEST
 7364                               ;-
 7366          054450                       .=<.+10>&177770
 7368 054450                        T33PACKET:
 7369 054450  100004                        .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
 7370 054452  054460                        .WORD   T33DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
 7371 054454  000000                        .WORD   0
 7372 054456  000012                        .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
 7373 054460                        T33DATA:                                ;CHARACTERISTICS DATA BLOCK
 7374 054460  054472                        .WORD   T33BFR                  ;ADDRESS OF MESSAGE BUFFER
 7375 054462  000000                        .WORD   0
 7376 054464  000024                        .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
 7377 054466  000000                        .WORD   0
 7378 054470  000000                T33DSW: .WORD   0                       ;SELECT DRIVE 0
 7379 054472                        T33BFR: .BLKW   25.                     ;MESSAGE BUFFER
 7380                               ;
 7381                               ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
 7382                               ;
 7384          054560                       .=<.+10>&177770
 7386 054560                        T33PK2:
 7387 054560  100006                        .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
 7388 054562  054600                        .WORD   T33BF2                  ;ADDRESS OF SELECT BLOCK DATA
 7389 054564  000000                        .WORD   0
 7390 054566  000006                        .WORD   6.                      ;SIZE OF DATA PACKET
 7391
 7395 054570                        T33PK3:
 7396 054570  100005                        .WORD   100005                  ;REREAD COMMAND, AND ACK
 7397 054572                        T33RB:
 7398 054572  003116                T33WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
 7399 054574  000000                        .WORD   0
 7400 054576  000000                T33SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
 7401                                       .EVEN
```

```
                                        ;
                                        ;
                                        ;
054600                                  T33BF2:
054600     010                          T33BS0: .BYTE   10                      ;BSEL0 AREA
054601     200                          T33BS1: .BYTE   200                     ;BSEL1 AREA
054602  000000                          T33S2:  .WORD   0                       ;SEL 2 AREA
054604  000000                          T33S3:  .WORD   0                       ;DATA AREA
                                        ;
                                        ;
                                                .EVEN
                                        ;TAPE MOTION PACKET COMMAND VALUES

054606  100205                          T33RN:  .WORD   100205                  ;REREAD DATA (NEXT)
054610  100605                          T33WDR: .WORD   100605                  ;REREAD DATA RETRY
054612  102205                          T33CON: .WORD   102205                  ;WRITE CONTINOUS
054614  177777                                  .WORD   177777                  ;END OF DATA

                                        ;
054616  000000                          T33CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
054620  000000                          T33CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
054622  000000                          T33DLY: .WORD   0                       ;DELAY COUNTER
                                        ;+
                                        ;LOCAL TEXT MESSAGES FOR TEST
                                        ;-

054624     122     145     141          T33RBP: .ASCIZ  'Read Bus Parity Bit Not Set (XST1), Should Be'
054702     124     123     123          T33WPW: .ASCIZ  'TSSR Incorrect After Wrong Parity Write Command'
054762     125     116     103          T33UNC: .ASCIZ  'UNC Bit (XST1) Not Set After Wrong Parity WRITE Command'
055052     125     116     103          T33UND: .ASCIZ  'UNC Bit (XST1) Not Set After Wrong Parity READ Command'
055141     127     122     111          T33SSR: .ASCIZ  'WRITE MISSCELLANEOUS CONT/READ COMMAND Not Accepted'
055225     124     141     160          T33BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
055320     122     145     167          T33RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
055367     124     123     123          T33WDC: .ASCIZ  'TSSR Not Correct After READ Wrong Parity Command'
05'450     104     141     164          T33DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
055545     104     141     164          TST33ID:        .ASCIZ  'Data Parity'
                                                .EVEN
                                        ;+
                                        ;
                                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                        ;WRITE SUBSYSTEM MEMORY COMMAND
                                        ;
                                        ;-

055562                                  T33REST:
055562                                          SAVREG                          ;SAVE THE REGISTERS
055566  012701  054450                          MOV     #T33PACKET,R1           ;START OF THE PACKET
055572  012721  100004                          MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
055576  012721  054460                          MOV     #T33DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
055602  005021                                  CLR     (R1)+                   ;EXTENDED ADDRESS
055604  012721  000012                          MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
055610  012721  054472                          MOV     #T33BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
055614  005021                                  CLR     (R1)+
055616  012721  000024                          MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
055622  005021                                  CLR     (R1)+
055624  012711  000000                          MOV     #0,(R1)                 ;SELECT DRIVE ZERO
055630  012702  000030                          MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
```

TEST 5: DATA PARITY TEST

```
7459 055634  012762  177777  054472  64$:    MOV     #177777,T33BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
7460 055642  005742                          TST     -(R2)                   ;NEXT LOCATION
7461 055644  022702  000000                  CMP     #0,R2                   ;AT END OF LOOP YET
7462 055650  001371                          BNE     64$                     ;KEEP GOING UNTIL DONE
7463 055652  000207                          RTS     PC                      ;RETURN
7464
7465 055654                          T33RT2:
7466 055654                                  SAVREG                          ;SAVE THE REGISTERS
7467 055660  012701  054560                  MOV     #T33PK2,R1              ;START OF THE PACKET
7468 055664  012721  100006                  MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
7469 055670  012721  054600                  MOV     #T33BF2,(R1)+           ;ADDRESS OF DATA BLOCK
7470 055674  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
7471 055676  012721  000006                  MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
7472 055702  005021                          CLR     (R1)+
7473 055704  012701  054600                  MOV     #T33BF2,R1              ;POINT TO DATA SEL AREA
7474 055710  005021                          CLR     (R1)+
7475 055712  005011                          CLR     (R1)
7476 055714  000207                          RTS     PC                      ;RETURN
7477 055716                          T33RT3:
7478 055716                                  SAVREG                          ;SAVE REGISTERS
7479 055722  012701  054570                  MOV     #T33PK3,R1              ;SET UP POINTER ADDRESS
7480 055726  005021                          CLR     (R1)+                   ;COMMAND SPACE
7481 055730  005021                          CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
7482 055732  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
7483 055734  005011                          CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
7484 055736  000207                          RTS     PC                      ;RETURN
7485 055740                                  ENDTST
     055740                                                          L10057:
     055740  104401                                                          TRAP    C$ETST
7486                                 .SBTTL  TEST  6: OPERATIONS AT EOT
7487                                 ;+
7488                                 ;
7489                                 ;THIS TEST VERIFIES PROPER OPERATION OF THE WRITE DATA RETRY
7490                                 ;COMMAND (SPACE REVERSE, ERASE, WRITE DATA)
7491                                 ;
7492                                 ;
7493                                 ;THE TEST CONSISTS OF THE FOLLOWING 1 SUBTEST
7494                                 ;
7495                                 ;
7496                                 ;
7497                                 ;-
7498 055742                                  BGNTST
     055742                                                          T6::
7499 055742  012737  006354  002172          MOV     @EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
7504 055750  012700  063107                  MOV     #TST34ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
7505 055754  004737  016570                  JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
7506 055760  012737  000005  002210          MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
7507 055766  005037  006572                  CLR     T34CNT                  ;CLEAR TAPE RECORD COUNTER
7508                                 ;+
7509                                 ;
7510                                 ;TEST 6. SUBTEST 1
7511                                 ;
7512                                 ;
7513                                 ;       THIS TEST VERIFIES THAT THE EOT STATUS IS HANDLED PROPERLY BY
7514                                 ;       THE VARIOUS TAPE MOTION COMMANDS.  THE FOLLOWING TEST SEQUENCE
7515                                 ;       IS PERFORMED:
7516                                 ;
```

```
                                        ;
                                        ;       1.  THE TAPE IS REWOUND.
                                        ;
                                        ;       2.  WRITE DATA COMMANDS ARE REPEATEDLY ISSUED UNTIL TAPE
                                        ;           STATUS ALERT TERMINATION IS SEEN WITH EOT=1.  ERRORS
                                        ;           OTHER THAN OCCASIONAL CORRECTABLE OR UNCORRECTABLE DATA
                                        ;           ERRORS CAUSE A FATAL ERROR REPORT.  RECORDS WITH DATA
                                        ;           ERRORS ARE RETRIED, SO THE TAPE ENDS UP WITH GOOD DATA.
                                        ;
                                        ;       3.  ANOTHER WRITE DATA COMMAND IS ISSUED, AND IT IS CHECKED
                                        ;           THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=1.
                                        ;
                                        ;       4.  A WRITE TAPE MARK COMMAND IS ISSUED, AND IT IS CHECKED
                                        ;           THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=1.
                                        ;
                                        ;       5.  A SKIP TAPE MARKS REVERSE COMMAND IS ISSUED, AND IT IS
                                        ;           CHECKED THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH
                                        ;           EOT=1 AND TMK=1.
                                        ;
                                        ;       6.  A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF
                                        ;           1, IS ISSUED, AND IT IS CHECKED THAT TAPE STATUS ALERT
                                        ;           TERMINATION OCCURS, WITH EOT=1 AND TMK=1.
                                        ;
                                        ;       7.  A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF
                                        ;           1, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
                                        ;           OCCURS, WITH EOT=1.
                                        ;
                                        ;       8.  A SPACE RECORDS FORWARD COMMAND, WITH A RECORD COUNT OF
                                        ;           1, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
                                        ;           OCCURS, WITH EOT=1.
                                        ;
                                        ;       9.  A READ REVERSE COMMAND IS ISSUED, AND IT IS CHECKED
                                        ;           THAT NORMAL TERMINATION OCCURS, WITH EOT=1.
                                        ;
                                        ;       10. A READ FORWARD COMMAND IS ISSUED, AND IT IS CHECKED
                                        ;           THAT NORMAL TERMINATION OCCURS, WITH EOT=1.
                                        ;
                                        ;       11. A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF
                                        ;           3, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
                                        ;           OCCURS, WITH EOT=0.
                                        ;
                                        ;       12. A SPACE RECORDS FORWARD COMMAND, WITH A RECORD COUNT OF
                                        ;           3, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
                                        ;           OCCURS, WITH EOT=1.
                                        ;
                                        ;       13. A SKIP FILE MARKS REVERSE COMMAND IS ISSUED, WHICH
                                        ;           SHOULD SKIP ALL THE WAY TO BOT, AND IT IS CHECKED THAT
                                        ;           TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=0,
                                        ;           BOT=1, AND RIB=1.
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;
055772                          T34LOOP:
                                        ;*
                                        ;
```

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.
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-
                                                BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
                                                                                T6.1:
055772  104402                                                                  TRAP    C$BSUB
                                                JSR     PC,T34REST      ;SET COMMAND PACKET
                                                JSR     PC,T34RT3       ;RESTORE PACKET
                                                JSR     PC,T34RT2       ;SET UP OTHER COMMAND PACKET
                                                MOV     #65000.,T34DLY  ;SET UP COUNTER
                                        10$:    JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
                                                BCS     20$             ;BR IF INIT WAS OK
                                                DELAY   250             ;DELAY A WHILE
056024  012727  000250                                                          MOV     #250.,(PC)+
056030  000000                                                                  .WORD   0
056032  013727  002116                                                          MOV     L$DLY,(PC)+
056036  000000                                                                  .WORD   0
056040  005367  177772                                                          DEC     -6(PC)
056044  001375                                                                  BNE     .-4
056046  005367  177756                                                          DEC     -22(PC)
056052  001367                                                                  BNE     .-20
                                                MOV     TSSR(R5),R1     ;GET TSSR STATUS
                                                BIT     #SSR,R1         ;CHECK FOR SSR SET
                                                BNE     20$             ;BR, WHEN SSR IS SET
                                                DEC     T34DLY          ;BUMP COUNTER DOWN
                                                BNE     10$             ;BR, IF MORE DELAY REQUIRED
                                                INC     FATFLG                  ;ERROR COUNT
                                                MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
                                                ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
056102  104455                                                                  TRAP    C$ERDF
056104  001131                                                                  .WORD   601
056106  003646                                                                  .WORD   SFIERR
056110  012114                                                                  .WORD   SFIMSG
                                        20$:    CKLOOP                  ;LOOP IF SELECTED
056112  104406                                                                  TRAP    C$CLP1
                                                MOV     UNITN,T34DSW    ;SET UP DRIVE NUMBER
                                                BIS     #BIT5,T34DSW    ;TURN ON HIGH SPEED TO SAVE TIME
                                                MOV     #T34PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
                                                JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
```

TEST 6: OPERATIONS AT EOT

```
7619 056140  103407                    BCS     30$                     ;BR. IF COMMAND ISSUED OK
7620 056142  005237  002214            INC     FATFLG                          ;ERROR COUNT
7624 056146  010001                    MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
7625 056150                            ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     056150  104456                                                            TRAP    C$ERHRD
     056152  001132                                                            .WORD   602
     056154  005052                                                            .WORD   WRTMSG
     056156  012114                                                            .WORD   SFIMSG
7626 056160                    30$:    CKLOOP                          ;LOOP IF SELECTED
     056160  104406                                                            TRAP    C$CLP1
7627 056162  004737  011074            JSR     PC,REWIND               ;REWIND CALL
7628 056166  103411                    BCS     35$                     ;BR. IF TSSR IS OK (GOOD)
7629 056170  016501  000002            MOV     TSSR(R5),R1             ;GET TSSR
7630 056174  010004                    MOV     R0,R4                   ;SET UP PACKET
7631 056176  005237  002214            INC     FATFLG                          ;ERROR COUNT
7635 056202                            ERRHRD  ERRNO,T34RWN,PKTSSR     ;TSSR IS INCORRECT AFTER REWIND
     056202  104456                                                            TRAP    C$ERHRD
     056204  001133                                                            .WORD   603
     056206  062237                                                            .WORD   T34RWN
     056210  012126                                                            .WORD   PKTSSR
7636 056212                    35$:    CKLOOP                          ;LOOP IF SELECTED
     056212  104406                                                            TRAP    C$CLP1
7637 056214  012737  140005  060560        MOV     #140005,T34PK3          ;WRITE DATA, ACK, CVC=1
7638 056222  012703  176750              MOV     #65000.,R3              ;SET MAX NUMBER OF WRITES
7639 056226  013737  003116  060562      MOV     FREE,T34WB              ;SET UP WRITE BUFFER ADDRESS
7640 056234  012737  006654  060566      MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (4K BYTES)
7641 056242  012704  060560              MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7642 056246  010465  000000      40$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7643 056252  004737  016330              JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7644 056256  016501  000002              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7645 056262  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED
7646 056266  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
7647 056270  001010                      BNE     50$                     ;BR. IT MIGHT BE END OF TAPE
7648 056272  005303                      DEC     R3                      ;DEC RECORD COUNTER
7649 056274  001364                      BNE     40$                     ;BR. IF MORE TO GO
7650 056276  005237  002214            INC     FATFLG                          ;ERROR COUNT
7654 056302                            ERRDF   ERRNO,T34ET,PKTSSR      ;EOT NOT FOUND (USE SHORTER TAPE?)
     056302  104455                                                            TRAP    C$ERDF
     056304  001134                                                            .WORD   604
     056306  062016                                                            .WORD   T34ET
     056310  012126                                                            .WORD   PKTSSR
7655 056312  032701  000004      50$:    BIT     #BIT2,R1                ;CHECK FOR TAPE STATUS ALERT
7656 056316  001001                      BNE     60$                     ;BR. IF SET
7657 056320  000752                      BR      40$                     ;KEEP GOING
7658 056322  013701  060470      60$:    MOV     T34BFR+6,R1             ;PICK UP XSTO
7659 056326  010102                      MOV     R1,R2                   ;SET UP EXPECTED
7660 056330  052702  000001              BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
7661 056334  020102                      CMP     R1,R2                   ;WAS THE BIT ON
7662 056336  001402                      BEQ     80$                     ;BR. IF EOT WAS FOUND
7663 056340  000137  056246              JMP     40$                     ;KEEP LOOKING
7664 056344                    80$:    CKLOOP                          ;LOOP IF SELECTED
     056344  104406                                                            TRAP    C$CLP1
7665 056346  012737  140005  060560        MOV     #140005,T34PK3          ;WRITE DATA, ACK, CVC=1
7666 056354  013737  003116  060562      MOV     FREE,T34WB              ;SET UP WRITE BUFFER ADDRESS
7667 056362  012737  006654  060566      MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (4K BYTES)
7668 056370  012704  060560              MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7669 056374  010465  000000              MOV     R4,TSDB(R5)             ;ISSUE COMMAND
```

TEST 6: OPERATIONS AT EOT

```
7670 056400  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7671 056404  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7672 056410  012702  100204                  MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
7673 056414  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
7674 056416  001406                          BEQ     90$                     ;BR. IF THEY ARE OK
7675 056420  005237  002214                  INC     FATFLG                          ;ERROR COUNT
7679 056424                                  ERRHRD  ERRNO,T34ET2,PKTSSR     ;WRITE TAPE AT EOT FAILED TO SET TSA
     056424  104456                                                                  TRAP    C$ERHRD
     056426  001135                                                                  .WORD   605
     056430  061267                                                                  .WORD   T34ET2
     056432  012126                                                                  .WORD   PKTSSR
7680 056434                          90$:    CKLOOP                          ;LOOP IF SELECTED
     056434  104406                                                                  TRAP    C$CLP1
7681 056436  013701  060470                  MOV     T34BFR+6,R1             ;PICK UP XSTO
7682 056442  010102                          MOV     R1,R2                   ;SET UP EXPECTED
7683 056444  052702  000001                  BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
7684 056450  020102                          CMP     R1,R2                   ;WAS THE BIT ON
7685 056452  001406                          BEQ     100$                    ;BR. IF EOT WAS FOUND
7686 056454  005237  002214                  INC     FATFLG                          ;ERROR COUNT
7690 056460                                  ERRHRD  ERRNO,T34ETN,EXPREC     ;EOT BIT (XSTO) NOT SET
     056460  10445(                                                                  TRAP    C$ERHRD
     056462  001136                                                                  .WORD   606
     056464  061351                                                                  .WORD   T34ETN
     056466  015554                                                                  .WORD   EXPREC
7691 056470                          100$:   CKLOOP                          ;LOOP IF SELECTED
     056470  104406                                                                  TRAP    C$CLP1
7692 056472  012737  140011  060560          MOV     #140011,T34PK3          ;WRITE TAPE MARK, ACK, CVC=1 COMMAND
7693 056500  012704  060560                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7694 056504  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7695 056510  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7696 056514  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7697 056520  012702  100204                  MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
7698 056524  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
7699 056526  001406                          BEQ     110$                    ;BR. IF STATUS IS GOOD (OK)
7700 056530  005237  002214                  INC     FATFLG                          ;ERROR COUNT
7704 056534                                  ERRHRD  ERRNO,T34WTM,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     056534  104456                                                                  TRAP    C$ERHRD
     056536  001137                                                                  .WORD   607
     056540  061200                                                                  .WORD   T34WTM
     056542  012126                                                                  .WORD   PKTSSR
7705 056544                          110$:   CKLOOP                          ;LOOP IF SELECTED
     056544  104406                                                                  TRAP    C$CLP1
7706 056546  013701  060470                  MOV     T34BFR+6,R1             ;PICK UP XSTO
7707 056552  010102                          MOV     R1,R2                   ;SET UP EXPECTED
7708 056554  052702  000001                  BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
7709 056560  020102                          CMP     R1,R2                   ;WAS THE BIT ON
7710 056562  001406                          BEQ     120$                    ;BR. IF EOT WAS FOUND
7711 056564  005237  002214                  INC     FATFLG                          ;ERROR COUNT
7715 056570                                  ERRHRD  ERRNO,T34ET0,EXPREC     ;EOT BIT (XSTO) NOT SET
     056570  104456                                                                  TRAP    C$ERHRD
     056572  001140                                                                  .WORD   608
     056574  060702                                                                  .WORD   T34ET0
     056576  015554                                                                  .WORD   EXPREC
7716 056600                          120$:   CKLOOP                          ;LOOP IF SELECTED
     056600  104406                                                                  TRAP    C$CLP1
7717 056602  012737  141410  060560          MOV     #141410,T34PK3          ;SKIP TAPE MARK REVERSE ACK,CVC=1 COMMAND
7718 056610  012737  000001  060562          MOV     #1,T34W8                ;SET NUMBER (1) OF TMS TO SKIP
```

TEST 6: OPERATIONS AT EOT

```
 7719 056616  012704  060560                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
 7720 056622  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 7721 056626  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 7722 056632  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 7723 056636  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 7724 056642  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 7725 056644  001406                        BEQ     130$                    ;BR, IF STATUS IS GOOD (OK)
 7726 056646  005237  002214                INC     FATFLG                          ;ERROR COUNT
 7730 056652                                ERRHRD  ERRNO,T34STM,PKTSSR     ;SKIP TAPE MARK REV. DIDN'T SET TSA
      056652  104456                                                                TRAP    C$ERHRD
      056654  001141                                                                .WORD   609
      056656  061600                                                                .WORD   T34STM
      056660  012126                                                                .WORD   PKTSSR
 7731 056662                        130$:   CKLOOP                          ;LOOP IF SELECTED
      056662  104406                                                                TRAP    C$CLP1
 7732 056664  013701  060470                MOV     T34BFR+6,R1             ;PICK UP XSTO
 7733 056670  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 7734 056672  052702  000001                BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
 7735 056676  C20102                        CMP     R1,R2                   ;WAS THE BIT ON
 7736 056700  001406                        BEQ     140$                    ;BR, IF EOT WAS FOUND
 7737 056702  005237  002214                INC     FATFLG                          ;ERROR COUNT
 7741 056706                                ERRHRD  ERRNO,T34ETN,EXPREC     ;EOT BIT (XSTO) NOT SET
      056706  104456                                                                TRAP    C$ERHRD
      056710  001142                                                                .WORD   610
      056712  061351                                                                .WORD   T34ETN
      056714  015554                                                                .WORD   EXPREC
 7742 056716                        140$:   CKLOOP                          ;LOOP IF SELECTED
      056716  104406                                                                TRAP    C$CLP1
 7743 056720  013701  060470                MOV     T34BFR+6,R1             ;PICK UP XSTO
 7744 056724  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 7745 056726  052702  100000                BIS     #BIT15,R2               ;SET THE TMK BIT ON IN EXPECTED
 7746 056732  020102                        CMP     R1,R2                   ;WAS THE BIT ON
 7747 056734  001406                        BEQ     150$                    ;BR, IF TMK WAS FOUND
 7748 056736  005237  002214                INC     FATFLG                          ;ERROR COUNT
 7752 056742                                ERRHRD  ERRNO,T34TMK,EXPREC     ;EOT BIT (XSTO) NOT SET
      056742  104456                                                                TRAP    C$ERHRD
      056744  001143                                                                .WORD   611
      056746  061663                                                                .WORD   T34TMK
      056750  015554                                                                .WORD   EXPREC
 7753 056752                        150$:   CKLOOP                          ;LOOP IF SELECTED
      056752  104406                                                                TRAP    C$CLP1
 7754 056754  012737  140410  060560          MOV     #140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD
 7755 056762  012737  000001  060562          MOV     #1,T34WB                ;SPACE ONE RECORD REVERSE
 7756 056770  012704  060560                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
 7757 056774  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 7758 057000  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 7759 057004  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 7760 057010  012702  100204                MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
 7761 057014  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 7762 057016  001006                        BNE     160$                    ;BR, IT MIGHT BE END OF TAPE
 7763 057020  005237  002214                INC     FATFLG                          ;ERROR COUNT
 7767 057024                                ERRHRD  ERRNO,T34POS,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
      057024  104456                                                                TRAP    C$ERHRD
      057026  001144                                                                .WORD   612
      057030  060614                                                                .WORD   T34POS
      057032  012126                                                                .WORD   PKTSSR
 7768 057034                        160$:   CKLOOP                          ;LOOP IF SELECTED
```

TEST 6: OPERATIONS AT EOT

```
                057034  104406                                                          TRAP    C$CLP1
 7769           057036  013701  060470          MOV     T34BFR+6,R1             ;PICK UP XSTO
 7770           057042  010102                  MOV     R1,R2                   ;SET UP EXPECTED
 7771           057044  052702  000001          BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
 7772           057050  020102                  CMP     R1,R2                   ;WAS THE BIT ON
 7773           057052  001406                  BEQ     163$                    ;BR, IF EOT WAS FOUND
 7774           057054  005237  002214          INC     FATFLG                          ;ERROR COUNT
 7778           057060                          ERRHRD  ERRNO,T34ETN,EXPREC     ;EOT BIT (XSTO) NOT SET
                057060  104456                                                          TRAP    C$ERHRD
                057062  001145                                                          .WORD   613
                057064  061351                                                          .WORD   T34ETN
                057066  015554                                                          .WORD   EXPREC
 7779           057070                  163$:   CKLOOP                          ;LOOP IF SELECTED
                057070  104406                                                          TRAP    C$CLP1
 7780           057072  013701  060470          MOV     T34BFR+6,R1             ;PICK UP XSTO
 7781           057076  010102                  MOV     R1,R2                   ;SET UP EXPECTED
 7782           057100  042702  100000          BIC     #BIT15,R2               ;CLEAR THE TMK BIT ON IN EXPECTED
 7783           057104  020102                  CMP     R1,R2                   ;WAS THE BIT ON
 7784           057106  001406                  BEQ     165$                    ;BR, IF TMK WAS FOUND
 7785           057110  005237  002214          INC     FATFLG                          ;ERROR COUNT
 7789           057114                          ERRHRD  ERRNO,T34TMK,EXPREC     ;EOT BIT (XSTO) NOT SET
                057114  104456                                                          TRAP    C$ERHRD
                057116  001146                                                          .WORD   614
                057120  061663                                                          .WORD   T34TMK
                057122  015554                                                          .WORD   EXPREC
 7790           057124                  165$:   CKLOOP                          ;LOOP IF SELECTED
                057124  104406                                                          TRAP    C$CLP1
 7791           057126  012737  140410  060560  MOV     #140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD
 7792           057134  012737  000001  060562  MOV     #1,T34WB                ;SPACE ONE RECORD REVERSE
 7793           057142  012704  060560          MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
 7794           057146  010465  000000          MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 7795           057152  004737  016330          JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 7796           057156  016501  000002          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 7797           057162  012702  000200          MOV     #SSR,R2                 ;SET UP EXPECTED
 7798           057166  020102                  CMP     R1,R2                   ;ARE THEY EQUAL
 7799           057170  001406                  BEQ     167$                    ;BR, IT MIGHT BE END OF TAPE
 7800           057172  005237  002214          INC     FATFLG                          ;ERROR COUNT
 7804           057176                          ERRHRD  ERRNO,T34POS,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
                057176  104456                                                          TRAP    C$ERHRD
                057200  001147                                                          .WORD   615
                057202  060614                                                          .WORD   T34POS
                057204  012126                                                          .WORD   PKTSSR
 7805           057206                  167$:   CKLOOP                          ;LOOP IF SELECTED
                057206  104406                                                          TRAP    C$CLP1
 7806           057210  013701  060470          MOV     T34BFR+6,R1             ;PICK UP XSTO
 7807           057214  010102                  MOV     R1,R2                   ;SET UP EXPECTED
 7808           057216  042702  000001          BIC     #BIT0,R2                ;CLEAR THE EOT BIT ON IN EXPECTED
 7809           057222  020102                  CMP     R1,R2                   ;WAS THE BIT OFF
 7810           057224  001400                  BEQ     170$                    ;BR, IF EOT WAS FOUND
 7811           057226                  170$:   CKLOOP                          ;LOOP IF SELECTED
                057226  104406                                                          TRAP    C$CLP1
 7812           057230  012737  140010  060560  MOV     #140010,T34PK3          ;SPACE RECORDS FORWARD, ACK, CVC=1
 7813           057236  012737  000002  060562  MOV     #2,T34WB                ;SPACE TWO RECORDS
 7814           057244  012704  060560          MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
 7815           057250  010465  000000          MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 7816           057254  004737  016330          JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 7817           057260  016501  000002          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
```

