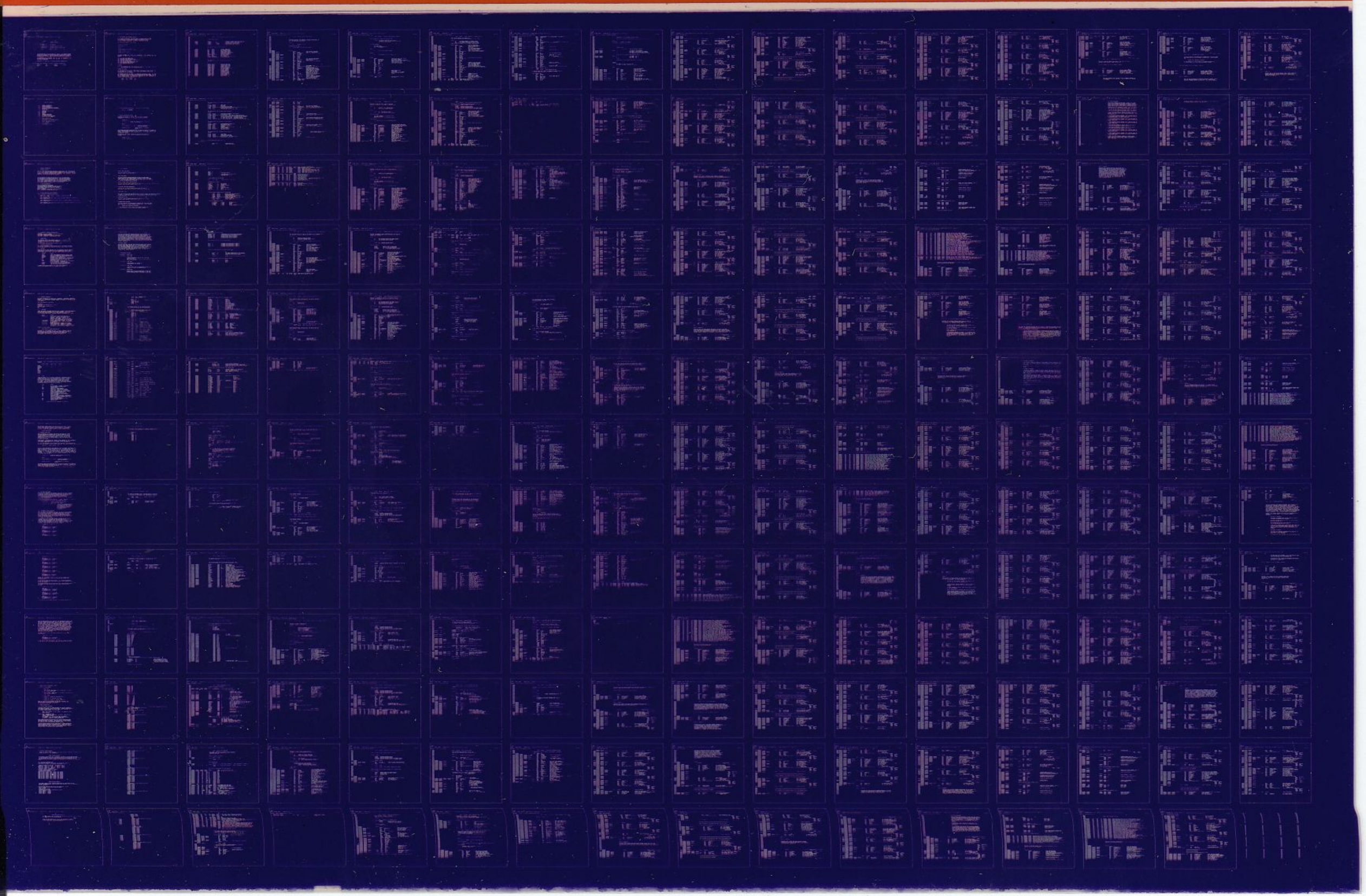
TSV05

TSV05 CTRL PT 4
CVTSDE0

AH-T100E-MC
1 OF 2 SEP 1987

digital
MADE IN USA



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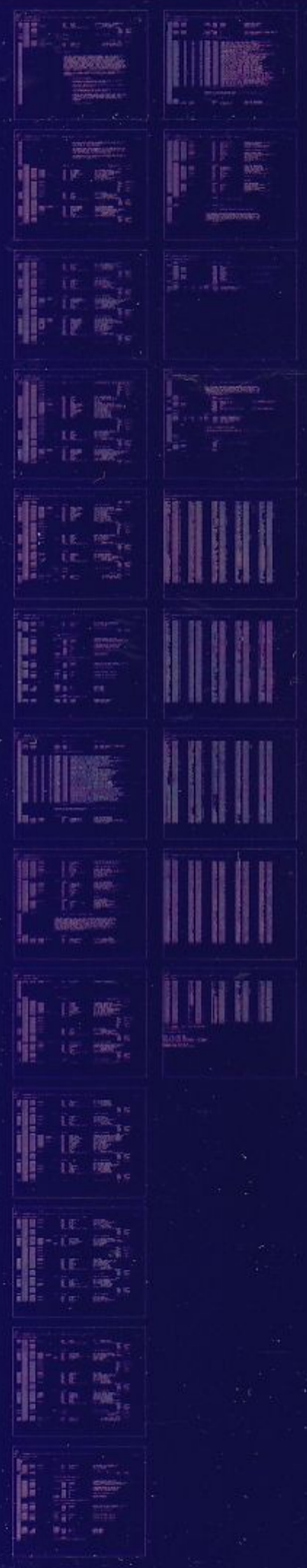

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IDENTIFICATION

PRODUCT ID: AC-T099E-MC

PRODUCT TITLE: CVTSDE0 TSV05 CTRL PART 4

DEPARTMENT: COMPUTER SPECIAL SYSTEMS/PGG

DATE: JUNE 04, 1987

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,CVTSBE AND CVTSCD 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-E-0
****TSV05 LOGIC DIAGNOSTIC****
UNIT IS TSV05
>DR
```

2.2 SWITCHES

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

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

EXAMPLE OF SWITCH USAGE:

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

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

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

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

2.3 FLAGS

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

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

*ERROR MESSAGES ARE DESCRIBED IN SECTION 3.1

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

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

2.4 HARDWARE QUESTIONS

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

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

ON A "N" (NO) RESPONSE TO THE "CHANGE HW?" QUESTION, THE 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 (O) 0 ?  <CR>

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

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

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

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

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

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

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

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

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

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

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

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

AS YOU CAN SEE IN THE ABOVE DIALOGUE, THE RUNTIME SERVICES WILL

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

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

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

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

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

2.7 QUICK START-UP PROCEDURE (XXDP+)

TO START-UP THIS PROGRAM:

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

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

3.0 ERROR INFORMATION

3.1 TYPES OF ERROR MESSAGES

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

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

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

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

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

3.2 SPECIFIC ERROR MESSAGES

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

ERROR MESSAGE EXAMPLE 1

THIS ERROR IS INDICATIVE OF AN INCORRECT REGISTER OR STATUS WORD RETURNED TO THE DIAGNOSTIC. THE FIRST PART DEFINES THE TEST FUNCTION AND UNIT THAT FAILED. THE SECOND PART 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  (0) 172520 ? <ENTER THE ADDRESS OF THE
                              TSBA/TSDB REGISTER>

VECTOR (0) 224 ?        <ENTER ADDRESS OF INTERRUPT
                        VECTOR>
```

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

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

```
CHANGE SW (L) ?

INHIBIT ITERATIONS (L) N ?
```

6.0 TEST SUMMARIES

TEST 1: WRITE TAPE MARK RETRY

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

TEST 2: SKIP TAPE MARKS

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

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

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

TEST 4: ERASE AND OPERATION INCOMPLETE

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

TEST 5: DATA PARITY TEST

This test verifies that the data parity circuitry in both the controller and the transport is operating properly by forcing data records with wrong parity to be written onto tape and checking the results obtained when the data is read.

TEST 6: OPERATIONS AT EOT

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

TEST 7: EXTENDED MODE FEATURES

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

REWIND WITH IMMEDIATE INTERRUPT

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

TEST 8: RECORD BUFFERING

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

TEST 9: FUNCTION TIMING

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

7.0 MAINTENANCE HISTORY

REVISION A - MARCH 1982

REVISION B - APRIL 1983

- FIXED TWO PROBLEMS, ONE IN TEST 1 AND THE OTHER IN TEST 8.
REF. DOYLE TO GRASKY "TSV05 CVTSDB 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.

REVISION E - APRIL 1987

CHANGES MADE TO ALLOW DIAGNOSTICS TO WORK WITH THE NEW TSV05 MICROCODE (REVISION 2). THE NEW TSV05 MICROCODE ALWAYS IN EXTENDED FEATURE MODE.

-

F2


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

                                        .MCALL  SVC
000000                                  SVC                     ; INITIALIZE SUPERVISOR MACROS
                                        .ENABLE LC
                                        .NLIST  BEX,CND
000000                                  .ENABL  AMS,AMA
        002000                          .=2000
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,E,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      105                         .ASCII  /E/
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  105526                          .WORD   L$HARD
002020                          L$SPCP::                ;POINTER TO S.W. QUES.
002020  105660                          .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
```

G2

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  003376                  .WORD   L$DVTYP
002062                  L$REPP::                ;PTR. TO REPORT CODE
002062  022700                  .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  022366                  .WORD   L$AU
002072                  L$DUT::                 ;PTR. TO DROP UNIT CODE
002072  022464                  .WORD   L$DU
002074                  L$LUN::                 ;LUN FOR EXERCISERS TO FILL
002074  000000                  .WORD   0
002076                  L$DESP::                ;POINTER TO DIAG. DESCRIPTION
002076  003404                  .WORD   L$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  021572                  .WORD   L$INIT
002106                  L$CCP::                 ;PTR. TO CLEAN-UP CODE
002106  022652                  .WORD   L$CLEAN
002110                  L$ACP::                 ;PTR. TO AUTO CODE
002110  022572                  .WORD   L$AUTO
002112                  L$PRT::                 ;PTR. TO PROTECT TABLE
002112  021562                  .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
```

H2

DISPATCH TABLE

```
                                        .SBTTL  DISPATCH TABLE

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

002122                                  DISPATCH 9
002122  000011                          .WORD   9
002124                          L$DISPATCH::
002124  023462                          .WORD   T1
002126  032264                          .WORD   T2
002130  041362                          .WORD   T3
002132  046720                          .WORD   T4
002134  052776                          .WORD   T5
002136  055772                          .WORD   T6
002140  063344                          .WORD   T7
002142  073274                          .WORD   T8
002144  101100                          .WORD   T9
```

I2

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:
```

J2

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:

002170                                  ENDMOD
```

K2

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
```

L2

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
922
923 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
```

M2

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 DESCRIPTOR REGISTERS
                        SDPDR0= 172220
                        SDPDR1= 172222
                        SDPDR2= 172224
                        SDPDR3= 172226
                        SDPDR4= 172230
                        SDPDR5= 172232
                        SDPDR6= 172234
                        SDPDR7= 172236
                        .ENDC
                        ;*SUPERVISOR "I" PAGE ADDRESS REGISTERS
                        SIPAR0= 172240
                        SIPAR1= 172242
                        SIPAR2= 172244
                        SIPAR3= 172246
                        SIPAR4= 172250
                        SIPAR5= 172252
                        SIPAR6= 172254
                        SIPAR7= 172256
                        .IF NB
                        ;*SUPERVISOR "D" PAGE ADDRESS REGISTERS
                        SDPAR0= 172260
                        SDPAR1= 172262
                        SDPAR2= 172264
                        SDPAR3= 172266
```

N2

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
```

E3

TSV05 REGISTER AND PACKET DEFINITIONS

```
1087                                    ;*
1088                                    ; CONTROLLER RAM DEFINITIONS
1089                                    ;-
1090    000167                          RMCHBEG = 167           ;CHARACTERISTICS IO DATA BEGIN RAM ADDRESS
1091    000200                          RMCHEND = 200           ;CHARACTERISTICS IO DATA END RAM ADDRESS
1092    000201                          RMPKTBEG= 201           ;COMMAND PACKET BEGIN RAM ADDRESS
1093    000210                          RMPKTEND= 210           ;COMMAND PACKET END RAM ADDRESS
1094    000215                          RMMSGBEG= 215           ;MESSAGE BUFFER BEGIN RAM ADDRESS
1095    000234                          RMMSGEND= 234           ;MESSAGE BUFFER END RAM ADDRESS
1096                                    ;*
1097                                    ;
1098                                    ;REGISTER DEFINITIONS IN THE MESSAGE BUFFER
1099                                    ;
1100                                    ;-
1101
1102    000006                          XST0==  6               ;EXTENDED STATUS REGISTER 0 (WORD 4)
1103    000010                          XST1==  8.              ;EXTENDED STATUS REGISTER 1 (WORD 5)
1104    000012                          XST2==  10.             ;EXTENDED STATUS REGISTER 2 (WORD 6)
1105    000014                          XST3==  12.             ;EXTENDED STATUS REGISTER 3 (WORD 7)
1106    000016                          XST4==  14.             ;EXTENDED STATUS REGISTER 4 (WORD 8)
1107
1108                                    ;*
1109                                    ;
1110                                    ;OFFSETS TO WORD LOCATIONS IN PACKET DEFINITIONS
1111                                    ;
1112                                    ;-
1113
1114    000002                                  PKLOW   = 2             ;LOW ORDER CHARACTERISTIC DATA POINTER
1115    000004                                  PKHI    = 4             ;HIGH ORDER CHARACTERISTIC DATA POINTER
1116    000006                                  PKBCNT  = 6             ;NUMBER OF BYTES IN DATA PACKET
1117
1118    000010                                  EXBCNT=10               ;NUMBER OF BYTES IN EXTENDED DATA PACKET
1119
1120                                    ;*
1121                                    ;DATA PACKET OFFSETS FOR WRITE SUBSYTEM COMMAND
1122                                    ;-
1123    000000                                  BSEL0   = 0             ;BYTE 0
1124    000001                                  BSEL1   = 1             ;BYTE 1
1125    000002                                  SEL2    = 2             ;WORD 2
1126    000004                                  SELDATA = 4             ;WORD 3
```