TEST 6: OPERATIONS AT EOT

```
7818 057264  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED
7819 057270  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
7820 057272  001406                      BEQ     190$                    ;BR, IT MIGHT BE END OF TAPE
7821 057274  005237  002214                      INC     FATFLG                          ;ERROR COUNT
7825 057300                              ERRHRD  ERRNO,T34POS,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     057300  104456                                                              TRAP    C$ERHRD
     057302  001150                                                              .WORD   616
     057304  060614                                                              .WORD   T34POS
     057306  012126                                                              .WORD   PKTSSR
7826 057310                      190$:   CKLOOP                          ;LOOP IF SELECTED
     057310  104406                                                              TRAP    C$CLP1
7827 057312  013701  060470              MOV     T34BFR+6,R1             ;PICK UP XSTO
7828 057316  010102                      MOV     R1,R2                   ;SET UP EXPECTED
7829 057320  052702  000001              BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
7830 057324  020102                      CMP     R1,R2                   ;WAS THE BIT ON
7831 057326  001406                      BEQ     200$                    ;BR, IF EOT WAS FOUND
7832 057330  005237  002214                      INC     FATFLG                          ;ERROR COUNT
7836 057334                              ERRHRD  ERRNO,T34ETS,EXPREC     ;EOT BIT (XSTO) NOT SET
     057334  104456                                                              TRAP    C$ERHRD
     057336  001151                                                              .WORD   617
     057340  061430                                                              .WORD   T34ETS
     057342  015554                                                              .WORD   EXPREC
7837 057344                      200$:   CKLOOP                          ;LOOP IF SELECTED
     057344  104406                                                              TRAP    C$CLP1
7838 057346  012737  140401  060560      MOV     #140401,T34PK3          ;READ REVERSE, ACK, CVC=1
7839 057354  013737  003116  060562      MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
7840 057362  012704  060560              MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7841 057366  010465  000000              MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7842 057372  004737  016330              JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7843 057376  016501  000002              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7844 057402  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED
7845 057406  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
7846 057410  001406                      BEQ     205$                    ;BR, ONLY SSR IS SET
7847 057412  005237  002214                      INC     FATFLG                          ;ERROR COUNT
7851 057416                              ERRHRD  ERRNO,T34RRE,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     057416  104456                                                              TRAP    C$ERHRD
     057420  001152                                                              .WORD   618
     057422  060766                                                              .WORD   T34RRE
     057424  012126                                                              .WORD   PKTSSR
7852 057426                      205$:   CKLOOP                          ;LOOP IF SELECTED
     057426  104406                                                              TRAP    C$CLP1
7853 057430  012737  140401  060560      MOV     #140401,T34PK3          ;READ REVERSE, ACK, CVC=1
7854 057436  013737  003116  060562      MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
7855 057444  012704  060560              MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7856 057450  010465  000000              MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7857 057454  004737  016330              JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7858 057460  016501  000002              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7859 057464  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED
7860 057470  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
7861 057472  001406                      BEQ     210$                    ;BR, IT MIGHT BE END OF TAPE
7862 057474  005237  002214                      INC     FATFLG                          ;ERROR COUNT
7866 057500                              ERRHRD  ERRNO,T34RRE,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     057500  104456                                                              TRAP    C$ERHRD
     057502  001153                                                              .WORD   619
     057504  060766                                                              .WORD   T34RRE
     057506  012126                                                              .WORD   PKTSSR
7867 057510                      210$:   CKLOOP                          ;LOOP IF SELECTED
```

TEST 6: OPERATIONS AT EOT

```
      057510  104406                                                                  TRAP    C$CLP1
 7868 057512  012737  140001  060560          MOV     #140001,T34PK3          ;READ DATA, ACK, CVC=1
 7869 057520  013737  003116  060562          MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
 7870 057526  012737  006654  060566          MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (4K BYTES)
 7871 057534  012704  060560    .             MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
 7872 057540  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 7873 057544  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 7874 057550  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 7875 057554  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 7876 057560  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 7877 057562  001406                          BEQ     230$                    ;BR, IT MIGHT BE END OF TAPE
 7878 057564  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 7882 057570                                  ERRHRD  ERRNO,T34RRE,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
      057570  104456                                                                  TRAP    C$ERHRD
      057572  001154                                                                  .WORD   620
      057574  060766                                                                  .WORD   T34RRE
      057576  012126                                                                  .WORD   PKTSSR
 7883 057600                          230$:   CKLOOP                          ;LOOP IF SELECTED
      057600  104406                                                                  TRAP    C$CLP1
 7884 057602  012737  140001  060560          MOV     #140001,T34PK3          ;READ DATA, ACK, CVC=1
 7885 057610  013737  003116  060562          MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
 7886 057616  012737  006654  060566          MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (4K BYTES)
 7887 057624  012704  060560                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
 7888 057630  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 7889 057634  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 7890 057640  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 7891 057644  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 7892 057650  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 7893 057652  001406                          BEQ     235$                    ;BR, IT MIGHT BE END OF TAPE
 7894 057654  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 7898 057660                                  ERRHRD  ERRNO,T34RRE,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
      057660  104456                                                                  TRAP    C$ERHRD
      057662  001155                                                                  .WORD   621
      057664  060766                                                                  .WORD   T34RRE
      057666  012126                                                                  .WORD   PKTSSR
 7899 057670                          235$:   CKLOOP                          ;LOOP IF SELECTED
      057670  104406                                                                  TRAP    C$CLP1
 7900 057672  013701  060470                  MOV     T34BFR+6,R1             ;PICK UP XSTO
 7901 057676  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 7902 057700  052702  000001                  BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
 7903 057704  020102                          CMP     R1,R2                   ;WAS THE BIT ON
 7904 057706  001406                          BEQ     240$                    ;BR, IF EOT WAS FOUND
 7905 057710  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 7909 057714                                  ERRHRD  ERRNO,T34ETZ,EXPREC     ;EOT BIT (XSTO) NOT SET
      057714  104456                                                                  TRAP    C$ERHRD
      057716  001156                                                                  .WORD   622
      057720  061522                                                                  .WORD   T34ETZ
      057722  015554                                                                  .WORD   EXPREC
 7910 057724                          240$:   CKLOOP                          ;LOOP IF SELECTED
      057724  104406                                                                  TRAP    C$CLP1
 7911 057726  012737  140410  060560          MOV     #140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD.
 7912 057734  012737  000005  060562          MOV     #5,T34RB                ;NUMBER OF RECORDS TO SPACE
 7913 057742  012704  060560                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
 7914 057746  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 7915 057752  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 7916 057756  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 7917 057762  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
```

TEST 6: OPERATIONS AT EOT

```
7918 057766  020102                    CMP     R1,R2                   ;ARE THEY EQUAL
7919 057770  001406                    BEQ     250$                    ;BR, IT MIGHT BE END OF TAPE
7920 057772  005237  002214                    INC     FATFLG                          ;ERROR COUNT
7924 057776                            ERRHRD  ERRNO,T34POS,PKTSSR     ;POSITION COMMAND DIDN'T WORK
     057776  104456                                                            TRAP    C$ERHRD
     060000  001157                                                            .WORD   623
     060002  060614                                                            .WORD   T34POS
     060004  012126                                                            .WORD   PKTSSR
7925 060006                    250$:   CKLOOP                          ;LOOP IF SELECTED
     060006  104406                                                            TRAP    C$CLP1
7926 060010  013701  060470            MOV     T34BFR+6,R1             ;PICK UP XSTO
7927 060014  010102                    MOV     R1,R2                   ;SET UP EXPECTED
7928 060016  042702  000001            BIC     #BIT0,R2                ;CLEAR THE EOT BIT ON IN EXPECTED
7929 060022  020102                    CMP     R1,R2                   ;WAS THE BIT ON
7930 060024  001406                    BEQ     260$                    ;BR, IF EOT WAS FOUND
7931 060026  005237  002214                    INC     FATFLG                          ;ERROR COUNT
7935 060032                            ERRHRD  ERRNO,T34ETC,EXPREC     ;EOT BIT (XSTO) NOT CLEAR
     060032  104456                                                            TRAP    C$ERHRD
     060034  C01160                                                            .WORD   624
     060036  061057                                                            .WORD   T34ETC
     060040  015554                                                            .WORD   EXPREC
7936 060042                    260$:   CKLOOP                          ;LOOP IF SELECTED
     060042  104406                                                            TRAP    C$CLP1
7937 060044  012737  140010  060560        MOV     #140010,T34PK3          ;SPACE RECORDS FORWARD, ACK, CVC=1 CMD.
7938 060052  012737  000005  060562        MOV     #5,T34RB                ;NUMBER OF RECORDS TO SPACE
7939 060060  012704  060560            MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7940 060064  010465  000000            MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7941 060070  004737  016330            JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7942 060074  016501  000002            MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7943 060100  012702  000200            MOV     #SSR,R2                 ;SET UP EXPECTED
7944 060104  020102                    CMP     R1,R2                   ;ARE THEY EQUAL
7945 060106  001406                    BEQ     270$                    ;BR, IT MIGHT BE END OF TAPE
7946 060110  005237  002214                    INC     FATFLG                          ;ERROR COUNT
7950 060114                            ERRHRD  ERRNO,T34ET,PKTSSR      ;TSSR NOT CORRECT
     060114  104456                                                            TRAP    C$ERHRD
     060116  001161                                                            .WORD   625
     060120  062016                                                            .WORD   T34ET
     060122  012126                                                            .WORD   PKTSSR
7951 060124                    270$:   CKLOOP                          ;LOOP IF SELECTED
     060124  104406                                                            TRAP    C$CLP1
7952 060126  013701  060470            MOV     T34BFR+6,R1             ;PICK UP XSTO
7953 060132  010102                    MOV     R1,R2                   ;SET UP EXPECTED
7954 060134  052702  000001            BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
7955 060140  020102                    CMP     R1,R2                   ;WAS THE BIT ON
7956 060142  001400                    BEQ     280$                    ;BR, IF EOT WAS FOUND
7957 060144                    280$:   CKLOOP                          ;LOOP IF SELECTED
     060144  104406                                                            TRAP    C$CLP1
7958 060146  012737  141410  060560        MOV     #141410,T34PK3          ;SKIP FILE MARKS REVERSE,ACK,CVC=1 COMMAND
7959 060154  012737  000003  060562        MOV     #3,T34RB                ;NUMBER OF FILE MARKS
7960 060162  012704  060560            MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7961 060166  010465  000000            MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7962 060172  012737  176750  060574        MOV     #65000.,T34DLY          ;SET UP DELAY COUNTER
7963 060200  004737  016330            285$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7964 060204  016501  000002            MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7965 060210  032701  000200            BIT     #SSR,R1                 ;CHECK FOR SSR SET
7966 060214  001017                    BNE     286$                    ;BR, WHEN SSR IS SET
7967 060216                            DELAY   250                     ;WAIT ABOUT .25 SECONDS
```

TEST 6: OPERATIONS AT EOT

```
        060216  012727  000250                                                          MOV     #250.,(PC)+
        060222  000000                                                                  .WORD   0
        060224  013727  002116                                                          MOV     L$DLY,(PC)+
        060230  000000                                                                  .WORD   0
        060232  005367  177772                                                          DEC     -6(PC)
        060236  001375                                                                  BNE     .-4
        060240  005367  177756                                                          DEC     -22(PC)
        060244  001367                                                                  BNE     .-20
  7968  060246  005337  060574                DEC     T34DLY          ;BUMP COUNTER
  7969  060252  001352                        BNE     285$            ;BR, IF MORE TO COUNT
  7970  060254  012702  000200        286$:   MOV     #SSR,R2         ;SET UP EXPECTED
  7971  060260  020102                        CMP     R1,R2           ;ARE THEY EQUAL
  7972  060262  001007                        BNE     290$            ;BR, IT MIGHT BE END OF TAPE
  7973  060264  005303                        DEC     R3              ;DEC RECORD COUNTER
  7974  060266  005237  002214                INC     FATFLG                  ;ERROR COUNT
  7978  060272                                ERRHRD  ERRNO,T34ET,PKTSSR      ;EOT NOT FOUND (USE SHORTER TAPE?)
        060272  104456                                                          TRAP    C$ERHRD
        060274  001162                                                          .WORD   626
        060276  C62016                                                          .WORD   T34ET
        060300  012126                                                          .WORD   PKTSSR
  7979  060302  032701  000004        290$:   BIT     #BIT2,R1        ;CHECK FOR TAPE STATUS ALERT
  7980  060306  013701  060470                MOV     T34BFR+6,R1     ;PICK UP XSTO
  7981  060312  010102                        MOV     R1,R2           ;SET UP EXPECTED
  7982  060314  042702  000001                BIC     #BIT0,R2        ;CLEAR THE EOT BIT IN EXPECTED
  7983  060320  020102                        CMP     R1,R2           ;WAS THE BIT ON
  7984  060322  001406                        BEQ     300$            ;BR, IF EOT WAS FOUND
  7985  060324  005237  002214                INC     FATFLG                  ;ERROR COUNT
  7989  060330                                ERRHRD  ERRNO,T34ETC,EXPREC     ;EOT BIT (XSTO) NOT CLEAR
        060330  104456                                                          TRAP    C$ERHRD
        060332  001163                                                          .WORD   627
        060334  061057                                                          .WORD   T34ETC
        060336  015554                                                          .WORD   EXPREC
  7990  060340                        300$:   CKLOOP                  ;LOOP IF SELECTED
        060340  104406                                                          TRAP    C$CLP1
  7991  060342  013701  060470                MOV     T34BFR+6,R1     ;PICK UP XSTO
  7992  060346  010102                        MOV     R1,R2           ;SET UP EXPECTED
  7993  060350  052702  000002                BIS     #BIT1,R2        ;SET THE BOT BIT ON IN EXPECTED
  7994  060354  020102                        CMP     R1,R2           ;WAS THE BIT ON
  7995  060356  001406                        BEQ     320$            ;BR, IF BOT WAS FOUND
  7996  060360  005237  002214                INC     FATFLG                  ;ERROR COUNT
  8000  060364                                ERRHRD  ERRNO,T34BOT,EXPREC     ;EOT BIT (XSTO) NOT CLEAR
        060364  104456                                                          TRAP    C$ERHRD
        060366  001164                                                          .WORD   628
        060370  061134                                                          .WORD   T34BOT
        060372  015554                                                          .WORD   EXPREC
  8001  060374                        320$:   CKLOOP                  ;LOOP IF SELECTED
        060374  104406                                                          TRAP    C$CLP1
  8002  060376                        600$:
  8003  060376                                ENDSUB                  ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
        060376                                                                  L10062:
        060376  104403                                                          TRAP    C$ESUB
  8004  060400  023727  002214  000017        CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
  8005  060406  103402                        BLO     999$                    ;BR, IF LESS THAN 25
  8006  060410  004737  017262                JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
  8007  060414                        999$:
  8008  060414  004737  016536                JSR     PC,TSTLOOP      ;DO WE NEED TO ITERATE TEST
  8009  060420  103002                        BCC     163$            ;BR, IF NO LOOP REQUIRED
```

TEST 6: OPERATIONS AT EOT

```
8010 060422  000137  055772                    JMP     T34LOOP                 ;EXECUTE AGAIN
8011 060426                             163$:   EXIT    TST                     ;ALL DONE THIS TEST
     060426  104432                                                                    TRAP    C$EXIT
     060430  002662                                                                    .WORD   L10061-.
8012                                    ;+
8013                                    ;LOCAL STORAGE FOR THIS TEST
8014                                    ;-
8016          060440                            .=<.+10>&177770
8018 060440                             T34PACKET:                              ;COMMAND PACKET FOR TEST
8019 060440  100004                             .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH ACK
8020 060442  060450                             .WORD   T34DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
8021 060444  000000                             .WORD   0
8022 060446  000010                             .WORD   8.                      ;STARTING VALUE OF BLOCK SIZE
8023 060450                             T34DATA:                                ;CHARACTERISTICS DATA BLOCK
8024 060450  060462                             .WORD   T34BFR                  ;ADDRESS OF MESSAGE BUFFER
8025 060452  000000                             .WORD   0
8026 060454  000012                             .WORD   10.                     ;LENGTH OF MESSAGE BUFFER
8027 060456  000000                             .WORD   0
8028 060460  C00000                     T34DSW: .WORD   0                       ;SELECT DRIVE 0
8029 060462                             T34BFR: .BLKW   25.                     ;MESSAGE BUFFER
8030                                    ;
8031                                    ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
8032                                    ;
8034          060550                            .=<.+10>&177770
8036 060550                             T34PK2:
8037 060550  100006                             .WORD   100006                  ;WRITE SUB SYS MEM COMMAND, AND ACK
8038 060552  060576                             .WORD   T34BF2                  ;ADDRESS OF SELECT BLOCK DATA
8039 060554  000000                             .WORD   0
8040 060556  000006                             .WORD   6.                      ;SIZE OF DATA PACKET
8041
8045 060560                             T34PK3:
8046 060560  100005                             .WORD   100005                  ;WRITE COMMAND,  AND ACK
8047 060562                             T34RB:
8048 060562  000000                     T34WB:  .WORD   0                       ;ADDRESS OF WRITE/READ BUFFER
8049 060564  000000                             .WORD   0
8050 060566  000000                     T34SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
8051                                            .EVEN
8052                                    ;
8053 060570  000000                     T34RSZ: .WORD   0                       ;LARGEST TAPE RECORD IN BYTES
8054 060572  000000                     T34CNT: .WORD   0                       ;TAPE RECORD COUNTER
8055 060574  000000                     T34DLY: .WORD   0                       ;DELAY COUNTER
8056                                    ;
8057                                    ;
8058 060576                             T34BF2:
8059 060576     010                     T34BS0: .BYTE   10                      ;BSEL0 AREA
8060 060577     200                     T34BS1: .BYTE   200                     ;BSEL1 AREA
8061 060600  000000                     T34S2:  .WORD   0                       ;SEL 2 AREA
8062 060602  000000                     T34S3:  .WORD   0                       ;DATA AREA
8063                                    ;
8064                                    ;
8065                                            .EVEN
8066                                    ;TAPE MOTION PACKET COMMAND VALUES
8067
8068 060604  100005                     T34WD:  .WORD   100005                  ;WRITE DATA (NEXT)
8069 060606  100405                     T34WDR: .WORD   100405                  ;WRITE DATA RETRY
8070 060610  102005                     T34CON: .WORD   102005                  ;WRITE CONTINOUS
8071 060612  177777                             .WORD   177777                  ;END OF DATA
```

```
8072                                    ;*
8073                                    ;LOCAL TEXT MESSAGES FOR TEST
8074                                    ;-
8075
8076 060614      124     123     123    T34POS: .ASCIZ  'TSSR Incorrect After Position (SPACE RECORDS) Command'
8077 060702      127     122     111    T34ETO: .ASCIZ  'WRITE TAPE MARK At EOT Failed To Set EOT Bit (XSTO)'
8078 060766      122     105     101    T34RRE: .ASCIZ  'READ Command At EOT Didn''t Give Normal Termination (TSSR)'
8079 061057      125     156     141    T34ETC: .ASCIZ  'Unable To Clear EOT Indication, (XSTO) Bit 0'
8080 061134      122     105     127    T34BOT: .ASCIZ  'REWIND Failed To Set BOT (XSTO) Bit'
8081 061200      127     122     111    T34WTM: .ASCIZ  'WRITE TAPE MARK At EOT Failed To Set Tape Status Alert'
8082 061267      127     122     111    T34ET2: .ASCIZ  'WRITE DATA At EOT Failed To Set Tape Status Alert'
8083 061351      127     122     111    T34ETN: .ASCIZ  'WRITE DATA At EOT Failed To Set EOT Bit (XSTO)'
8084 061430      123     120     101    T34ETS: .ASCIZ  'SPACE RECORDS FORWARD At EOT Failed To Set EOT Bit (XSTO)'
8085 061522      122     105     101    T34ETZ: .ASCIZ  'READ DATA At EOT Failed To Set EOT Bit (XSTO)'
8086 061600      124     123     123    T34STM: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE At EOT'
8087 061663      120     117     123    T34TMK: .ASCIZ  'POSITION Command At EOT Onto Tape Mark Failed To Set TMK (XSTO)'
8088 061763      127     122     111    T34SSR: .ASCIZ  'WRITE Command Not Accepted'
8089 062016      105     117     124    T34ET:  .ASCIZ  'EOT Not Found In 65000 3.5K Writes, (Use Shorter Tape)'
8090 062105      127     122     111    T34EOT: .ASCIZ  'WRITE DATA OVER EOT GAVE NO TAPE STATUS ALERT'
8091 062163      124     123     123    T34TM:  .ASCIZ  'TSSR Not Correct After WRITE Command Reject'
8092 062237      122     145     167    T34RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
8093 062306      122     101     115    T34RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
8094 062361      124     123     123    T34AM3: .ASCIZ  'TSSR Init. Failed After WRITE Command'
8095 062427      104     162     151    T34OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
8096 062502      124     123     123    T34WDD: .ASCIZ  'TSSR Not Correct After WRITE DATA Command, SWB Bit Set'
8097 062571      124     123     123    T34WDC: .ASCIZ  'TSSR Not Correct After WRITE DATA Command, Check For Tape Offline'
8098 062673      103     126     103    T34VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
8099 062746      124     123     102    T34BA:  .ASCIZ  'TSBA Not Correct After WRITE DATA Command'
8100 063020      127     122     111    T34WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
8101 063107      117     160     145    TST34ID:        .ASCIZ  'Operations At EOT'
8102                                            .EVEN
8103                                    ;*
8104                                    ;
8105                                    ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
8106                                    ;WRITE SUBSYSTEM MEMORY COMMAND
8107                                    ;
8108                                    ;-
8109
8110 063132                             T34REST:
8111 063132                                     SAVREG                          ;SAVE THE REGISTERS
8112 063136  012701  060440                        MOV     #T34PACKET,R1       ;START OF THE PACKET
8113 063142  012721  100004                        MOV     #100004,(R1)+       ;WRITE SUBSYSTEM MEM. WITH ACK
8114 063146  012721  060450                        MOV     #T34DATA,(R1)+      ;ADDRESS OF CHARAISTICS DATA BLOCK
8115 063152  005021                                CLR     (R1)+               ;EXTENDED ADDRESS
8116 063154  012721  000012                        MOV     #10.,(R1)+          ;SIZE OF DATA BLOCK IN BYTES
8117 063160  012721  060462                        MOV     #T34BFR,(R1)+       ;ADDRESS OF MESSAGE BUFFER
8118 063164  005021                                CLR     (R1)+
8119 063166  012721  000024                        MOV     #20.,(R1)+          ;LENGTH OF MESSAGE BUFFER
8120 063172  005021                                CLR     (R1)+
8121 063174  012711  000000                        MOV     #0,(R1)             ;SELECT DRIVE ZERO
8122 063200  012702  000030                        MOV     #24.,R2             ;NUMBER OF LOCATIONS TO BE CLEARED
8123 063204  012762  177777  060462  64$:         MOV     #177777,T34BFR(R2)  ;ALL ONES TO MESSAGE BUFFER
8124 063212  005742                                TST     -(R2)               ;BUMP DOWN TO NEXT LOCATION
8125 063214  020227  000000                        CMP     R2,#0               ;R2 AT ZERO YET
8126 063220  001371                                BNE     64$                 ;KEEP GOING UNTIL DONE
8127 063222  000207                                RTS     PC                  ;RETURN
8128
```

TEST 6: OPERATIONS AT EOT

```
8129 063224                                T34RT2:
8130 063224                                        SAVREG                          ;SAVE THE REGISTERS
8131 063230  012701  060550                        MOV     #T34PK2,R1              ;START OF THE PACKET
8132 063234  012721  100006                        MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK
8133 063240  012721  060576                        MOV     #T34BF2,(R1)+           ;ADDRESS OF DATA BLOCK
8134 063244  005021                                CLR     (R1)+                   ;EXTENDED ADDRESS
8135 063246  012721  000006                        MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
8136 063252  012701  060576                        MOV     #T34BF2,R1              ;POINT TO DATA SEL AREA
8137 063256  005021                                CLR     (R1)+
8138 063260  005021                                CLR     (R1)+
8139 063262  005011                                CLR     (R1)
8140 063264  000207                                RTS     PC                      ;RETURN
8141 063266                                T34RT3:
8142 063266                                        SAVREG                          ;SAVE THE REGISTERS
8143 063272  012701  060560                        MOV     #T34PK3,R1              ;START OF THE PACKET
8144 063276  012721  100005                        MOV     #100005,(R1)+           ;WRITE  TAPE. WITH ACK
8145 063302  005021                                CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
8146 063304  005021                                CLR     (R1)+                   ;EXTENDED ADDRESS
8147 063306  005011                                CLR     (R1)                    ;SIZE OF DATA BLOCK
8148 063310  000207                                RTS     PC                              ;RETURN
8149 063312                                        ENDTST
     063312                                                                                L10061:
     063312  104401                                                                              TRAP    C$ETST
8150                                       .SBTTL  TEST  7: EXTENDED MODE FEATURES
8151                                ;+
8152                                ;
8153                                ;       THIS TEST VERIFIES THE OPERATION OF COMMANDS ONLY AVAILABLE WHEN
8154                                ;       THE CONTROLLER IS IN THE EXTENDED FEATURES MODE.  THESE COMMANDS
8155                                ;       ARE:
8156                                ;
8157                                ;               REWIND WITH IMMEDIATE INTERRUPT
8158                                ;
8159                                ;       IF THE CONTROLLER IS NOT ALREADY IN EXTENDED FEATURES MODE, IT
8160                                ;       IS PLACED THERE VIA A WRITE SUBSYSTEM MEMORY COMMAND.
8161                                ;
8162                                ;
8163                                ;
8164                                ;THE TEST CONSISTS OF THE FOLLOWING 7 SUBTESTS
8165                                ;
8166                                ;
8167                                ;
8168                                ;-
8169 063314                                        BGNTST
     063314                                                                                T7::
8170 063314  012737  006354  002172                MOV     @EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
8175 063322  012700  073033                        MOV     #TST35ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
8176 063326  004737  016570                        JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
8177 063332  012737  000005  002210                MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
8178 063340  005037  067436                        CLR     T35CNT                  ;CLEAR TAPE RECORD COUNTER
8179                                ;+
8180                                ;
8181                                ;TEST 7, SUBTEST 1
8182                                ;
8183                                ;
8184                                ;       VERIFIES THAT A REWIND WITH IMMEDIATE INTERRUPT COMMAND, ISSUED
8185                                ;       WITH THE INTERRUPT ENABLE (IE) BIT CLEAR (0), CAUSES ALMOST
8186                                ;       IMMEDIATE TERMINATION BUT NO INTERRUPT.  STATUS IN THE MESSAGE
```

```
 8187                                   ;        BUFFER IS CHECKED TO VERIFY THAT THE MOTION (MOT) AND OPERATION
 8188                                   ;        IN PROGRESS (OPM) STATUS BITS ARE BOTH SET.
 8189                                   ;
 8190                                   ;
 8191                                   ;
 8192                                   ;
 8193                                   ;
 8194                                   ;-
 8195
 8196 063344                            T35LOOP:
 8197 063344                                    BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      063344                                                                                    T7.1:
      063344  104402                                                                                TRAP    C$BSUB
 8198 063346  004737  073064                      JSR     PC,T35REST            ;SET COMMAND PACKET
 8199 063352  005037  002216                      CLR     INTRECV               ;CLEAR INTERRUPT RECEIVED FLAG
 8200 063356  004737  073156                      JSR     PC,T35RT2             ;SET UP OTHER COMMAND PACKET
 8201 063362  004737  073220                      JSR     PC,T35RT3             ;SET UP OTHER COMMAND PACKET
 8202 063366  012737  176750  067442              MOV     #65000.,T35DLY        ;SET UP DELAY COUNTER
 8203 063374  005037  067436                      CLR     T35CNT                ;CLEAR COUNTER
 8204 063400  004737  016054          10$:        JSR     PC,SOFINIT            ;DO INITIALIZE ON CONTROLLER
 8205 063404  103426                              BCS     20$                   ;BR IF INIT WAS OK
 8206 063406                                      DELAY   250                   ;DELAY ABOUT .25 SEC
      063406  012727  000250                                                                    MOV     #250.,(PC)+
      063412  000000                                                                            .WORD   0
      063414  013727  002116                                                                    MOV     L$DLY,(PC)+
      063420  000000                                                                            .WORD   0
      063422  005367  177772                                                                    DEC     -6(PC)
      063426  001375                                                                            BNE     .-4
      063430  005367  177756                                                                    DEC     -22(PC)
      063434  001367                                                                            BNE     .-20
 8207 063436  005337  067442                      DEC     T35DLY                ;BUMP COUNTER
 8208 063442  001356                              BNE     10$                   ;BR, IF COUNTER NOT DONE
 8209 063444  005237  002214                      INC     FATFLG                        ;ERROR COUNT
 8213 063450  010001                              MOV     R0,R1                 ;CONTENTS OF TSSR REGISTER
 8214 063452                                      ERRDF   ERRNO,SFIERR,SFIMSG   ;FATAL ERROR TSSR WAS NOT OK
      063452  104455                                                                            TRAP    C$ERDF
      063454  001275                                                                            .WORD   701
      063456  003646                                                                            .WORD   SFIERR
      063460  012114                                                                            .WORD   SFIMSG
 8215 063462  013737  002174  067310  20$:        MOV     UNITN,T35DSW          ;SET UP DRIVE NUMBER
 8216 063470  012704  067270                      MOV     #T35PACKET,R4         ;SUBROUTINE NEEDS PACKET ADDRESS
 8217 063474  004737  010742                      JSR     PC,WRTCHR             ;ISSUE WRITE CHARACTERISTICS
 8218 063500  103407                              BCS     25$                   ;BR, IF COMMAND ISSUED OK
 8219 063502  005237  002214                      INC     FATFLG                        ;ERROR COUNT
 8223 063506  010001                              MOV     R0,R1                 ;SAVE CONTENTS OF TSSR
 8224 063510                                      ERRHRD  ERRNO,WRTMSG,SFIMSG   ;WRITE CHARACTERISTISC FAILED
      063510  104456                                                                            TRAP    C$ERHRD
      063512  001276                                                                            .WORD   702
      063514  005052                                                                            .WORD   WRTMSG
      063516  012114                                                                            .WORD   SFIMSG
 8225 063520                            25$:        CKLOOP                        ;LOOP IF SELECTED
      063520  104406                                                                            TRAP    C$CLP1
 8226 063522  004737  011074                      JSR     PC,REWIND             ;CALL TAPE REWIND COMMAND
 8227 063526  103411                              BCS     30$                   ;BR, IF NO PROBLEM
 8228 063530  010004                              MOV     R0,R4                 ;SET UP REWIND PACKET ADDRESS
 8229 063532  016501  000002                      MOV     TSSR(R5),R1           ;GET TSSR FOR PRINTOUT
 8230 063536  005237  002214                      INC     FATFLG                        ;ERROR COUNT
```