F3

TSV05 REGISTER AND PACKET DEFINITIONS

```
1128                                    ;+
1129                                    ;BSEL0 SELECT CODES FOR WRITE SUBSYSTEM COMMAND
1130                                    ;-
1131            000000                  PW.NOP          = 0             ;NO OP
1132            000001                  PW.RDRAM        = 1             ;READ RAM
1133            000002                  PW.WTRAM        = 2             ;WRITE RAM
1134            000003                  PW.RFIFO        = 3             ;READ FIFO
1135            000004                  PW.WFIFO        = 4             ;WRITE FIFO
1136            000005                  PW.RDSTAT       = 5             ;READ STATUS
1137            000006                  PW.WCTL         = 6             ;WRITE TAPE CONTROL
1138            000007                  PW.WFMT         = 7             ;WRITE TAPE FORMAT
1139            000010                  PW.WMISC        = 10            ;WRITE MISCELLANEOUS
1140            000011                  PW.WNPR         = 11            ;WRITE NPR CONTROL
1141            000020                  PW.D22          = 20            ;DO MICROTEST 22
1142            000021                  PW.D11          = 21            ;DO MICROTEST 11
1143            000022                  PW.D13          = 22            ;DO MICROTEST 13
1144            000023                  PW.ND1311       = 23            ;DISABLE MICROTEST 11 AND 13
1145            000024                  PW.RDEXT        = 24            ;READ EXT. TAPE STATUS (NOT SUPPORTED BY ALL TRANSPORTS
1146
1147                                    ;+
1148                                    ;BSEL1 CODES FOR WRITE TAPE CONTROL
1149                                    ;
1150            000200                  WC.IFAD         = BIT7          ;IFAD - FORMATTER ADDRESS
1151            000100                  WC.IOTAD        = BIT6          ;ITAD0  - TRANSPORT ADDRESS BIT 0
1152            000040                  WC.I1TAD        = BIT5          ;ITAD1    TRANSPORT ADDRESS BIT 1
1153            000020                  WC.ISRESV       = BIT4          ;IRESV5 - RESERVED #5
1154            000010                  WC.IREW         = BIT3          ;IREW   - REWIND
1155            000004                  WC.IRWU         = BIT2          ;IRWU   - REWIND AND UNLOAD
1156            000002                  WC.IFEN         = BIT1          ;IFEN   - FORMATTER ENABLE
1157            000001                  WC.IGO          = BIT0          ;GO
1158
1159                                    ;+
1160                                    ;BSEL1 CODES FOR WRITE FORMAT
1161                                    ;-
1162            000200                  WF.IHISP        = BIT7          ;IHISP  - HIGH SPEED
1163            000100                  WF.IWRT         = BIT6          ;IWRT   - WRITE
1164            000040                  WF.IREV         = BIT5          ;IREV   - REVERSE
1165            000020                  WF.IWFM         = BIT4          ;IWFM   - WRITE FILE MARK
1166            000010                  WF.IEDIT        = BIT3          ;IEDIT  - EDIT
1167            000004                  WF.IERASE       = BIT2          ;IERASE - ERASE
1168            000002                  WF.I3RESV       = BIT1          ;IRESV3 - RESERVED #3
1169            000001                  WF.I4RESV       = BIT0          ;IRESV4 - RESERVED #4
1170
1171                                    ;+
1172                                    ;BSEL1 CODES FOR WRITE MISCELLANEOUS SUBCOMMAND
1173                                    ;-
1174            000200                  MS.EXT          = BIT7          ;INVERT SENSE OF EXTENDED FEATURES SWITCH
1175            000020                  MS.RSFIFO       = BIT4          ;RESET FIFO AND INPUT PARITY ERRORR
1176            000010                  MS.RSTAPE       = BIT3          ;RESET TAPE STATUS IN 2 FLIP FLOPS
1177            000006                  MS.ATTN         = BIT2!BIT1     ;ATTENTION TRIGGER FIELD
1178            000001                  MS.RSD          = BIT0          ;RESET TIMER A,B THEN DELAY TIMES IN SEL2
```

```
                                ;*
                                ; MS.ATTN SUBCODES
                                ;-
                                        MSA.NOP = 0*2           ;NO-OP (NOTHING TRIGGERED)
                                        MSA.VOL = 1*2           ;SIMULATE ON-LINE/OFF-LINE TRANSISTION
                                        MSA.NRAM= 2*2           ;FORCE NON-FATAL RAM ERROR (FORCES ERRCODE 54)
                                        MSA.FRAM= 3*2           ;FORCE FATAL RAM ERROR (CAUSES SCE TO SET)
                                ;*
                                ; WRITE SUBSYSTEM WRITE NPR BSEL1 BIT DEFINITIONS
                                ;-
                                NP.IR           = BIT7          ;INTERRUPT REQUEST (0-1 TRANSITION)
                                NP.OUT          = BIT6          ;TAPE DATA DIRECTION OUT (0= IN)
                                NP.LOOP         = BIT5          ;ENABLE TRANSPORT LOOPBACK
                                NP.WRP          = BIT4          ;WRITE CORRECT PARITY (SET=0 TO WRITE WRONG)
                                ;*
                                ; READ STATUS MESSAGE BUFFER BIT DEFINITIONS
                                ;-

                                S2.DIM          = BIT7          ;WORD #9 BYTE 2 DATA IN MISS
                                S2.ILW          = BIT6          ;               ILW H
                                S2.OUTRDY       = BIT5          ;               OUT RDY H
                                S2.INRDY        = BIT4          ;               IN RDY H
                                S2.ATIMR        = BIT3          ;               TIMER A FLAG H
                                S2.BTIMR        = BIT2          ;               TIMER B FLAG H
                                S2.UNDEF        = BIT1+BIT0     ;(UNDEFINED)
                                S1.PARIN        = BIT15         ;WORD #8 BYTE 1 PARIN H
                                S1.I2RESV       = BIT14         ;               IRESV2
                                S1.I1RESV       = BIT13         ;               IRESV1
                                S1.IEOT         = BIT12         ;               IEOT L
                                S1.IIDENT       = BIT11         ;               IIDENT H
                                S1.ICER         = BIT10         ;               ICER H
                                S1.IFMK         = BIT9          ;               IFMK H
                                S1.IHER         = BIT8          ;               IHER H
                                S0.ISPEED       = BIT7          ;WORD #8 BYTE 0 ISPEED H
                                S0.IRDY         = BIT6          ;               IRDY L
                                S0.IONL         = BIT5          ;               IONL L
                                S0.ILDP         = BIT4          ;               ILDP L
                                S0.IDBY         = BIT3          ;               IDBY L
                                S0.IRWD         = BIT2          ;               IRWD L
                                S0.IFBY         = BIT1          ;               IFBY L
                                S0.IFPT         = BIT0          ;               IFPT L
```

H3

SPECIAL MACROS AND OPDEFS.

```
                        .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     %.(SP)
                                        BIC     B.(SP)
                                        BIC     A,B
                                        BIS     (SP)+,B
                                        .ENDM

                                        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.
```

J3

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          REV::           .WORD   0       ;MICROCODE REVISION LEVEL
002224  000000          BENBSW::        .WORD   0       ;BUFFER ENABLE SWITCH SW 0=OFF;1=ON
002226  000000          EXPD::          .WORD   0       ;EXPECTED RAM DATA FOR PRAMPKT ROUTINE
002230  000000          RECV::          .WORD   0       ;RECEIVED RAM DATA FOR PRAMPKT ROUTINE
002232  000000          ERRHI::         .WORD   0       ;HIGH ADDRESS MEMORY ERROR
002234  000000          ERRLO::         .WORD   0       ;LOW ADDRESS MEMORY ERROR
002236                  RAMDATA::       .BLKW   16.     ;DATA READ FROM RAM PACKET OR MESSAGE BUF AREA
002276  000000          RAMSIZ::        .WORD   0       ;RAM DATA SIZE FOR PRAMPKT ROUTINE
002300  000000          RCVHIADD::      .WORD   0       ;RECEIVED BUFFER HIGH ADDRESS
002302  000000          RCVLOADD::      .WORD   0       ;RECEIVED BUFFER LOW ADDRESS
002304  000000          COUNT::         .WORD   0       ;TEST COUNT PATTERN
002306  000000          DATA::          .WORD   0       ;TEST DATA
002310  000000          TSTFLAG::       .WORD   0       ;TEST FLAG WORD
002312  000000          TSTPTR::        .WORD   0       ;TSTBLK POINTER
002314  000000          PRMNO::         .WORD   0       ;PRINT ROUTINE TEMP
002316                  EXPMSG::        .BLKB   100.    ;EXPECTED MESSAGE BUFFER DATA
002462                  RECMSG::        .BLKB   100.    ;RECEIVED MESSAGE BUFFER DATA
002626                  TMPBFR::        .BLKB   80.     ;TEMPORARY STORAGE FOR PRINT
```

K3


```
                                        .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
                                ;
                                ;-
002746                          TSTBLK::
002746  000000                          .WORD   0               ;ALL ZEROS
002750  177777                          .WORD   177777          ;ALL ONES
002752  000001                          .WORD   BIT0            ;DATA FOR WALKING ONES
002754  000002                          .WORD   BIT1
002756  000004                          .WORD   BIT2
002760  000010                          .WORD   BIT3
002762  000020                          .WORD   BIT4
002764  000040                          .WORD   BIT5
002766  000100                          .WORD   BIT6
002770  000200                          .WORD   BIT7
002772  000400                          .WORD   BIT8
002774  001000                          .WORD   BIT9
002776  002000                          .WORD   BIT10
003000  004000                          .WORD   BIT11
003002  010000                          .WORD   BIT12
003004  020000                          .WORD   BIT13
003006  040000                          .WORD   BIT14
003010  100000                          .WORD   BIT15
003012  177776                          .WORD   ^CBIT0          ;DATA FOR WALKING ZEROS
003014  177775                          .WORD   ^CBIT1
003016  177773                          .WORD   ^CBIT2
003020  177767                          .WORD   ^CBIT3
003022  177757                          .WORD   ^CBIT4
003024  177737                          .WORD   ^CBIT5
003026  177677                          .WORD   ^CBIT6
003030  177577                          .WORD   ^CBIT7
003032  177377                          .WORD   ^CBIT8
003034  176777                          .WORD   ^CBIT9
003036  175777                          .WORD   ^CBIT10
003040  173777                          .WORD   ^CBIT11
003042  167777                          .WORD   ^CBIT12
003044  157777                          .WORD   ^CBIT13
003046  137777                          .WORD   ^CBIT14
003050  077777                          .WORD   ^CBIT15
003052  125252                          .WORD   125252          ;ALTERNATING ONES, ZEROS
003054  052525                          .WORD   052525          ;ALTERNATING ONES, ZERO OPPOSITE FROM ABOVE
003056                          TBLEND==.
```

GLOBAL ENVIRONMENT STORAGE

```
1397                                            .SBTTL  GLOBAL ENVIRONMENT STORAGE
1398                                    ;
1399                                    ;STORAGE FOR DEVICE REGISTERS
1400                                    ;
1401 003056  000000  100000  000000  DUMMY:  0,100000,0,0     ;DUMMY DEVICE REGISTERS...
1402 003066  000000  000000  000000          0,0,0,0,0,0,0,0
1403                                                          ;...FOR MULTI-UNIT CHECKOUT.
1404
1405 003106  000000                  DUFLG::         .WORD   0               ;"DROPPED UNIT" FLAG.
1406                                                                          ;INHIBITS CODE IN "CLEAN-UP".
1407 003110  000000                  NODEV::         .WORD   0               ;FLAG TO SAY NO DEVICE.
1408
1409 003112  000000                  TEMP1::         .WORD   0               ;SOME TEMP LOCATIONS.
1410 003114  000000                  TEMP2::         .WORD   0
1411 003116  000000                  XXCOMM::        .WORD   0               ;XXDP+ COMM BLOCK POINTER.
1412 003120  000000                  FREE::          .WORD   0               ;1ST FREE MEMORY ADDRESS...
1413 003122  000000                  FRESIZ::        .WORD   0               ;...AND SIZE (IN WORDS).
1414 003124  000000                  FREEHI: .WORD   0               ;LAST WORD IN FREE SPACE
1415 003126  000000                  KTFLG::         .WORD   0               ;KT11, MEM AVAIL FLAG
1416                                                                          ;- .WORD        0 = <24K OR NO KT -
1417                                                                          ;- NZ = >24K AND KT.
1418 003130  000000                  KTENABLE::      .WORD   0               ;SET BY TEST ROUTINES TO FLAG >28K UNDER TEST
1419 003132  000000                  NXMFLG::        .WORD   0               ;SET IF WE CAN TEST CLEARED OTHERWISE
1420 003134  000000                  NXMLO::         .WORD   0               ;NXM LO ADDRESS BITS
1421 003136  000000                  NXMHI::         .WORD   0               ;NXM HI ADDRESS BITS FOR DAL'S 16-21
1422 003140  000000                  T23A::          .WORD   0               ;11/23A FLAG
1423 003142  000000                  T23B::          .WORD   0               ;11/23B FLAG
1424 003144  000000                  T3BFLG::        .WORD   0               ;TEST 3B FLAG TO
1425 003146  002000                  PST32W::        .WORD   2000            ;32W BLOCK ADDRESS FOR 32K START
1426 003150  000000                  STFLG::         .WORD   0               ;
1427 003152  000000                  BADDAT::        .WORD   0               ;ACTUAL DATA
1428 003154  000000                  GODAT::         .WORD   0               ;EXPECTED DATA
1429 003156  000000                  LOOPFL::        .WORD   0
1430 003160                           CTAB::                                  ;CONFIGURATION TABLES.
1431 003160  000000                  CTABM::         .WORD   0               ;CONFIG WORK.
1432 003162  000000                                  .WORD   0
1433 003164  000000                                  .WORD   0
1434 003166  000000                                  .WORD   0
1435 003170  177777                                  .WORD   -1              ;END OF MEM TABLE.
1436 003172                           CTABE::
1437                                  ;ERROR STATISTICS TABLE (1 WORD PER UNIT), 64 UNITS MAX:
1438                                  ;
1439                                  ;       0       =       UNIT NOT TESTED
1440                                  ;       100000  =       UNIT ONLINE, NO ERRORS
1441                                  ;       10XXXX  =       UNIT ONLINE, ENCOUNTERED XXXX ERRORS
1442                                  ;       160000  =       UNIT DROPPED, NON-EXISTENT DEVICE REGISTER
1443                                  ;       160001  =       UNIT DROPPED, NOT IDLE AT START
1444                                  ;       14XXXX  =       UNIT DROPPED, ENCOUNTERED XXXX ERRORS
1445                                  ;
1446 003172                           ERTABL:         .BLKW   64.
1447 003372  000000                  ERTABE:         .WORD   0
1448
1449 003374  000000                  SKIPT:  .WORD   0               ;1=SKIP SUBTEST 0=NO SKIP OF SUBTEST
```

M3

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
                                ;-
003376                                  DEVTYP  <TSV05>
003376                          L$DVTYP::
003376  124     123     126             .ASCIZ  /TSV05/
                                        .EVEN

                                ;*
                                ;TEST DESCRIPTION
                                ;-
003404                                  DESCRIPT <**** TSV05 LOGIC DIAGNOSTIC - CHECK TRANSPORT IF ERROR ****>
003404                          L$DESC::
003404  052     052     052             .ASCIZ  /**** TSV05 LOGIC DIAGNOSTIC - CHECK TRANSPORT IF ERROR ****/
                                        .EVEN

                                ;*
                                ;BIT TO ASCII CONVERSION FOR TSSR REGISTER
                                ;-
003500  003540  003543  003547  TSSRBIT::       .WORD   1$,2$,3$,4$,5$,6$,7$,8$
003520  003601  003605  003611                  .WORD   9$,10$,11$,12$,13$,14$,15$,16$
003540    123     103     000   1$:     .ASCIZ  'SC'
003543    102     111     105   2$:     .ASCIZ  'BIE'
003547    123     103     105   3$:     .ASCIZ  'SCE'
003553    122     115     122   4$:     .ASCIZ  'RMR'
003557    116     130     115   5$:     .ASCIZ  'NXM'
003563    116     102     101   6$:     .ASCIZ  'NBA'
003567    102     111     124   7$:     .ASCIZ  'BIT9'
003574    102     111     124   8$:     .ASCIZ  'BIT8'
003601    123     123     122   9$:     .ASCIZ  'SSR'
003605    117     106     114   10$:    .ASCIZ  'OFL'
003611    102     111     124   11$:    .ASCIZ  'BIT5'
003616    102     111     124   12$:    .ASCIZ  'BIT4'
003623    102     111     124   13$:    .ASCIZ  'BIT3'
003630    102     111     124   14$:    .ASCIZ  'BIT2'
003635    102     111     124   15$:    .ASCIZ  'BIT1'
003642    102     111     124   16$:    .ASCIZ  'BIT0'
                                .EVEN
003650    124     123     123   SFIERR: .ASCIZ  'TSSR ERROR AFTER SOFT INIT'
003703    124     123     123   SFHERR: .ASCIZ  'TSSR ERROR AFTER BUS RESET'
003736    040     040     116   NXR:    .ASCIZ  /  NON-EXISTANT DEVICE REGISTER/
003775    045     101     040   NXRX:   .ASCIZ  /%A  ADDRESS: %O6/
004016    045     101     040   TSSX:   .ASCII  /%A  TSBA,TSSR EXP'D: %O6%A,%O6%N/
004056    045     101     040           .ASCIZ  /%A  TSBA,TSSR REC'D: %O6%A,%O6/
004115    045     116     045   FUSI:   .ASCII  /%N%A/
004121    040     040     125   USI:    .ASCIZ  /  UNEXPECTED INTERRUPT/
004150    040     040     111   NSI:    .ASCIZ  /  INTERRUPT EXPECTED, NOT RECEIVED/
004213    045     116     045   FNOINTR:        .ASCII  /%N%A/
004217    040     040     116   NOINTR: .ASCIZ  /  NO INTERRUPT WAS GENERATED/
004254    040     040     111   IFAULT: .ASCIZ  /  INTERRUPT FAULT/
004276    045     101     040   INTX:   .ASCIZ  /%A  CPU PC: %O6%A  TSBA: %O6/
```

GLOBAL TEXT MESSAGES

```
1523 004333      040      040      042  NOINIT: .ASCIZ  /  "BUS-INIT" DIDN'T INITIALIZE CONTROLLER/
1524 004405      040      040      042  NSINIT: .ASCIZ  /  "SOFT-INIT" DIDN'T INITIALIZE THE DPU/
1525 004455      040      040      042  BRINIT: .ASCIZ  /  "BUS-RESET" DIDN'T INITIALIZE THE DPU/
1526 004525      000                    NUL:    .ASCIZ  //
1527 004526      045      116      000  NULCR:  .ASCIZ  /%N/
1528 004531      045      101      040  EXPGOT: .ASCIZ  /%A EXP'D: %O6%A, REC'D: %O6/
1529 004565      045      116      045  EXPGT2: .ASCIZ  /%N%A EXP'D: %O6%A, %O6%N%A REC'D: %O%A, %O6/
1530 004641      045      101      040  DUAD12: .ASCIZ  /%A REG(W) WRITTEN TO: %O6%A REG(R) READ; EXP'D: %O6%A, REC'D: %O6/
1531 004743      122      101      115  PKTRAM::        .ASCIZ  'RAM Contents Do Not Match Packet Sent'
1532 005011      040      040      103  SCME:   .ASCIZ  /  CONFIG DOESN'T MATCH MFG. MASTER/
1533 005054      127      122      111  WRTMSG: .ASCIZ  'WRITE CHARACTERISTICS Failed'
1534 005111      124      123      123  WRTERR: .ASCIZ  'TSSR Incorrect After WRITE Command, More Bits Set Than SSR'
1535 005204      124      123      123  RDERR:  .ASCIZ  'TSSR Incorrect After READ Command, More Bits Set Than SSR'
1536 005276      106      101      124  SCHERR: .ASCIZ  'FATAL ERROR IN SUBTEST - CHECK TAPE,CABLES,TRANSPORT etc.'
1537 005370      105      122      122  RETERR: .ASCIZ  'ERROR IN SUBTEST - WRITE DATA RETRY FIVE TIMES FAILED'
1538 005456      045      116      045  NOMEM:  .ASCIZ  '%N%A ***** NO NXM ADDRESS--CANNOT TEST NXM TIMEOUT. *****%N'
1539 005552      045      116      045  M8186:  .ASCIZ  '%N%A ****************** 11/23A SYSTEM ******************%N'
1540 005643      045      116      045  M8189:  .ASCIZ  '%N%A ****************** 11/23B SYSTEM ******************%N'
1541                                             .EVEN
1542                                             .SBTTL  GLOBAL ERROR REPORT SECTION
1543
1544                                     ;++
1545                                     ; THE GLOBAL ERROR REPORT SECTION CONTAINS THE PRINTB AND PRINTX
1546                                     ; CALLS THAT ARE USED IN MORE THAN ONE TEST.
1547                                     ; ASCII TEXT STRINGS ARE FOUND IN THE GLOBAL TEXT SECTION.
1548                                     ;--
1549 005734                                     BGNMSG  NXRERR          ;NON-EXISTANT DEVICE REGISTER.
     005734                             NXRERR::
1550 005734                                     PRINTX  #NXRX,NODEV     ;NODEV = NEXM ADDRESS.
     005734  013746  003110                     MOV     NODEV,-(SP)
     005740  012746  003775                     MOV     #NXRX,-(SP)
     005744  012746  000002                     MOV     #2.-(SP)
     005750  010600                             MOV     SP,R0
     005752  104415                             TRAP    C$PNTX
     005754  062706  000006                     ADD     #6.SP
1551 005760  004737  005766                     JSR     PC.EXTEND       ; PRINT EXTENSION IF REQUIRED.
1552 005764                                     ENDMSG
     005764                             L10002:
     005764  104423                             TRAP    C$MSG
1553                                     ;
1554                                     ; THIS ROUTINE APPENDS A UNIQUE EXTENSION (IF REQUIRED)
1555                                     ; TO ANY OF THE ABOVE ERROR SIGNATURES.
1556                                     ;
1557 005766  005727                     EXTEND: TST     (PC)+
1558 005770  000000                     EXTA:   0                       ; 0 = NO EXTENSION.
1559 005772  001402                             BEQ     1$
1560 005774  004777  177770                     JSR     PC,@EXTA        ; APPEND EXTENSION TEXT.
1561 006000                             1$:     PRINTX  #NULCR          ; PRINT A BLANK LINE
     006000  012746  004526                     MOV     #NULCR,-(SP)
     006004  012746  000001                     MOV     #1.-(SP)
     006010  010600                             MOV     SP,R0
     006012  104415                             TRAP    C$PNTX
     006014  062706  000004                     ADD     #4.SP
1562 006020  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
                                ;
                                ;-

006022                          PRITSSR:
006022                                  SAVREG                  ;SAVE GENERAL REGISTERS
006026  010104                          MOV     R1,R4           ;SAVE THE TSSR CONTENTS
006030                                  PRINTB  #TSSRFOR,R4     ;PRINT THE CONTENTS OF TSSR
006030  010446                          MOV     R4,-(SP)
006032  012746  006475                  MOV     #TSSRFOR,-(SP)
006036  012746  000002                  MOV     #2,-(SP)
006042  010600                          MOV     SP,R0
006044  104414                          TRAP    C$PNTB
006046  062706  000006                  ADD     #6,SP
006052  010400                          MOV     R4,R0           ;GET TSSR BACK FOR CHKAMB
006054  004737  016154                  JSR     PC,CHKAMB       ;ARE CONTENTS AMBIGUOUS ?
006060  103410                          BCS     5$              ;BRANCH IF NOT
006062                                  PRINTX  #AMBTSSR        ;SHOW CONTENTS ARE AMBIGUOUS
006062  012746  006715                  MOV     #AMBTSSR,-(SP)
006066  012746  000001                  MOV     #1,-(SP)
006072  010600                          MOV     SP,R0
006074  104415                          TRAP    C$PNTX
006076  062706  000004                  ADD     #4,SP
006102  010403                  5$:     MOV     R4,R3           ;CONTENTS OF TSSR
006104  042703  001476                  BIC     #HIADDR!FATERR!TERCLS,R3        ;CLEAR ALL MULTIPLE BIT FIELDS
006110  001434                          BEQ     20$             ;NO BITS ARE SET
006112  012702  002626                  MOV     #TMPBFR,R2      ;TEMPORARY ASCII BUFFER
006116  012701  003500                  MOV     #TSSRBIT,R1     ;ASCII EQUIVALENT OF BITS
006122  005703                  10$:    TST     R3              ;REMAINING BITS TO CONVERT
006124  001413                          BEQ     15$             ;BRANCH WHEN ALL ARE DONE
006126  000241                          CLC                     ;CLEAR CARRY FOR SHIFT
006130  006103                          ROL     R3              ;SHIFT NEXT BIT TO CARRY
006132  103006                          BCC     13$             ;BRANCH IF BIT NOT SET
006134  011100                          MOV     (R1),R0         ;POINTER TO BIT DEFINITION
006136  112022                  11$:    MOVB    (R0)+,(R2)+     ;MOVE ASCIZ TO BUFFER
006140  001376                          BNE     11$             ;MOVE ALL BITS
006142  112762  000054  177777          MOVB    #',,-1(R2)      ;INSERT A COMMA TO TERMINATE
006150  005721                  13$:    TST     (R1)+           ;POINT TO NEXT DESCRIPTION
006152  000763                          BR      10$             ;GET THE REMAINING BITS
006154  105042                  15$:    CLRB    -(R2)           ;TERMINATE THE LINE
006156                                  PRINTX  #TSSDEF,#TMPBFR ;PRINT THE BIT DEFINITIONS
006156  012746  002626                  MOV     #TMPBFR,-(SP)
006162  012746  006666                  MOV     #TSSDEF,-(SP)
```

PRITSSR - PRINT TSSR CONTENTS

```
                006166  012746  000002                  MOV     #2,-(SP)
                006172  010600                          MOV     SP,R0
                006174  104415                          TRAP    C$PNTX
                006176  062706  000006                  ADD     #6,SP
     1608
     1609       006202  010403                  20$:    MOV     R4,R3           ;GET THE TSSR CONTENTS
     1610       006204  042703  177761                  BIC     #^CTERCLS,R3    ;CLEAR ALL BUT TERMINATION
     1611       006210  016303  006756                  MOV     TCOCOD(R3),R3   ;GET THE TERMINATION CODE MEANING
     1612       006214                                  PRINTX  #TCOASC,R3      ;PRINT THE TERMINATION CODE
                006214  010346                          MOV     R3,-(SP)
                006216  012746  006556                  MOV     #TCOASC,-(SP)
                006222  012746  000002                  MOV     #2,-(SP)
                006226  010600                          MOV     SP,R0
                006230  104415                          TRAP    C$PNTX
                006232  062706  000006                  ADD     #6,SP
     1613       006236  010403                          MOV     R4,R3           ;TSSR CONTENTS AGAIN
     1614       006240  042703  177717                  BIC     #^CFATERR,R3    ;CLEAR ALL BUT FATAL TERMINATION
     1615       006244  001416                          BEQ     25$             ;DON'T PRINT IF ZERO
     1616       006246  006203                          ASR     R3
     1617       006250  006203                          ASR     R3
     1618       006252  006203                          ASR     R3              ;ALINE TERMINATION CODE FOR INDEX
     1619       006254  016303  007316                  MOV     TSFCOD(R3),R3   ;GET THE FATAL TERMINATION CODE
     1620       006260                                  PRINTX  #TFCASC,R3      ;PRINT THE FATAL TERMINATION CODE
                006260  010346                          MOV     R3,-(SP)
                006262  012746  006617                  MOV     #TFCASC,-(SP)
                006266  012746  000002                  MOV     #2,-(SP)
                006272  010600                          MOV     SP,R0
                006274  104415                          TRAP    C$PNTX
                006276  062706  000006                  ADD     #6,SP
     1621       006302  042704  176377          25$:    BIC     #^CHIADDR,R4    ;CLEAR ALL BUT EXTENDED ADDRESS
     1622       006306  001411                          BEQ     30$             ;DON'T PRINT IF ZERO
     1623       006310                                  PRINTX  #TEXASC,R4      ;PRINT THE EXTENDED ADDRESS BITS
                006310  010446                          MOV     R4,-(SP)
                006312  012746  006515                  MOV     #TEXASC,-(SP)
                006316  012746  000002                  MOV     #2,-(SP)
                006322  010600                          MOV     SP,R0
                006324  104415                          TRAP    C$PNTX
                006326  062706  000006                  ADD     #6,SP
     1624       006332  013703  002172          30$:    MOV     EPRTSW,R3               ;PRINT MEAASGE BUFFER ADDRESS
     1625       006336                                  PRINTX  R3                      ;PRINT PROPER MESSAGE
                006336  010346                          MOV     R3,-(SP)
                006340  012746  000001                  MOV     #1,-(SP)
                006344  010600                          MOV     SP,R0
                006346  104415                          TRAP    C$PNTX
                006350  062706  000004                  ADD     #4,SP
     1626       006354  000207                          RTS     PC              ;RETURN TO CALLER
```

PRITSSR PRINT TSSR CONTENTS

```
1642 006356  045  116  045  EPRT1:   .ASCIZ  '%N%A *****CHECK TRANSPORT*****'
1643 006415  045  116  045  EPRT2:   .ASCIZ  '%N%A *****CHECK PARITY SWITCH IN TRANSPORT*****'
1645 006475  045  116  045  TSSRFOR:         .ASCIZ  '%N%A TSSR = %O6'
1646 006515  045  116  045  TEXASC:          .ASCIZ  '%N%A Extended Address Bits = %O6'
1647 006556  045  116  045  TCOASC:          .ASCIZ  '%N%A Termination Class Code = %T'
1648 006617  045  116  045  TFCASC:          .ASCIZ  '%N%A Fatal Termination Class Code = %T'
1649 006666  045  116  045  TSSDEF:          .ASCIZ  '%N%A TSSR Bits Set: %T'
1650 006715  045  116  045  AMBTSSR:         .ASCIZ  '%N%A TSSR Contents Are Ambiguous'
1651                                  .EVEN
1652 006756  006776  007021  007047  TCOCOD:  .WORD   1$,2$,3$,4$,5$,6$,7$,8$
1653 006776  116  157  162  1$:      .ASCIZ  'Normal Termination'
1654 007021  124  145  162  2$:      .ASCIZ  'Termination Condition'
1655 007047  124  141  160  3$:      .ASCIZ  'Tape Status Alert'
1656 007071  106  165  156  4$:      .ASCIZ  'Function Reject'
1657 007111  122  145  143  5$:      .ASCIZ  'Recoverable Error - Tape Position One Record Down'
1658 007173  122  145  143  6$:      .ASCIZ  'Recoverable Error   Tape Was Not Moved'
1659 007242  125  156  162  7$:      .ASCIZ  'Unrecoverable Error'
1660 007266  106  141  164  8$:      .ASCIZ  'Fatal Controller Error'
1661                                  .EVEN
1662
1663 007316  007326  007362  007373  TSFCOD:  .WORD   1$,2$,3$,4$
1664 007326  111  156  164  1$:      .ASCIZ  'Internal Diagnostic Failure'
1665 007362  122  145  163  2$:      .ASCIZ  'Reserved'
1666 007373  102  165  163  3$:      .ASCIZ  'Bus Interface or Sanity Check Error'
1667 007437  122  145  163  4$:      .ASCIZ  'Reserved'
1668                                  .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.
                                ;

007450                          PRIPKT::
007450                                  SAVREG                          ;SAVE THE REGISTERS
007454  010005                          MOV     R0,R5                   ;SAVE NO. OF WORDS IN PACKET
007456  005737  003130                  TST     KTENABLE                ;ABOVE 28K UNDER TEST?
007462  001001                          BNE     10$                     ;BR IF YES
007464  005003                          CLR     R3                      ;SET HIGH ORDER ADDRESS TO 0
007466  010301                  10$:    MOV     R3,R1                   ;COPY HIGH ORDER ADDRESS
007470  010400                          MOV     R4,R0                   ;GET LOWER ADDRESS
007472  006100                          ROL     R0                      ;SHIFT BIT 15 INTO C BIT
007474  006101                          ROL     R1                      ;AND INTO HIGH ORDER.
007476                                  PRINTB  #PKTADD,R1,R4           ;PRINT PACKET ADDRESS
007476  010446                          MOV     R4,-(SP)
007500  010146                          MOV     R1,-(SP)
007502  012746  007634                  MOV     #PKTADD,-(SP)
007506  012746  000003                  MOV     #3,-(SP)
007512  010600                          MOV     SP,R0
007514  104414                          TRAP    C$PNTB
007516  062706  000010                  ADD     #10,SP
007522  010300                  15$:    MOV     R3,R0                   ;GET HIGH ORDER ADDRESS
007524  001404                          BEQ     20$                     ;BR IF NOT ABOVE 28K.
007526  010401                          MOV     R4,R1                   ;GET LOW ORDER ADDRESS
007530  004737  017426                  JSR     PC,SETMAP               ;SETUP PAR6 MAPPING FOR 18 BIT ADDRESS
007534  010004                          MOV     R0,R4                   ;GET RETURNED PAR6 ADDRESS BIAS
007536  005001                  20$:    CLR     R1                      ;SAVE WORD NUMBER
007540  012402                  25$:    MOV     (R4)+,R2                ;GET PACKET CONTENTS
007542                                  PRINTB  #PKTFRM,R1,R2           ;PRINT THE DATA
007542  010246                          MOV     R2,-(SP)
007544  010146                          MOV     R1,-(SP)
007546  012746  007576                  MOV     #PKTFRM,-(SP)
007552  012746  000003                  MOV     #3,-(SP)
007556  010600                          MOV     SP,R0
007560  104414                          TRAP    C$PNTB
007562  062706  000010                  ADD     #10,SP
007566  005201                          INC     R1                      ;NEXT WORD NUMBER
007570  020105                          CMP     R1,R5                   ;DONE ALL PACKET WORDS?
007572  002762                          BLT     25$                     ;LOOP TILL ALL DONE
007574  000207                          RTS     PC                      ;RETURN

007576      045     116     045 PKTFRM: .ASCIZ   '%N%A Packet Word #%D1%A = %06'
007634      045     116     045 PKTADD: .ASCIZ   '%N%A Packet Address = %01%05'
                                        .EVEN
```

```
PRIBXOR   PRINT EXPD, RECV AND XOR BYTE

                                                .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
                                        ;-
007672                                  PRIBXOR::
007672                                          SAVREG                          ;SAVE THE REGISTERS
007676  010203                                  MOV     R2,R3                   ;EXPECTED DATA
007700                                          XOR     R1,R3                   ;FORM THE EXCLUSIVE OR
007710  012700  177400                          MOV     #^C<377>,R0             ;BYTE MASK
007714  040001                                  BIC     R0,R1                   ;SAVE LOW BYTE RECV
007716  040002                                  BIC     R0,R2                   ;SAVE LOW BYTE EXPD
007720  040003                                  BIC     R0,R3                   ;SAVE LOW BYTE XOR
007722                                          PRINTB  #XORBFOR,R2,R1,R3 ;PRINT THE MESSAGE
007722  010346                                  MOV     R3,-(SP)
007724  010146                                  MOV     R1,-(SP)
007726  010246                                  MOV     R2,-(SP)
007730  012746  007754                          MOV     #XORBFOR,-(SP)
007734  012746  000004                          MOV     #4, (SP)
007740  010600                                  MOV     SP,R0
007742  104414                                  TRAP    C$PNTB
007744  062706  000012                          ADD     #12,SP
007750  010300                                  MOV     R3,R0                   ;R0 HAS XOR ON RETURN
007752  000207                                  RTS     PC                      ;RETURN TO CALLER

007754      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
                                        ;
010022                                  PRIXOR::
010022                                          SAVREG                          ;SAVE THE REGISTERS
010026  010203                                  MOV     R2,R3                   ;EXPECTED DATA
010030                                          XOR     R1,R3                   ;FORM THE EXCLUSIVE OR
010040                                          PRINTB  #XORFOR,R2,R1,R3 ;PRINT THE MESSAGE
```