TEST 7: EXTENDED MODE FEATURES

```
8234 063542                                ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
     063542  104456                                                                TRAP    C$ERHRD
     063544  001277                                                                .WORD   703
     063546  070544                                                                .WORD   T35RWN
     063550  012126                                                                .WORD   PKTSSR
8235 063552                          30$:  CKLOOP                          ;LOOP IF SELECTED
     063552  104406                                                                TRAP    C$CLP1
8236 063554  013701  067320                 MOV     T35BFR+6,R1             ;PICK UP XSTO
8237 063560  010102                         MOV     R1,R2                   ;SET UP EXPECTED
8238 063562  052702  000002                 BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
8239 063566  020102                         CMP     R1,R2                   ;DOES EXP = REC'D
8240 063570  001406                         BEQ     40$                     ;BR, IF EQUAL (OK)
8241 063572  005237  002214                 INC     FATFLG                          ;ERROR COUNT
8245 063576                                ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     063576  104456                                                                TRAP    C$ERHRD
     063600  001300                                                                .WORD   704
     063602  070240                                                                .WORD   T35BOT
     063604  015554                                                                .WORD   EXPREC
8246 063606                          40$:  CKLOOP                          ;LOOP IF SELECTED
     063606  104406                                                                TRAP    C$CLP1
8247 063610  012703  000024                 MOV     #20.,R3                 ;NUMBER OF RECORDS
8248 063614  012737  000400  067416         MOV     #256.,T35SZ             ;SET UP RECORD SIZE
8249 063622  013737  003116  067412         MOV     FREE,T35WB              ;ADDRESS OF WRITE BUFFER
8250
8251                                 ;*****************************************
8252                                 ;
8253                                 ;WRITE DATA,ACK,CVC=1 COMMAND
8254                                 ;
8255                                 ;*****************************************
8256
8257 063630  012737  140005  067410         MOV     #140005,T35PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
8258 063636  012704  067410                 MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
8259 063642  010465  000000          50$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
8260 063646  004737  016330                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
8261 063652  016501  000002                 MOV     TSSR(R5),P1             ;GET TSSR CONTENTS
8262 063656  012702  000200                 MOV     #SSR,R2                 ;SET UP EXPECTED
8263 063662  020102                         CMP     R1,R2                   ;ARE THEY EQUAL
8264 063664  001406                         BEQ     60$                     ;BR, IF OK
8265 063666  005237  002214                 INC     FATFLG                          ;ERROR COUNT
8269 063672                                ERRHRD  ERRNO,T35WDE,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     063672  104456                                                                TRAP    C$ERHRD
     063674  001301                                                                .WORD   705
     063676  070166                                                                .WORD   T35WDE
     063700  012126                                                                .WORD   PKTSSR
8270 063702                          60$:  CKLOOP                          ;LOOP IF SELECTED
     063702  104406                                                                TRAP    C$CLP1
8271 063704  005303                         DEC     R3                      ;BUMP RECORD COUNTER
8272 063706  001355                         BNE     50$                     ;BR, IF MORE RRECORDS TO COUNT
8273
8274                                 ;*****************************************
8275                                 ;
8276                                 ;WAIT FOR TAPE TO STOP ALL MOTION
8277                                 ;
8278                                 ;*****************************************
8279
8280 063710  012737  000012  067442         MOV     #10.,T35DLY             ;SET UP DELAY COUNTER
8281 063716                          70$:   DELAY   250                     ;WAIT ABOUT .25 SEC
```

TEST 7: EXTENDED MODE FEATURES

```
        063716  012727  000250                                                          MOV     #250,(PC)+
        063722  000000                                                                  .WORD   0
        063724  013727  002116                                                          MOV     L$DLY,(PC)+
        063730  000000                                                                  .WORD   0
        063732  005367  177772                                                          DEC     -6(PC)
        063736  001375                                                                  BNE     .-4
        063740  005367  177756                                                          DEC     -22(PC)
        063744  001367                                                                  BNE     .-20
  8282  063746  005337  067442                DEC     T35DLY                  ;BUMP COUNTER DOWN
  8283  063752  001361                        BNE     70$                     ;BR, IF MORE TO DELAY
  8284  063754  005737  002220                TST     EXTFEA                  ;CHECK FOR EXTENDED FEATURES SW SWITCH
  8285  063760  001042                        BNE     110$                    ;BR IF SWITCH IS ON
  8286  063762  112737  000200  067421        MOVB    #200,T35BS1             ;WRITE MISCELLANEOUS CONT/READ STATUS
  8287  063770  112737  000010  067420        MOVB    #10,T35BS0              ;FUNCTION SELECTION BIT (TURN ON EXTFEA HW SWITCH)
  8288  063776  012704  067400                MOV     #T35PK2,R4              ;WRITE SUBSYS MEM PACKET
  8289  064002  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
  8290  064006  004737  016416                JSR     PC,CHKTSSR              ;WAIT FOR SSR
  8291  064012  103407                        BCS     90$                     ;BR, IF NO ERROR
  8292  064014  C10001                        MOV     R0,R1                   ;ERROR, SAVE TSSR
  8293  064016  005237  002214                INC     FATFLG                          ;ERROR COUNT
  8297  064022                                ERRHRD  ERRNO,T35SSR,PKTSSR     ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
        064022  104456                                                                 TRAP    C$ERHRD
        064024  001302                                                                 .WORD   706
        064026  072322                                                                 .WORD   T35SSR
        064030  012126                                                                 .WORD   PKTSSR
  8298  064032                        90$:    CKLOOP                          ;LOOP IF SELECTED
        064032  104406                                                                 TRAP    C$CLP1
  8299  064034  012704  067270                MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
  8300  064040  004737  010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
  8301  064044  103407                        BCS     100$                    ;BR, IF COMMAND ISSUED OK
  8302  064046  005237  002214                INC     FATFLG                          ;ERROR COUNT
  8306  064052  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
  8307  064054                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        064054  104456                                                                 TRAP    C$ERHRD
        064056  001303                                                                 .WORD   707
        064060  005052                                                                 .WORD   WRTMSG
        064062  012114                                                                 .WORD   SFIMSG
  8308  064064                        100$:   CKLOOP                          ;SCOPE LOOP
        064064  104406                                                                 TRAP    C$CLP1
  8309  064066  012737  176750  067442  110$:   MOV     #65000.,T35DLY          ;SET UP DELAY COUNTER
  8310  064074  005037  067436                CLR     T35CNT                  ;DELAY COUNTER
  8311
  8312                                  ;*****************************************
  8313                                  ;
  8314                                  ;REWIND IMED. INTERRUPT,ACK,CVC=1,IE=0 COMMAND
  8315                                  ;
  8316                                  ;*****************************************
  8317
  8318  064100  012737  142012  067410        MOV     #142012,T35PK3          ;REWIND IMED. INTERRUPT,ACK,CVC=1,IE=0 COMMAND
  8319  064106  012704  067410                MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
  8320  064112  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
  8321  064116  016501  000002        120$:   MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
  8322  064122  032701  000200                BIT     #SSR,R1                 ;CHECK FOR SSR SET
  8323  064126  001021                        BNE     130$                    ;BR, WHEN SSR IS SET
  8324  064130  005237  067436                INC     T35CNT                  ;BUMP THE CYCLE COUNTER
  8325  064134                                DELAY   1                       ;DELAY TO KEEP COUNTER DOWN
        064134  012727  000001                                                         MOV     #1,(PC)+
```

TEST 7: EXTENDED MODE FEATURES

```
                064140  000000                                                                  .WORD   0
                064142  013727  002116                                                          MOV     L$DLY,(PC)+
                064146  000000                                                                  .WORD   0
                064150  005367  177772                                                          DEC     -6(PC)
                064154  001375                                                                  BNE     .-4
                064156  005367  177756                                                          DEC     -22(PC)
                064162  001367                                                                  BNE     .-20
    8326        064164  005337  067442                  DEC     T35DLY          ;DROP DEAD TIMER BUMP DOWN
    8327        064170  001352                          BNE     120$            ;BR, IF MORE TIME TO GO
    8328        064172  012702  000200          130$:   MOV     #SSR,R2         ;SET UP EXPECTED
    8329        064176  020102                          CMP     R1,R2           ;ARE THEY EQUAL
    8330        064200  001406                          BEQ     140$            ;BR, IF OK
    8331        064202  005237  002214                  INC     FATFLG                  ;ERROR COUNT
    8335        064206                                  ERRHRD  ERRNO,T35RWE,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
                064206  104456                                                                  TRAP    C$ERHRD
                064210  001304                                                                  .WORD   708
                064212  072670                                                                  .WORD   T35RWE
                064214  012126                                                                  .WORD   PKTSSR
    8336        064216                  140$:   CKLOOP                  ;LOOP IF SELECTED
                064216  104406                                                                  TRAP    C$CLP1
    8337        064220  005737  002216                  TST     INTRECV         ;CHECK FOR INTERRUPTS
    8338        064224  001410                          BEQ     150$            ;BR, IF NO INTERRUPTS DETECTED
    8339        064226  016501  000002                  MOV     TSSR(R5),R1     ;GET TSSR STATUS FOR PRINTOUT
    8340        064232  005237  002214                  INC     FATFLG                  ;ERROR COUNT
    8344        064236                                  ERRHRD  ERRNO,T35INT,PKTSSR     ;INTERRUPT RECEIVED (BAD)
                064236  104456                                                                  TRAP    C$ERHRD
                064240  001305                                                                  .WORD   709
                064242  072501                                                                  .WORD   T35INT
                064244  012126                                                                  .WORD   PKTSSR
    8345        064246                  150$:   CKLOOP                  ;LOOP IF SELECTED
                064246  104406                                                                  TRAP    C$CLP1
    8346
    8347                                ;*************************************
    8348                                ;
    8349                                ;NOW CHECK FOR THE MOTION BITS SET
    8350                                ;
    8351                                ;*************************************
    8352
    8353        064250  013701  067320                  MOV     T35BFR+6,R1     ;PICK UP XSTO
    8354        064254  010102                          MOV     R1,R2           ;SET UP EXPECTED
    8355        064256  052702  000200                  BIS     #BIT7,R2        ;SET MOT BIT IN EXPECTED
    8356        064262  020102                          CMP     R1,R2           ;DOES EXP = REC'D
    8357        064264  001406                          BEQ     160$            ;BR, IF EQUAL (OK)
    8358        064266  005237  002214                  INC     FATFLG                  ;ERROR COUNT
    8362        064272                                  ERRHRD  ERRNO,T35MOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                064272  104456                                                                  TRAP    C$ERHRD
                064274  001306                                                                  .WORD   710
                064276  072403                                                                  .WORD   T35MOT
                064300  015554                                                                  .WORD   EXPREC
    8363        064302                  160$:   CKLOOP                  ;LOOP IF SELECTED
                064302  104406                                                                  TRAP    C$CLP1
    8364        064304  013701  067324                  MOV     T35BFR+12,R1    ;PICK UP XST2
    8365        064310  010102                          MOV     R1,R2           ;SET UP EXPECTED
    8366        064312  052702  100000                  BIS     #BIT15,R2       ;SET OPM BIT IN EXPECTED
    8367        064316  020102                          CMP     R1,R2           ;DOES EXP = REC'D
    8368        064320  001406                          BEQ     170$            ;BR, IF EQUAL (OK)
    8369        064322  005237  002214                  INC     FATFLG                  ;ERROR COUNT
```

TEST 7: EXTENDED MODE FEATURES

```
8373 064326                                ERRHRD  ERRNO,T35OPM,EXPREC     ;OPM BIT NOT SET
     064326  104456                                                                TRAP    C$ERHRD
     064330  001307                                                                .WORD   711
     064332  072572                                                                .WORD   T35OPM
     064334  015554                                                                .WORD   EXPREC
8374 064336                        170$:   CKLOOP                          ;LOOP IF SELECTED
     064336  104406                                                                TRAP    C$CLP1
8375 064340  012737  000027  067442        MOV     #23.,T35DLY             ;SET UP DELAY COUNTER
8376 064346                        175$:   DELAY   250                     ;START DELAY
     064346  012727  000250                                                        MOV     #250.,(PC)+
     064352  000000                                                                .WORD   0
     064354  013727  002116                                                        MOV     L$DLY,(PC)+
     064360  000000                                                                .WORD   0
     064362  005367  177772                                                        DEC     -6(PC)
     064366  001375                                                                BNE     .-4
     064370  005367  177756                                                        DEC     -22(PC)
     064374  001367                                                                BNE     .-20
8377 064376  005337  067442                DEC     T35DLY                  ;BUMP DELAY COUNTER
8378 064402  C01361                        BNE     175$                    ;BR, IF MORE DELAY
8379 064404                                ENDSUB
     064404                                                                  L10064:
     064404  104403                                                                TRAP    C$ESUB
8380 064406  023727  002214  000017        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
8381 064414  103402                        BLO     999$                            ;BR, IF LESS THAN 25
8382 064416  004737  017262                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
8383 064422                        999$:
8384                               ;*
8385                               ;
8386                               ;TEST 7: SUBTEST 2
8387                               ;
8388                               ;       WITH THE INTERRUPT ENABLE (IE) BIT SET (1), CAUSES ALMOST
8389                               ;       IMMEDIATE TERMINATION AND AN INTERRUPT.  STATUS IN THE MESSAGE
8390                               ;       BUFFER IS CHECKED TO VERIFY THAT THE MOTION (MOT) AND OPERATION
8391                               ;       IN PROGRESS (OPM) STATUS BITS ARE BOTH SET.
8392                               ;
8393                               ;
8394                               ;
8395                               ;
8396                               ;
8397                               ;
8398                               ;
8399                               ;-
8400 064422                                BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     064422                                                                  T7.2:
     064422  104402                                                                TRAP    C$BSUB
8401 064424                                SETPRI  #PRIOO          ;ENABLE INTERRUPTS.
     064424  012700  000000                                                        MOV     #PRIOO,R0
     064430  104441                                                                TRAP    C$SPRI
8402 064432  004737  073064                JSR     PC,T35REST              ;SET COMMAND PACKET
8403 064436  005037  002216                CLR     INTRECV                 ;CLEAR INTERRUPT RECEIVED FLAG
8404 064442  004737  073156                JSR     PC,T35RT2               ;SET UP OTHER COMMAND PACKET
8405 064446  004737  073220                JSR     PC,T35RT3               ;SET UP OTHER COMMAND PACKET
8406 064452  012737  176750  067442        MOV     #65000.,T35DLY          ;SET UP DELAY COUNTER
8407 064460  005037  067436                CLR     T35CNT                  ;CLEAR COUNTER
8408 064464  004737  016054        10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
8409 064470  103426                        BCS     20$                     ;BR IF INIT WAS OK
8410 064472                                DELAY   250                     ;DELAY ABOUT .25 SEC
```

TEST 7: EXTENDED MODE FEATURES

```
        064472  012727  000250                                                  MOV     #250,(PC)+
        064476  000000                                                          .WORD   0
        064500  013727  002116                                                  MOV     L$DLY,(PC)+
        064504  000000                                                          .WORD   0
        064506  005367  177772                                                  DEC     -6(PC)
        064512  001375                                                          BNE     .-4
        064514  005367  177756                                                  DEC     -22(PC)
        064520  001367                                                          BNE     .-20
  8411  064522  005337  067442          DEC     T35DLY          ;BUMP COUNTER
  8412  064526  001356                  BNE     10$             ;BR, IF COUNTER NOT DONE
  8413  064530  005237  002214          INC     FATFLG                  ;ERROR COUNT
  8417  064534  010001                  MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
  8418  064536                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
        064536  104455                                                          TRAP    C$ERDF
        064540  001310                                                          .WORD   712
        064542  003646                                                          .WORD   SFIERR
        064544  012114                                                          .WORD   SFIMSG
  8419  064546  013737  002174  067310  20$:     MOV     UNITN,T35DSW    ;SET UP DRIVE NUMBER
  8420  064554  012704  067270          MOV     #T35PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
  8421  064560  004737  010742          JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
  8422  064564  103407                  BCS     25$             ;BR, IF COMMAND ISSUED OK
  8423  064566  005237  002214          INC     FATFLG                  ;ERROR COUNT
  8427  064572  010001                  MOV     R0,R1           ;SAVE CONTENTS OF TSSR
  8428  064574                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        064574  104456                                                          TRAP    C$ERHRD
        064576  001311                                                          .WORD   713
        064600  005052                                                          .WORD   WRTMSG
        064602  012114                                                          .WORD   SFIMSG
  8429  064604                  25$:     CKLOOP                         ;LOOP IF SELECTED
        064604  104406                                                          TRAP    C$CLP1
  8430  064606  004737  011074          JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
  8431  064612  103411                  BCS     30$             ;BR, IF NO PROBLEM
  8432  064614  010004                  MOV     R0,R4           ;SET UP REWIND PACKET ADDRESS
  8433  064616  016501  000002          MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
  8434  064622  005237  002214          INC     FATFLG                  ;ERROR COUNT
  8438  064626                          ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
        064626  104456                                                          TRAP    C$ERHRD
        064630  001312                                                          .WORD   714
        064632  070544                                                          .WORD   T35RWN
        064634  012126                                                          .WORD   PKTSSR
  8439  064636                  30$:     CKLOOP                         ;LOOP IF SELECTED
        064636  104406                                                          TRAP    C$CLP1
  8440  064640  013701  067320          MOV     T35BFR+6,R1     ;PICK UP XSTO
  8441  064644  010102                  MOV     R1,R2           ;SET UP EXPECTED
  8442  064646  052702  000002          BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
  8443  064652  020102                  CMP     R1,R2           ;DOES EXP = REC'D
  8444  064654  001406                  BEQ     40$             ;BR, IF EQUAL (OK)
  8445  064656  005237  002214          INC     FATFLG                  ;ERROR COUNT
  8449  064662                          ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        064662  104456                                                          TRAP    C$ERHRD
        064664  001313                                                          .WORD   715
        064666  070240                                                          .WORD   T35BOT
        064670  015554                                                          .WORD   EXPREC
  8450  064672                  40$:     CKLOOP                         ;LOOP IF SELECTED
        064672  104406                                                          TRAP    C$CLP1
  8451  064674  012703  000024          MOV     #20.,R3         ;NUMBER OF RECORDS
  8452  064700  012737  000400  067416  MOV     #256.,T35SZ     ;SET UP RECORD SIZE
```

TEST 7: EXTENDED MODE FEATURES

```
 8453 064706  013737  003116  067412          MOV     FREE,T35WB              ;ADDRESS OF WRITE BUFFER
 8454
 8455                                  ;****************************************
 8456                                  ;
 8457                                  ;WRITE DATA,ACK,CVC=1 COMMAND
 8458                                  ;
 8459                                  ;****************************************
 8460
 8461 064714  012737  140005  067410          MOV     #140005,T35PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
 8462 064722  012704  067410                  MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 8463 064726  010465  000000          50$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 8464 064732  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 8465 064736  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 8466 064742  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 8467 064746  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 8468 064750  001406                          BEQ     60$                     ;BR, IF OK
 8469 064752  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 8473 064756                                  ERRHRD  ERRNO,T35WDE,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      064756  104456                                                                  TRAP    C$ERHRD
      064760  001314                                                                  .WORD   716
      064762  070166                                                                  .WOPD   T35WDE
      064764  012126                                                                  .WORD   PKTSSR
 8474 064766                          60$:    CKLOOP                          ;LOOP IF SELECTED
      064766  104406                                                                  TRAP    C$CLP1
 8475
 8476                                  ;****************************************
 8477                                  ;
 8478                                  ;WAIT FOR TAPE TO STOP ALL MOTION
 8479                                  ;
 8480                                  ;****************************************
 8481
 8482 064770  012737  000012  067442          MOV     #10.,T35DLY             ;SET UP DELAY COUNTER
 8483 064776                          70$:    DELAY   250                     ;WAIT ABOUT .25 SEC
      064776  012727  000250                                                          MOV     #250.,(PC)+
      065002  000000                                                                  .WORD   0
      065004  013727  002116                                                          MOV     L$DLY,(PC)+
      065010  000000                                                                  .WORD   0
      065012  005367  177772                                                          DEC     -6(PC)
      065016  001375                                                                  BNE     .-4
      065020  005367  177756                                                          DEC     -22(PC)
      065024  001367                                                                  BNE     .-20
 8484 065026  005337  067442                  DEC     T35DLY                  ;BUMP COUNTER DOWN
 8485 065032  001361                          BNE     70$                     ;BR, IF MORE TO DELAY
 8486 065034  005737  002220                  TST     EXTFEA                  ;CHECK FOR EXTENDED FEATURES SW SWITCH
 8487 065040  001042                          BNE     110$                    ;BR IF SWITCH IS ON
 8488 065042  112737  000200  067421          MOVB    #200,T35BS1             ;WRITE MISCELLANEOUS CONT/READ STATUS
 8489 065050  112737  000010  067420          MOVB    #10,T35BS0              ;FUNCTION SELECTION BIT (TURN ON EXTFEA HW SWITCH)
 8490 065056  012704  006400                  MOV     #T35PK2,R4              ;WRITE SUBSYS MEM PACKET
 8491 065062  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 8492 065066  004737  016416                  JSR     PC,CHKTSSR              ;WAIT FOR SSR
 8493 065072  103407                          BCS     90$                     ;BR, IF NO ERROR
 8494 065074  010001                          MOV     R0,R1                   ;ERROR, SAVE TSSR
 8495 065076  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 8499 065102                                  ERRHRD  ERRNO,T35SSR,PKTSSR     ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
      065102  104456                                                                  TRAP    C$ERHRD
      065104  001315                                                                  .WORD   717
      065106  072322                                                                  .WORD   T35SSR
```

```
     065110 012126                                                          .WORD   PKTSSR
8500 065112                       90$:   CKLOOP                     ;LOOP IF SELECTED
     065112 104406                                                          TRAP    C$CLP1
8501 065114 012704 067270                MOV    #T35PACKET,R4       ;SUBROUTINE NEEDS PACKET ADDRESS
8502 065120 004737 010742                JSR    PC,WRTCHR           ;ISSUE WRITE CHARACTERISTICS
8503 065124 103407                       BCS    100$                ;BR, IF COMMAND ISSUED OK
8504 065126 005237 002214                INC    FATFLG                     ;ERROR COUNT
8508 065132 010001                       MOV    R0,R1               ;SAVE CONTENTS OF TSSR
8509 065134                              ERRHRD ERRNO,WRTMSG,SFIMSG ;WRITE CHARACTERISTISC FAILED
     065134 104456                                                          TRAP    C$ERHRD
     065136 001316                                                          .WORD   718
     065140 005052                                                          .WORD   WRTMSG
     065142 012114                                                          .WORD   SFIMSG
8510 065144                       100$:  CKLOOP                     ;SCOPE LOOP
     065144 104406                                                          TRAP    C$CLP1
8511 065146 012737 176750 067442  110$:  MOV    #65000.,T35DLY      ;SET UP DELAY COUNTER
8512 065154 005037 067436                CLR    T35CNT              ;DELAY COUNTER
8513
8514                              ;*****************************************
8515                              ;
8516                              ;REWIND IMMEDIATE,ACK,CVC=1,IE=1 COMMAND
8517                              ;
8518                              ;*****************************************
8519
8520 065160 012737 142212 067410         MOV    #142212,T35PK3      ;REWIND IMMEDIATE,ACK,CVC=1,IE=1 COMMAND
8521 065166 012704 067410                MOV    #T35PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
8522 065172 010465 000000                MOV    R4,TSDB(R5)         ;ISSUE COMMAND
8523 065176 016501 000002         120$:  MOV    TSSR(R5),R1         ;GET TSSR CONTENTS
8524 065202 032701 000200                BIT    #SSR,R1             ;CHECK FOR SSR SET
8525 065206 001021                       BNE    130$                ;BR, WHEN SSR IS SET
8526 065210 005237 067436                INC    T35CNT              ;BUMP THE CYCLE COUNTER
8527 065214                              DELAY  1                   ;DELAY TO KEEP COUNTER DOWN
     065214 012727 000001                                                   MOV     #1,(PC)+
     065220 000000                                                          .WORD   0
     065222 013727 002116                                                   MOV     L$DLY,(PC)+
     065226 000000                                                          .WORD   0
     065230 005367 177772                                                   DEC     -6(PC)
     065234 001375                                                          BNE     .-4
     065236 005367 177756                                                   DEC     -22(PC)
     065242 001367                                                          BNE     .-20
8528 065244 005337 067442                DEC    T35DLY              ;DROP DEAD TIMER BUMP DOWN
8529 065250 001352                       BNE    120$                ;BR, IF MORE TIME TO GO
8530 065252 012702 000200         130$:  MOV    #SSR,R2             ;SET UP EXPECTED
8531 065256 020102                       CMP    R1,R2               ;ARE THEY EQUAL
8532 065260 001406                       BEQ    140$                ;BR, IF OK
8533 065262 005237 002214                INC    FATFLG                     ;ERROR COUNT
8537 065266                              ERRHRD ERRNO,T35RWE,PKTSSR ;TSSR INCORRECT AFTER WRITE DATA
     065266 104456                                                          TRAP    C$ERHRD
     065270 001317                                                          .WORD   719
     065272 072670                                                          .WORD   T35RWE
     065274 012126                                                          .WORD   PKTSSR
8538 065276                       140$:  CKLOOP                     ;LOOP IF SELECTED
     065276 104406                                                          TRAP    C$CLP1
8539 065300 005737 002216                TST    INTRECV             ;CHECK FOR INTERRUPTS
8540 065304 001010                       BNE    150$                ;BR, IF INTERRUPTS DETECTED
8541 065306 016501 000002                MOV    TSSR(R5),R1         ;GET TSSR STATUS FOR PRINTOUT
8542 065312 005237 002214                INC    FATFLG                     ;ERROR COUNT
```