G4


```
PRIXOR    PRINT EXPD, RECV AND XOR

        010040  010346                        MOV     R3,-(SP)
        010042  010146                        MOV     R1,-(SP)
        010044  010246                        MOV     R2,-(SP)
        010046  012746  010072                MOV     #XORFOR,(SP)
        010052  012746  000004                MOV     #4,(SP)
        010056  010600                        MOV     SP,R0
        010060  104414                        TRAP    C$PNTB
        010062  062706  000012                ADD     #12,SP
  1762  010066  010300                        MOV     R3,R0           ;R0 HAS XOR ON RETURN
  1763  010070  000207                        RTS     PC              ;RETURN TO CALLER
  1764
  1765  010072      045     116     045  XORFOR: .ASCIZ  '%N%A EXPD: %06%A RECV: %06%A XOR: %06'
  1766                                      .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
                                ;
                                ;

                                PRIEQU:
010140                                  SAVREG                          ;SAVE THE REGISTERS
010144  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
                                ;
                                ;-
                                PRIRAM:
010146                                  SAVREG                  ;SAVE R1 R5 UNTIL NEXT RETURN
010146                                  PRINTB  @RAMFOR,R4      ;PRINT RAM ADDRESS IN ERROR
010152  010446                          MOV     R4,-(SP)
010154  012746  010176                  MOV     @RAMFOR,-(SP)
010160  012746  000002                  MOV     #2.-(SP)
010164  010600                          MOV     SP,R0
010166  104414                          TRAP    C$PNTB
010170  062706  000006                  ADD     #6.SP
010174  000207                          RTS     PC              ;RETURN

010176      045     116     045 RAMFOR: .ASCIZ  '%N%A CONTROLLER RAM ADDRESS = %O6
                                        .EVEN
```

I4


```
                                        .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
                                ;
                                ;-
010240                          PRIADD:
010240                                  SAVREG                          ;SAVE R1 R5 UNTIL NEXT RETURN
010244  013700  002232                  MOV     ERRHI,R0                ;GET HIGH ADDRESSS
010250  013701  002234                  MOV     ERRLO,R1                ;GET LOW ADDRESS
010254  010102                          MOV     R1,R2                   ;COPY LOW ADDRESS
010256  006101                          ROL     R1                      ;SHIFT BIT 15 TO C BIT
010260  006100                          ROL     R0                      ;SHIFT INTO HIGH ORDER
010262                                  PRINTB  @PRIA0,R0,R2            ;PRINT MEMORY ADDRESS IN ERROR
010262  010246                          MOV     R2,-(SP)
010264  010046                          MOV     R0,-(SP)
010266  012746  010310                  MOV     @PRIA0,-(SP)
010272  012746  000003                  MOV     #3,-(SP)
010276  010600                          MOV     SP,R0
010300  104414                          TRAP    C$PNTB
010302  062706  000010                  ADD     #10,SP
010306  000207                          RTS     PC                      ;RETURN

010310      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
                                ;
                                ;
010354                          PRITADD:
010354                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
010360  013702  002232                  MOV     ERRHI,R2                ;GET HIGH ADDRESSS
010364  013701  002234                  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
010370                                  PRINTB  @PRIT0,R1               ;PRINT MEMORY ADDRESS LOW IN ERROR
010370  010146                          MOV     R1,-(SP)
010372  012746  010436                  MOV     @PRIT0,-(SP)
010376  012746  000002                  MOV     #2,-(SP)
010402  010600                          MOV     SP,R0
010404  104414                          TRAP    C$PNTB
```

J4

PRITADD PRINT MEMORY TEST ADDRESS

```
      010406  062706  000006                  ADD     #6,SP
 1850 010412                                  PRINTB  #PRIT1,R2       ;PRINT MEMORY ADDRESS HIGH IN ERROR
      010412  010246                          MOV     R2,-(SP)
      010414  012746  010501                  MOV     #PRIT1,-(SP)
      010420  012746  000002                  MOV     #2,-(SP)
      010424  010600                          MOV     SP,R0
      010426  104414                          TRAP    C$PNTB
      010430  062706  000006                  ADD     #6,SP
 1851 010434  000207                          RTS     PC              ;RETURN
 1852
 1853 010436     045     116     045  PRIT0:  .ASCIZ  '<N><A> MEMORY TEST ADDRESS LOW = <06>'
 1854 010501     045     116     045  PRIT1:  .ASCIZ   <N><A> MEMORY TEST ADDRESS HIGH = <06>'
 1855                                         .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::
010546                                  SAVREG                          ;SAVE THE GENERAL REGISTERS
010552  012737  000764  010740          MOV     #500.,SDELAY            ;SET UP DELAY
010560  012737  140010  010730          MOV     #140010,80$             ;SET UP COMMAND, SPACE FORWARD
010566  005703                          TST     R3                      ;CHECK FOR DIRECTION
010570  100403                          BMI     5$                      ;BR, IF REVERSE INDICATED
010572  010337  010732                  MOV     R3,90$                  ;LOAD UP NUMBER OF RECORDS TO SPACE
010576  000407                          BR      10$                     ;GO DO COMMAND
010600  042703  100000          5$:     BIC     #BIT15,R3               ;CLEAR DIRECTION BIT
010604  010337  010732                  MOV     R3,90$                  ;LOAD UP NUMBER OF RECORDS TO SPACE
010610  052737  000400  010730          BIS     #BIT8,80$               ;SET REVERSE BIT IN COMMAND PACKET
010616  012704  010730          10$:    MOV     #80$,R4                 ;SET UP R4 WITH PACKET ADDRESS
010622  010465  000000                  MOV     R4,TSDB(R5)             ;SEND OUT COMMAND
010626  004737  016360          15$:    JSR     PC,WAITF                ;WAIT FOR SSR
010632  103420                          BCS     20$                     ;BR, IF SSR IS SET AND OK
010634                                  DELAY   250             ;DELAY ABOUT .25 SECONDS
010634  012727  000250                  MOV     #250,(PC)+
010640  000000                          .WORD   0
010642  013727  002116                  MOV     L$DLY,(PC)+
010646  000000                          .WORD   0
010650  005367  177772                  DEC     -6(PC)
010654  001375                          BNE     .-4
```

L4

SEQ 0050

SPACE SPACE RECORDS (FORWARD AND REVERSE) COMMAND

```
        010656  005367  177756                  DEC     22(PC)
        010662  001367                          BNE     .-20
   1908 010664  005337  010740                  DEC     SDELAY                  ;BUMP DELAY COUNTER DOWN
   1909 010670  001356                          BNE     15$                     ;BR, IF MORE DELAY
   1910 010672  000411                          BR      60$                     ;BR IF TROUBLE CARRY = CLEAR
   1911 010674  016501  000002          20$:    MOV     TSSR(R5),R1             ;READ TSSR
   1912 010700  012702  000200                  MOV     #TSSR,R2                ;SET UP EXPECTED
   1913 010704  020201                  25$:    CMP     R2,R1                   ;ARE THEY OK
   1914 010706  001401                          BEQ     40$                     ;BR, IF EQUAL = OK
   1915 010710  000402                          BR      60$                     ;TROUBLE EXIT
   1916 010712  000261                  40$:    SEC                             ;SET CARRY NO TROUBLE
   1917 010714  000401                          BR      70$                     ;EXIT
   1918 010716  000241                  60$:    CLC                             ;CARRY CLEAR = ERROR
   1919 010720                          70$:
   1920 010720  010400                          MOV     R4,R0                   ;PASS PACKET ADDRESS
   1921 010722  000207                          RTS     PC                      ;RETURN
   1922                                 ;
   1923                                 ;
   1924                                 ;
   1925                                 ;PACKET FOR SPACE COMMAND
   1926                                 ;
   1928         010730                          .=<.+10>&177770
   1930                                 ;
   1931                                 ;COMMAND WORD
   1932 010730  000000                  80$:    .WORD
   1933                                 ;NUMBER OF RECORDS TO BE SPACED OVER WORD
   1934 010732  000000                  90$:    .WORD
   1935 010734  000000                          .WORD
   1936 010736  000000                          .WORD
   1937 010740  000000                  SDELAY: .WORD   0                       ;DELAY COUNTER
   1938                                         .EVEN
   1939                                         .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  002224                          CLR     BENBSW                  ;CLEAR BUFFER ENABLE SWITCH
010752  005037  002220                          CLR     EXTFEA                  ;CLEAR EXTENDED FEATURES SW SWITCH
010756  010465  000000                  10$:    MOV     R4,TSDB(R5)             ;SEND OUT COMMAND
010762  004737  016446                          JSR     PC,CHKTSSR              ;WAIT FOR SSR
010766  103401                                  BCS     20$                     ;BR, IF SSR IS SET AND OK
010770  000452                                  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  000436                                  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  002224                          INC     BENBSW                  ;SET SOFTWARE SWITCH FOR ENABLED
011060                                  50$:
011060  016337  000012  002222                  MOV     XST2(R3),REV            ;MICROCODE REV LEVEL
011066  042737  017700  002222                  BIC     #17700,REV              ;CLEAR UNWANTED BITS
011074  022737  000001  002222                  CMP     #1,REV                  ;IS IT A NEW MICROCODE
011102  001403                                  BEQ     55$                     ;NO BR
011104  012737  000001  002220                  MOV     #1,EXTFEA               ;ALWAY EXTENDED FEATURE FOR NEW
                                                                                ;MICROCODE
011112  000261                          55$:    SEC                             ;SET CARRY NO TROUBLE
011114  000401                                  BR      70$                     ;EXIT
```

N4
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SEQ 0052

WRTCHR - WRITE CHARACTERISTICS COMMAND

```
1998 011116  000241                  60$:   CLC                        ;CARRY CLEAR = ERROR
1999 011120  016500  000002          70$:   MOV     TSSR(R5),R0        ;RETURN TSSR CONTENTS
2000 011124  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
                        ;
                        ;
                        ;-
011126                  REWIND::
011126                          SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
011132  012704  011220          MOV     #RWPACK,R4              ;GET PACKET ADDRESS
011136  010465  000000          MOV     R4,TSDB(R5)             ;SEND PACKET ADDRESS TO EXECUTE
011142  012703  000550          MOV     #360.,R3                ;ENOUGH TIME FOR 2400' REEL TO REWIND
011146  004737  016360  10$:     JSR     PC,WAITF                ;WAIT FOR SSR TO SET
011152  103417                  BCS     20$                     ;LEAVE WHEN SSR IS SET
011154                          DELAY   250.                    ;WAIT FOR .25 SECONDS
011154  012727  000372          MOV     #250.,(PC)+
011160  000000                  .WORD   0
011162  013727  002116          MOV     L$DLY,(PC)+
011166  000000                  .WORD   0
011170  005367  177772          DEC     -6(PC)
011174  001375                  BNE     .-4
011176  005367  177756          DEC     -22(PC)
011202  001367                  BNE     .-20
011204  005303                  DEC     R3                      ;BUMP COUNTER DOWN
011206  001357                  BNE     10$                     ;KEEP GOING
011210  000241                  CLC                             ;CLEAR CARRY TO SET ERROR
011212  010400          20$:    MOV     R4,R0                   ;PASS THE PACKET ADDRESS
011214  000207                  RTS     PC                      ;RETURN

                                .=<.+10>&177770
011220                  RWPACK:
011220  102010                  .WORD   102010                  ;POSTION COMMAND (REWIND)
011222  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
                ;
                ;-

011224                  CKRAM::
011224                  SAVREG                          ;SAVE THE GENERAL REGISTERS
011230  012701  002236          MOV     #RAMDATA,R1     ;ADDRESS TO SAVE THE RAM DATA
011234  012702  000201          MOV     #RMPKTBEG,R2    ;BYTE ADDRESS OF FIRST RAM DATA
011240  005003                  CLR     R3              ;CLEAR THE ERROR FLAG
011242  004737  016446          JSR     PC,CHKTSSR      ;WAIT FOR SSR
011246  112765  000000  000000  MOVB    #0,TSDB(R5)     ;SET MAINTENANCE MODE
011254  004737  016446  10$:    JSR     PC,CHKTSSR      ;WAIT FOR SSR TO SET
011260  010265  000000          MOV     R2,TSDB(R5)     ;SELECT NEXT RAM ADDRESS
011264  004737  016446          JSR     PC,CHKTSSR      ;WAIT FOR SSR TO SET
011270  116511  000000          MOVB    TSBA(R5),(R1)   ;READ THE RAM DATA
011274  122124                  CMPB    (R1)+,(R4)+     ;COMPARE TO EXPECTED
011276  001401                  BEQ     20$             ;BRANCH IF OK
011300  005203                  INC     R3              ;SET ERROR FLAG
011302  005202          20$:    INC     R2              ;ADDRESS OF NEXT RAM LOCATION
011304  020227  000210          CMP     R2,#RMPKTEND    ;REACHED END YET ?
011310  003761                  BLE     10$             ;BRANCH TILL ALL READ
011312  005703                  TST     R3              ;WAS AN ERROR FOUND ?
011314  001402                  BEQ     30$             ;BRANCH IF NOT
011316  000241                  CLC                     ;CLEAR CARRY TO SHOW ERROR
011320  000401                  BR      50$             ;AND EXIT
011322  000261          30$:    SEC                     ;SHOW GOOD COMPARE
011324  012737  000010  002276  50$:    MOV     #8.,RAMSIZ      ;SETUP RAMSIZ FOR PRAMPKT ROUTINE
011332  000207                  RTS     PC              ;RETURN
```

CKRAM2 - COMPARE RAM TO I/O CHARACTERISTICS DATA

```
                                        .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
                                ;-
011334                          CKRAM2::
011334                                  SAVREG                          ;SAVE THE GENERAL REGISTERS
011340  012701  002236                  MOV     #RAMDATA,R1             ;ADDRESS TO SAVE THE RAM DATA
011344  012702  000167                  MOV     #RMCHBEG,R2             ;BYTE ADDRESS OF FIRST RAM DATA
011350  005003                          CLR     R3                      ;CLEAR THE ERROR FLAG
011352  004737  016446                  JSR     PC,CHKTSSR              ;WAIT FOR SSR
011356  112765  000000  000000          MOVB    #0,TSDR(R5)             ;SET MAINTENANCE MODE
011364  004737  016446          10$:    JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
011370  010265  000000                  MOV     R2,TSDB(R5)             ;SELECT NEXT RAM ADDRESS
011374  004737  016446                  JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
011400  116511  000000                  MOVB    TSBA(R5),(R1)           ;READ THE RAM DATA
011404  122124                          CMPB    (R1)+,(R4)+             ;COMPARE TO EXPECTED
011406  001401                          BEQ     20$                     ;BRANCH IF OK
011410  005203                          INC     R3                      ;SET ERROR FLAG
011412  005202                  20$:    INC     R2                      ;ADDRESS OF NEXT RAM LOCATION
011414  012737  000010  002276          MOV     #8.,RAMSIZ              ;ASSUME EXTFEA NOT SET
011422  005737  002220                  TST     EXTFEA                  ;IS THE SOFTWARE EXTENDED FEATURES SET
011426  001407                          BEQ     25$                     ;BR, IF NOT SET
011430  012737  000012  002276          MOV     #10.,RAMSIZ             ;SET RAMSIZ FOR EXTEND FEATURES
011436  020227  000200                  CMP     R2,#RMCHEND             ;AT END OF EXTENDED BUFFER
011442  003750                          BLE     10$                     ;BR, IF NOT AT END YET
011444  000403                          BR      27$                     ;AT END BRANCH
011446  020227  000176          25$:    CMP     R2,#RMCHEND-2           ;REACHED END YET ?
011452  003744                          BLE     10$                     ;BRANCH TILL ALL READ
011454  005703                  27$:    TST     R3                      ;WAS AN ERROR FOUND ?
011456  001402                          BEQ     30$                     ;BRANCH IF NOT
011460  000241                          CLC                             ;CLEAR CARRY TO SHOW ERROR
011462  000401                          BR      50$                     ;AND EXIT
011464  000261                  30$:    SEC                             ;SHOW GOOD COMPARE
011466  000207                  50$:    RTS     PC                      ;RETURN
```

CKMSG COMPARE WRITE CHAR. MESSAGE BUFFERS

```
                                        .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
                                ;
                                ;-
011470                          CKMSG::
011470                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
011474  010037  002300                   MOV     R0,RCVHIADD             ;SAVE RECV HIGH ADDRESS
011500  010137  002302                   MOV     R1,RCVLOAD              ;SAVE RECV LOW ADDRESS
011504  005737  003130                   TST     KTENABLE                ;TESTING ABOVE 28K?
011510  001403                          BEQ     10$                     ;BR IF NO
011512  004737  017426                   JSR     PC,SETMAP               ;RETURN ADDRESS BIASED TO PAR6 IN R0
011516  010001                          MOV     R0,R1                   ;GET RETURNED ADDRESS BIASED TO PAR6
011520  005004                  10$:    CLR     R4                      ;WORD IN BUFFER
011522  005003                          CLR     R3                      ;CLEAR ERROR SEEN FLAG
011524  010205                          MOV     R2,R5                   ;GET EXPD BUFFER ADDRESS
011526  011264  002316          15$:    MOV     (R2),EXPMSG(R4)         ;SAVE EXPD FOR ERROR REPORT
011532  011164  002462                   MOV     (R1),RECMSG(R4)         ;SAVE RECV FOR ERROR REPORT
011536  022221                          CMP     (R2)+,(R1)+             ;EXPD EQUAL RECV?
011540  001401                          BEQ     25$                     ;BR IF YES
011542  005203                          INC     R3                      ;SET ERROR SEEN FLAG
011544  062704  000002          25$:    ADD     #2,R4                   ;POINT TO NEXT WORD ADDRESS
011550  020427  000014                   CMP     R4,#14                  ;DONE FIRST 7 WORDS?
011554  003764                          BLE     15$                     ;BR IF NO
011556  032765  000200  000012           BIT     #X2.EXTF,XST2(R5)       ;IS EXTENDED FEATURES SET IN EXPD?
011564  001403                          BEQ     50$                     ;BR IF NO
011566  020427  000016                   CMP     R4,#16                  ;DONE EXTENDED FEATURES WORD?
011572  003755                          BLE     15$                     ;BR IF NO
011574  005703                  50$:    TST     R3                      ;ANY ERRORS SEEN?
011576  001402                          BEQ     55$                     ;BR IF NO
011600  000241                          CLC                             ;SET FAILURE
011602  000401                          BR      60$                     ;
011604  000261                  55$:    SEC                             ;SET SUCCESS
011606  000207                  60$:    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
                                ;-
011610                          CKMSG2::
011610                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
011614  020327  000144                  CMP     R3,#RECMSG-EXPMSG;@@D IS COUNT ABOVE MAX ALLOWED?
011620  003412                          BLE     5$                      ;@@D BR IF NO
011622  012703  000144                  MOV     #RECMSG-EXPMSG,R3;@@D
011626                                  PRINTF  #DEBUGMSG               ;@@D
011626  012746  011742                  MOV     #DEBUGMSG,-(SP)
011632  012746  000001                  MOV     #1,-(SP)
011636  010600                          MOV     SP,R0
011640  104417                          TRAP    C$PNTF
011642  062706  000004                  ADD     #4,SP
011646  010037  002300          5$:     MOV     R0,RCVHIADD             ;SAVE RECV HIGH ADDRESS
011652  010137  002302                  MOV     R1,RCVLOAD              ;SAVE RECV LOW ADDRESS
011656  005737  003130                  TST     KTENABLE                ;TESTING ABOVE 25K?
011662  001403                          BEQ     10$                     ;BR IF NO
011664  004737  017426                  JSR     PC,SETMAP               ;RETURN ADDRESS BIASED TO PAR6 IN R0
011670  010001                          MOV     R0,R1                   ;GET RETURNED ADDRESS BIASED TO PAR6
011672  005004          10$:    CLR     R4                      ;WORD IN BUFFER
011674  005005                  CLR     R5                      ;CLEAR ERROR SEEN FLAG
011676  111264  002316  15$:    MOVB    (R2),EXPMSG(R4)         ;SAVE EXPD FOR ERROR REPORT
011702  111164  002462          MOVB    (R1),RECMSG(R4)         ;SAVE RECV FOR ERROR REPORT
011706  122221                  CMPB    (R2)+,(R1)+             ;EXPD EQUAL RECV?
011710  001401                  BEQ     25$                     ;BR IF YES
011712  005205                  INC     R5                      ;SET ERROR SEEN FLAG
011714  062704  000001  25$:    ADD     #1,R4                   ;POINT TO NEXT BYTE
011720  020403                  CMP     R4,R3                   ;DONE ALL BYTES?
011722  002001                  BGE     50$                     ;BR IF YES
011724  000764                  BR      15$                     ;DO NEXT BYTE
011726  005705          50$:    TST     R5                      ;ANY ERRORS SEEN?
011730  001402                  BEQ     55$                     ;BR IF NO
011732  000241                  CLC                             ;SET FAILURE
011734  000401                  BR      60$                     ;
011736  000261          55$:    SEC                             ;SET SUCCESS
011740  000207          60$:    RTS     PC                      ;RETURN
```

```
   2267 011742      120      122      117  DEBUGMSG: .ASCIZ 'PROGRAM INTERNAL ERROR -CKMSG2 MESSAGE BUFFER EXCEEDED ';aa@
   2268 012032      045      116      045  FERCM:    .ASCII  /%N%A  ***/
   2269 012043      040      040      124  ERCM:     .ASCIZ  /  TSSR ERROR CODE REC'D = /
   2270 012076      056      056      056  SIMSG:    .ASCIZ  /.... AFTER DOING SOFT INIT/
   2271 012131      124      105      123  TINERR:   .ASCIZ  /TEST: .../
   2272                                             .EVEN
   2273                                          ;+
   2274                                          ;
   2275                                          ;PRINT ROUTINE TO FATAL SOFT INIT ERRORS
   2276                                          ;
   2277                                          ;INPUT:
   2278                                          ;
   2279                                          ;       R1      CONTENTS OF TSSR AT ERROR
   2280                                          ;
   2281                                          ;SIDE EFFECTS:
   2282                                          ;
   2283                                          ;       EXECUTES DROP UNIT TO CEASE TESTING
   2284                                          ;
   2285                                          ;-
   2286
   2287 012144                                            BGNMSG  SFIMSG
        012144                                   SFIMSG::
   2288 012144  004737  006022                             JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
   2289 012150  004737  017312                             JSR     PC,CKDROP       ;DROP UNIT, IF ALLOWED
   2290 012154                                             ENDMSG
        012154                                   L10003:
        012154  104423                                     TRAP    C$MSG
   2291
   2292                                          ;+
   2293                                          ;PRINT ROUTINE TO PRINT THE CONTENTS OF
   2294                                          ;TSSR AND A COMMAND PACKET OTHER THAN GET STATUS COMMAND PACKET.
   2295                                          ;
   2296                                          ;INPUTS:
   2297                                          ;
   2298                                          ;       R1      TSSR CONTENTS
   2299                                          ;       R4      ADDRESS OF COMMAND PACKET
   2300                                          ;
   2301                                          ;-
   2302
   2303 012156                                            BGNMSG  PKTSSR
        012156                                   PKTSSR::
   2304 012156  004737  006022                             JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
   2305 012162  012700  000004                             MOV     #4,R0           ;NO. OF WORDS IN PACKET
   2306 012166  004737  007450                             JSR     PC,PRIPKT       ;PRINT THE CONTENTS OF COMMAND PACKET
   2307 012172                                             ENDMSG
        012172                                   L10004:
        012172  104423                                     TRAP    C$MSG
```

```
                                        ;*
                                        ;PRINT ROUTINE TO PRINT THE CONTENTS OF
                                        ;TSSR AND A GET STATUS COMMAND PACKET.
                                        ;
                                        ;INPUTS:
                                        ;
                                        ;       R1      TSSR CONTENTS
                                        ;       R4      ADDRESS OF COMMAND PACKET
                                        ;-
012174                                  BGNMSG  PKTGETS
012174                                  PKTGETS::
012174  004737  006022                  JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
012200  012700  000002                  MOV     #2,R0           ;NO. OF WORDS IN GET STATUS PACKET
012204  004737  007450                  JSR     PC,PRIPKT       ;PRINT THE CONTENTS OF COMMAND PACKET
012210                                  ENDMSG
012210                                  L10005:
012210  104423                          TRAP    C$MSG
                                        ;*
                                        ;PRINT TSSR ERRORS FOR INITIALIZATION TESTS
                                        ;
                                        ;INPUTS:
                                        ;       R1      TSSR CONTENTS
                                        ;       R4      ADDRESS OF COMMAND PACKET
                                        ;
012212                                  BGNMSG  SFFMSG
012212                                  SFFMSG::
012212  004737  006022                  JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
012216                                  ENDMSG
012216                                  L10006:
012216  104423                          TRAP    C$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
                                        ;
012220                                  BGNMSG  PKTMES
012220                                  PKTMES::
012220  004737  006022                  JSR     PC,PRITSSR              ;PRINT CONTENTS OF TSSR
012224  010200                          MOV     R2,R0                   ;LOW ORDER ADDRESS
012226  010301                          MOV     R3,R1                   ;HIGH ORDER ADDRESS
012230  004737  014352                  JSR     PC,PRMESS               ;PRINT THE MESSAGE BUFFER
012234                                  ENDMSG
012234                                  L10007:
012234  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
012236                          ADDSSR::
012236  004737  010354                  JSR     PC,PRITADD      ;PRINT MEMORY TEST ADDRESS
012242  016501  000002                  MOV     TSSR(R5),R1     ;GET CURRENT TSSR
012246  004737  006022                  JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
012252                                  ENDMSG
012252                          L10010:
012252  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
012254                          MSGEXP::
012254  012700  000007                  MOV     #7,R0           ;ASSUME NO EXT FEATURES
012260  005737  002220                  TST     EXTFEA          ;EXT FEATURES SET?
012264  001402                          BEQ     5$              ;BR IF NO
012266  012700  000010                  MOV     #8.,R0          ;EXT FEATURE BUFFER IS 8 WORDS
012272  004737  014662          5$:     JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
012276                                  ENDMSG
012276                          L10011:
012276  104423                          TRAP    C$MSG
```

J5


```
                                        .SBTTL  FIFEXP    PRINT FIFO EXP/RECV DATA
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT FIFO EXP/RECV DATA
                                ;
                                ;       R1      - BYTE COUNT
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER (CONTAINS FIFO DATA ONLY
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER (CONTAINS FIFO DATA ONLY)
                                ;-
                                        BGNMSG  FIFEXP
012300                          FIFEXP::
                                        PRINTX  #FIF1MSG,R1     ;PRINT BYTES TRANSFERRED
012300  010146                          MOV     R1,-(SP)
012302  012746  012352                  MOV     #FIF1MSG,-(SP)
012306  012746  000002                  MOV     #2,-(SP)
012312  010600                          MOV     SP,R0
012314  104415                          TRAP    C$PNTX
012316  062706  000006                  ADD     #6,SP
                                        PRINTX  #FIF2MSG        ;PRINT HEADER MSG
012322  012746  012421                  MOV     #FIF2MSG,-(SP)
012326  012746  000001                  MOV     #1,-(SP)
012332  010600                          MOV     SP,R0
012334  104415                          TRAP    C$PNTX
012336  062706  000004                  ADD     #4,SP
012342  010100                          MOV     R1,R0           ;GET BYTE COUNT
012344  004737  015232                  JSR     PC,PRBYTEXP     ;PRINT FIFO BYTES IN ERROR
                                        ENDMSG
012350                          L10012:
012350  104423                          TRAP    C$MSG
012352  045  116  045  045    FIF1MSG:    .ASCIZ  '#N#A NUMBER OF BYTES TRANSFERRED = #D2'
012421  045  116  045  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
                                        ;
012460                                          BGNMSG  MSGSTAT
012460                                  MSGSTAT::
012460  012701  012522                  10$:    MOV     #STATCOD,R1     ;ASCII ADDRESS TABLE
012464  012100                                  MOV     (R1)+,R0        ;DONE ALL MSG LINES?
012466  001410                                  BEQ     20$             ;BR IF YES
012470                                          PRINTX  R0              ;PRINT STATUS BIT NAMES
012470  010046                                  MOV     R0,-(SP)
012472  012746  000001                          MOV     #1,-(SP)
012476  010600                                  MOV     SP,R0
012500  104415                                  TRAP    C$PNTX
012502  062706  000004                          ADD     #4,SP
012506  000766                                  BR      10$             ;DO ANOTHER MSG LINE
012510  012700  000012                  20$:    MOV     #10.,R0         ;NUMBER OF WORDS IN A READ STATUS BUFFER
012514  004737  014662                          JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
012520                                          ENDMSG
012520                                  L10013:
012520  104423                                  TRAP    C$MSG

012522  012540  012602  012673        STATCOD:        .WORD   1$,2$,3$,4$,5$,6$,0
012540    045     116     045         1$:.ASCIZ  '<LF><LF>A Tape Bus Signals in Word #8:'
012602    045     116     045         2$:.ASCIZ  '<LF><LF>A       PARERR<15>  IEOT  <12>  IFMK  <9>  IRDY<6>  IRWD<2>'
012673    045     116     045         3$:.ASCIZ  '<LF><LF>A       IRESV2<14>  IIDENT<11>  IHER  <8>  IONL<5>  IFBY<1>'
012764    045     116     045         4$:.ASCIZ  '<LF><LF>A       IRESV1<13>  ICER  <10>  ISPEED<7>  ILDP<4>  IFPT<0>'
013055    045     116     045         5$:.ASCIZ  '<LF><LF>A Tape Bus Signals in Word #9:'
013117    045     116     045         6$:.ASCIZ  '<LF><LF>A       DATMIS<7>  ILW<6>  OUTRDY<5>  INRDY<4>'
                                                .EVEN
```