TEST 7: EXTENDED MODE FEATURES

```
8546 065316                                ERRHRD  ERRNO,T35NIN,PKTSSR     ;INTERRUPT NOT RECEIVED (BAD)
     065316  104456                                                                TRAP    C$ERHRD
     065320  001320                                                                .WORD   720
     065322  072756                                                                .WORD   T35NIN
     065324  012126                                                                .WORD   PKTSSR
8547 065326                         150$:  CKLOOP                          ;LOOP IF SELECTED
     065326  104406                                                                TRAP    C$CLP1
8548
8549                                ;*****************************************
8550                                ;
8551                                ;NOW CHECK FOR THE MOTION BITS SET
8552                                ;
8553                                ;*****************************************
8554
8555 065330  013701  067320                MOV     T35BFR+6,R1             ;PICK UP XST0
8556 065334  010102                        MOV     R1,R2                   ;SET UP EXPECTED
8557 065336  052702  000200                BIS     #BIT7,R2                ;SET MOT BIT IN EXPECTED
8558 065342  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
8559 065344  001406                        BEQ     160$                    ;BR. IF EQUAL (OK)
8560 065346  005237  002214                INC     FATFLG                          ;ERROR COUNT
8564 065352                                ERRHRD  ERRNO,T35MOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     065352  104456                                                                TRAP    C$ERHRD
     065354  001321                                                                .WORD   721
     065356  072403                                                                .WORD   T35MOT
     065360  015554                                                                .WORD   EXPREC
8565 065362                         160$:  CKLOOP                          ;LOOP IF SELECTED
     065362  104406                                                                TRAP    C$CLP1
8566 065364  013701  067324                MOV     T35BFR+12,R1            ;PICK UP XST2
8567 065370  010102                        MOV     R1,R2                   ;SET UP EXPECTED
8568 065372  052702  100000                BIS     #BIT15,R2               ;SET OPM BIT IN EXPECTED
8569 065376  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
8570 065400  001406                        BEQ     170$                    ;BR. IF EQUAL (OK)
8571 065402  005237  002214                INC     FATFLG                          ;ERROR COUNT
8575 065406                                ERRHRD  ERRNO,T35OPM,EXPREC     ;OPM BIT NOT SET
     065406  104456                                                                TRAP    C$ERHRD
     065410  001322                                                                .WORD   722
     065412  072572                                                                .WORD   T35OPM
     065414  015554                                                                .WORD   EXPREC
8576 065416                         170$:  CKLOOP                          ;LOOP IF SELECTED
     065416  104406                                                                TRAP    C$CLP1
8577 065420  012737  000027  067442        MOV     #23.,T35DLY             ;SET UP DELAY COUNTER
8578 065426                         175$:  DELAY   250                     ;START DELAY
     065426  012727  000250                                                        MOV     #250,(PC)+
     065432  000000                                                                .WORD   0
     065434  013727  002116                                                        MOV     L$DLY,(PC)+
     065440  000000                                                                .WORD   0
     065442  005367  177772                                                        DEC     -6(PC)
     065446  001375                                                                BNE     .-4
     065450  005367  177756                                                        DEC     -22(PC)
     065454  001367                                                                BNE     .-20
8579 065456  005337  067442                DEC     T35DLY                  ;BUMP DELAY COUNTER
8580 065462  001361                        BNE     175$                    ;BR. IF MORE DELAY
8581 065464                                ENDSUB
     065464                                                                  L10065:
     065464  104403                                                                TRAP    C$ESUB
8582 065466  023727  002214  000017        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
8583 065474  103402                        BLO     999$                            ;BR. IF LESS THAN 25
```

TEST 7: EXTENDED MODE FEATURES

```
 8584 065476  004737  017262                    JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
 8585 065502                             999$:
 8586                                    ;+
 8587                                    ;
 8588                                    ;TEST 7, SUBTEST 3
 8589                                    ;
 8590                                    ;       VERIFIES THAT THE NON-TAPE-MOTION COMMAND GET STATUS, ISSUED
 8591                                    ;       IMMEDIATATELY AFTER TERMINATION OF A REWIND WITH IMMEDIATE
 8592                                    ;       INTERRUPT COMMAND, TERMINATES PROPERLY AND PROVIDES PROPER
 8593                                    ;       STATUS.  FIRST, A NUMBER OF DATA RECORDS ARE WRITTEN FROM BOT.
 8594                                    ;       THEN THE REWIND WITH IMMEDIATE INTERRUPT COMMAND IS ISSUED AND
 8595                                    ;       TERMINATION VERIFIED.  THEN THE GET STATUS COMMAND IS ISSUED.
 8596                                    ;       THE GET STATUS SHOULD TERMINATE ALMOST IMMEDIATELY AND SHOW
 8597                                    ;       MOT=1 AND OPM=1 IN THE MESSAGE BUFFER.  AFTER A DELAY LONG
 8598                                    ;       ENOUGH TO ALLOW THE REWIND TO COMPLETE AND THE TAPE COME TO
 8599                                    ;       REST, GET STATUS IS AGAIN ISSUED AND THE STATUS CHECKED;  BOTH
 8600                                    ;       MOT AND OPM SHOULD BE CLEAR.
 8601                                    ;
 8602                                    ;
 8603                                    ;
 8604                                    ;
 8605                                    ;-
 8606 065502                                    BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      065502                                                                                      T7.3:
      065502  104402                                                                                  TRAP    C$BSUB
 8607 065504  004737  073064                    JSR     PC,T35REST              ;SET COMMAND PACKET
 8608 065510  004737  073156                    JSR     PC,T35RT2               ;SET UP OTHER COMMAND PACKET
 8609 065514  004737  073220                    JSR     PC,T35RT3               ;SET UP OTHER COMMAND PACKET
 8610 065520  004737  016054                    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 8611 065524  103407                            BCS     20$                     ;BR IF INIT WAS OK
 8612 065526  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 8616 065532  010001                            MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 8617 065534                                    ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      065534  104455                                                                              TRAP    C$ERDF
      065536  001323                                                                              .WORD   723
      065540  003646                                                                              .WORD   SFIERR
      065542  012114                                                                              .WORD   SFIMSG
 8618 065544  013737  002174  067310      20$:   MOV     UNITN,T35DSW            ;SET UP UNIT NUMBER IN PACKET
 8619 065552  012704  067270                    MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 8620 065556  004737  010742                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 8621 065562  103407                            BCS     23$                     ;BR, IF COMMAND ISSUED OK
 8622 065564  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 8626 065570  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 8627 065572                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      065572  104456                                                                              TRAP    C$ERHRD
      065574  001324                                                                              .WORD   /24
      065576  005052                                                                              .WORD   WRTMSG
      065600  012114                                                                              .WORD   SFIMSG
 8628 065602                             23$:   CKLOOP                          ;LOOP IF SELECTED
      065602  104406                                                                              TRAP    C$CLP1
 8629 065604  004737  011074                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 8630 065610  103411                            BCS     30$                     ;BR, IF NO PROBLEM
 8631 065612  010004                            MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
 8632 065614  016501  000002                    MOV     TSSR(R5),R1             ;GET CONTENTS FOR CALL
 8633 065620  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 8637 065624                                    ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
      065624  104456                                                                              TRAP    C$ERHRD
```

```
        065626  001325                                                          .WORD   725
        065630  070544                                                          .WORD   T35RWN
        065632  012126                                                          .WORD   PKTSSR
  8638  065634                          30$:    CKLOOP                  ;LOOP IF SELECTED
        065634  104406                                                          TRAP    C$CLP1
  8639  065636  013701  067320                  MOV     T35BFR+6,R1             ;PICK UP XSTO
  8640  065642  010102                          MOV     R1,R2                   ;SET UP EXPECTED
  8641  065644  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
  8642  065650  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
  8643  065652  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
  8644  065654  005237  002214                  INC     FATFLG                          ;ERROR COUNT
  8648  065660                                  ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        065660  104456                                                          TRAP    C$ERHRD
        065662  001326                                                          .WORD   726
        065664  070240                                                          .WORD   T35BOT
        065666  015554                                                          .WORD   EXPREC
  8649  065670                          40$:    CKLOOP                  ;LOOP IF SELECTED
        065670  104406                                                          TRAP    C$CLP1
  8650  065672  C12703  000024                  MOV     #20.,R3                 ;STARTING RECORD SIZE
  8651  065676  013737  003116  067412          MOV     FREE,T35WB              ;STARTING WRITE BUFFER ADDRESS
  8652
  8653                          ;*****************************************
  8654                          ;
  8655                          ;WRITE DATA,CVC=1,ACK COMMAND
  8656                          ;
  8657                          ;*****************************************
  8658
  8659  065704  012737  140005  067410  65$:    MOV     #140005,T35PK3          ;WRITE DATA,CVC=1,ACK COMMAND
  8660  065712  012704  067410                  MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
  8661  065716  010300                          MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
  8662  065720  004737  017502                  JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
  8663  065724  010337  067416                  MOV     R3,T35SZ                ;SET UP RECORD SIZE IN PACKET
  8664  065730  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
  8665  065734  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
  8666  065740  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
  8667  065744  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
  8668  065750  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
  8669  065752  001406                          BEQ     80$                     ;BR, IF OK
  8670  065754  005237  002214                  INC     FATFLG                          ;ERROR COUNT
  8674  065760                                  ERRHRD  ERRNO,T35WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        065760  104456                                                          TRAP    C$ERHRD
        065762  001327                                                          .WORD   727
        065764  071100                                                          .WORD   T35WDC
        065766  012126                                                          .WORD   PKTSSR
  8675  065770                          80$:    CKLOOP                  ;LOOP IF SELECTED
        065770  104406                                                          TRAP    L$CLP1
  8676
  8677                          ;*****************************************
  8678                          ;
  8679                          ;WRITE DATA RETRY,CVC=1,ACK COMMAND
  8680                          ;
  8681                          ;*****************************************
  8682
  8683  065772  012737  141005  067410          MOV     #141005,T35PK3          ;WRITE DATA RETRY,CVC=1,ACK COMMAND
  8684  066000  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
  8685  066004  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
  8686  066010  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
```

TEST 7: EXTENDED MODE FEATURES

```
 8687 066014  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 8688 066020  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 8689 066022  001406                        BEQ     90$                     ;BR, IF OK
 8690 066024  005237  002214                INC     FATFLG                          ;ERROR COUNT
 8694 066030                                ERRHRD  ERRNO,T35WRF,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA RETRY
      066030  104456                                                                TRAP    C$ERHRD
      066032  001330                                                                .WORD   728
      066034  072145                                                                .WORD   T35WRF
      066036  012126                                                                .WORD   PKTSSR
 8695 066040                        90$:    CKLOOP                          ;LOOP IF SELECTED
      066040  104406                                                                TRAP    C$CLP1
 8696 066042  005723                        TST     (R3)+                   ;BUMP RECORD SIZE COUNTER
 8697 066044  020327  000052                CMP     R3,#42.                 ;AT 42 SIZE YET
 8698 066050  001315                        BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
 8699 066052  004737  011074                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 8700 066056  103411                        BCS     230$                    ;BR, IF NO PROBLEM
 8701 066060  010001                        MOV     R0,R1                   ;SAVE TSSR
 8702 066062  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 8703 066066  C05237  002214                INC     FATFLG                          ;ERROR COUNT
 8707 066072                                ERRHRD  ERRNO,T35RWN,EXPREC     ;REWIND NOT ACCEPTED
      066072  104456                                                                TRAP    C$ERHRD
      066074  001331                                                                .WORD   729
      066076  070544                                                                .WORD   T35RWN
      066100  015554                                                                .WORD   EXPREC
 8708 066102                        230$:   CKLOOP                          ;LOOP IF SELECTED
      066102  104406                                                                TRAP    C$CLP1
 8709 066104  013701  067320                MOV     T35BFR+6,R1             ;PICK UP XSTO
 8710 066110  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 8711 066112  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 8712 066116  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 8713 066120  001406                        BEQ     240$                    ;BR, IF EQUAL (OK)
 8714 066122  005237  002214                INC     FATFLG                          ;ERROR COUNT
 8718 066126                                ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      066126  104456                                                                TRAP    C$ERHRD
      066130  001332                                                                .WORD   730
      066132  070240                                                                .WORD   T35BOT
      066134  015554                                                                .WORD   EXPREC
 8719 066136                        240$:   CKLOOP                          ;LOOP IF SELECTED
      066136  104406                                                                TRAP    C$CLP1
 8720 066140  012703  000024                MOV     #20.,R3                 ;STARTING RECORD SIZE
 8721 066144  013737  003116  067412        MOV     FREE,T35RB              ;STARTING READ BUFFER ADDRESS
 8722
 8723                               ;*****************************************
 8724                               ;
 8725                               ;READ DATA,ACK COMMAND
 8726                               ;
 8727                               ;*****************************************
 8728
 8729 066152  012737  100001  067410  265$:   MOV     #100001,T35PK3          ;READ DATA,ACK COMMAND
 8730 066160  012704  067410                MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 8731 066164  012700  177777                MOV     #177777,R0              ;SET PATTERN IN CORRECT REGISTER
 8732 066170  004737  017502                JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
 8733 066174  010337  067416                MOV     R3,T35SZ                ;SET UP RECORD SIZE IN PACKET
 8734 066200  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 8735 066204  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 8736 066210  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 8737 066214  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
```

TEST 7: EXTENDED MODE FEATURES

```
8738 066220  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
8739 066222  001406                          BEQ     280$                    ;BR. IF OK
8740 066224  005237  002214                  INC     FATFLG                          ;ERROR COUNT
8744 066230                                  ERRHRD  ERRNO,T35RDF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     066230  104456                                                              TRAP    C$ERHRD
     066232  001333                                                              .WORD   731
     066234  067532                                                              .WORD   T35RDF
     066236  012126                                                              .WORD   PKTSSR
8745 066240                          280$:   CKLOOP                          ;LOOP IF SELECTED
     066240  104406                                                              TRAP    C$CLP1
8746 066242  013702  003116                  MOV     FREE,R2                 ;GET BUFFER ADDRESS
8747 066246  010304                          MOV     R3,R4                   ;GET RECORD SIZE
8748 066250  162704  000024                  SUB     #20.,R4                 ;POINT BACK TO 1ST RECORD
8749 066254  060204                  285$:   ADD     R2,R4                   ;POINT TO 1ST LOC IN BUFFER
8750 066256  021403                          CMP     (R4),R3                 ;DATA WRITTEN = READ
8751 066260  001410                          BEQ     290$                    ;BR. IF DATA OK (GOOD)
8752 066262  011401                          MOV     (R4),R1                 ;PICK UP BAD DATA
8753 066264  010302                          MOV     R3,R2                   ;SET UP EXPECTED
8754 066266  005237  002214                  INC     FATFLG                          ;ERROR COUNT
8758 066272                                  ERRHRD  ERRNO,T35DTA,EXPREC     ;DATA IN BUFFER NOT CORRECT
     066272  104456                                                              TRAP    C$ERHRD
     066274  001334                                                              .WORD   732
     066276  072225                                                              .WORD   T35DTA
     066300  015554                                                              .WORD   EXPREC
8759 066302                          290$:   CKLOOP                          ;LOOP IF SELECTED
     066302  104406                                                              TRAP    C$CLP1
8760 066304  005724                          TST     (R4)+                   ;BUMP TO NEXT ADDRESS
8761 066306  160204                          SUB     R2,R4                   ;BACK TO RECORD SIZE
8762 066310  020403                          CMP     R4,R3                   ;AT END OF RECORD YET
8763 066312  001360                          BNE     285$                    ;BR. IF MORE DATA TO CHECK
8764 066314  005723                          TST     (R3)+                   ;BUMP RECORD SIZE
8765 066316  020327  000050                  CMP     R3,#40.                 ;DONE YET
8766 066322  001313                          BNE     265$                    ;BR. IF NOT DONE YET (MORE READS)
8767 066324                          300$:   CKLOOP                          ;LOOP IF SELECTED
     066324  104406                                                              TRAP    C$CLP1
8768 066326                          330$:
8769 066326                                  ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     066326                                                                      L10066:
     066326  104403                                                              TRAP    C$ESUB
8770 066330  023727  002214  000017                  CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
8771 066336  103402                                  BLO     999$                    ;BR. IF LESS THAN 25
8772 066340  004737  017262                          JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
8773 066344                          999$:
8774                                 ;*
8775                                 ;
8776                                 ;TEST 7, SUBTEST 4
8777                                 ;
8778                                 ;       VERIFIES THAT A TAPE-MOTION COMMAND (READ, WRITE, POSITION),
8779                                 ;       ISSUED IMMEDIATATELY AFTER TERMINATION OF A REWIND WITH
8780                                 ;       IMMEDIATE INTERRUPT COMMAND, IS "QUEUED" BY THE CONTROLLER AND
8781                                 ;       THEN EXECUTES PROPERLY.
8782                                 ;
8783                                 ;
8784                                 ;
8785                                 ;-
8786 066344                                  BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     066344                                                                      T7.4:
```

TEST 7: EXTENDED MODE FEATURES

```
                066344  104402                                                          TRAP    C$BSUB
 8787           066346  004737  073064                  JSR     PC,T35REST              ;SET COMMAND PACKET
 8788           066352  004737  073156                  JSR     PC,T35RT2               ;SET UP OTHER COMMAND PACKET
 8789           066356  004737  073220                  JSR     PC,T35RT3               ;SET UP OTHER COMMAND PACKET
 8790           066362  012737  176750  067442          MOV     #65000.,T35DLY          ;SET UP DELAY COUNTER
 8791           066370  004737  016054          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 8792           066374  103426                          BCS     20$                     ;BR IF INIT WAS OK
 8793           066376                                  DELAY   250                     ;DELAY ABOUT .25 SEC
                066376  012727  000250                                                  MOV     #250.,(PC)+
                066402  000000                                                          .WORD   0
                066404  013727  002116                                                  MOV     L$DLY,(PC)+
                066410  000000                                                          .WORD   0
                066412  005367  177772                                                  DEC     -6(PC)
                066416  001375                                                          BNE     .-4
                066420  005367  177756                                                  DEC     -22(PC)
                066424  001367                                                          BNE     .-20
 8794           066426  005337  067442                  DEC     T35DLY                  ;BUMP COUNTER
 8795           066432  001356                          BNE     10$                     ;BR, IF COUNTER NOT DONE
 8796           066434  C05237  002214                  INC     FATFLG                          ;ERROR COUNT
 8800           066440  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 8801           066442                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
                066442  104455                                                          TRAP    C$ERDF
                066444  001335                                                          .WORD   733
                066446  003646                                                          .WORD   SFIERR
                066450  012114                                                          .WORD   SFIMSG
 8802           066452  013737  002174  067310  20$:    MOV     UNITN,T35DSW            ;SET UP UNIT (DRIVE) NUMBER
 8803           066460  012704  067270                  MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 8804           066464  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 8805           066470  103407                          BCS     23$                     ;BR, IF COMMAND ISSUED OK
 8806           066472  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 8810           066476  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 8811           066500                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
                066500  104456                                                          TRAP    C$ERHRD
                066502  001336                                                          .WORD   734
                066504  005052                                                          .WORD   WRTMSG
                066506  012114                                                          .WORD   SFIMSG
 8812           066510                  23$:    CKLOOP                                  ;LOOP IF SELECTED
                066510  104406                                                          TRAP    C$CLP1
 8813           066512  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 8814           066516  103411                          BCS     30$                     ;BR, IF NO PROBLEM
 8815           066520  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 8816           066524  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
 8817           066526  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 8821           066532                                  ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
                066532  104456                                                          TRAP    C$ERHRD
                066534  001337                                                          .WORD   /35
                066536  070544                                                          .WORD   T35RWN
                066540  012126                                                          .WORD   PKTSSR
 8822           066542                  30$:    CKLOOP                                  ;LOOP IF SELECTED
                066542  104406                                                          TRAP    C$CLP1
 8823           066544  013701  067320                  MOV     T35BFR+6,R1             ;PICK UP XSTO
 8824           066550  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 8825           066552  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 8826           066556  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
 8827           066560  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
 8828           066562  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 8832           066566                                  ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
```

TEST 7: EXTENDED MODE FEATURES

```
        066566  104456                                                                  TRAP    C$ERHRD
        066570  001340                                                                  .WORD   736
        066572  070240                                                                  .WORD   T35BOT
        066574  015554                                                                  .WORD   EXPREC
  8833  066576                          40$:    CKLOOP                  ;LOOP IF SELECTED
        066576  104406                                                                  TRAP    C$CLP1
  8834  066600  012703  000024                  MOV     #20.,R3         ;STARTINC RECORD SIZE
  8835  066604  013737  003116  067412        MOV     FREE,T35WB      ;STARTING WRITE BUFFER ADDRESS
  8836
  8837                          ;*****************************************
  8838                          ;
  8839                          ;WRITE DATA,CVC=1,ACK COMMAND
  8840                          ;
  8841                          ;*****************************************
  8842
  8843  066612  012737  140005  067410  65$:    MOV     #140005,T35PK3  ;WRITE DATA,CVC=1,ACK COMMAND
  8844  066620  012704  067410                  MOV     #T35PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
  8845  066624  010300                          MOV     R3,R0           ;SET PATTERN IN CORRECT REGISTER
  8846  066626  C04737  017502                  JSR     PC,FILLMEM      ;FILL MEMORY WITH RECORD SIZE
  8847  066632  010337  067416                  MOV     R3,T35SZ        ;SET UP RECORD SIZE IN PACKET
  8848  066636  010465  000000                  MOV     R4,TSDB(R5)     ;ISSUE COMMAND
  8849  066642  004737  016330                  JSR     PC,WAITF        ;WAIT FOR SSR TO SET
  8850  066646  016501  000002                  MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
  8851  066652  012702  000200                  MOV     #SSR,R2         ;SET UP EXPECTED
  8852  066656  020102                          CMP     R1,R2           ;ARE THEY EQUAL
  8853  066660  001406                          BEQ     80$             ;BR, IF OK
  8854  066662  005237  002214                  INC     FATFLG                  ;ERROR COUNT
  8858  066666                                  ERRHRD  ERRNO,T35WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        066666  104456                                                                  TRAP    C$ERHRD
        066670  001341                                                                  .WORD   737
        066672  071100                                                                  .WORD   T35WDC
        066674  012126                                                                  .WORD   PKTSSR
  8859  066676                          80$:    CKLOOP                  ;LOOP IF SELECTED
        066676  104406                                                                  TRAP    C$CLP1
  8860
  8861                          ;*****************************************
  8862                          ;
  8863                          ;WRITE DATA RETRY,ACK,SWB=1 COMMAND
  8864                          ;
  8865                          ;*****************************************
  8866
  8867  066700  012737  111005  067410          MOV     #111005,T35PK3  ;WRITE DATA RETRY,ACK,SWB=1 COMMAND
  8868  066706  010465  000000                  MOV     R4,TSDB(R5)     ;ISSUE COMMAND
  8869  066712  004737  016330                  JSR     PC,WAITF        ;WAIT FOR SSR TO SET
  8870  066716  016501  000002                  MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
  8871  066722  012702  000200                  MOV     #SSR,R2         ;SET UP EXPECTED
  8872  066726  020102                          CMP     R1,R2           ;ARE THEY EQUAL
  8873  066730  001406                          BEQ     90$             ;BR, IF OK
  8874  066732  005237  002214                  INC     FATFLG                  ;ERROR COUNT
  8878  066736                                  ERRHRD  ERRNO,T35WRF,EXPREC     ;TSSR INCORRECT AFTER WRITE DATA RETRY
        066736  104456                                                                  TRAP    C$ERHRD
        066740  001342                                                                  .WORD   738
        066742  072145                                                                  .WORD   T35WRF
        066744  015554                                                                  .WORD   EXPREC
  8879  066746                          90$:    CKLOOP                  ;LOOP IF SELECTED
        066746  104406                                                                  TRAP    C$CLP1
  8880  066750  005723                          TST     (R3)+           ;BUMP RECORD SIZE COUNTER
```

TEST 7: EXTENDED MODE FEATURES

```
 8881 066752  020327  000052                          CMP     R3,#42.         ;AT 42 SIZE YET
 8882 066756  001315                          BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
 8883 066760  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 8884 066764  103411                          BCS     230$                    ;BR, IF NO PROBLEM
 8885 066766  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 8886 066772  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
 8887 066774  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 8891 067000                                  ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
      067000  104456                                                                  TRAP    C$ERHRD
      067002  001343                                                                  .WORD   739
      067004  070544                                                                  .WORD   T35RWN
      067006  012126                                                                  .WORD   PKTSSR
 8892 067010                          230$:   CKLOOP                          ;LOOP IF SELECTED
      067010  104406                                                                  TRAP    C$CLP1
 8893 067012  013701  067320                  MOV     T35BFR+6,R1             ;PICK UP XSTO
 8894 067016  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 8895 067020  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 8896 067024  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
 8897 067026  001406                          BEQ     240$                    ;BR, IF EQUAL (OK)
 8898 067030  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 8902 067034                                  ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      067034  104456                                                                  TRAP    C$ERHRD
      067036  001344                                                                  .WORD   740
      067040  070240                                                                  .WORD   T35BOT
      067042  015554                                                                  .WORD   EXPREC
 8903 067044                          240$:   CKLOOP                          ;LOOP IF SELECTED
      067044  104406                                                                  TRAP    C$CLP1
 8904 067046  012703  000024                  MOV     #20.,R3                 ;STARTING RECORD SIZE
 8905 067052  013737  003116  067412          MOV     FREE,T35RB              ;STARTING READ BUFFER ADDRESS
 8906
 8907                                 ;*****************************************
 8908                                 ;
 8909                                 ;READ DATA,ACK COMMAND
 8910                                 ;
 8911                                 ;*****************************************
 8912
 8913 067060  012737  100001  067410  265$:   MOV     #100001,T35PK3          ;READ DATA,ACK COMMAND
 8914 067066  012704  067410                  MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 8915 067072  010337  067416                  MOV     R3,T35SZ                ;SET UP RECORD SIZE IN PACKET
 8916 067076  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 8917 067102  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 8918 067106  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 8919 067112  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 8920 067116  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 8921 067120  001406                          BEQ     280$                    ;BR, IF OK
 8922 067122  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 8926 067126                                  ERRHRD  ERRNO,T35RDF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      067126  104456                                                                  TRAP    C$ERHRD
      067130  001345                                                                  .WORD   741
      067132  067532                                                                  .WORD   T35RDF
      067134  012126                                                                  .WORD   PKTSSR
 8927 067136                          280$:   CKLOOP                          ;LOOP IF SELECTED
      067136  104406                                                                  TRAP    C$CLP1
 8928 067140  013702  003116                  MOV     FREE,R2                 ;GET BUFFER ADDRESS
 8929 067144  010304                          MOV     R3,R4                   ;GET RECORD SIZE
 8930 067146  162704  000024                  SUB     #20.,R4                 ;POINT BACK TO 1ST RECORD
 8931 067152  060204                  285$:   ADD     R2,R4                   ;POINT TO 1ST LOC IN BUFFER
```