L5

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
                                ;
013174                          MSGLOOP:        BGNMSG  MSGLOOP
013174                                  ;
013174  012701  013236          10$:    MOV     #LOOPCOD,R1     ;ASCII ADDRESS TABLE
013200  012100                  10$:    MOV     (R1)+,R0        ;DONE ALL MSG LINES?
013202  001410                          BEQ     20$             ;BR IF YES
013204                                  PRINTX  R0              ;PRINT STATUS BIT NAMES
013204  010046                          MOV     R0,-(SP)
013206  012746  000001                  MOV     #1,-(SP)
013212  010600                          MOV     SP,R0
013214  104415                          TRAP    C$PNTX
013216  062706  000004                  ADD     #4,SP
013222  000766                          BR      10$             ;DO ANOTHER MSG LINE
013224  012700  000012          20$:    MOV     #10.,R0         ;NUMBER OF WORDS IN A READ STATUS BUFFER
013230  004737  014662                  JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
013234                                  ENDMSG
013234                          L10014:
013234  104423                          TRAP    C$MSG

013236  013256  013331  013430  LOOPCOD:        .WORD   1$,2$,3$,4$,5$,6$,7$,0
013256     045     116     045  1$:.ASCIZ  '<15><12>A Tape Bus Loopback Signals in Word #8:'
013331     045     116     045  2$:.ASCIZ  '<15><12>A       PARERR<15>          IRESV2<14>          IRESV1<13>'
013430     045     116     045  3$:.ASCIZ  '<15><12>A IHISP=>IEOT<12>    IWRT=>IIDENT<11>    IREV  =>ICER  <10>'
013527     045     116     045  4$:.ASCIZ  '<15><12>A IWFM =>IFMK<09>    IEDIT=>IHER <08>    IFAD  =>ISPEED<07>'
013626     045     116     045  5$:.ASCIZ  '<15><12>A ITADO=>IRDY<06>    ITAD1=>IONL <05>    IERASE=>ILDP  <04>'
013725     045     116     045  6$:.ASCIZ  '<15><12>A IREW =>IDBY<03>    IRWU =>IRWD <02>    IFEN  =>IFBY  <01>'
014024     045     116     045  7$:.ASCIZ  '<15><12>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
                                ;-
014052                                  BGNMSG  MSGSUB
014052                          MSGSUB::
014052  012700  000012                  MOV     #10.,R0         ;SIZE OF WRITE SUBSYSTEM BUFFER
014056  004737  014662                  JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
014062                                  ENDMSG
014062                          L10015:
014062  104423                          TRAP    C$MSG
                                        .SBTTL  MEMADD - PRINT MEMORY ADDRESS DATA ERROR
                                ;*
                                ;
                                ;PRINT ROUTINE TO PRINT MEMORY ADDRESS DATA COMPARE ERROR
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       ERRHI   - MEMORY ERROR HIGH ORDER ADDRESS
                                ;       ERRLO   - MEMORY ERROR LOW ORDER ADDRESS
                                ;       EXP     - EXPECTED DATA
                                ;       RECV    - RECEIVED DATA
                                ;-
014064                                  BGNMSG  MEMADD
014064                          MEMADD::
014064  004737  010240                  JSR     PC,PRIADD       ;PRINT MEMORY ADDRESS IN ERROR
014070  013701  002226                  MOV     EXPD,R1         ;GET EXPD DATA
014074  013702  002230                  MOV     RECV,R2         ;GET RECEIVED DATA
014100  004737  010022                  JSR     PC,PRIXOR       ;PRINT EXPD/RECV
014104                                  ENDMSG
014104                          L10016:
014104  104423                          TRAP    C$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
                                ;-
014106                          PRAMPKT:
014106                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
014112  012701  002236                  MOV     #RAMDATA,R1             ;DATA FROM THE RAM
014116  005002                          CLR     R2                      ;INIT BYTE NUMBER
014120  122124                  5$:     CMPB    (R1)+,(R4)+             ;COMPARE EXPECTED, RECEIVED
014122  001005                          BNE     7$                      ;BR IF NO MATCH
014124                                  FORCERROR       7$,NOTSSR
014134  000436                          BR      10$                     ;add
014136  116105  177777          7$:     MOVB    -1(R1),R5               ;GET RECV RAM DATA
014142  116403  177777                  MOVB    -1(R4),R3               ;GET EXPD PACKET DATA
014146                                  XOR     R5,R3                   ;XOR EXPD/RECV
014156  042703  177400                  BIC     #177400,R3              ;LOW BYTE ONLY
014162  116137  177777  002230          MOVB    -1(R1),RECV             ;GET RECEIVED RAM DATA
014170  116437  177777  002226          MOVB    -1(R4),EXPD             ;GET EXPECTED RAM DATA
014176                                  PRINTB  #RAMASC,R2,RECV,EXPD,R3
014176  010346                          MOV     R3,-(SP)
014200  013746  002226                  MOV     EXPD,-(SP)
014204  013746  002230                  MOV     RECV,-(SP)
014210  010246                          MOV     R2,-(SP)
014212  012746  014266                  MOV     #RAMASC,-(SP)
014216  012746  000005                  MOV     #5,-(SP)
014222  010600                          MOV     SP,R0
014224  104414                          TRAP    C$PNTB
014226  062706  000014                  ADD     #14,SP
014232  005202                  10$:    INC     R2                      ;UPDATE BYTE COUNT
014234  005737  002276                  TST     RAMSIZ                  ;DEFAULT TO 8.?
014240  001404                          BEQ     15$                     ;BR IF YES
014242  020237  002276                  CMP     R2,RAMSIZ               ;DONE ALL BYTES?
014246  003724                          BLE     5$                      ;BR IF NO
014250  000403                          BR      25$                     ;
014252  020227  000010          15$:    CMP     R2,#8.                  ;DONE DEFAULT NUMBER OF BYTES?
014256  002720                  20$:    BLT     5$                      ;BR IF NO
014260  005037  002276          25$:    CLR     RAMSIZ                  ;SET DEFAULT RAMSIZ
014264  000207                          RTS     PC                      ;RETURN

014266      045     116     045 RAMASC: .ASCIZ  '%N%A  BYTE: %D2%A RAM: %03%A Packet: %03%A XOR:%03'
                                        .EVEN
```

PRMESS - PRINT CONTENTS OF MESSAGE BUFFER

```
                                                .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
                                        ;-
014352                                  PRMESS: SAVREG                  ;SAVE THE REGISTERS
014356  010005                                  MOV     R0,R5           ;SAVE LOW ORDER ADDRESS
014360  005737  003130                          TST     KTENABLE        ;ADDRESS ABOVE 28K?
014364  001001                                  BNE     10$             ;BR IF YES
014366  005001                                  CLR     R1              ;SET HIGH ORDER ADDRESS TO 0
014370  010103                          10$:    MOV     R1,R3           ;SAVE HIGH ORDER ADDRESS
014372  006100                                  ROL     R0              ;SHIFT BIT15 TO C BIT
014374  006101                                  ROL     R1              ;SHIFT TO HIGH ORDER FOR PRINTOUT
014376                                          PRINTX  #PROASC,R1,R5   ;PRINT MESSAGE BUFFER ADDRESS
014376  010546                                  MOV     R5,-(SP)
014400  010146                                  MOV     R1,-(SP)
014402  012746  014530                          MOV     #PROASC,-(SP)
014406  012746  000003                          MOV     #3,-(SP)
014412  010600                                  MOV     SP,R0
014414  104415                                  TRAP    C$PNTX
014416  062706  000010                          ADD     #10,SP
014422                                          PRINTX  #PR1ASC         ;PRINT HEADER FOR CONTENTS
014422  012746  014575                          MOV     #PR1ASC,-(SP)
014426  012746  000001                          MOV     #1,-(SP)
014432  010600                                  MOV     SP,R0
014434  104415                                  TRAP    C$PNTX
014436  062706  000004                          ADD     #4,SP
014442  005004                                  CLR     R4              ;NUMBER OF THE NEXT WORD
014444  010501                                  MOV     R5,R1           ;COPY LOW ORDER ADDRESS
014446  010300                                  MOV     R3,R0           ;COPY HIGH ORDER ADDRESS
014450  001403                                  BEQ     20$             ;BR IF NOT ABOVE 28K
014452  004737  017426                          JSR     PC,SETMAP       ;SETUP PAR ADDRESS IN R0
014456  010005                                  MOV     R0,R5           ;GET PAR FORMAT ADDRESS ABOVE 28K
014460                                  20$:    PRINTX  #PRASC,R4,(R5)+ ;PRINT THE CONTENTS OF MEMORY BUFFER
014460  012546                                  MOV     (R5)+,-(SP)
014462  010446                                  MOV     R4,-(SP)
014464  012746  014633                          MOV     #PRASC,-(SP)
014470  012746  000003                          MOV     #3, (SP)
014474  010600                                  MOV     SP,R0
014476  104415                                  TRAP    C$PNTX
014500  062706  000010                          ADD     #10,SP
014504  005204                                  INC     R4              ;NUMBER OF THE NEXT
014506  020427  000007                          CMP     R4,#7           ;DONE ALL YET ?
014512  003005                                  BGT     50$             ;BRANCH IF ALL DONE
014514  002761                                  BLT     20$             ;PRINT FIRST 7 WORDS
014516  032763  000200  000012                  BIT     #X2.EXTF,XST2(R3);EXTENDED FEATUTES ON ?
014524  001355                                  BNE     20$             ;PRINT EXTENDED STATUS WORD
014526  000207                          50$:    RTS     PC              ;RETURN
014530     045     116     045  PROASC: .ASCIZ  '%N%A Message Buffer Address = %01%05'
014575     045     116     045  PR1ASC: .ASCIZ  '%N%A Message Buffer Contents:'
014633     045     116     045  PRASC:  .ASCIZ  '%N%A    Word%01%A: %0'
```

C6

PRMESS - PRINT CONTENTS OF MESSAGE BUFFER

```
                                        .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
                                ;-
014662                          PRMSGEXP::
014662                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
014666  010005                          MOV     R0,R5                   ;SAVE NUMBER OF WORDS
014670  013700  002302                  MOV     RCVLOADD,R0             ;GET RECV LOW ADDRESS
014674  010004                          MOV     R0,R4                   ;COPY LOW ADDRESS
014676  013701  002300                  MOV     RCVHIADD,R1             ;GET RECV HIGH ADDRESS
015002  006100                          ROL     R0                      ;SHIFT BIT15 TO C BIT
015004  006101                          ROL     R1                      ;SHIFT TO HIGH ORDER FOR PRINTOUT
015006                                  PRINTX  #PRMSG0,R1,R4           ;PRINT MESSAGE BUFFER ADDRESS
015006  010446                          MOV     R4,-(SP)
015010  010146                          MOV     R1,-(SP)
015012  012746  015042                  MOV     #PRMSG0,-(SP)
015016  012746  000003                  MOV     #3,-(SP)
015022  010600                          MOV     SP,R0
015024  104415                          TRAP    C$PNTX
015026  062706  000010                  ADD     #10,SP
015032                                  PRINTX  #PRMSG1                 ;PRINT HEADER FOR CONTENTS
015032  012746  015107                  MOV     #PRMSG1,-(SP)
015036  012746  000001                  MOV     #1,-(SP)
015042  010600                          MOV     SP,R0
015044  104415                          TRAP    C$PNTX
015046  062706  000004                  ADD     #4,SP
015052  005004                          CLR     R4                      ;NUMBER OF THE CURRENT WORD
015054  012701  002316                  MOV     #EXPMSG,R1              ;GET EXPD BUFFER ADDRESS
015060  012702  002462                  MOV     #RECMSG,R2              ;GET RECV BUFFER ADDRESS
015064  011100                  20$:    MOV     (R1),R0                 ;GET EXPD
015066  011203                          MOV     (R2),R3                 ;GET RECV
015070                                  XOR     R0,R3                   ;XOR EXPD/RECV
015000                                  PRINTX  #PRMSG2,R4,(R1)+,(R2)+,R3
015000  010346                          MOV     R3,-(SP)
015002  012246                          MOV     (R2)+,-(SP)
015004  012146                          MOV     (R1)+,-(SP)
015006  010446                          MOV     R4,-(SP)
015010  012746  015145                  MOV     #PRMSG2,-(SP)
015014  012746  000005                  MOV     #5,-(SP)
015020  010600                          MOV     SP,R0
015022  104415                          TRAP    C$PNTX
015024  062706  000014                  ADD     #14,SP
015030  005204                          INC     R4                      ;NUMBER OF THE NEXT
015032  020405                          CMP     R4,R5                   ;DONE ALL YET?
015034  002001                          BGE     50$                     ;BR IF YES
015036  000752                          BR      20$                     ;DO ANOTHER
015040  000207                  50$:    RTS     PC                      ;RETURN
015042     045     116     045  PRMSG0: .ASCIZ  '<N><A Message Buffer Address = <01><05>'
015107     045     116     045  PRMSG1: .ASCIZ  '<N><A Message Buffer Contents:'
015145     045     116     045  PRMSG2: .ASCIZ  '<N><A   WORD #<D2><A  EXPD: <06><A  RECV: <06><A  XOR: <06>'
```

D6