TEST 7: EXTENDED MODE FEATURES

```
8932 067154  000303                        SWAB    R3                      ;SWAP BYTES SW8=1 ETC.
8933 067156  021403                        CMP     (R4),R3                 ;DATA WRITTEN = READ
8934 067160  001410                        BEQ     290$                    ;BR, IF DATA OK (GOOD)
8935 067162  011401                        MOV     (R4),R1                 ;PICK UP BAD DATA
8936 067164  010302                        MOV     R3,R2                   ;SET UP EXPECTED
8937 067166  005237  002214                INC     FATFLG                          ;ERROR COUNT
8941 067172                                ERRHRD  ERRNO,T35DTA,EXPREC     ;DATA IN BUFFER NOT CORRECT
     067172  104456                                                                TRAP    C$ERHRD
     067174  001346                                                                .WORD   742
     067176  072225                                                                .WORD   T35DTA
     067200  015554                                                                .WORD   EXPREC
8942 067202                        290$:   CKLOOP                          ;LOOP IF SELECTED
     067202  104406                                                                TRAP    C$CLP1
8943 067204  005724                        TST     (R4)+                   ;BUMP TO NEXT ADDRESS
8944 067206  160204                        SUB     R2,R4                   ;BACK TO RECORD SIZE
8945 067210  000303                        SWAB    R3                      ;PUT R3 BACK INTO SHAPE
8946 067212  020403                        CMP     R4,R3                   ;AT END OF RECORD YET
8947 067214  001356                        BNE     285$                    ;BR, IF MORE DATA TO CHECK
8948 067216  005723                        TST     (R3)+                   ;BUMP RECORD SIZE
8949 067220  020327  000050                CMP     R3,#40.                 ;DONE YET
8950 067224  001315                        BNE     265$                    ;BR, IF NOT DONE YET (MORE READS)
8951 067226                        300$:   CKLOOP                          ;LOOP IF SELECTED
     067226  104406                                                                TRAP    C$CLP1
8952 067230                                ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     067230                                                                     L10067:
     067230  104403                                                                TRAP    C$ESUB
8953 067232  023727  002214  000017                CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
8954 067240  103402                                BLO     999$                    ;BR, IF LESS THAN 25
8955 067242  004737  017262                        JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
8956 067246                        999$:
8957                                       ;
8958                                       ;
8959                                       ;
8960 067246  004737  016536                JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
8961 067252  103002                        BCC     163$                    ;BR, IF NO LOOP REQUIRED
8962 067254  000137  063344                JMP     T35LOOP                 ;EXECUTE AGAIN
8963 067260                        163$:   EXIT    TST                     ;ALL DONE THIS TEST
     067260  104432                                                                TRAP    C$EXIT
     067262  003760                                                                .WORD   L10063-.
8964                                       ;+
8965                                       ;LOCAL STORAGE FOR THIS TEST
8966                                       ;-
8968         067270                                .=<.+10>&177770
8970 067270                        T35PACKET:                              ;COMMAND PACKET FOR TEST
8971 067270  100004                               .WORD   100004           ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
8972 067272  067300                               .WORD   T35DATA          ;ADDRESS OF CHARACTERISTICS BLOCK
8973 067274  000000                               .WORD   0
8974 067276  000012                               .WORD   10.              ;STARTING VALUE OF BLOCK SIZE
8975 067300                        T35DATA:                                ;CHARACTERISTICS DATA BLOCK
8976 067300  067312                               .WORD   T35BFR           ;ADDRESS OF MESSAGE BUFFER
8977 067302  000000                               .WORD   0
8978 067304  000024                               .WORD   20.              ;LENGTH OF MESSAGE BUFFER
8979 067306  000000                               .WORD   0
8980 067310  000000                T35DSW: .WORD   0                       ;SELECT DRIVE 0
8981 067312                        T35BFR: .BLKW   25.                     ;MESSAGE BUFFER
8982                                       ;
8983                                       ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
```

```
                                ;
                                        .=<.+10>&177770
067400                          T35PK2:
067400  100006                          .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
067402  067420                          .WORD   T35BF2          ;ADDRESS OF SELECT BLOCK DATA
067404  000000                          .WORD   0
067406  000006                          .WORD   6.              ;SIZE OF DATA PACKET
                                ;
067410                          T35PK3:
067410  100005                          .WORD   100005          ;REREAD COMMAND, AND ACK
067412                          T35RB:
067412  003116                  T35WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
067414  000000                          .WORD   0
067416  000000                  T35SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
                                        .EVEN
                                ;
                                ;
                                ;
067420                          T35BF2:
067420     010                  T35BS0: .BYTE   10              ;BSEL0 AREA
067421     200                  T35BS1: .BYTE   200             ;BSEL1 AREA
067422  000000                  T35S2:  .WORD   0               ;SEL 2 AREA
067424  000000                  T35S3:  .WORD   0               ;DATA AREA
                                ;
                                ;
                                        .EVEN
                                ;TAPE MOTION PACKET COMMAND VALUES

067426  100205                  T35RN:  .WORD   100205          ;REREAD DATA (NEXT)
067430  100605                  T35WDR: .WORD   100605          ;REREAD DATA RETRY
067432  102205                  T35CON: .WORD   102205          ;WRITE CONTINOUS
067434  177777                          .WORD   177777          ;END OF DATA

                                ;
067436  000000                  T35CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
067440  000000                  T35CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
067442  000000                  T35DLY: .WORD   0               ;DELAY COUNTER
                                ;+
                                ;LOCAL TEXT MESSAGES FOR TEST
                                ;-

067444     124     141     160  T35WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
067532     124     123     123  T35RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
067601     122     105     122  T35RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
067676     120     117     123  T35SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
067760     122     111     102  T35LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
070030     124     123     123  T35WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
070105     111     154     154  T35LOG: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
070166     124     123     123  T35WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA Command'
070240     124     141     160  T35BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XSTO)'
070333     127     122     111  T35TIM: .ASCIZ  'WRITE DATA RETRY''S Erase Tape Not Long Enough'
070410     122     105     122  T35EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
070467     124     123     123  T35TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
070544     122     145     167  T35RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
070613     122     101     115  T35RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
070666     124     123     123  T35AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
070735     104     162     151  T35OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
```

TEST 7: EXTENDED MODE FEATURES

```
9046 071010      124      123      123  T35WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
9047 071100      124      123      123  T35WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
9048 071153      103      126      103  T35VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
9049 071226      124      123      102  T35BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
9050 071301      127      122      111  T35WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
9051 071370      122      145      141  T35LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XST0'
9052 071452      122      145      141  T35LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XST0'
9053 071534      122      145      163  T35PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
9054 071622      122      145      141  T35TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
9055 071710      127      122      111  T35NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
9056 072006      124      123      123  T35SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
9057 072063      124      123      123  T35TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
9058 072145      124      123      123  T35WRF: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command'
9059 072225      104      141      164  T35DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
9060 072322      124      123      123  T35SSR: .ASCIZ  'TSSR Incorrect After WRITE MISCELLANEOUS Command'
9061 072403      115      117      124  T35MOT: .ASCIZ  'MOT Bit (XST0) Not Set During Rewind (Extended Features Mode)'
9062 072501      111      156      164  T35INT: .ASCIZ  'Interrupt Received After REWIND Command (IE Bit Not Set)'
9063 072572      117      120      115  T35OPM: .ASCIZ  'OPM Bit (XST2) Not Set During Rewind (Extended Features Mode)'
9064 072670      124      123      123  T35RWE: .ASCIZ  'TSSR Incorrect After Extended Features REWIND Command'
9065 072756      116      157      040  T35NIN: .ASCIZ  'No Interrupt Detected After REWIND IMMEDIATE'
9066 073033      105      170      164  TST35ID:        .ASCIZ  'Extended Mode Functions'
9067                                                     .EVEN
9068                                                ;+
9069                                                ;
9070                                                ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
9071                                                ;WRITE SUBSYSTEM MEMORY COMMAND
9072                                                ;
9073                                                ;-
9074
9075 073064                                         T35REST:
9076 073064                                                 SAVREG                          ;SAVE THE REGISTERS
9077 073070  012701  067270                                MOV     #T35PACKET,R1           ;START OF THE PACKET
9078 073074  012721  100004                                MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
9079 073100  012721  067300                                MOV     #T35DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
9080 073104  005021                                        CLR     (R1)+                   ;EXTENDED ADDRESS
9081 073106  012721  000012                                MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
9082 073112  012721  067312                                MOV     #T35BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
9083 073116  005021                                        CLR     (R1)+
9084 073120  012721  000024                                MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
9085 073124  005021                                        CLR     (R1)+
9086 073126  012711  000000                                MOV     #0,(R1)                 ;SELECT DRIVE ZERO
9087 073132  012702  000030                                MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
9088 073136  012240  177777  067312  64$:                  MOV     #177777,T35BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
9089 073144  005342                                        TST     -(R2)                   ;NEXT LOCATION
9090 073146  022702  000000                                CMP     #0,R2                   ;AT END OF LOOP YET
9091 073152  001371                                        BNE     64$                     ;KEEP GOING UNTIL DONE
9092 073154  000207                                        RTS     PC                      ;RETURN
9093
9094 073156                                         T35RT2:
9095 073156                                                 SAVREG                          ;SAVE THE REGISTERS
9096 073162  012701  067400                                MOV     #T35PK2,R1              ;START OF THE PACKET
9097 073166  012721  100006                                MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
9098 073172  012721  067420                                MOV     #T35BF2,(R1)+           ;ADDRESS OF DATA BLOCK
9099 073176  005021                                        CLR     (R1)+                   ;EXTENDED ADDRESS
9100 073200  012721  000006                                MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
9101 073204  005021                                        CLR     (R1)+
9102 073206  012701  067420                                MOV     #T35BF2,R1              ;POINT TO DATA SEL AREA
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```
 9103 073212  005021                        CLR     (R1)+
 9104 073214  005011                        CLR     (R1)
 9105 073216  000207                        RTS     PC                      ;RETURN
 9106 073220                          T35RT3:
 9107 073220                                SAVREG                          ;SAVE REGISTERS
 9108 073224  012701  067410                MOV     #T35PK3,R1              ;SET UP POINTER ADDRESS
 9109 073230  00502*                        CLR     (R1)+                   ;COMMAND SPACE
 9110 073232  00502?1                       CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
 9111 073234  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
 9112 073236  005011                        CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
 9113 073240  000207                        RTS     PC                      ;RETURN
 9114 073242                                ENDTST
      073242                                                          L10063:
      073242  104401                                                       TRAP    C$ETST
 9115                                       .SBTTL  TEST  8: RECORD BUFFERING
 9116                                ;+
 9117                                ;
 9118                                ;
 9119                                ;       THIS TEST VERIFIES THAT RECORD BUFFERING, USED FOR WRITE DATA
 9120                                ;       AND READ NEXT COMMANDS, OPERATES PROPERLY AND IS PROPERLY
 9121                                ;       CONTROLLED BY THE EXTENDED CHARACTERISTICS DATA WORD.  IF THE
 9122                                ;       M7196 CONTROLLER MODULE IS NOT ALREADY IN EXTENDED FEATURES MODE
 9123                                ;       (AS CONTROLLED BY THE DIP SWITCH ON THE MODULE), IT IS PLACED
 9124                                ;       INTO THAT MODE BY INVERTING THE SENSE OF THE SWITCH USING THE
 9125                                ;       WRITE SUBSYSTEM MEMORY COMMAND.  NOTE THAT RECORD BUFFERING HAS
 9126                                ;       BEEN ENABLED IN PREVIOUS TESTS OF READ AND WRITE AND SO HAS BEEN
 9127                                ;       PARTIALLY TESTED ALREADY.  THIS TEST VERIFIES THAT BUFFERING IS
 9128                                ;       ACTUALLY OPERATING.  THE FOLLOWING SUBTESTS ARE PERFORMED:
 9129                                ;
 9130                                ;       VERI IES THAT NORMAL BUFFERING ON WRITE DATA COMMANDS OPERATES
 9131                                ;       PROPERLY AT LOW TAPE SPEED.  THE FOLLOWING SEQUENCE IS
 9132                                ;       PERFORMED:
 9133                                ;
 9134                                ;            1.  THE TAPE IS REWOUND.
 9135                                ;
 9136                                ;            2.  BUFFERING IS DISABLED AND LOW TAPE SPEED IS SELECTED
 9137                                ;                (VIA WRITE CHARACTERISTICS COMMAND).
 9138                                ;
 9139                                ;            3.  AN INITIAL RECORD IS WRITTEN ONTO THE TAPE IN ORDER TO
 9140                                ;                MOVE THE TAPE OFF BOT.
 9141                                ;
 9142                                ;            4.  THE PROGRAM DELAYS FOR A TIME SUFFICIENT TO ALLOW THE
 9143                                ;                TAPE TO REPOSITION AND COME TO REST.
 9144                                ;
 9145                                ;            5.  A WRITE DATA COMMAND, WITH A BYTE COUNT LESS THAN 3.5K,
 9146                                ;                IS ISSUED, AND THE PROGRAM COUNTS, IN A WAIT LOOP, THE
 9147                                ;                TIME IT TAKES TO RECEIVE COMMAND TERMINATION.  THIS
 9148                                ;                SHOULD BE A RELATIVELY LONG TIME SINCE BUFFERING IS
 9149                                ;                DISABLED.
 9150                                ;
 9151                                ;            6.  BUFFERING IS ENABLED.
 9152                                ;
 9153                                ;            7.  THE WRITE DATA COMMAND IS AGAIN ISSUED, WITH THE SAME
 9154                                ;                BYTE COUNT AS THAT USED PREVIOUSLY.  THE TIME TO
 9155                                ;                COMPLETION IS AGAIN MEASURED.
 9156                                ;
 9157                                ;            8.  THE COMPLETION TIMES MEASURED FOR THE NON-BUFFERED AND
```

TEST 8: RECORD BUFFERING

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                                        ;               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
                                        ;
                                        ;
                                        ;
                                        :-
073244                                          BGNTST
073244                                                                                  T8::
073244  012737  006354  002172                  MOV     @EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
073252  004737  017354                          JSR     PC,KTOFF                ;TURN OFF KT11
073256  012700  100617                          MOV     #TST36ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
073262  004737  016570                          JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
073266  012737  000005  002210                  MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
073274  005037  075626                          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.
                                        ;
                                        ;
                                        ;-

073300                                  T36LOOP:
073300                                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
073300                                                                                  T8.1:
073300  104402                                                                          TRAP    C$BSUB
073302  004737  100640                          JSR     PC,T36REST              ;SET COMMAND PACKET
073306  004737  100732                          JSR     PC,T36RT2               ;SET UP OTHER COMMAND PACKET
073312  004737  100774                          JSR     PC,T36RT3               ;SET UP OTHER COMMAND PACKET
073316  012737  176750  075632                  MOV     #65000.,T36DLY          ;SET UP DELAY COUNTER
073324  005037  075626                          CLR     T36CNT                  ;CLEAR COUNTER
073330  004737  016054          10$:            JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
073334  103426                                  BCS     20$                     ;BR IF INIT WAS OK
073336                                          DELAY   250                     ;DELAY ABOUT .25 SEC
073336  012727  000250                                                          MOV     #250,(PC)+
073342  000000                                                                  .WORD   0
073344  013727  002116                                                          MOV     L$DLY,(PC)+
073350  000000                                                                  .WORD   0
073352  005367  177772                                                          DEC     -6(PC)
073356  001375                                                                  BNE     .-4
073360  005367  177756                                                          DEC     -22(PC)
073364  001367                                                                  BNE     .-20
073366  005337  075632                          DEC     T36DLY                  ;BUMP COUNTER
073372  001356                                  BNE     10$                     ;BR, IF COUNTER NOT DONE
```

TEST 8: RECORD BUFFERING

```
 9208 073374  005237  002214                INC     FATFLG                          ;ERROR COUNT
 9212 073400  010001                        MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 9213 073402                                ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      073402  104455                                                                TRAP    C$ERDF
      073404  001441                                                                .WORD   801
      073406  003646                                                                .WORD   SFIERR
      073410  012114                                                                .WORD   SFIMSG
 9214 073412  013737  002174  075500  20$:    MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
 9215 073420  012704  075460                MOV     #T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 9216 073424  004737  010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 9217 073430  103407                        BCS     25$                     ;BR, IF COMMAND ISSUED OK
 9218 073432  005237  002214                INC     FATFLG                          ;ERROR COUNT
 9222 073436  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 9223 073440                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      073440  104456                                                                TRAP    C$ERHRD
      073442  001442                                                                .WORD   802
      073444  005052                                                                .WORD   WRTMSG
      073446  012114                                                                .WORD   SFIMSG
 9224 073450                        25$:    CKLOOP                          ;LOOP IF SELECTED
      073450  104406                                                                TRAP    C$CLP1
 9225 073452  004737  011074                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 9226 073456  103407                        BCS     30$                     ;BR, IF NO PROBLEM
 9227 073460  010004                        MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
 9228 073462  005237  002214                INC     FATFLG                          ;ERROR COUNT
 9232 073466                                ERRHRD  ERRNO,T36RWN,PKTSSR     ;REWIND NOT ACCEPTED
      073466  104456                                                                TRAP    C$ERHRD
      073470  001443                                                                .WORD   803
      073472  077041                                                                .WORD   T36RWN
      073474  012126                                                                .WORD   PKTSSR
 9233 073476                        30$:    CKLOOP                          ;LOOP IF SELECTED
      073476  104406                                                                TRAP    C$CLP1
 9234 073500  013701  075510                MOV     T36BFR+6,R1             ;PICK UP XSTO
 9235 073504  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 9236 073506  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 9237 073512  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 9238 073514  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
 9239 073516  005237  002214                INC     FATFLG                          ;ERROR COUNT
 9243 073522                                ERRHRD  ERRNO,T36BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      073522  104456                                                                TRAP    C$ERHRD
      073524  001444                                                                .WORD   804
      073526  076535                                                                .WORD   T36BOT
      073530  015554                                                                .WORD   EXPREC
 9244 073532                        40$:    CKLOOP                          ;LOOP IF SELECTED
      073532  104406                                                                TRAP    C$CLP1
 9245 073534  013737  002174  075500          MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
 9246 073542  052737  000030  075500          BIS     #BIT3!BIT4,T36DSW       ;25-APR-83 REV B - TURN ON THE BUFFERING
 9247 073550  012704  075460                MOV     #T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 9248 073554  004737  010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 9249 073560  103407                        BCS     50$                     ;BR, IF COMMAND ISSUED OK
 9250 073562  005237  002214                INC     FATFLG                          ;ERROR COUNT
 9254 073566  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 9255 073570                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      073570  104456                                                                TRAP    C$ERHRD
      073572  001445                                                                .WORD   805
      073574  005052                                                                .WORD   WRTMSG
      073576  012114                                                                .WORD   SFIMSG
 9256 073600                        50$:    CKLOOP                          ;LOOP IF SELECTED
```

TEST 8: RECORD BUFFERING

```
        073600  104406                                                          TRAP    C$CLP1
   9257 073602  012737  003720  075606          MOV     #2000.,T36SZ           ;SET UP RECORD SIZE
   9258 073610  013737  003116  075602          MOV     FREE,T36WB             ;ADDRESS OF WRITE BUFFER
   9259 073616  012737  140005  075600          MOV     #140005,T36PK3         ;WRITE DATA,ACK,CVC=1 COMMAND
   9260 073624  012704  075600                  MOV     #T36PK3,R4             ;SET UP R4 WITH PACKET ADDRESS
   9261 073630  010465  000000                  MOV     R4,TSDB(R5)            ;ISSUE COMMAND
   9262 073634  004737  016330                  JSR     PC,WAITF               ;WAIT FOR SSR TO SET
   9263 073640  016501  000002                  MOV     TSSR(R5),R1            ;GET TSSR CONTENTS
   9264 073644  012702  000200                  MOV     #SSR,R2                ;SET UP EXPECTED
   9265 073650  020102                          CMP     R1,R2                  ;ARE THEY EQUAL
   9266 073652  001406                          BEQ     60$                    ;BR, IF OK
   9267 073654  005237  002214                  INC     FATFLG                          ;ERROR COUNT
   9271 073660                                  ERRHRD  ERRNO,WRTERR,PKTSSR    ;TSSR INCORRECT AFTER READ DATA
        073660  104456                                                          TRAP    C$ERHRD
        073662  001446                                                          .WORD   806
        073664  005107                                                          .WORD   WRTERR
        073666  012126                                                          .WORD   PKTSSR
   9272 073670                          60$:    CKLOOP                         ;LOOP IF SELECTED
        073670  104406                                                          TRAP    C$CLP1
   9273 073672  012737  000005  075632          MOV     #05.,T36DLY            ;25-APR-83 REV B - DELAY FOR TAPE TO STOP
   9274 073700                          70$:    DELAY   1                      ;25-APR-83 REV B - DELAY ROUTINE CALL
        073700  012727  000001                                                  MOV     #1,(PC)+
        073704  000000                                                          .WORD   0
        073706  013727  002116                                                  MOV     L$DLY,(PC)+
        073712  000000                                                          .WORD   0
        073714  005367  177772                                                  DEC     -6(PC)
        073720  001375                                                          BNE     .-4
        073722  005367  177756                                                  DEC     -22(PC)
        073726  001367                                                          BNE     .-20
   9275 073730  005337  075632                  ...     T36DLY                 ;BUMP COUNTER DOWN
   9276 073734  001361                          BNE     70$                    ;BR, IF MORE DELAY TO GO
   9277 073736  012737  006642  075606          MOV     #3490.,T36SZ           ;SET SIZE OF TRANSFER
   9278 073744  012737  140005  075600          MOV     #140005,T36PK3         ;WRITE DATA,ACK,CVC=1 COMMAND
   9279 073752  012704  075600                  MOV     #T36PK3,R4             ;SET UP R4 WITH PACKET ADDRESS
   9280 073756  005037  075626                  CLR     T36CNT                 ;CLEAR COUNTER
   9281 073762  012737  001750  075632          MOV     #1000.,T36DLY          ;SET DROP DEAD COUNTER VALUE
   9282 073770  010465  000000                  MOV     R4,TSDB(R5)            ;ISSUE COMMAND
   9283 073774  016501  000002          80$:    MOV     TSSR(R5),R1            ;GET TSSR CONTENTS
   9284 074000  032701  000200                  BIT     #SSR,R1                ;CHECK FOR SSR SET
   9285 074004  001021                          BNE     90$                    ;BR, IF SSR IS SET
   9286 074006  005237  075626                  INC     T36CNT                 ;BUMP CYCLE COUNTER
   9287 074012                                  DELAY   1                      ;CUT NUMBER OF LOOPS DOWN
        074012  012727  000001                                                  MOV     #1,(PC)+
        074016  000000                                                          .WORD   0
        074020  013727  002116                                                  MOV     L$DLY,(PC)+
        074024  000000                                                          .WORD   0
        074026  005367  177772                                                  DEC     -6(PC)
        074032  001375                                                          BNE     .-4
        074034  005367  177756                                                  DEC     -22(PC)
        074040  001367                                                          BNE     .-20
   9288 074042  005337  075632                  DEC     T36DLY                 ;BUMP DROP DEAD COUNTER
   9289 074046  001352                          BNE     80$                    ;BR, IF THERE IS STILL TIME
   9290 074050  012702  000200          90$:    MOV     #SSR,R2                ;SET UP EXPECTED
   9291 074054  020102                          CMP     R1,R2                  ;ARE THEY EQUAL
   9292 074056  001406                          BEQ     100$                   ;BR, IF OK
   9293 074060  005237  002214                  INC     FATFLG                          ;ERROR COUNT
   9297 074064                                  ERRHRD  ERRNO,T36WDE,PKTSSR    ;TSSR INCORRECT AFTER READ DATA
```

TEST 8: RECORD BUFFERING

```
        074064  104456                                                          TRAP    C$ERHRD
        074066  001447                                                          .WORD   807
        074070  076463                                                          .WORD   T36WDE
        074072  012126                                                          .WORD   PKTSSR
  9298  074074                          100$:   CKLOOP                        ;LOOP IF SELECTED
        074074  104406                                                          TRAP    C$CLP1
  9299  074076  013737  002174  075500          MOV     UNITN,T36DSW          ;SET UP DRIVE NUMBER
  9300  074104  052737  000010  075500          BIS     #BIT3,T36DSW          ;25-APR-83 REV B - TURN OFF BUFFERING
  9301  074112  012704  075460                  MOV     #T36PACKET,R4         ;SUBROUTINE NEEDS PACKET ADDRESS
  9302  074116  004737  010742                  JSR     PC,WRTCHR             ;ISSUE WRITE CHARACTERISTICS
  9303  074122  103407                          BCS     110$                  ;BR, IF COMMAND ISSUED OK
  9304  074124  005237  002214                  INC     FATFLG                        ;ERROR COUNT
  9308  074130  010001                          MOV     R0,R1                 ;SAVE CONTENTS OF TSSR
  9309  074132                                  ERRHRD  ERRNO,WRTMSG,SFIMSG   ;WRITE CHARACTERISTISC FAILED
        074132  104456                                                          TRAP    C$ERHRD
        074134  001450                                                          .WORD   808
        074136  005052                                                          .WORD   WRTMSG
        074140  012114                                                          .WORD   SFIMSG
  9310  074142                          110$:   CKLOOP                        ;LOOP IF SELECTED
        074142  104406                                                          TRAP    C$CLP1
  9311  074144  012737  006642  075606          MOV     #3490.,T36SZ          ;SET SIZE OF TRANSFER
  9312  074152  012737  140005  075600          MOV     #140005,T36PK3        ;WRITE DATA,ACK,CVC=1 COMMAND
  9313  074160  012704  075600                  MOV     #T36PK3,R4            ;SET UP R4 WITH PACKET ADDRESS
  9314  074164  005037  075630                  CLR     T36CNU                ;CLEAR COUNTER
  9315  074170  012737  001750  075632          MOV     #1000.,T36DLY         ;SET DROP DEAD COUNTER VALUE
  9316  074176  010465  000000                  MOV     R4,TSDB(R5)           ;ISSUE COMMAND
  9317  074202  016501  000002          120$:   MOV     TSSR(R5),R1           ;GET TSSR CONTENTS
  9318  074206  032701  000200                  BIT     #SSR,R1               ;CHECK FOR SSR SET
  9319  074212  001021                          BNE     130$                  ;BR, IF SSR IS SET
  9320  074214  005237  075630                  INC     T36CNU                ;BUMP CYCLE COUNTER
  9321  074220                                  DELAY   1                     ;CUT NUMBER OF LOOPS DOWN
        074220  012727  000001                                                  MOV     #1,(PC)+
        074224  000000                                                          .WORD   0
        074226  013727  002116                                                  MOV     L$DLY,(PC)+
        074232  000000                                                          .WORD   0
        074234  005367  177772                                                  DEC     -6(PC)
        074240  001375                                                          BNE     .-4
        074242  005367  177756                                                  DEC     -22(PC)
        074246  001367                                                          BNE     .-20
  9322  074250  005337  075632                  DEC     T36DLY                ;BUMP DROP DEAD COUNTER
  9323  074254  001352                          BNE     120$                  ;BR, IF THERE IS STILL TIME
  9324  074256  012702  000200          130$:   MOV     #SSR,R2               ;SET UP EXPECTED
  9325  074262  020102                          CMP     R1,R2                 ;ARE THEY EQUAL
  9326  074264  001406                          BEQ     140$                  ;BR, IF OK
  9327  074266  005237  002214                  INC     FATFLG                        ;ERROR COUNT
  9331  074272                                  ERRHRD  ERRNO,WRTERR,PKTSSR   ;TSSR INCORRECT AFTER WRITE DATA
        074272  104456                                                          TRAP    C$ERHRD
        074274  001451                                                          .WORD   809
        074276  005107                                                          .WORD   WRTERR
        074300  012126                                                          .WORD   PKTSSR
  9332  074302                          140$:   CKLOOP                        ;LOOP IF SELECTED
        074302  104406                                                          TRAP    C$CLP1
  9333  074304  013701  075626                  MOV     T36CNT,R1             ;GET FIRST COUNTER
  9334  074310  013702  075630                  MOV     T36CNU,R2             ;GET SECOND COUNTER
  9335  074314  020102                          CMP     R1,R2                 ;25-APR-83 REV B - COMPARE EM
  9336  074316  003406                          BLE     300$                  ;BR, IF VALUES ARE CORRECT (OK)
  9337  074320  005237  002214                  INC     FATFLG                        ;ERROR COUNT
```

TEST 8: RECORD BUFFERING