```
                                        .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
                                ;
2649 015232                     PRBYTEXP::
2650 015232                             SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
2651 015236  010005                     MOV     R0,R5                   ;SAVE NUMBER OF BYTES
2652 015240  005037  002314             CLR     PRMNO                   ;INIT ERROR COUNT
2653 015244  005004                     CLR     R4                      ;NUMBER OF THE CURRENT BYTE
2654 015246  012701  002316             MOV     #EXPMSG,R1              ;GET EXPD BUFFER ADDRESS
2655 015252  012702  002462             MOV     #RECMSG,R2              ;GET RECV BUFFER ADDRESS
2656 015256  111100             20$:    MOVB    (R1),R0                 ;GET EXPD BYTE
2657 015260  042700  177400             BIC     #^C<377>,R0             ;CLEAR UPPER BYTE
2658 015264  110037  015600             MOVB    R0,PRBEXP               ;SAVE FOR ERROR REPORT
2659 015270  111203                     MOVB    (R2),R3                 ;GET RECV BYTE
2660 015272  042703  177400             BIC     #^C<377>,R3             ;CLEAR UPPER BYTE
2661 015276  110337  015602             MOVB    R3,PRBREC               ;FOR ERROR REPORT
2662 015302                             XOR     R0,R3                   ;XOR EXPD/RECV
2663 015312  122122                     CMPB    (R1)+,(R2)+             ;EXPD = RECV?
2664 015314  001431                     BEQ     30$                     ;BR IF YES
2665 015316  005237  002314             INC     PRMNO                   ;UPDATE ERROR COUNT
2666 015322  023727  002314  000010     CMP     PRMNO,#8.               ;PRINTED 8?
2667 015330  101023                     BHI     30$                     ;BR IF YES
2668 015332                     27$:    PRINTX  #PRBMSG,R4,PRBEXP,PRBREC,R3
     015332  010346                     MOV     R3,-(SP)
     015334  013746  015602             MOV     PRBREC,-(SP)
     015340  013746  015600             MOV     PRBEXP,-(SP)
     015344  010446                     MOV     R4,-(SP)
     015346  012746  015446             MOV     #PRBMSG,-(SP)
     015352  012746  000005             MOV     #5,-(SP)
     015356  010600                     MOV     SP,R0
     015360  104415                     TRAP    C$PNTX
     015362  062706  000014             ADD     #14,SP
2669 015366                             FORCEXIT        50$             ;add
2670 015376  000404                     BR      35$                     ;add
2671 015400                     30$:
2672 015400                             FORCERROR  27$,NOTSSR           ;add
2673 015410                     35$:                                    ;add
2674 015410  005204                     INC     R4                      ;NUMBER OF THE NEXT
2675 015412  020405                     CMP     R4,R5                   ;DONE ALL YET?
2676 015414  002001                     BGE     50$                     ;BR IF YES
2677 015416  000717                     BR      20$                     ;DO ANOTHER
2678 015420                     50$:    PRINTX  #PRBTOT,PRMNO           ;PRINT TOTAL ERROR COUNT
     015420  013746  002314             MOV     PRMNO,-(SP)
     015424  012746  015533             MOV     #PRBTOT,-(SP)
     015430  012746  000002             MOV     #2,-(SP)
     015434  010600                     MOV     SP,R0
```

E6

PRBYTEXP - PRINT ERROR BYTES IN EXP/REC MESSAGE BUFFER

```
        015436  104415                          TRAP    C$PNTX
        015440  062706  000006                  ADD     #6,SP
  2679  015444  000207                          RTS     PC                      ;RETURN
  2680
  2681  015446     045     116     045  PRBMSG: .ASCIZ  '<N><A>   BYTE #<D2><A>  EXPD: <03><A>  RECV: <03><A>  XOR: <03>'
  2682  015533     045     116     045  PRBTOT: .ASCIZ  '<N><A> NUMBER OF BYTES IN ERROR = <D2>'
  2683                                          .EVEN
  2684  015600  000000                  PRBEXP: .WORD   0                       ;EXPD
  2685  015602  000000                  PRBREC: .WORD   0                       ;RECV
  2686                                          .SBTTL  EXPREC    PRINT EXPD/RECV WORD DATA
  2687                                  ;+
  2688                                  ;
  2689                                  ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
  2690                                  ;
  2691                                  ;INPUTS:
  2692                                  ;
  2693                                  ;       R1      RECEIVED DATA
  2694                                  ;       R2      EXPECTED DATA
  2695                                  ;
  2696                                  ;-
  2697
  2698  015604                                  BGNMSG  EXPREC
        015604                          EXPREC::
  2699  015604  004737  010022                  JSR     PC,PRIXOR               ;PRINT THE DATA
  2700  015610                                  ENDMSG
        015610                          L10017:
        015610  104423                          TRAP    C$MSG
  2701                                          .SBTTL  EXPBREC - PRINT EXPD/RECV BYTE DATA
  2702                                  ;+
  2703                                  ;
  2704                                  ;PRINT ROUTINE TO DISPLAY BYTE EXPD/RECV DATA
  2705                                  ;
  2706                                  ;
  2707                                  ;INPUTS:
  2708                                  ;
  2709                                  ;       R1      RECEIVED DATA BYTE
  2710                                  ;       R2      EXPECTED DATA BYTE
  2711                                  ;
  2712                                  ;-
  2713
  2714  015612                                  BGNMSG  EXPBREC
        015612                          EXPBREC::
  2715  015612  004737  007672                  JSR     PC,PRIBXOR              ;PRINT THE DATA
  2716  015616                                  ENDMSG
        015616                          L10020:
        015616  104423                          TRAP    C$MSG
  2717
  2718
  2719                                          .SBTTL  RAMERR  - PRINT RAM AND PACKET DATA
  2720                                  ;+
  2721                                  ;
  2722                                  ;PRINT ROUTINE TO DISPLAY RAM/PACKET DATA
  2723                                  ;
  2724                                  ;INPUTS:
  2725                                  ;
  2726                                  ;       R4      POINTER TO COMMAND PACKET
  2727                                  ;
```

F6

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
                                        ;-
                                        
015620                                          BGNMSG  RAMERR
015620                                  RAMERR::
015620  004737  014106                          JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
015624                                          ENDMSG
015624                                  L10021:
015624  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
                                        ;-
                                        
015626                                          BGNMSG  RAMTADD
015626                                  RAMTADD::
015626  004737  010354                          JSR     PC,PRITADD      ;PRINT TEST ADDRESS
015632  004737  014106                          JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
015636                                          ENDMSG
015636                                  L10022:
015636  104423                                  TRAP    C$MSG
                                        
                                                .SBTTL  RAMEXP  - PRINT RAM EXPD/RECV DATA
                                        ;*
                                        ;
                                        ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
                                        ;
                                        ;INPUTS:
                                        ;
                                        ;       R1      RECEIVED DATA
                                        ;       R2      EXPECTED DATA
```

```
                                        ;       R4      CONTROLLER RAM ADDRESS
                                        ;
                                                BGNMSG  RAMEXP
                                        RAMEXP::
015640  042701  177400                          BIC     #^C<377>,R1             ;SAVE EXPD RAM DATA BYTE
015644  042702  177400                          BIC     #^C<377>,R2             ;SAVE EXPD RAM DATA BYTE
015650  004737  010146                          JSR     PC,PRIRAM               ;PRINT THE RAM ADDRESS
015654  004737  010022                          JSR     PC,PRIXOR               ;PRINT THE DATA
015660                                          ENDMSG
                                        L10023:
015660  104423                                  TRAP    C$MSG

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

                                                BGNMSG  TIMEXP
                                        TIMEXP::
                                                PRINTX  #TIMSGO                 ;PRINT HEADER
015662  012746  015710                          MOV     #TIMSGO,-(SP)
015666  012746  000001                          MOV     #1,-(SP)
015672  010600                                  MOV     SP,R0
015674  104415                                  TRAP    C$PNTX
015676  062706  000004                          ADD     #4,SP
015702  004737  010022                          JSR     PC,PRIXOR               ;PRINT THE DATA
015706                                          ENDMSG
                                        L10024:
015706  104423                                  TRAP    C$MSG

015710      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::
016010  010246                                  MOV     R2,-(SP)                ;SAVE DATA TRANSFERRED
016012  042702  177400                          BIC     #177400,R2              ;GET JUST ONE BYTE
```

H6

BADSSR - PRINT TSSR ERRORS ON DATA TRANSFERS

```
   2824 016016                                    PRINTB  #XFERASC,R2
        016016  010246                            MOV     R2,-(SP)
        016020  012746  016050                    MOV     #XFERASC,-(SP)
        016024  012746  000002                    MOV     #2,-(SP)
        016030  010600                            MOV     SP,R0
        016032  104414                            TRAP    C$PNTB
        016034  062706  000006                    ADD     #6,SP
   2825 016040  012602                            MOV     (SP)+,R2                ;RESTORE R2
   2826 016042  004737  006022                    JSR     PC,PRITSSR              ;DECODE TSSR CONTENTS
   2827 016046                                    ENDMSG
        016046                            L10025:
        016046  104423                            TRAP    C$MSG
   2828 016050     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
                                ;
                                ;

016104                          SOFINIT::
016104                                  SAVREG                          ; SAVE THE REGISTERS
016110  012765  000000  000002          MOV     #0,TSSR(R5)             ; DO THE INIT.
016116  004737  016360                  JSR     PC,WAITF                ; WAIT FOR SSR
016122  016500  000002                  MOV     TSSR(R5),R0             ;GET THE TSSR REGISTER
016126  010004                          MOV     R0,R4                   ;TSSR CONTENTS
016130  042704  176277                  BIC     #^C<HIADDR!OFL>,R4
016134  052704  002200                  BIS     #SSR!NBA,R4             ;R4 HAS EXPECTED CONTENTS
016140  020400                          CMP     R4,R0                   ;ONLY EXPECTED BITS SET ?
016142  001402                          BEQ     5$                      ;BRANCH IF OKAY.
016144  000241                          CLC                             ;CLEAR THE CARRY FOR ERROR
016146  000401                          BR      10$                     ;GO TO EXIT
016150  000261                  5$:     SEC                             ;SET THE CARRY BIT
016152  000207                  10$:    RTS     PC                      ;RETURN TO CALLER
```

J6

CHKAMB CHECK TSSR FOR AMBIGUITY

```
                                        .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
                                        ;
                                        ;

016154                                  CHKAMB:
016154                                          SAVREG                  ;SAVE THE GENERAL REGISTERS
016160  010004                                  MOV     R0,R4           ;CONTENTS OF TSSR
016162  032700  100000                          BIT     #SC,R0          ;IS BIT 15 SET ?
016166  001004                                  BNE     5$              ;BRANCH IF YES
016170  032700  174077                          BIT     #^C<NBA!OFL!SSR!HIADDR>,R0      ;ANY OTHER BITS SET ?
016174  001023                                  BNE     40$             ;MUST BE AN ERROR
016176  000424                                  BR      45$             ;RETURN WITH SUCCESS
016200  032700  000200          5$:             BIT     #SSR,R0         ;IS READY BIT SET ?
016204  001011                                  BNE     10$             ;BRANCH IF READY BIT IS SET.
016206  032700  000040                          BIT     #BIT5,R0        ;IS FATAL ERROR BIT SET ?
016212  001414                                  BEQ     40$             ;ERROR IF NOT
016214  042704  177761                          BIC     #^CTERCLS,R4    ;CLEAR ALL BUT TERMINATION CODE
016220  020427  000016                          CMP     R4,#16          ;ALL THREE BITS MUST BE SET
016224  001007                                  BNE     40$             ;ERROR IF NOT SET
016226  000410                                  BR      45$             ;OK IF ALL ARE SET
016230  032700  000040          10$:            BIT     #BIT5,R0        ;IS FATAL ERROR BIT SET ?
016234  001405                                  BEQ     45$             ;ERROR IF BIT IS SET WITH SSR
016236  032700  000006                          BIT     #BIT2!BIT1,R0   ;IS THIS A FUNCTION REJECT
016242  001002                                  BNE     45$             ;BR, IF TSSR IS OK
016244  000241          40$:            CLC                             ;AMBIGUOUS CONTENTS
016246  000401                                  BR      50$
016250  000261          45$:            SEC                             ;SHOW SUCCESS - NO AMBIGUITY
016252  000207          50$:            RTS     PC                      ;RETURN TO CALLER
```

```
                                .SBTTL  ENAINT,DSBINT   ENABLE/DISABLE INTERRUPTS
                                ;
                                ; DEFAULT DISPLAY INTERRUPT HANDLERS.
                                ; IF DISPLAY TIME OUT, REPORT DEV FATAL, AND ABORT PASS.
                                ; OTHERWISE, SAVE DPU REGISTERS AND DISMISS.
                                ;
                                ; BIT DEFINITIONS FOR "INTMASK" AND "INTFLAG" BYTES:
                                ;
 000200                                 IOKCKIN=BIT7    ; DON'T CHECK FOR BAD INTERRUPTS -- TEST WILL.
 000001                                 IOKSTP=BIT0     ; EXPECT "STOP" INTERRUPT.
                                ;
                                ;INTERRUPT MASK    SAYS EXPECTING INTERRUPTS
016254    000                   INTMASK:        .BYTE   0
                                ;INTERRUPT FLAG -  SAYS WE GOT ONE (IF POSITIVE)
016255    000                   INTFLAG:        .BYTE   0

                                ;SAVED INTERRUPT VECTOR:
016256  000000                  INTVEC: .WORD   0
                                ;SAVE CPU PC
016260  000000                  INTCPC: .WORD   0

                                ;SUBROUTINE TO ENABLE INTERRUPTS:
016262  010046                  ENAINT: MOV     R0,-(SP)        ;SAVE R0
016264  013700  002202                  MOV     IVEC,R0         ;GET POINTER TO VECTORS
016270  012720  016326                  MOV     #INTR,(R0)+     ;SET UP INTERRUPT VECTOR
016274  012720  000340                  MOV     #PRI07,(R0)+
016300  012600                          MOV     (SP)+,R0        ;RESTORE R0
016302  011646                          MOV     (SP),-(SP)
016304  012766  000000  000002          MOV     #0,2(SP)        ;SET CPU TO LEVEL 0
016312  000002                          RTI

                                ;SUBROUTINE TO DISABLE INTERRUPTS (RAISE PRIORITY TO LEVEL 7)
016314  011646                  DSBINT: MOV     (SP),-(SP)
016316  012766  000340  000002          MOV     #PRI07,2(SP)
016324  000002                          RTI
                                        .SBTTL  INTR    - INTERRUPT HANDLERS

                                        BGNSRV  INTR            ;DEFINE INTERRUPT ENTRY
016326                          INTR::
016326  012737  000001  002216          MOV     #1,INTRECV      ;SET FLAG TO SHOW INTERRUPT RECEIVED
016334  105037  016255                  CLRB    INTFLAG         ;CLEAR FLAG TO SAY WE GOT INTERRUPT
016340  132737  000001  016254          BITB    #IOKSTP,INTMASK ;EXPECTING STOP INTERRUPT?
016346  001003                          BNE     1$              ;BR IF YES
016350  152737  000001  016255          BISB    #IOKSTP,INTFLAG ;NO. SET THE ERROR FLAG.

                                ;SAVE REGISTERS, MSG BUFFER, ETC.
016356                          1$:
016356                                  ENDSRV
016356                          L10026:
016356  000002                          RTI
```