```
9341 074324                              ERRHRD  ERRNO,T36NAS,EXPREC     ;TAPE NOT AT CORRECT SPEED
     074324  104456                                                              TRAP    C$ERHRD
     074326  001452                                                              .WORD   810
     074330  075634                                                              .WORD   T36NAS
     074332  015554                                                              .WORD   EXPREC
9342 074334                         300$:   CKLOOP                          ;LOOP IF SELECTED
     074334  104406                                                              TRAP    C$CLP1
9343 074336                              ENDSUB
     074336                                                          L10071:
     074336  104403                                                              TRAP    C$ESUB
9344 074340  023727  002214  000017        CMP     FATFLG,#15.                 ;IS ERROR COUNT AT 25
9345 074346  103402                        BLO     999$                        ;BR, IF LESS THAN 25
9346 074350  004737  017262                JSR     PC,CKDROP                   ;TRY TO DROP THE UNIT
9347 074354                         999$:
9348                                ;*
9349                                ;
9350                                ;TEST 8, SUBTEST 2
9351                                ;
9352                                ;
9353                                ;       THIS TEST VERIFIES THAT RECORD BUFFERING, USED FOR WRITE DATA
9354                                ;       AND READ NEXT COMMANDS, OPERATES PROPERLY AND IS PROPERLY
9355                                ;       CONTROLLED BY THE EXTENDED CHARACTERISTICS DATA WORD.  IF THE
9356                                ;       M7196 CONTROLLER MODULE IS NOT ALREADY IN EXTENDED FEATURES MODE
9357                                ;       (AS CONTROLLED BY THE DIP SWITCH ON THE MODULE), IT IS PLACED
9358                                ;       INTO THAT MODE BY INVERTING THE SENSE OF THE SWITCH USING THE
9359                                ;       WRITE SUBSYSTEM MEMORY COMMAND.  NOTE THAT RECORD BUFFERING HAS
9360                                ;       BEEN ENABLED IN PREVIOUS TESTS OF READ AND WRITE AND SO HAS BEEN
9361                                ;       PARTIALLY TESTED ALREADY.  THIS TEST VERIFIES THAT BUFFERING IS
9362                                ;       ACTUALLY OPERATING.  THE FOLLOWING SUBTESTS ARE PERFORMED:
9363                                ;
9364                                ;       VERIFIES THAT NORMAL BUFFERING ON WRITE DATA COMMANDS OPERATES
9365                                ;       PROPERLY AT LOW TAPE SPEED.  THE FOLLOWING SEQUENCE IS
9366                                ;       PERFORMED:
9367                                ;
9368                                ;            1.  THE TAPE IS REWOUND.
9369                                ;
9370                                ;            2.  BUFFERING IS DISABLED AND LOW TAPE SPEED IS SELECTED
9371                                ;                (VIA WRITE CHARACTERISTICS COMMAND).
9372                                ;
9373                                ;            3.  AN INITIAL RECORD IS WRITTEN ONTO THE TAPE IN ORDER TO
9374                                ;                MOVE THE TAPE OFF BOT.
9375                                ;
9376                                ;            4.  THE PROGRAM DELAYS FOR A TIME SUFFICIENT TO ALLOW THE
9377                                ;                TAPE TO REPOSITION AND COME TO REST.
9378                                ;
9379                                ;            5.  A WRITE DATA COMMAND, WITH A BYTE COUNT LESS THAN 3.5K,
9380                                ;                IS ISSUED, AND THE PROGRAM COUNTS, IN A WAIT LOOP, THE
9381                                ;                TIME IT TAKES TO RECEIVE COMMAND TERMINATION.  THIS
9382                                ;                SHOULD BE A RELATIVELY LONG TIME SINCE BUFFERING IS
9383                                ;                DISABLED.
9384                                ;
9385                                ;            6.  BUFFERING IS ENABLED.
9386                                ;
9387                                ;            7.  THE WRITE DATA COMMAND IS AGAIN ISSUED, WITH THE SAME
9388                                ;                BYTE COUNT AS THAT USED PREVIOUSLY.  THE TIME TO
9389                                ;                COMPLETION IS AGAIN MEASURED.
9390                                ;
```

TEST 8: RECORD BUFFERING

```
                                        ;             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.
                                        ;-
9403 074354                             BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     074354                                                                         T8.2:
     074354  104402                                                                TRAP    C$BSUB
9404 074356  004737  100640            JSR     PC,T36REST              ;SET COMMAND PACKET
9405 074362  004737  100732            JSR     PC,T36RT2               ;SET UP OTHER COMMAND PACKET
9406 074366  004737  100774            JSR     PC,T36RT3               ;SET UP OTHER COMMAND PACKET
9407 074372  C12737  176750  075632    MOV     #65000.,T36DLY          ;SET UP DELAY COUNTER
9408 074400  005037  075626            CLR     T36CNT                  ;CLEAR COUNTER
9409 074404  004737  016054    10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
9410 074410  103426                    BCS     20$                     ;BR IF INIT WAS OK
9411 074412                             DELAY   250                     ;DELAY ABOUT .25 SEC
     074412  012727  000250                                                    MOV     #250,(PC)+
     074416  000000                                                            .WORD   0
     074420  013727  002116                                                    MOV     L$DLY,(PC)+
     074424  000000                                                            .WORD   0
     074426  005367  177772                                                    DEC     -6(PC)
     074432  001375                                                            BNE     .-4
     074434  005367  177756                                                    DEC     -22(PC)
     074440  001367                                                            BNE     .-20
9412 074442  005337  075632            DEC     T36DLY                  ;BUMP COUNTER
9413 074446  001356                    BNE     10$                     ;BR, IF COUNTER NOT DONE
9414 074450  005237  002214            INC     FATFLG                          ;ERROR COUNT
9418 074454  010001                    MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
9419 074456                             ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     074456  104455                                                            TRAP    C$ERDF
     074460  001453                                                            .WORD   811
     074462  003646                                                            .WORD   SFIERR
     074464  012114                                                            .WORD   SFIMSG
9420 074466  013737  002174  075500  20$:    MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
9421 074474  052737  000040  075500        BIS     #BIT5,T36DSW            ;TURN ON HIGH SPEED
$422 074502  012704  075460            MOV     #T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
9423 074506  004737  010742            JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
9424 074512  103407                    BCS     25$                     ;BR, IF COMMAND ISSUED OK
9425 074514  005237  002214            INC     FATFLG                          ;ERROR COUNT
9429 074520  010001                    MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
9430 074522                             ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     074522  104456                                                            TRAP    C$ERHRD
     074524  001454                                                            .WORD   812
     074526  005052                                                            .WORD   WRTMSG
     074530  012114                                                            .WORD   SFIMSG
9431 074532                     25$:    CKLOOP                          ;LOOP IF SELECTED
     074532  104406                                                            TRAP    C$CLP1
9432 074534  004737  011074            JSR     PC,RFWIND               ;CALL TAPE REWIND COMMAND
9433 074540  103407                    BCS     30$                     ;BR, IF NO PROBLEM
9434 074542  010004                    MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
```

TEST 8: RECORD BUFFERING

```
 9435 074544  005237  002214                 INC     FATFLG                          ;ERROR COUNT
 9439 074550                                 ERRHRD  ERRNO,T36RWN,PKTSSR     ;REWIND NOT ACCEPTED
      074550  104456                                                            TRAP    C$ERHRD
      074552  001455                                                            .WORD   813
      074554  077041                                                            .WORD   T36RWN
      074556  012126                                                            .WORD   PKTSSR
 9440 074560                         30$:    CKLOOP                          ;LOOP IF SELECTED
      074560  104406                                                            TRAP    C$CLP1
 9441 074562  013701  075510                 MOV     T36BFR+6,R1             ;PICK UP XSTO
 9442 074566  010102                         MOV     R1,R2                   ;SET UP EXPECTED
 9443 074570  052702  000002                 BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 9444 074574  020102                         CMP     R1,R2                   ;DOES EXP = REC'D
 9445 074576  001406                         BEQ     40$                     ;BR, IF EQUAL (OK)
 9446 074600  005237  002214                 INC     FATFLG                          ;ERROR COUNT
 9450 074604                                 ERRHRD  ERRNO,T36BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      074604  104456                                                            TRAP    C$ERHRD
      074606  001456                                                            .WORD   814
      074610  076535                                                            .WORD   T36BOT
      074612  015554                                                            .WORD   EXPREC
 9451 074614                         40$:    CKLOOP                          ;LOOP IF SELECTED
      074614  104406                                                            TRAP    C$CLP1
 9452 074616  013737  002174  075500         MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
 9453 074624  052737  000030  075500         BIS     #BIT3!BIT4,T36DSW       ;25-APR-83 REV B - TURN ON THE BUFFERING
 9454 074632  012704  075460                 MOV     #T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 9455 074636  004737  010742                 JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 9456 074642  103407                         BCS     50$                     ;BR, IF COMMAND ISSUED OK
 9457 074644  005237  002214                 INC     FATFLG                          ;ERROR COUNT
 9461 074650  010001                         MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 9462 074652                                 ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      074652  104456                                                            TRAP    C$ERHRD
      074654  001457                                                            .WORD   815
      074656  005052                                                            .WORD   WRTMSG
      074660  012114                                                            .WORD   SFIMSG
 9463 074662                         50$:    CKLOOP                          ;LOOP IF SELECTED
      074662  104406                                                            TRAP    C$CLP1
 9464 074664  012737  003720  075606         MOV     #2000.,T36SZ            ;SET UP RECORD SIZE
 9465 074672  013737  003116  075602         MOV     FREE,T36WB              ;ADDRESS OF WRITE BUFFER
 9466 074700  012737  140005  075600         MOV     #140005,T36PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
 9467 074706  012704  075600                 MOV     #T36PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 9468 074712  010465  000000                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 9469 074716  004737  016330                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 9470 074722  016501  000002                 MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9471 074726  012702  000200                 MOV     #SSR,R2                 ;SET UP EXPECTED
 9472 074732  020102                         CMP     R1,R2                   ;ARE THEY EQUAL
 9473 074734  001406                         BEQ     60$                     ;BR, IF OK
 9474 074736  005237  002214                 INC     FATFLG                          ;ERROR COUNT
 9478 074742                                 ERRHRD  ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      074742  104456                                                            TRAP    C$ERHRD
      074744  001460                                                            .WORD   816
      074746  005107                                                            .WORD   WRTERR
      074750  012126                                                            .WORD   PKTSSR
 9479 074752                         60$:    CKLOOP                          ;LOOP IF SELECTED
      074752  104406                                                            TRAP    C$CLP1
 9480 074754  012737  000005  075632         MOV     #05.,T36DLY             ;25-APR-83 REV B - DELAY FOR TAPE TO STOP
 9481 074762                         70$:    DELAY   1                       ;25-APR-83 REV B - DELAY ROUTINE CALL
      074762  012727  000001                                                    MOV     #1,(PC)+
      074766  000000                                                            .WORD   0
```

TEST 8: RECORD BUFFERING

```
        074770  013727  002116                                                  MOV     L$DLY,(PC)+
        074774  000000                                                          .WORD   0
        074776  005367  177772                                                  DEC     -6(PC)
        075002  001375                                                          BNE     .-4
        075004  005367  177756                                                  DEC     -22(PC)
        075010  001367                                                          BNE     .-20
  9482  075012  005337  075632          DEC     T36DLY          ;BUMP COUNTER DOWN
  9483  075016  001361                  BNE     70$             ;BR, IF MORE DELAY TO GO
  9484  075020  012737  006642  075606  MOV     #3490.,T36SZ    ;SET SIZE OF TRANSFER
  9485  075026  012737  140005  075600  MOV     #140005,T36PK3  ;WRITE DATA,ACK,CVC=1 COMMAND
  9486  075034  012704  075600          MOV     #T36PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
  9487  075040  005037  075626          CLR     T36CNT          ;CLEAR COUNTER
  9488  075044  012737  001750  075632  MOV     #1000.,T36DLY   ;SET DROP DEAD COUNTER VALUE
  9489  075052  010465  000000          MOV     R4,TSDB(R5)     ;ISSUE COMMAND
  9490  075056  016501  000002  80$:    MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
  9491  075062  032701  000200          BIT     #SSR,R1         ;CHECK FOR SSR SET
  9492  075066  001021                  BNE     90$             ;BR, IF SSR IS SET
  9493  075070  005237  075626          INC     T36CNT          ;BUMP CYCLE COUNTER
  9494  075074                          DELAY   1               ;CUT NUMBER OF LOOPS DOWN
        075074  012727  000001                                                  MOV     #1,(PC)+
        075100  000000                                                          .WORD   0
        075102  013727  002116                                                  MOV     L$DLY,(PC)+
        075106  000000                                                          .WORD   0
        075110  005367  177772                                                  DEC     -6(PC)
        075114  001375                                                          BNE     .-4
        075116  005367  177756                                                  DEC     -22(PC)
        075122  001367                                                          BNE     .-20
  9495  075124  005337  075632          DEC     T36DLY          ;BUMP DROP DEAD COUNTER
  9496  075130  001352                  BNE     80$             ;BR, IF THERE IS STILL TIME
  9497  075132  012702  000200  90$:    MOV     #SSR,R2         ;SET UP EXPECTED
  9498  075136  020102                  CMP     R1,R2           ;ARE THEY EQUAL
  9499  075140  001406                  BEQ     100$            ;BR, IF OK
  9500  075142  005237  002214          INC     FATFLG                  ;ERROR COUNT
  9504  075146                          ERRHRD  ERRNO,T36WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
        075146  104456                                                          TRAP    C$ERHRD
        075150  001461                                                          .WORD   817
        075152  076463                                                          .WORD   T36WDE
        075154  012126                                                          .WORD   PKTSSR
  9505  075156                  100$:   CKLOOP                  ;LOOP IF SELECTED
        075156  104406                                                          TRAP    C$CLP1
  9506  075160  013737  002174  075500  MOV     UNITN,T36DSW    ;SET UP DRIVE NUMBER
  9507  075166  052737  000010  075500  BIS     #BIT3,T36DSW    ;25-APR-83 REV B - TURN OFF BUFFERING
  9508  075174  012704  075460          MOV     #T36PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
  9509  075200  004737  010742          JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
  9510  075204  103407                  BCS     110$            ;BR, IF COMMAND ISSUED OK
  9511  075206  005237  002214          INC     FATFLG                  ;ERROR COUNT
  9515  075212  010001                  MOV     R0,R1           ;SAVE CONTENTS OF TSSR
  9516  075214                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        075214  104456                                                          TRAP    C$ERHRD
        075216  001462                                                          .WORD   818
        075220  005052                                                          .WORD   WRTMSG
        075222  012114                                                          .WORD   SFIMSG
  9517  075224                  110$:   CKLOOP                  ;LOOP IF SELECTED
        075224  104406                                                          TRAP    C$CLP1
  9518  075226  012737  006642  075606  MOV     #3490.,T36SZ    ;SET SIZE OF TRANSFER
  9519  075234  012737  140005  075600  MOV     #140005,T36PK3  ;WRITE DATA,ACK,CVC=1 COMMAND
  9520  075242  012704  075600          MOV     #T36PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
```

TEST 8: RECORD BUFFERING

```
 9521 075246  005037  075630                 CLR     T36CNU                  ;CLEAR COUNTER
 9522 075252  012737  001750  075632         MOV     #1000.,T36DLY           ;SET DROP DEAD COUNTER VALUE
 9523 075260  010465  000000                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 9524 075264  016501  000002         120$:   MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9525 075270  032701  000200                 BIT     #SSR,R1                 ;CHECK FOR SSR SET
 9526 075274  001021                         BNE     130$                    ;BR, IF SSR IS SET
 9527 075276  005237  075630                 INC     T36CNU                  ;BUMP CYCLE COUNTER
 9528 075302                                 DELAY   1                       ;CUT NUMBER OF LOOPS DOWN
      075302  012727  000001                                                         MOV     #1,(PC)+
      075306  000000                                                                 .WORD   0
      075310  013727  002116                                                         MOV     L$DLY,(PC)+
      075314  000000                                                                 .WORD   0
      075316  005367  177772                                                         DEC     -6(PC)
      075322  001375                                                                 BNE     .-4
      075324  005367  177756                                                         DEC     -22(PC)
      075330  001367                                                                 BNE     .-20
 9529 075332  005337  075632                 DEC     T36DLY                  ;BUMP DROP DEAD COUNTER
 9530 075336  001352                         BNE     120$                    ;BR, IF THERE IS STILL TIME
 9531 075340  012702  000200         130$:   MOV     #SSR,R2                 ;SET UP EXPECTED
 9532 075344  020102                         CMP     R1,R2                   ;ARE THEY EQUAL
 9533 075346  001406                         BEQ     140$                    ;BR, IF OK
 9534 075350  005237  002214                 INC     FATFLG                          ;ERROR COUNT
 9538 075354                                 ERRHRD  ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      075354  104456                                                                TRAP    C$ERHRD
      075356  001463                                                                .WORD   819
      075360  005107                                                                .WORD   WRTERR
      075362  012126                                                                .WORD   PKTSSR
 9539 075364                         140$:   CKLOOP                          ;LOOP IF SELECTED
      075364  104406                                                                TRAP    C$CLP1
 9540 075366  013701  075626                 MOV     T36CNT,R1               ;GET FIRST COUNTER
 9541 075372  013702  075630                 MOV     T36CNU,R2               ;GET SECOND COUNTER
 9542 075376  020102                         CMP     R1,R2                   ;25-APR-83 REV B - COMPARE EM
 9543 075400  003406                         BLE     300$                    ;BR, IF VALUES ARE CORRECT (OK)
 9544 075402  005237  002214                 INC     FATFLG                          ;ERROR COUNT
 9548 075406                                 ERRHRD  ERRNO,T36NAS,EXPREC     ;TAPE NOT AT CORRECT SPEED
      075406  104456                                                                TRAP    C$ERHRD
      075410  001464                                                                .WORD   820
      075412  075634                                                                .WORD   T36NAS
      075414  015554                                                                .WORD   EXPREC
 9549 075416                         300$:   CKLOOP                          ;LOOP IF SELECTED
      075416  104406                                                                TRAP    C$CLP1
 9550 075420                                 ENDSUB
      075420                                                                  L10072:
      075420  104403                                                                TRAP    C$ESUB
 9551 075422  023727  002214  000017                 CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
 9552 075430  103402                                 BLO     999$                            ;BR, IF LESS THAN 25
 9553 075432  004737  017262                         JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
 9554 075436                         999$:
 9555                                ;
 9556                                ;
 9557                                ;
 9558 075436  004737  016536                 JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
 9559 075442  103002                         BCC     163$                    ;BR, IF NO LOOP REQUIRED
 9560 075444  000137  073300                 JMP     T36LOOP                 ;EXECUTE AGAIN
 9561 075450                         163$:
 9562 075450                                 EXIT    TST                     ;ALL DONE THIS TEST
      075450  104432                                                                TRAP    C$EXIT
```

TEST 8: RECORD BUFFERING

```
        075452  003344                                                          .WORD   L10070-.
   9563                         ;+
   9564                         ;LOCAL STORAGE FOR THIS TEST
   9565                         ;-
   9567            075460               .=<.+10>&177770
   9569 075460                  T36PACKET:                      ;COMMAND PACKET FOR TEST
   9570 075460  100004                  .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH . ACK
   9571 075462  075470                  .WORD   T36DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
   9572 075464  000000                  .WORD   0
   9573 075466  000012                  .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
   9574 075470                  T36DATA:                        ;CHARACTERISTICS DATA BLOCK
   9575 075470  075502                  .WORD   T36BFR          ;ADDRESS OF MESSAGE BUFFER
   9576 075472  000000                  .WORD   0
   9577 075474  000024                  .WORD   20.             ;LENGTH OF MESSAGE BUFFER
   9578 075476  000000                  .WORD   0
   9579 075500  000000          T36DSW: .WORD   0               ;SELECT DRIVE 0
   9580 075502                  T36BFR: .BLKW   25.             ;MESSAGE BUFFER
   9581                         ;
   9582                         ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
   9583                         ;
   9585            075570               .=<.+10>&177770
   9587 075570                  T36PK2:
   9588 075570  100006                  .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
   9589 075572  075610                  .WORD   T36BF2          ;ADDRESS OF SELECT BLOCK DATA
   9590 075574  000000                  .WORD   0
   9591 075576  000006                  .WORD   6.              ;SIZE OF DATA PACKET
   9592
   9596 075600                  T36PK3:
   9597 075600  100005                  .WORD   100005          ;REREAD COMMAND, AND ACK
   9598 075602                  T36R8:
   9599 075602  003116          T36WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
   9600 075604  000000                  .WORD   0
   9601 075606  000000          T36SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
   9602                                 .EVEN
   9603                         ;
   9604                         ;
   9605                         ;
   9606 075610                  T36BF2:
   9607 075610      010         T36BS0: .BYTE   10              ;BSEL0 AREA
   9608 075611      200         T36BS1: .BYTE   200             ;BSEL1 AREA
   9609 075612  000000          T36S2:  .WORD   0               ;SEL 2 AREA
   9610 075614  000000          T36S3:  .WORD   0               ;DATA AREA
   9611                         ;
   9612                         ;
   9613                                 .EVEN
   9614                         ;TAPE MOTION PACKET COMMAND VALUES
   9615
   9616 075616  100205          T36RN:  .WORD   100205          ;REREAD DATA (NEXT)
   9617 075620  100605          T36WDR: .WORD   100605          ;REREAD DATA RETRY
   9618 075622  102205          T36CON: .WORD   102205          ;WRITE CONTINOUS
   9619 075624  177777                  .WORD   177777          ;END OF DATA
   9620
   9621                         ;
   9622 075626  000000          T36CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
   9623 075630  000000          T36CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
   9624 075632  000000          T36DLY: .WORD   0               ;DELAY COUNTER
   9625                         ;+
```

TEST 8: RECORD BUFFERING

```
                                        ;LOCAL TEXT MESSAGES FOR TEST
                                        ;-

075634  111  155  160  T36NAS: .ASCIZ  'Improper Tape Controller Buffering Speed'
075705  124  141  160  T36WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
075773  124  123  123  T36RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
076042  122  105  122  T36RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
076137  120  117  123  T36SC.  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
076221  122  111  102  T36LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
076271  124  123  123  T36WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
076346  111  154  154  T36LOG: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
076427  122  105  122  T36SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
076463  124  123  123  T36WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA Command'
076535  124  141  160  T36BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
076630  127  122  111  T36TIM: .ASCIZ  'WRITE DATA RETRY''S Erase Tape Not Long Enough'
076705  122  105  122  T36EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
076764  124  123  123  T36TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
077041  122  145  167  T36RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
077110  122  101  115  T36RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
077163  124  123  123  T36AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
077232  104  162  151  T36OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
077305  124  123  123  T36WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
077375  124  123  123  T36WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
077450  103  126  103  T36VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
077523  124  123  102  T36BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
077576  127  122  111  T36WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
077665  122  145  141  T36LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XST0'
077747  122  145  141  T36LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XST0'
100031  122  145  163  T36PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
100117  122  145  141  T36TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
100205  127  122  111  T36NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
100303  124  123  123  T36SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
100360  124  123  123  T36TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
100442  124  123  123  T36WRF: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command'
100522  104  141  164  T36DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
100617  122  145  143  TST36ID:        .ASCIZ  'Record Buffering'
                              .EVEN
                                        ;*
                                        ;
                                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                        ;WRITE SUBSYSTEM MEMORY COMMAND
                                        ;
                                        ;-

100640                                  T36REST:
100640                                          SAVREG                          ;SAVE THE REGISTERS
100644  012701  075460                          MOV     #T36PACKET,R1           ;START OF THE PACKET
100650  012721  100004                          MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
100654  012721  075470                          MOV     #T36DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
100660  005021                                  CLR     (R1)+                   ;EXTENDED ADDRESS
100662  012721  000012                          MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
100666  012721  075502                          MOV     #T36BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
100672  005021                                  CLR     (R1)+
100674  012721  000024                          MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
100700  005021                                  CLR     (R1)+
100702  012711  000000                          MOV     #0,(R1)                 ;SELECT DRIVE ZERO
100706  012702  000030                          MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
```

```
TEST  8: RECORD BUFFERING

 9683 100712  012762  177777  075502  64$:    MOV     #177777,T36BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
 9684 100720  005742                          TST     -(R2)                   ;NEXT LOCATION
 9685 100722  022702  000000                  CMP     #0,R2                   ;AT END OF LOOP YET
 9686 100726  001371                          BNE     64$                     ;KEEP GOING UNTIL DONE
 9687 100730  000207                          RTS     PC                      ;RETURN
 9688
 9689 100732                          T36RT2:
 9690 100732                                  SAVREG                          ;SAVE THE REGISTERS
 9691 100736  012701  075570                  MOV     #T36PK2,R1              ;START OF THE PACKET
 9692 100742  012721  100006                  MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
 9693 100746  012721  075610                  MOV     #T36BF2,(R1)+           ;ADDRESS OF DATA BLOCK
 9694 100752  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
 9695 100754  012721  000006                  MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
 9696 100760  005021                          CLR     (R1)+
 9697 100762  012701  075610                  MOV     #T36BF2,R1              ;POINT TO DATA SEL AREA
 9698 100766  005021                          CLR     (R1)+
 9699 100770  005011                          CLR     (R1)
 9700 100772  000207                          RTS     PC                      ;RETURN
 9701 100774                          T36RT3:
 9702 100774                                  SAVREG                          ;SAVE REGISTERS
 9703 101000  012701  075600                  MOV     #T36PK3,R1              ;SET UP POINTER ADDRESS
 9704 101004  005021                          CLR     (R1)+                   ;COMMAND SPACE
 9705 101006  005021                          CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
 9706 101010  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
 9707 101012  005011                          CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
 9708 101014  000207                          RTS     PC                      ;RETURN
 9709 101016                                  ENDTST
      101016                                                                          L10070:
      101016  104401                                                                         TRAP    C$ETST
 9710                                         .SBTTL  TEST  9: FUNCTION TIMING
 9711                                 ;+
 9712                                 ;
 9713                                 ;THIS TEST VERIFIES THAT THE TAPE TRANSPORT SEEMS TO BE WRITING
 9714                                 ;RECORDS, GAPS, AND EXTENDED GAPS OF THE PROPER LENGTH. BOTH LOW
 9715                                 ;AND HIGH SPEED MODES ARE TESTED. IT IS ALSO VERIFIED THAT A
 9716                                 ;SPACE RECORDS COMMAND WITH A RECORD COUNT OF 80 OR MORE, AND A
 9717                                 ;SKIP TAPE MARKS COMMAND WITH A COUNT OF 2 OF MORE, OPERATE THE
 9718                                 ;TAPE IN HIGH-SPEED MODE. THIS TEST CAN ONLY BE RUN IF A
 9719                                 ;REAL-TIME CLOCK IS AVAILIABLE ON THE SYSTEM. THE TEST OPERATES BY
 9720                                 ;TIMING VARIOUS TAPE-MOTION OPERATIONS, USING A NUMBER OF
 9721                                 ;DIFFERENT TEST RECORD LENGTHS.
 9722                                 ;
 9723                                 ;
 9724                                 ;-
 9725 101020                                  BGNTST
      101020                                                                          T9::
 9726 101020  012737  006354  002172          MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
 9727 101026  004737  017354                  JSR     PC,KTOFF                        ;TURN KT OFF
 9732 101032  012700  105243                  MOV     #TST37ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
 9733 101036  004737  016570                  JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
 9734 101042  012737  000005  002210          MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
 9735 101050  005037  102306                  CLR     T37CNT                  ;CLEAR TAPE RECORD COUNTER
 9736                                 ;+
 9737                                 ;
 9738                                 ;TEST 9, SUBTEST 1
 9739                                 ;
 9740                                 ;
```

TEST 9: FUNCTION TIMING

```
 9741                                   ;
 9742                                   ;
 9743                                   ;-
 9744
 9745 101054                            T37LOOP:
 9746 101054                                    BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      101054                                                                                    T9.1:
      101054  104402                                                                              TRAP    C$BSUB
 9747 101056  005037  002216                    CLR     INTRECV                 ;INTERRUPT INDICATOR
 9748 101062  005037  102306                    CLR     T37CNT                  ;TIMER FOR WRITE DATA SPACING
 9749 101066  005037  102310                    CLR     T37CNU                  ;TIMER FOR WRITE DATA RETRY SPACING
 9750 101072  004737  105264                    JSR     PC,T37REST              ;SET COMMAND PACKET
 9751 101076  004737  105356                    JSR     PC,T37RT2               ;SET UP OTHER COMMAND PACKET
 9752 101102  004737  105420                    JSR     PC,T37RT3               ;SET UP OTHER COMMAND PACKET
 9753 101106  012737  176750  102312            MOV     #65000.,T37DLY          ;SET UP DELAY COUNTER
 9754 101114  004737  016054            10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 9755 101120  103426                            BCS     20$                     ;BR IF INIT WAS OK
 9756 101122                                    DELAY   250                     ;DELAY ABOUT .25 SEC
      101122  C12727  000250                                                                    MOV     #250.,(PC)+
      101126  000000                                                                           .WORD   0
      101130  013727  002116                                                                    MOV     L$DLY,(PC)+
      101134  000000                                                                           .WORD   0
      101136  005367  177772                                                                    DEC     -6(PC)
      101142  001375                                                                           BNE     .-4
      101144  005367  177756                                                                    DEC     -22(PC)
      101150  001367                                                                           BNE     .-20
 9757 101152  005337  102312                    DEC     T37DLY                  ;BUMP COUNTER
 9758 101156  001356                            BNE     10$                     ;BR, IF COUNTER NOT DONE
 9759 101160  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 9763 101164  010001                            MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 9764 101166                                    ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      101166  104455                                                                            TRAP    C$ERDF
      101170  001605                                                                           .WORD   901
      101172  003646                                                                           .WORD   SFIERR
      101174  012114                                                                           .WORD   SFIMSG
 9765 101176  013737  002174  102160  20$:       MOV     UNITN,T37DSW            ;SET UP UNIT NUMBER
 9766
 9767 101204  012704  102140                    MOV     #T37PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 9768 101210  004737  010742                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 9769 101214  103407                            BCS     23$                     ;BR, IF COMMAND ISSUED OK
 9770 101216  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 9774 101222  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 9775 101224                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      101224  104456                                                                            TRAP    C$ERHRD
      101226  001606                                                                           .WORD   902
      101230  005052                                                                           .WORD   WRTMSG
      101232  012114                                                                           .WORD   SFIMSG
 9776 101234                            23$:    CKLOOP                          ;LOOP IF SELECTED
      101234  104406                                                                            TRAP    C$CLP1
 9777 101236  004737  011074                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 9778 101242  103411                            BCS     30$                     ;BR, IF NO PROBLEM
 9779 101244  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9780 101250  010004                            MOV     R0,R4                   ;GET PACKET ADDRESS
 9781 101252  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 9785 101256                                    ERRHRD  ERRNO,T37RWN,PKTSSR     ;REWIND NOT ACCEPTED
      101256  104456                                                                            TRAP    C$ERHRD
      101260  001607                                                                           .WORD   903
```

TEST 9: FUNCTION TIMING

```
        101262  103465                                                          .WORD   T37RWN
        101264  012126                                                          .WORD   PKTSSR
  9786  101266                          30$:    CKLOOP                  ;LOOP IF SELECTED
        101266  104406                                                          TRAP    C$CLP1
  9787  101270  013701  102170                  MOV     T37BFR+6,R1             ;PICK UP XSTO
  9788  101274  010102                          MOV     R1,R2                   ;SET UP EXPECTED
  9789  101276  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
  9790  101302  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
  9791  101304  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
  9792  101306  005237  002214                  INC     FATFLG                          ;ERROR COUNT
  9796  101312                                  ERRHRD  ERRNO,T37BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        101312  104456                                                          TRAP    C$ERHRD
        101314  001610                                                          .WORD   904
        101316  103161                                                          .WORD   T37BOT
        101320  015554                                                          .WORD   EXPREC
  9797  101322                          40$:    CKLOOP                  ;LOOP IF SELECTED
        101322  104406                                                          TRAP    C$CLP1
  9798  101324  012703  000144                  MOV     #100.,R3                ;NUMBER OF RECORDS TO BE WRITTEN
  9799  101330  C13737  003116  102262          MOV     FREE,T37WB              ;STARTING WRITE BUFFER ADDRESS
  9800  101336  012737  140005  102260  65$:    MOV     #140005,T37PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
  9801  101344  012704  102260                  MOV     #T37PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
  9802  101350  012737  001130  102266          MOV     #600.,T37SZ             ;SET UP RECORD SIZE IN PACKET
  9803  101356  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
  9804  101362  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
  9805  101366  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
  9806  101372  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
  9807  101376  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
  9808  101400  001406                          BEQ     70$                     ;BR, IF OK
  9809  101402  005237  002214                  INC     FATFLG                          ;ERROR COUNT
  9813  101406                                  ERRHRD  ERRNO,T37WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        101406  104456                                                          TRAP    C$ERHRD
        101410  001611                                                          .WORD   905
        101412  104021                                                          .WORD   T37WDC
        101414  012126                                                          .WORD   PKTSSR
  9814  101416                          70$:    CKLOOP                  ;LOOP IF SELECTED
        101416  104406                                                          TRAP    C$CLP1
  9815  101420  005303                          DEC     R3                      ;DEC RECORD COUNTER
  9816  101422  001345                          BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
  9817  101424  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
  9818  101430  103411                          BCS     130$                    ;BR, IF NO PROBLEM
  9819  101432  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
  9820  101436  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
  9821  101440  005237  002214                  INC     FATFLG                          ;ERROR COUNT
  9825  101444                                  ERRHRD  ERRNO,T37RWN,PKTSSR     ;REWIND NOT ACCEPTED
        101444  104456                                                          TRAP    C$ERHRD
        101446  001612                                                          .WORD   906
        101450  103465                                                          .WORD   T37RWN
        101452  012126                                                          .WORD   PKTSSR
  9826  101454                          130$:   CKLOOP                  ;LOOP IF SELECTED
        101454  104406                                                          TRAP    C$CLP1
  9827  101456  013701  102170                  MOV     T37BFR+6,R1             ;PICK UP XSTO
  9828  101462  010102                          MOV     R1,R2                   ;SET UP EXPECTED
  9829  101464  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
  9830  101470  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
  9831  101472  001406                          BEQ     140$                    ;BR, IF EQUAL (OK)
  9832  101474  005237  002214                  INC     FATFLG                          ;ERROR COUNT
  9836  101500                                  ERRHRD  ERRNO,T37BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
```

TEST 9: FUNCTION TIMING

```
        101500  104456                                                                    TRAP    C$ERHRD
        101502  001613                                                                    .WORD   907
        101504  103161                                                                    .WORD   T37BOT
        101506  015554                                                                    .WORD   EXPREC
  9837  101510                          140$:   CKLOOP                  ;LOOP IF SELECTED
        101510  104406                                                                    TRAP    C$CLP1
  9838  101512  012704  102260                  MOV     #T37PK3,R4      ;SET UP PACKET ADDRESS
  9839  101516  012737  000037  102262          MOV     #31.,T37RB      ;SET UP RECORDS TO SPACE OVER
  9840  101524  012737  140010  102260          MOV     #140010,T37PK3  ;ACK,CVC=1,SPACE FORWARD COMMAND
  9841  101532  010465  000000          150$:   MOV     R4,TSDB(R5)     ;ISSUE COMMAND
  9842  101536  005237  102306          152$:   INC     T37CNT          ;BUMP TIMER
  9843  101542                                  DELAY   1               ;DELAY ABOUT 100US
        101542  012727  000001                                                          MOV     #1,(PC)+
        101546  000000                                                                  .WORD   0
        101550  013727  002116                                                          MOV     L$DLY,(PC)+
        101554  000000                                                                  .WORD   0
        101556  005367  177772                                                          DEC     -6(PC)
        101562  001375                                                                  BNE     .-4
        101564  005367  177756                                                          DEC     -22(PC)
        101570  001367                                                                  BNE     .-20
  9844  101572  016501  000002                  MOV     TSSR(R5),R1     ;GET TSSR
  9845  101576  032701  000200                  BIT     #SSR,R1         ;CHECK FOR TSSR'S SSR SET
  9846  101602  001755                          BEQ     152$            ;KEEP COUNTING UNTIL SET
  9847  101604  012702  000200                  MOV     #SSR,R2         ;SET UP EXPECTED
  9848  101610  020201                          CMP     R2,R1           ;WAS EVERYTHING OK
  9849  101612  001406                          BEQ     160$            ;BR, IF ALL IS WELL
  9850  101614  005237  002214                  INC     FATFLG                  ;ERROR COUNT
  9854  101620                                  ERRHRD  ERRNO,T37SCF,PKTSSR     ;SPACE FORWARD DIDN'T WORK OUT
        101620  104456                                                                  TRAP    C$ERHRD
        101622  001614                                                                  .WORD   908
        101624  104727                                                                  .WORD   T37SCF
        101626  012126                                                                  .WORD   PKTSSR
  9855  101630                          160$:   CKLOOP                  ;LOOP IF SELECTED
        101630  104406                                                                  TRAP    C$CLP1
  9856  101632  004737  011074                  JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
  9857  101636  103411                          BCS     170$            ;BR, IF NO PROBLEM
  9858  101640  010004                          MOV     R0,R4           ;GET PACKET ADDRESS
  9859  101642  016501  000002                  MOV     TSSR(R5),R1     ;GET STATUS FROM TSSR
  9860  101646  005237  002214                  INC     FATFLG                  ;ERROR COUNT
  9864  101652                                  ERRHRD  ERRNO,T37RWN,PKTSSR     ;REWIND NOT ACCEPTED
        101652  104456                                                                  TRAP    C$ERHRD
        101654  001615                                                                  .WORD   909
        101656  103465                                                                  .WORD   T37RWN
        101660  012126                                                                  .WORD   PKTSSR
  9865  101662                          170$:   CKLOOP                  ;LOOP IF SELECTED
        101662  104406                                                                  TRAP    C$CLP1
  9866  101664  013701  102170                  MOV     T37BFR+6,R1     ;PICK UP XSTO
  9867  101670  010102                          MOV     R1,R2           ;SET UP EXPECTED
  9868  101672  052702  000002                  BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
  9869  101676  020102                          CMP     R1,R2           ;DOES EXP = REC'D
  9870  101700  001406                          BEQ     175$            ;BR, IF EQUAL (OK)
  9871  101702  005237  002214                  INC     FATFLG                  ;ERROR COUNT
  9875  101706                                  ERRHRD  ERRNO,T37BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        101706  104456                                                                  TRAP    C$ERHRD
        101710  001616                                                                  .WORD   910
        101712  103161                                                                  .WORD   T37BOT
        101714  015554                                                                  .WORD   EXPREC
```

TEST 9: FUNCTION TIMING

```
 9876 101716                          175$:   CKLOOP                          ;LOOP IF SELECTED
      101716  104406                                                                  TRAP    C$CLP1
 9877 101720  012704  102260                  MOV     #T37PK3,R4              ;SET UP PACKET ADDRESS
 9878 101724  012737  000121  102262          MOV     #81.,T37RB              ;SET UP RECORDS TO SPACE OVER
 9879 101732  012737  140010  102260          MOV     #140010,T37PK3          ;ACK,CVC=1,SPACE FORWARD COMMAND
 9880 101740  010465  000000          250$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 9881 101744  005237  102310          252$:   INC     T37CNU                  ;BUMP TIMER
 9882 101750                                  DELAY   1                       ;DELAY ABOUT 100US
      101750  012727  000001                                                          MOV     #1,(PC)+
      101754  000000                                                                  .WORD   0
      101756  013727  002116                                                          MOV     L$DLY,(PC)+
      101762  000000                                                                  .WORD   0
      101764  005367  177772                                                          DEC     -6(PC)
      101770  001375                                                                  BNE     .-4
      101772  005367  177756                                                          DEC     -22(PC)
      101776  001367                                                                  BNE     .-20
 9883 102000  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR
 9884 102004  032701  000200                  BIT     #SSR,R1                 ;CHECK FOR TSSR'S SSR SET
 9885 102010  001755                          BEQ     252$                    ;KEEP COUNTING UNTIL SET
 9886 102012  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 9887 102016  020201                          CMP     R2,R1                   ;WAS EVERYTHING OK
 9888 102020  001406                          BEQ     260$                    ;BR, IF ALL IS WELL
 9889 102022  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 9893 102026                                  ERRHRD  ERRNO,T37SCF ,PKTSSR    ;SPACE FORWARD DIDN'T WORK OUT
      102026  104456                                                                  TRAP    C$ERHRD
      102030  001617                                                                  .WORD   911
      102032  104727                                                                  .WORD   T37SCF
      102034  012126                                                                  .WORD   PKTSSR
 9894 102036                          260$:   CKLOOP                          ;LOOP IF SELECTED
      102036  104406                                                                  TRAP    C$CLP1
 9895 102040  013701  102306                  MOV     T37CNT,R1               ;TIME FOR WRITE SPACING
 9896 102044  013702  102310                  MOV     T37CNU,R2               ;TIME FOR WRITE RETRY SPACING
 9897 102050  042701  000077                  BIC     #000077,R1              ;SETTING UP CONSTANTS
 9898 102054  042702  000077                  BIC     #000077,R2              ;SETTING UP CONSTANTS
 9899 102060  020102                          CMP     R1,R2                   ;CHECK FOR DIFFERENCE
 9900 102062  003406                          BLE     300$                    ;BR, IF GOOD 8888 CHECK 8888
 9901 102064  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 9905 102070                                  ERRHRD  ERRNO,T37TIM,EXPREC     ;TIME WAS NOT DIFFERENT ENOUGH
      102070  104456                                                                  TRAP    C$ERHRD
      102072  001620                                                                  .WORD   912
      102074  103254                                                                  .WORD   T37TIM
      102076  015554                                                                  .WORD   EXPREC
 9906 102100                          300$:   CKLOOP                          ;LOOP IF SELECTED
      102100  104406                                                                  TRAP    C$CLP1
 9907 102102                                  ENDSUB                          ;<<<<<<<<<<<<< END SUBTEST >>>>>>>>>>>>
      102102                                                                      L10074:
      102102  104403                                                                  TRAP    C$ESUB
 9908 102104  023727  002214  000017          CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
 9909 102112  103402                          BLO     999$                            ;BR, IF LESS THAN 25
 9910 102114  004737  017262                  JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
 9911 102120                          999$:
 9912                                 ;
 9913                                 ;
 9914                                 ;
 9915 102120  004737  016536                  JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
 9916 102124  103002                          BCC     163$                    ;BR, IF NO LOOP REQUIRED
 9917 102126  000137  101054                  JMP     T37LOOP                 ;EXECUTE AGAIN
```

TEST 9: FUNCTION TIMING

```
 9918 102132                    163$:
 9919 102132                            EXIT    TST                     ;ALL DONE THIS TEST
      102132  104432                                                            TRAP    C$EXIT
      102134  003306                                                            .WORD   L10073-.
 9920                           ;+
 9921                           ;LOCAL STORAGE FOR THIS TEST
 9922                           ;-
 9924            102140                 .=<.+10>&177770
 9926 102140                    T37PACKET:                              ;COMMAND PACKET FOR TEST
 9927 102140  100004                    .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
 9928 102142  102150                    .WORD   T37DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
 9929 102144  000000                    .WORD   0
 9930 102146  000012                    .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
 9931 102150                    T37DATA:                                ;CHARACTERISTICS DATA BLOCK
 9932 102150  102162                    .WORD   T37BFR                  ;ADDRESS OF MESSAGE BUFFER
 9933 102152  000000                    .WORD   0
 9934 102154  000024                    .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
 9935 102156  000000                    .WORD   0
 9936 102160  C00000            T37DSW: .WORD   0                       ;SELECT DRIVE 0
 9937 102162                    T37BFR: .BLKW   25.                     ;MESSAGE BUFFER
 9938                           ;
 9939                           ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
 9940                           ;
 9942            102250                 .=<.+10>&177770
 9944 102250                    T37PK2:
 9945 102250  100006                    .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
 9946 102252  102270                    .WORD   T37BF2                  ;ADDRESS OF SELECT BLOCK DATA
 9947 102254  000000                    .WORD   0
 9948 102256  000006                    .WORD   6.                      ;SIZE OF DATA PACKET
 9949
 9953 102260                    T37PK3:
 9954 102260  100005                    .WORD   100005                  ;REREAD COMMAND, AND ACK
 9955 102262                    T37RB:
 9956 102262  003116            T37WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
 9957 102264  000000                    .WORD   0
 9958 102266  000000            T37SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
 9959                                   .EVEN
 9960                           ;
 9961                           ;
 9962                           ;
 9963 102270                    T37BF2:
 9964 102270     010            T37BS0: .BYTE   10                      ;BSEL0 AREA
 9965 102271     200            T37BS1: .BYTE   200                     ;BSEL1 AREA
 9966 102272  000000            T37S2:  .WORD   0                       ;SEL 2 AREA
 9967 102274  000000            T37S3:  .WORD   0                       ;DATA AREA
 9968                           ;
 9969                           ;
 9970                                   .EVEN
 9971                           ;TAPE MOTION PACKET COMMAND VALUES
 9972
 9973 102276  100205            T37RN:  .WORD   100205                  ;PEREAD DATA (NEXT)
 9974 102300  100605            T37WDR: .WORD   100605                  ;REREAD DATA RETRY
 9975 102302  102205            T37CON: .WORD   102205                  ;WRITE CONTINOUS
 9976 102304  177777                    .WORD   177777                  ;END OF DATA
 9977
 9978                           ;
 9979 102306  000000            T37CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
```

TEST 9: FUNCTION TIMING

```
 9980 102310  000000                    T37CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
 9981 102312  000000                    T37DLY: .WORD   0                       ;DELAY COUNTER
 9982                                   ;+
 9983                                   ;LOCAL TEXT MESSAGES FOR TEST
 9984                                   ;-
 9985
 9986 102314      124     141     160   T37WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
 9987 102402      124     123     123   T37RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
 9988 102451      122     105     122   T37RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
 9989 102546      120     117     123   T37SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
 9990 102630      122     111     102   T37LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
 9991 102700      124     123     123   T37WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
 9992 102755      111     154     154   T37LOG: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
 9993 103036      122     105     122   T37SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
 9994 103072      124     123     123   T37WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command,At BOT'
 9995 103161      124     141     160   T37BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
 9996 103254      127     122     111   T37TIM: .ASCIZ  'WRITE DATA RETRY''S Erase Tape Not Long Enough'
 9997 103331      122     105     122   T37EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
 9998 103410      124     123     123   T37TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
 9999 103465      122     145     167   T37RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
10000 103534      122     101     115   T37RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
10001 103607      124     123     123   T37AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
10002 103656      104     162     151   T37OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
10003 103731      124     123     123   T37WDO: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
10004 104021      124     123     123   T37WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
10005 104074      103     126     103   T37VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
10006 104147      124     123     102   T37BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
10007 104222      127     122     111   T37WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
10008 104311      122     145     141   T37LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XST0'
10009 104373      122     145     141   T37LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XST0'
10010 104455      122     145     163   T37PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
10011 104543      122     145     141   T37TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
10012 104631      127     122     111   T37NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
10013 104727      124     123     123   T37SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
10014 105004      124     123     123   T37TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
10015 105066      124     123     123   T37WRF: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command'
10016 105146      104     141     164   T37DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
10017 105243      106     165     156   TST37ID:        .ASCIZ  'Function Timing'
10018                                          .EVEN
10019                                  ;+
10020                                  ;
10021                                  ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
10022                                  ;WRITE SUBSYSTEM MEMORY COMMAND
10023                                  ;
10024                                  ;-
10025
10026 105264                           T37REST:
10027 105264                                   SAVREG                          ;SAVE THE REGISTERS
10028 105270  012701  102140                   MOV     #T37PACKET,R1           ;START OF THE PACKET
10029 105274  012721  100004                   MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
10030 105300  012721  102150                   MOV     #T37DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
10031 105304  005021                           CLR     (R1)+                   ;EXTENDED ADDRESS
10032 105306  012721  000012                   MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
10033 105312  012721  102162                   MOV     #T37BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
10034 105316  005021                           CLR     (R1)+
10035 105320  012721  000024                   MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
10036 105324  005021                           CLR     (R1)+
```

TEST 9: FUNCTION TIMING

```
10037 105326  012711  000000                  MOV     #0,(R1)                 ;SELECT DRIVE ZERO
10038 105332  012702  000030                  MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
10039 105336  012762  177777  102162  64$:    MOV     #177777,T37BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
10040 105344  005742                        TST     -(R2)                   ;NEXT LOCATION
10041 105346  022702  000000                CMP     #0,R2                   ;AT END OF LOOP YET
10042 105352  001371                        BNE     64$                     ;KEEP GOING UNTIL DONE
10043 105354  000207                        RTS     PC                      ;RETURN
10044
10045 105356                          T37RT2:
10046 105356                                  SAVREG                          ;SAVE THE REGISTERS
10047 105362  012701  102250                  MOV     #T37PK2,R1              ;START OF THE PACKET
10048 105366  012721  100006                  MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
10049 105372  012721  102270                  MOV     #T37BF2,(R1)+           ;ADDRESS OF DATA BLOCK
10050 105376  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
10051 105400  012721  000006                  MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
10052 105404  005021                        CLR     (R1)+
10053 105406  012701  102270                  MOV     #T37BF2,R1              ;POINT TO DATA SEL AREA
10054 105412  005021                        CLR     (R1)+
10055 105414  C05011                        CLR     (R1)
10056 105416  000207                        RTS     PC                      ;RETURN
10057 105420                          T37RT3:
10058 105420                                  SAVREG                          ;SAVE REGISTERS
10059 105424  012701  102260                  MOV     #T37PK3,R1              ;SET UP POINTER ADDRESS
10060 105430  005021                        CLR     (R1)+                   ;COMMAND SPACE
10061 105432  005021                        CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
10062 105434  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
10063 105436  005011                        CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
10064 105440  000207                        RTS     PC                      ;RETURN
10065 105442                                  ENDTST
      105442                                                                          L10073:
      105442  104401                                                                          TRAP    C$ETST
10066 105444                                  ENDMOD
10067                                         .TITLE  TSV6 - PAR^METER CODING
10073
10078
10084
10085 105444                                  BGNMOD  TSV6
      105444                          TSV6::
10086
10087                                         .SBTTL  HARDWARE PARAMETER CODING SECTION
10088
10089                                 ;++
10090                                 ; THE HARDWARE PARAMETER CODING SECTION CONTAINS MACROS
10091                                 ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
10092                                 ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
10093                                 ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
10094                                 ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
10095                                 ; WITH THE OPERATOR.
10096                                 ;--
10097 105444                                  BGNHRD
      105444  000010                          .WORD L10075-L$HARD/2
      105446                          L$HARD::
10098
10099 105446                                  GPPMA   HPM1,0,0,160010,177776,YES      ;GET TSBA/TSDB REGISTER ADDRESS.
      105446  000031                          .WORD   T$CODE
      105450  105466                          .WORD   HPM1
      105452  160010                          .WORD   T$LOLIM
```

HARDWARE PARAMETER CODING SECTION

```
        105454  177776                          .WORD   T$HILIM
10100 ;105456                                   GPRMA   HPM2,2,0,0,776,YES              ;GET VECTOR ADDRESS.
        105456  001031                          .WORD   T$CODE
        105460  105522                          .WORD   HPM2
        105462  000000                          .WORD   T$LOLIM
        105464  000776                          .WORD   T$HILIM
10101                                           ;GPRMD  HPM3,4,0,340,0,7,YES            ;GET INTERRUPT PRIORITY.
10102 105466                                    ENDHRD
                                                .EVEN
        105466                          L10075:
10103 105466    104     105     126     HPM1:   .ASCIZ  'DEVICE ADDRESS (TSBA/TSDB) '
10104 105522    111     116     124     HPM2:   .ASCIZ  'INTERRUPT VECTOR    '
10105 105546    111     116     124     HPM3:   .ASCIZ  'INTERRUPT PRIORITY     '
10106                                           .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.
                                ;--
105576                                  BGNSFT
105576  000003                          .WORD L10076-L$SOFT/2
105600                          L$SOFT::
                                ;       GPRML   SPM1,0,-1,YES                   ; GET TRANSPORT TEST FLAG.
105600                                  GPRML   SPM4,2,-1,YES                   ; GET ITERATION CONTROL.
105600  001130                          .WORD   T$CODE
105602  105636                          .WORD   SPM4
105604  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
105606                                  ENDSFT
                                        .EVEN
105606                          L10076:

105606  105  116  101  SPM1:    .ASCIZ  'ENABLE TRANSPORT TESTS '
105636  111  116  110  SPM4:    .ASCIZ  'INHIBIT ITERATIONS     '
105666  120  105  122  SPM6:    .ASCIZ  'PER TEST ERROR LIMIT   '
105716  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).
                                ;

105746                          PATCH::

105746                                  .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$AU  = 000052        DEVDRO  023362          FRESIZ  003120 G        INTFLA  016225
ADR   = 000020 G        C$AUTO= 000061        DEVNRO  023301          FUSI    004113          INTMAS  016224
AMBTSS  006713          C$BRK = 000022        DEVNXR  023217          F$AU  = 000015          INTR    016276 G
ASSEMB= 000010          C$BSEG= 000004        DEVONL  023147          F$AUTO= 000020          INTREC  002216 G
A1716 = 000003          C$BSUB= 000002        DEVSUM  023112          F$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          IOKCKI= 000200
BDVPCR= 177520 G        C$CLEA= 000012        DICED = 000001          F$END = 000041          IOKSTP= 000001
BENBSW  002222 G        C$CLOS= 000035        DSBINT  016264          F$HARD= 000004          IPRI    002204 G
BIE   = 040000          C$CLP1= 000006        DUAD12  004637          F$HW  = 000013          ISR   = 000100 G
BIT0  = 000001 G        C$CVEC= 000036        DUFLG   003104 G        F$INIT= 000006          IVEC    002202 G
BIT00 = 000001 G        C$DCLN= 000044        DUMMY   003054          F$JMP = 000050          IXE   = 004000 G
BIT01 = 000002 G        C$DODU= 000051        EF.CON= 000036 G        F$MOD = 000000          I$AU  = 000041
BIT02 = 000004 G        C$DRPT= 000024        EF.NEW= 000035 G        F$MSG = 000011          I$AUTO= 000041
BIT03 = 000010 G        C$DU  = 000053        EF.PWR= 000034 G        F$PROT= 000021          I$CLN = 000041
BIT04 = 000020 G        C$EDIT= 000003        EF.RES= 000037 G        F$PWR = 000017          I$DU  = 000041
BIT05 = 000040 G        C$ERDF= 000055        EF.STA= 000040 G        F$RPT = 000012          I$HRD = 000041
BIT06 = 000100 G        C$ERHR= 000056        EMAXDU  017057          F$SEG = 000003          I$INIT= 000041
BIT07 = 000200 G        C$ERRO= 000060        EN    = 000000          F$SOFT= 000005          I$MOD = 000041
BIT08 = 000400 G        C$ERSF= 000054        ENAINT  016232          F$SRV = 000010          I$MSG = 000041
BIT09 = 001000 G        C$ERSO= 000057        ENVIRN  020710          F$SUB = 000002          I$PROT= 000040
BIT1  = 000002 G        C$ESCA= 000010        EPRTSW  002172 G        F$SW  = 000014          I$PTAB= 000041
BIT10 = 002000 G        C$ESEG= 000005        EPRT1   006354          F$TEST= 000001          I$PWR = 000041
BIT11 = 004000 G        C$ESUB= 000003        EPRT2   006413          GDDAT   003152 G        I$RPT = 000041
BIT12 = 010000 G        C$ETST= 000001        ERCM    012013          GERRMA  002166 G        I$SEG = 000041
BIT13 = 020000 G        C$EXIT= 000032        ERRHI   002230 G        GETPAT  020254 G        I$SETU= 000041
BIT14 = 040000 G        C$GETB= 000026        ERRK    017036          GETSEL  020336 G        I$SFT = 000041
BIT15 = 100000 G        C$GETW= 000027        ERRLO   002232 G        G$CNTO= 000200          I$SRV = 000041
BIT2  = 000004 G        C$GMAN= 000043        ERRNO = 001620          G$DELM= 000372          I$SUB = 000041
BIT3  = 000010 G        C$GPHR= 000042        ERRVEC= 000004 G        G$DISP= 000003          I$TST = 000041
BIT4  = 000020 G        C$GPLO= 000030        ERTABE  003370          G$EXCP= 000400          J$JMP = 000167
BIT5  = 000040 G        C$GPRI= 000040        ERTABL  003170          G$HILI= 000002          KIPAR0= 172340
BIT6  = 000100 G        C$INIT= 000011        ESUM    017040          G$LOLI= 000001          KIPAR1= 172342
BIT7  = 000200 G        C$INLP= 000020        EVL   = 000004 G        G$NO  = 000000          KIPAR2= 172344
BIT8  = 000400 G        C$MANI= 000050        EXBCNT= 000010          G$OFFS= 000400          KIPAR3= 172346
BIT9  = 001000 G        C$MEM = 000031        EXPBRE  015562 G        G$OFSI= 000376          KIPAR4= 172350
BOE   = 000400 G        C$MSG = 000023        EXPD    002224 G        G$PRMA= 000001          KIPAR5= 172352
BRINIT  004453          C$OPEN= 000034        EXPGOT  004527          G$PRMD= 000002          KIPAR6= 172354
BSEL0 = 000000          C$PNTB= 000014        EXPGT2  004563          G$PRML= 000000          KIPAR7= 172356
BSEL1 = 000001          C$PNTF= 000017        EXPMSG  002314 G        G$RADA= 000140          KIPDR0= 172300
CHKAMB  016124          C$PNTS= 000016        EXPREC  015554 G        G$RADB= 000000          KIPDR1= 172302
CHKMAN  020560 G        C$PNTX= 000015        EXTA    005766          G$RADD= 000040          KIPDR2= 172304
CHKTSS  016416          C$QIO = 000377        EXTEND  005764          G$RADL= 000120          KIPDR3= 172306
CKDROP  017262          C$RDBU= 000007        EXTFEA  002220 G        G$RADO= 000020          KIPDR4= 172310
CKEMAX  017162          C$REFG= 000047        E$END = 002100          G$XFER= 000004          KIPDR5= 172312
CKMSG   011440 G        C$RESE= 000033        E$LOAD= 000035          G$YES = 000010          KIPDR6= 172314
CKMSG2  011560 G        C$REVI= 000003        FATERR= 000060          HIADDR= 001400          KIPDR7= 172316
CKRAM   011174 G        C$RFLA= 000021        FATFLG  002214 G        HOE   = 100000 G        KTENAB  003126 G
CKRAM2  011304 G        C$RPT = 000025        FERCM   012002          HPM1    105466          KTFLG   003124 G
CMDPKT  021244 G        C$SEFG= 000046        FIFEXP  012250 G        HPM2    105522          KTINIT  021070
CMPMEM  017740          C$SPRI= 000041        FIF1MS  012322          HPM3    105546          KTOFF   017354
CONFIG  017330          C$SVEC= 000037        FIF2MS  012371          IBE   = 010000 G        KTON    017336
COUNT   002302 G        C$TPRI= 000013        FILLME  017502          IDU   = 000040 G        LERRMA  002164 G
CSRADD  002200 G        DATA    002304 G      FNOINT  004211          IER   = 020000 G        LISTAL= 000001
CTAB    003156 G        DATASC  020312        FORCER  002170 G        IFAULT  004252          LOE   = 040000 G
CTABE   003170 G        DEBUGM  011712        FREE    003116 G        INCERK  017124          LOOPCN  002210 G
CTABM   003156 G        DEVCNT  002212 G      FREEHI  003122          INTCPC  016230          LOOPCO  013206
```

Symbol table

```
LOOPFL  003154 G        L10002  005762          L10074  102102          O$GNSW= 000001          PUNIT   022270
LOT   = 000010 G        L10003  012124          L10075  105466          O$POIN= 000001          PW.D11= 000021
L$ACP   002110 G        L10004  012142          L10076  105606          O$SETU= 000000          PW.D13= 000022
L$APT   002036 G        L10005  012160          MEMADD  014034 G        PASRPT  022040          PW.D22= 000020
L$AU    022336 G        L10006  012166          MEMCK   021262 G        PATCH   105746 G        PW.NOP= 000000
L$AUT   002070 G        L10007  012204          MENASC  020527          PATDAT  020310          PW.NO1= 000023
L$AUTO  022542 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  022622 G        L10012  012320          MMVEC = 000250          PC.NOO= 001000          PW.RDS= 000005
L$CO    002032 G        L10013  012470          MSA.FR= 000006          PC.REL= 000000          PW.RFI= 000003
L$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   002040 G        L10022  015606          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    022434 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$EF    002052 G        L10030  022266          MS.RST= 000010          PRAMPK  014056          P.FORM= 000011
L$ENVI  002044 G        L10031  022432          M8186   005550          PRASC   014603          P.GETS= 000017
L$ETP   002102 G        L10032  022540          M8189   005641          PRBEXP  015550          P.IF  = 000200
L$EXP1  002046 G        L10033  022620          NBA   = 002000          PRBMSG  015416          P.INIT= 000013
L$EXP4  002064 G        L10034  022646          NEWPAS  021774          PRBREC  015552          P.MODE= 007400
L$EXP5  002066 G        L10035  023110          NODEV   003106 G        PRBTOT  015503          P.OPP = 020000
L$HARD  105446 G        L10036  032232          NOINIT  004331          PRBYTE  015202 G        P.POSI= 000010
L$HIME  002120 G        L10037  024074          NOINTR  004215          PRI   = 002000 G        P.READ= 0000C1
L$HPCP  002016 G        L10040  024616          NOITS   002162 G        PRIADD  010236          P.SWB = 010000
L$HPTP  002022 G        L10041  025342          NOMAN   020614          PRIAO   010306          P.WRIT= 000005
L$HW    002150 G        L10042  026164          NOMEM   005454          PRIBXO  007670 G        P.WRTC= 000004
L$ICP   002104 G        L10043  041330          NP.IR = 000200          PRIEQU  010136          P.WRTS= 000006
L$INIT  021542 G        L10044  033634          NP.LOO= 000040          PRIPKT  007446 G        QVP     002176 G
L$LADP  002026 G        L10045  035260          NP.OUT= 000100          PRIRAM  010144          RAMASC  014236
L$LAST  106404 G        L10046  035654          NP.WRP= 000020          PRITAD  010352          RAMDAT  002234 G
L$LOAD  002100 G        L10047  036340          NSI     004146          PRITSS  006020          RAMERR  015570 G
L$LUN   002074 G        L10050  046666          NSINIT  004403          PRITO   010434          RAMEXP  015610 G
L$MREV  002050 G        L10051  042222          NUL     004523          PRIT1   010477          RAMFOR  010174
L$NAME  002000 G        L10052  043034          NULCR   004524          PRIXOR  010020 G        RAMSIZ  002274 G
L$PRIO  002042 G        L10053  052744          NXM   = 004000          PRIO0 = 000000 G        RAMTAD  015576 G
L$PROT  021532 G        L10054  047542          NXMFLG  003130 G        PRIO1 = 000040 G        RCVHIA  002276 G
L$PRT   002112 G        L10055  050352          NXMHI   003134 G        PRIO2 = 000100 G        RCVLOA  002300 G
L$REPP  002062 G        L10056  051166          NXMLO   003132 G        PRIO3 = 000140 G        RDERR   005202
L$REV   002010 G        L10057  055740          NXMTST  021436          PRIO4 = 000200 G        RECMSG  002460 G
L$RPT   022650 G        L10060  054406          NXR     003734          PRIO5 = 000240 G        RECV    002226 G
L$SOFT  105600 G        L10061  063312          NXRERR  005732 G        PRIO6 = 000300 G        REGSAV  020220
L$SPC   002056 G        L10062  060376          NXRX    003773          PRIO7 = 000340 G        RETERR  005366
L$SPCP  002020 G        L10063  073242          NXTU    022006          PRMESS  014322          REWIND  011074 G
L$SPTP  002024 G        L10064  064404          OFL   = 000100          PRMNO   002312 G        RMCHBE= 000167
L$STA   002030 G        L10065  065464          ONEFIL= 000000          PRMSGE  014632 G        RMCHEN= 000200
L$SW    002160 G        L10066  066326          O$APTS= 000000          PRMSGO  015012          RMMSGB= 000215
L$TEST  002114 G        L10067  067230          O$AU  = 000001          PRMSG1  015057          RMMSGE= 000234
L$TIML  002014 G        L10070  101016          O$BGNR= 000001          PRMSG2  015115          RMPKTB= 000201
L$UNIT  002012 G        L10071  074336          O$BGNS= 000001          PROASC  014500          RMPKTE= 000210
L10000  002156          L10072  075420          O$DU  = 000001          PR1ASC  014545          RMR   = 010000
L10001  002170          L10073  105442          O$ERRT= 000000          PST32W  003144 G        RWPACK  011170
```

Symbol table

```
SC     = 100000          S2.OUT= 000040          T$FLAG= 000040          T29DAT  026230          T30BS0  036530
SCE    = 020000          S2.UND= 000003          T$GMAN= 000000          T29DLY  026400          T30BS1  036531
SCHERR  005274           TBLEND= 003054 G        T$HILI= 000776          T29DSW  026240          T30CNT  036550
SCME    005007           TCOASC  006554         T$LAST= 000001          T29DTA  027743          T30CNU  036552
SDELAY  010740           TCOCOD  006754         T$LOLI= 000000          T29EOT  030031          T30DAT  036410
SELASC  020522           TEMP1   003110 G        T$LSYM= 010000          T29LON  031125          T30DLY  036556
SELDAT= 000004           TEMP2   003112 G        T$LTNO= 000011          T29LOO  023462          T30DSW  036420
SEL2   = 000002          TERCLS= 000016          T$NEST= 177777          T29LOP  031207          T30DTA  041034
SETMAP  017376           TESTNO= 000011          T$NS0 = 000000          T29LOQ  027326          T30DTR  040770
SETU    022072           TEXASC  006513          T$NS1 = 000005          T29LOR  027201          T30ETM  036416
SFFMSG  012162 G         TFCASC  006615          T$NS2 = 000002          T29NEF  026530          T30FCN  036554
SFHERR  003701           TIMEXP  015632 G        T$PTNU= 000000          T29NEQ  031445          T30IBT  036731
SFIERR  003646           TIMSGO  015660          T$SAVL= 177777          T29OFL  026402          T30IBU  036560
SFIMSG  012114 G         TINERR  012101          T$SEGL= 177777          T29OF7  030415          T30IMV  036536
SFPTBL  002160 G         TMPBFR  002624 G        T$SUBN= 000001          T29PAC  026220          T30LOO  032260
SIFLAG  003146 G         TNAM    016764          T$TAGL= 177777          T29PBP  031271          T30LOQ  037530
SIMSG   012046           TRANST  002160 G        T$TAGN= 010077          T29PK2  026330          T30NEF  040476
SKIPT   003372           TSBA   = 000000 G        T$TEMP= 000000          T29PK3  026340          T30OFL  040207
SOFINI  016054 G         TSBAH  = 000001 G        T$TEST= 000011          T29RB   026342          T30PAC  036400
SPACE   010544 G         TSDB   = 000000 G        T$TSTM= 177777          T29RDF  026620          T30PK2  036510
SPM1    105606           TSDBH  = 000001 G        T$TSTS= 000001          T29RDG  031543          T30PK3  036520
SPM4    105636           TSFCOD  007314           T$$AU = 010031          T29RES  032046          T30PTB  037142
SPM6    105666           TSREJ  = 000006          T$$AUT= 010033          T29RIB  031624          T30RB   036522
SPM7    105716           TSSDEF  006664           T$$CLE= 010034          T29RN   026356          T30RDF  037313
SR0    = 177572          TSSR   = 000002 G        T$$DU = 010032          T29RNC  030254          T30RDG  037371
SR1    = 177574          TSSRBI  003476 G         T$$HAR= 010075          T29RRF  026667          T30RES  041152
SR2    = 177576          TSSRFO  006473           T$$HW = 010000          T29RRG  027003          T30RIB  036645
SR3    = 172516          TSSRH  = 000003 G        T$$INI= 010030          T29RRN  031724          T30RN   036536
SSR    = 000200          TSSX    004014           T$$MSG= 010025          T29RSZ  026376          T30RRM  040555
STATCO  012472           TSTBLK  002744 G         T$$PRO= 010027          T29RT2  032140          T30RRN  040633
SVCGBL= 000000           TSTCNT  002206 G         T$$RPT= 010035          T29RT3  032202          T30RRP  040712
SVCINS= 000000           TSTEND  017000           T$$SOF= 010076          T29RWN  030205          T30RT2  041244
SVCSUB= 000001           TSTFLA  002306 G         T$$SRV= 010026          T29SC   027117          T30RT3  041306
SVCTAG= 000000           TSTLOO  016536 G         T$$SUB= 010074          T29SSR  027407          T30RWN  040140
SVCTST= 000001           TSTPTR  002310 G         T$$SW  = 010001          T29SZ   026346          T30SKM  037014
S$LSYM= 010000           TSTSET  016570 G         T$$TES= 010073          T29S2   026352          T30SSR  037611
S0.IDB= 000010           TST29I  032017           T1      023432 G        T29S3   026354          T30SZ   036526
S0.IFB= 000002           TST30I  041131           T1.1    023462          T29TM   030127          T30S2   036532
S0.IFP= 000001           TST31I  046443           T1.2    024112          T29TRL  031357          T30S3   036534
S0.ILD= 000020           TST32I  052540           T1.3    024634          T29VCK  030671          T30TM   040006
S0.ION= 000040           TST33I  055545           T1.4    025360          T29WB   026342          T30TMK  040414
S0.IRD= 000100           TST34I  063107           T2      032234 G        T29WDC  030577          T30TM2  040063
S0.IRW= 000004           TST35I  073033           T2.1    032260          T29WDD  030470          T30TPB  037233
S0.ISP= 000200           TST36I  100617           T2.2    033652          T29WDE  027462          T30VCK  040341
S1.ICE= 002000           TST37I  105243           T2.3    035276          T29WDF  027251          T30WB   036522
S1.IE0= 010000           TSV2    002000 G         T2.4    035672          T29WDR  026360          T30WDC  040262
S1.IFM= 001000           TSV3    002170 G         T23A    003136 G        T29WLK  027544          T30WDD  037070
S1.IHE= 000400           TSV4    021532 G         T23B    003140 G        T29WNG  026423          T30WDE  037662
S1.IID= 004000           TSV6    105444 G         T29AM3  030327          T29WRT  027631          T30WDF  037453
S1.I1R= 020000           TSV7B   023432 G         T298A   030744          T29WSS  031036          T31AM3  044716
S1.I2R= 040000           TTIBFR= 177562 G         T298FR  026242          T3      041332 G        T31BA   045256
S1.PAR= 100000           TTICSR= 177560 G         T298F2  026350          T3BFLG  003142 G        T31BFR  043112
S2.ATI= 000010           TTIVEC= 000060 G         T29BOT  027676          T3.1    041362          T31BF2  043220
S2.BTI= 000004           T$ARGC= 000003           T29BS0  026350          T3.2    042240          T31BOT  044245
S2.DIM= 000200           T$CODE= 001130           T29BS1  026351          T30BFR  036422          T31BS0  043220
S2.ILW= 000100           T$ERRN= 001620           T29CNT  026374          T30BF2  036530          T31BS1  043221
S2.INR= 000020           T$EXCP= 000000           T29CON  026362          T30BOT  037741          T31CNT  043236
```

Symbol table

T31CNU	043240	T32DAT	051240	T34BFR	060462	T35DAT	067300	T36CNT	075626
T31CON	043232	T32DLY	051414	T34BF2	060576	T35DLY	067442	T36CNU	075630
T31DAT	043100	T32DSW	051250	T34BOT	061134	T35DSW	067310	T36CON	075622
T31DLY	043242	T32ECF	052355	T34BS0	060576	T35DTA	072225	T36DAT	075470
T31DSW	043110	T32EOT	051511	T34BS1	060577	T35EOT	07041C	T36DLY	075632
T31DTA	046346	T32ERA	051716	T34CNT	060572	T35INT	072501	T36DSW	075500
T31EOT	044440	T32LOO	046720	T34CON	060610	T35LON	071370	T36DTA	100522
T31LON	045420	T32OPI	052503	T34DAT	060450	T35LOO	063344	T36EOT	076705
T31LOO	041362	T32PAC	051230	T34DLY	060574	T35LOP	071452	T36LON	077665
T31LOP	045502	T32PK2	051340	T34DSW	060460	T35LOQ	070105	T36LOO	073300
T31LOQ	044016	T32PK3	051350	T34EOT	062105	T35LOR	067760	T36LOP	077747
T31LOR	043671	T32RB	051352	T34ET	062016	T35MOT	072403	T36LOQ	076346
T31NEF	045740	T32RES	052600	T34ETC	061057	T35NEF	071710	T36LOR	076221
T31OFL	044765	T32RIB	052036	T34ETN	061351	T35NIN	072756	T36NAS	075634
T31PAC	043070	T32RT2	052672	T34ETO	060702	T35OFL	070735	T36NEF	100205
T31PBP	045564	T32RT3	052722	T34ETS	061430	T35OPM	072572	T36OFL	077232
T31PK2	043200	T32RWN	051600	T34ETZ	061522	T35PAC	067270	T36PAC	075460
T31PK3	043210	T32SCF	052134	T34ET2	061267	T35PBP	071534	T36PBP	100031
T31RB	043212	T32SZ	051356	T34LOO	055772	T35PK2	067400	T36PK2	075570
T31RDE	043244	T32TSA	052211	T34OFL	062427	T35PK3	067410	T36PK3	075600
T31RDF	043443	T32WB	051352	T34PAC	060440	T35RB	067412	T36RB	075602
T31RES	046510	T32WDC	052436	T34PK2	060550	T35RDF	067532	T36RDF	075773
T31RN	043226	T33BFR	054472	T34PK3	060560	T35RES	073064	T36RES	100640
T31RNC	044643	T33BF2	054600	T34POS	060614	T35RN	067426	T36RN	075616
T31RRF	043512	T33BOT	055225	T34RB	060562	T35RNC	070613	T36RNC	077110
T31RT2	046602	T33BS0	054600	T34RES	063132	T35RRF	067601	T36RRF	076042
T31RT3	046644	T33BS1	054601	T34RNC	062306	T35RT2	073156	T36RT2	100732
T31RWN	044574	T33CNT	054616	T34RRE	060766	T35RT3	073220	T36RT3	100774
T31SC	043607	T33CNU	054620	T34RSZ	060570	T35RWE	072670	T36RWN	077041
T31SCF	046061	T33CON	054612	T34RT2	063224	T35RWN	070544	T36SC	076137
T31SSR	044077	T33DAT	054460	T34RT3	063266	T35SC	067676	T36SCF	100303
T31SZ	043216	T33DLY	054622	T34RWN	062237	T35SCF	072006	T36SSR	076427
T31S2	043222	T33DSW	054470	T34SSR	061763	T35SSR	072322	T36SZ	075606
T31S3	043224	T33DTA	055450	T34STM	061600	T35SZ	067416	T36S2	075612
T31TIM	044340	T33LOO	052776	T34SZ	060566	T35S2	067422	T36S3	075614
T31TM	044517	T33PAC	054450	T34S2	060600	T35S3	067424	T36TIM	076630
T31TRL	045652	T33PK2	054560	T34S3	060602	T35TIM	070333	T36TM	076764
T31TSA	046136	T33PK3	054570	T34TM	062163	T35TM	070467	T36TRL	100117
T31VCK	045203	T33RB	054572	T34TMK	061663	T35TRL	071622	T36TSA	100360
T31WB	043212	T33RBP	054624	T34VCK	062673	T35TSA	072063	T36VCK	077450
T31WDC	045130	T33RES	055562	T34WB	060562	T35VCK	071153	T36WB	075602
T31WDD	045040	T33RN	054606	T34WD	060604	T35WB	067412	T36WDC	077375
T31WDE	044133	T33RT2	055654	T34WDC	062571	T35WDC	071100	T36WDD	077305
T31WDF	043741	T33RT3	055716	T34WDD	062502	T35WDD	071010	T36WDE	076463
T31WDR	043230	T33RWN	055320	T34WDR	060606	T35WDE	070166	T36WDF	076271
T31WNG	043371	T33SSR	055141	T34WSS	063020	T35WDF	070030	T36WDR	075620
T31WNH	043310	T33SZ	054576	T34WTM	061200	T35WDR	067430	T36WNG	075705
T31WRF	046243	T33S2	054602	T35AM3	070666	T35WNG	067444	T36WRF	100442
T31WSS	045331	T33S3	054604	T35BA	071226	T35WRF	072145	T36WSS	077576
T32AM3	051647	T33UNC	054762	T35BFR	067312	T35WSS	071301	T37AM3	103607
T32BA	051763	T33UND	055052	T35BF2	067420	T36AM3	077163	T37BA	104147
T32BFR	051252	T33WB	054572	T35BOT	070240	T36BA	077523	T37BFR	102162
T32BOE	052266	T33WDC	055367	T35BS0	067420	T36BFR	075502	T37BF2	102270
T32BOT	051416	T33WDR	054610	T35BS1	067421	T36BF2	075610	T37BOT	103161
T32CMD	051360	T33WPW	054702	T35CNT	067436	T36BOT	076535	T37BS0	102270
T32CNT	051410	T34AM3	062361	T35CNU	067440	T36BS0	075610	T37BS1	102271
T32CNU	051412	T34BA	062746	T35CON	067432	T36BS1	075611	T37CNT	102306

Symbol table

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T37CNU  102310          T37SZ   102266          T8      073244 G        WSMBK   021254 G        X$OFFS= 000400
T37CON  102302          T37S2   102272          T8.1    073300          XFERAS  016020          X$TRUE= 000020
T37DAT  102150          T37S3   102274          T8.2    074354          XNXM    016456          X1.COR= 020000
T37DLY  102312          T37TIM  103254          T9      101020 G        XORBFO  007752          X1.DLT= 100000
T37DSW  102160          T37TM   103410          T9.1    101054          XORFOR  010070          X1.MBZ= 017375
T37DTA  105146          T37TRL  104543          UAM   = 000200 G        XST0  = 000006 G        X1.RBP= 000400
T37EOT  103331          T37TSA  105004          UNITN   002174 G        XST1  = 000010 G        X1.SPA= 040000
T37LON  104311          T37VCK  104074          UNREC = 000006          XST2  = 000012 G        X1.UNC= 000002
T37LOO  101054          T37WB   102262          USI     004117          XST3  = 000014 G        X2.BUF= 000100
T37LOP  104373          T37WDC  104021          WAITF   016330 G        XST4  = 000016 G        X2.EXT= 000200
T37LOQ  102755          T37WDD  103731          WC.IFA= 000200          XSOBOT= 000002          X2.OPM= 100000
T37LOR  102630          T37WDE  103072          WC.IFE= 000002          XSOEOT= 000001          X2.RCE= 040000
T37NEF  104631          T37WDF  102700          WC.IGO= 000001          XSOIE = 000040          X2.REV= 000077
T37OFL  103656          T37WDR  102300          WC.IRE= 000010          XSOILA= 000400          X2.SPA= 035400
T37PAC  102140          T37WNG  102314          WC.IRW= 000004          XSOILC= 001000          X2.UNI= 000007
T37PBP  104455          T37WRF  105066          WC.IOT= 000100          XSOLET= 020000          X2.WCF= 002000
T37PK2  102250          T37WSS  104222          WC.I1T= 000040          XSOMOT= 000200          X3.DCK= 000010
T37PK3  102260          T4      046670 G        WC.I5R= 000020          XSONEF= 002000          X3.MBZ= 000006
T37RB   102262          T4.1    046720          WF.IED= 000010          XSOONL= 000100          X3.MDE= 177400
T37RDF  102402          T4.2    047560          WF.IER= 000004          XSOPED= 000010          X3.OPI= 000100
T37RES  105264          T4.3    050370          WF.IHI= 000200          XSORLL= 010000          X3.REV= 000040
T37RN   102276          T5      052746 G        WF.IRE= 000040          XSORLS= 040000          X3.RIB= 000001
T37RNC  103534          T5.1    052776          WF.IWF= 000020          XSOTMK= 100000          X3.SPA= 000200
T37RRF  102451          T6      055742 G        WF.IWR= 000100          XSOVCK= 000020          X3.TRF= 000020
T37RT2  105356          T6.1    055772          WF.I3R= 000002          XSOWLE= 004000          X4.HSP= 100000
T37RT3  105420          T7      063314 G        WF.I4R= 000001          XSOWLK= 000004          X4.MBZ= 017400
T37RWN  103465          T7.1    063344          WRTCHR  010742 G        XXCOMM  003114 G        X4.RCE= 040000
T37SC   102546          T7.2    064422          WRTERR  005107          X$ALWA= 000000          X4.TSM= 020000
T37SCF  104727          T7.3    065502          WRTMSG  005052          X$FALS= 000040          X4.WRC= 000377
T37SSR  103036          T7.4    066344

. ABS.  106404    000   (RW,I,GBL,ABS,OVR)
        000000    001   (RW,I,LCL,REL,CON)
Errors detected:  0

*** Assembler statistics


Work  file  reads: 297
Work  file writes: 285
Size of work file: 31544 Words  ( 124 Pages)
Size of core pool: 19714 Words  ( 75 Pages)
Operating  system: RSX-11M/PLUS (Under VAX/VMS)

Elapsed time: 00:07:05.40
CVTSDD,CVTSDD,=SVC/ML,CVTSDD
```