L6

WAITF WAIT FOR SUBSYSTEM READY

```
                                        .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
                                ;
016360  000401          WAITF:: BR      1$              ;NOP WHEN SUPER FIXED
016362                          BREAK                   ; DO A SUPVSR BREAK FIRST.
016362  104422                  TRAP    C$BRK
016364  012746  011000    1$:   MOV     #11000,-(SP)    ;25-APRIL-83 REV B  - 1100 MSEC TIMER
016370  016500  000002    2$:   MOV     TSSR(R5),R0     ;READ THE TSSR REGISTER
016374  105700                  TSTB    R0              ;TEST FOR READY BIT SET
                                ;
016376  100420                  BMI     3$              ; EXIT ON STOP FLAG.
016400                          DELAY   1               ; WAIT 100 USEC
016400  012727  000001          MOV     #1,(PC)+
016404  000000                  .WORD   0
016406  013727  002116          MOV     L$DLY,(PC)+
016412  000000                  .WORD   0
016414  005367  177772          DEC     -6(PC)
016420  001375                  BNE     .-4
016422  005367  177756          DEC     -22(PC)
016426  001367                  BNE     .-20
016430  005316                  DEC     (SP)            ;REDUCE DELAY COUNT
016432  001356                  BNE     2$              ;RETRY UNTIL TIMER EXPIRES
016434  000241                  CLC                     ; C = 0, CONTROLLER STILL RUNNING...
016436  000401                  BR      4$              ;...OR HUNG-UP AFTER 300 MSEC.
016440  000261          3$:     SEC                     ; C = 1, CONTROLLER IS STOPPED.
016442  005326          4$:     DEC     (SP)+           ;RESTORE STACK WITHOUT CHANGING CARRY BIT
016444  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
                                ;-
016446                          CHKTSSR:
016446  004737  016360                  JSR     PC,WAITF                ;WAIT FOR READY
016452  103014                          BCC     20$                     ;BRANCH IF TIME OUT
016454  004737  016154                  JSR     PC,CHKAMB               ;TSSR AMBIGOUS?
016460  103006                          BCC     10$                     ;BR IF YES
016462  032700  100000                  BIT     #SC,R0                  ;SPECIAL CONDITION SET?
016466  001405                          BEQ     15$                     ;BR IF NO
016470  032700  074000                  BIT     #<SCE!BIS:RMR!NXM>,R0   ;ANY ERROR BITS SET?
016474  001402                          BEQ     15$                     ;BR IF NO
016476  000241                  10$:    CLC                             ;SET FAILURE
016500  000401                          BR      20$                     ;
016502  000261                  15$:    SEC                             ;SET SUCCESS
016504  000207                  20$:    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.
016506  012737  016540  000004  XNXM:   MOV     #2$,@#4                 ; SET BUSERR VECTOR.
016514  012737  000200  000006          MOV     #PRI04,@#6
016522  005003                          CLR     R3                      ;FLAG.
016524  005711                  1$:     TST     (R1)                    ;TEST THE ADDRESS(ES).
                                                                        ;IF ANY TRAP, CONTINUE AT 2$.
016526  020102                          CMP     R1,R2                   ;OTHERWISE, CONTINUE HERE.
016530  001407                          BEQ     3$                      ;BR IF FINISHED (NO NEXM'S).
016532  062701  000002                  ADD     #2,R1                   ;SET NEXT ADDRESS...
016536  000772                          BR      1$                      ;...AND CONTINUE.
016540  005103                  2$:     COM     R3                      ;GOT ONE, SET FLAG...
016542  012716  016550                  MOV     #3$,(SP)
016546  000002                          RTI                             ;...AND DISMISS INTERRUPT...
016550                          3$:     CLRVEC  #4                      ;...AND GIVE BACK THE VECTOR.
016550  012700  000004                  MOV     #4,R0
016554  104436                          TRAP    C$CVEC
016556  005703                          TST     R3                      ;DID WE CATCH ONE ??
016560  001401                          BEQ     .+4                     ;NO, "C" = 0, SKIP NEXT.
016562  000261                          SEC                             ;YES, "C" = 1, (R1) = NEXM ADDR.
016564  000207                          RTS     PC
```

N6

TSTLOOP - CHECK ITERATION COUNT

```
                                        .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
                                ;
016566                          TSTLOOP::
016566  005737  002162                  TST     NOITS           ; ITERATIONS INHIBITED?
016572  001006                          BNE     1$              ; YES.
016574  005737  002176                  TST     QVP             ; NO.
016600  100403                          BMI     1$              ;LOOPS DISALLOWED IN QUICK PASS.
016602  005337  002210                  DEC     LOOPCNT         ; BUMP LOOP COUNTER.
016606  001002                          BNE     2$
016610  000241                  1$:     CLC                     ;LOOP DISALLOWED, OR DONE.
016612  000401                          BR      3$
016614  000261                  2$:     SEC                     ;LOOP ENABLED.
016616  000207                  3$:     RTS     PC

                                        .SBTTL  TSTSETUP - PRINT TEST NAME AND INIT ERROR COUNTS
                                ;*
                                ; PRINT THE NUMBER AND NAME OF EACH TEST AS WE GO ALONG.
                                ; INCREMENT "TESTK" TO INDICATE THE NUMBER OF TESTS
                                ; IN THE CURRENT RUN SEQUENCE.
                                ; CLEAR THE ERROR COUNTER AND SIGNATURE EXTENSION FLAGS.
                                ;
                                ;INPUT:
                                ;
                                ;       R0      POINTER TO TEST ID ASCIZ STRING
                                ;
                                ;OUTPUT:
                                ;
                                ;       R5      ADDRESS OF FIRST DEVICE REGISTER
                                ;
                                ;IMPLICIT OUTPUTS:
                                ;
                                ;       TSTCNT  UPDATED TO COUNT TESTS PERFORMED SINCE START OR RESTART
                                ;
                                ;SIDE EFFECTS:
                                ;
                                ;       INTERRUPT LEVEL IS RAISED TO LEVEL OF
                                ;       THE DEVICE UNDER TEST
                                ;
                                ;-
016620                          TSTSETUP::
016620  010046                          MOV     R0,-(SP)        ;SAVE THE TEST ID MESSAGE
016622  005037  003150                  CLR     SIFLAG          ; CLEAR "SOFT INIT" FLAG
016626  005037  017066                  CLR     ERRK            ; CLEAR LOCAL ERROR COUNTER.
016632  005037  005770                  CLR     EXTA            ; CLEAR ERROR EXTENSION FLAG.
016636  105037  016254                  CLRB    INTMASK         ; CLEAR INTERRUPT MASK (CHECK ERROR)
016642  013700  002174                  MOV     UNITN,R0        ; GET THE UNIT NUMBER.
016646  006300                          ASL     R0              ; ... AND MAKE IT A WORD OFFSET.
016650  005737  003110                  TST     NODEV           ; DID STARTUP FIND THE DEVICE?
016654  001430                          BEQ     4$              ; BR IF YES
016656  100010                          BPL     3$              ; BR IF NOT IDLE
```

TSTSETUP - PRINT TEST NAME AND INIT ERROR COUNTS

```
3114 016660  052760  160000  003172          BIS     #160000,ERTABL(R0) ; FLAG ERROR IN THE ERROR TABLE
3115 016666                                  ERRDF   1,NXR,NXRERR     ; NO DEVICE HERE -- PRINT IT
     016666  104455                          TRAP    C$ERDF
     016670  000001                          .WORD   1
     016672  003736                          .WORD   NXR
     016674  005734                          .WORD   NXRERR
3116 016676  000407                          BR      2$
3117 016700  052760  160001  003172  3$:     BIS     #160001,ERTABL(R0)       ; FLAG ERROR IN THE ERROR TABLE
3118 016706                                  ERRDF   2,NOINIT         ; DEVICE NOT IDLE
     016706  104455                          TRAP    C$ERDF
     016710  000002                          .WORD   2
     016712  004333                          .WORD   NOINIT
     016714  000000                          .WORD   0
3119 016716  012737  177777  003106  2$:     MOV     #-1,DUFLG        ; DROP THE UNIT
3120 016724                                  DODU    UNITN
     016724  013700  002174                  MOV     UNITN,R0
     016730  104451                          TRAP    C$DODU
3121 016732                                  DOCLN                    ; ABORT THE PASS
     016732  104444                          TRAP    C$DCLN
3122 016734  000423                          BR      5$
3123
3124 016736                          4$:     RFLAGS  R0               ; GET THE OPERATOR FLAGS.
     016736  104421                          TRAP    C$RFLA
3125 016740  032700  001000                  BIT     #PNT,R0          ; PRINT THE TEST NUMBERS?
3126 016744  001412                          BEQ     1$               ; BR IF NO
3127 016746  011600                          MOV     (SP),R0          ;GET THE ID MESSAGE
3128 016750                                  PRINTF  #TNAM,R0                  ;DISPLAY THE TEST ID
     016750  010046                          MOV     R0,-(SP)
     016752  012746  017014                  MOV     #TNAM, (SP)
     016756  012746  000002                  MOV     #2,-(SP)
     016762  010600                          MOV     SP,R0
     016764  104417                          TRAP    C$PNTF
     016766  062706  000006                  ADD     #6,SP
3129 016772  005237  002206          1$:     INC     TSTCNT           ; BUMP TEST COUNTER.
3130 016776                                  SETPRI  IPRI             ;PRIORITY THAT OF DEVICE
     016776  013700  002204                  MOV     IPRI,R0
     017002  104441                          TRAP    C$SPRI
3131 017004  005726                  5$:     TST     (SP)+            ;FIX UP THE STACK
3132 017006  013705  002200                  MOV     CSRADDR,R5       ; ADDRESS OF TSV REGISTERS ON UNIBUS
3133 017012  000207                          RTS     PC
3134 017014     045     123     045  TNAM:   .ASCIZ  '%S%T%A Test'
3135                                         .EVEN
3136                                         .SBTTL  TSTEND  - PRINT ERRORS RECEIVED
3137                                 ;
3138                                 ; AT END OF EACH TEST, PRINT THE NUMBER OF ERRORS RECEIVED
3139                                 ; IF NORMAL ERROR REPORTING IS DISABLED (FLA:IER).
3140                                 ;
3141 017030                          TSTEND: RFLAGS  R0
     017030  104421                          TRAP    C$RFLA
3142 017032  030027  020000                  BIT     R0,#IER
3143 017036  001412                          BEQ     1$               ; BR IF "IER" NOT SET.
3144 017040                                  PRINTF  #ESUM,ERRK       ; PRINT ERROR COUNT.
     017040  013746  017066                  MOV     ERRK,-(SP)
     017044  012746  017070                  MOV     #ESUM,-(SP)
     017050  012746  000002                  MOV     #2,-(SP)
     017054  010600                          MOV     SP,R0
     017056  104417                          TRAP    C$PNTF
```

C7

SEQ 0080

TSTEND PRINT ERRORS RECEIVED

```
        017060  062706  000006                  ADD     #6,SP
  3145  017064  000207                  1$:     RTS     PC
  3146
  3147  017066  000000                  ERRK:   0                       ; LOCAL ERROR COUNT.
  3148  017070     045     101     040  ESUM:   .ASCIZ  /%A %D%A ERRORS/
  3149  017107     105     122     122  EMAXDU: .ASCIZ  /ERROR LIMIT REACHED -- DROPPING UNIT/
  3150                                          .EVEN
```

```
                                                .SBTTL  INCERK    INCREMENT LOCAL ERROR COUNT
                                        ;+
                                        ; ROUTINES TO INCREMENT LOCAL ERROR COUNT AND CHECK FOR LIMIT:
                                        ;-
017154  005237  017066          INCERK: INC     ERRK                    ; INCREMENT LOCAL ERROR COUNT
017160  010046                          MOV     R0,-(SP)                ; SAVE R0
017162  013700  002174                  MOV     UNITN,R0                ; GET UNIT NUMBER,
017166  006300                          ASL     R0                      ; ... AND MAKE IT A WORD OFFSET.
017170  062700  003172                  ADD     #ERTABL,R0              ; R0 GETS ADDRESS OF ERROR TABLE ENTRY.
017174  005210                          INC     (R0)                    ; INCREMENT THE DEVICE ERROR COUNT
017176  032710  007777                  BIT     #7777,(R0)              ; DID WE OVERFLOW THE FIELD?
017202  001001                          BNE     1$                      ; BR IF NO.
017204  005310                          DEC     (R0)                    ; YES -- BACK IT UP TO 7777.
017206  012600                  1$:     MOV     (SP)+,R0                ; RESTORE R0
017210  000207                          RTS     PC                      ; RETURN TO CALLER

017212  010046                  CKEMAX: MOV     R0,-(SP)                ; SAVE R0
017214  013700  002174                  MOV     UNITN,R0                ; GET UNIT NUMBER
017220  006300                          ASL     R0                      ; ... AND MAKE IT A WORD OFFSET
017222  016000  003172                  MOV     ERTABL(R0),R0           ; GET ERROR TABLE ENTRY
017226  042700  170000                  BIC     #170000,R0              ; EXTRACT ERROR COUNT FIELD
017232  020037  002166                  CMP     R0,GERRMAX              ; IS GLOBAL LIMIT EXCEEDED FOR THIS UNIT?
017236  103004                          BHIS    1$                      ; BR IF YES
017240  023737  017066  002164          CMP     ERRK,LERRMAX            ; IS LOCAL LIMIT EXCEEDED FOR THIS TEST?
017246  103417                          BLO     2$                      ; BR IF NO
017250                          1$:     RFLAGS  R0                      ; GET OPERATOR FLAGS
017250  104421                          TRAP    C$RFLA
017252  032700  000040                  BIT     #IDU,R0                 ; IS DROPPING INHIBITED?
017256  001013                          BNE     2$                      ; BR IF YES.
017260  012737  177777  003106          MOV     #-1,DUFLG               ; NO -- DROP THE UNIT
017266                                  ERRDF   4,EMAXDU
017266  104455                          TRAP    C$ERDF
017270  000004                          .WORD   4
017272  017107                          .WORD   EMAXDU
017274  000000                          .WORD   0
017276                                  DODU    UNITN
017276  013700  002174                  MOV     UNITN,R0
017302  104451                          TRAP    C$DODU
017304                                  DOCLN
017304  104444                          TRAP    C$DCLN
017306  012600                  2$:     MOV     (SP)+,R0                ; RESTORE R0
017310  000207                          RTS     PC                      ; RETURN TO CALLER
```

```
                                                .SBTTL  CKDROP  - CHECK IF UNIT SHOULD BE DROPPED
                                        ;+
                                        ; CHECK IF UNIT SHOULD BE DROPPED
                                        ;-
017312  010046                          CKDROP: MOV     R0,-(SP)
017314                                          FORCERROR       1$,NOTSSR
017324                                          RFLAGS  R0
017324  104421                                  TRAP    C$RFLA
017326  032700  000040                          BIT     #IDU,R0
017332  001010                                  BNE     1$
017334  011600                                  MOV     (SP),R0
017336  012737  177777  003106                  MOV     #-1,DUFLG
017344                                          DODU    UNITN
017344  013700  002174                          MOV     UNITN,R0
017350  104451                                  TRAP    C$DODU
017352                                          DOCLN                   ;ABORT THE PASS
017352  104444                                  TRAP    C$DCLN
017354  012600                          1$:     MOV     (SP)+,R0
017356  000207                                  RTS     PC

                                                .SBTTL  CONFIG  - DETERMINE CONFIGURATION OF SYSTEM
                                        ;
                                        ; SUBROUTINE - DETERMINE CONFIGURATION OF TSV05 SYSTEM.
                                        ;
017360                                  CONFIG:
017360  004737  016104                          JSR     PC,SOFINIT
017364  000207                                  RTS     PC
                                                .SBTTL  KTON,KTOFF      - ENABLE/DISABLE MEMORY MANAGEMENT
                                        ;
                                        ; SUBROUTINE - ENABLE MEM MGT.
                                        ;
017366  005737  003126                  KTON:   TST     KTFLG           ; GOT KT?
017372  001403                                  BEQ     1$              ; NO.
017374  012737  000001  177572                  MOV     #1,SR0          ; YES. ENABLE KT11.
017402  000207                          1$:     RTS     PC

                                        ;
                                        ; SUBROUTINE - DISABLE MEM MGT.
                                        ;
017404  005737  003126                  KTOFF:  TST     KTFLG           ; GOT KT11?
017410  001405                                  BEQ     1$              ; NO.
017412  000240                                  NOP
017414  000240                                  NOP
017416  012737  000000  177572                  MOV     #0,SR0          ; DISABLE KT.
017424  000207                          1$:     RTS     PC
```

```
                                        .SBTTL  SETMAP    SETUP PAR6 MAPPING

                                ;+
                                ;
                                ;THIS ROUTINE SETS UP KERNEL PAR6 TP HANDLE
                                ;AN 18 BIT ADDRESS. THE OFFSET INTO THE PAGE
                                ;IS RETURNED BIASED TO PAR6.
                                ;
                                ;INPUTS:
                                ;
                                ;       R0      HIGH ORDER ADDRESS BITS
                                ;       R1      LOW ORDER ADDRESS BITS
                                ;
                                ;OUTPUTS:
                                ;
                                ;       R0      OFFSET INTO BLOCK WITH PAR6 BIAS (I.E. THE ADDRESS)
                                ;       CARRY   SET IF SUCCESS
                                ;               CLR IF ERROR
                                ;
017426                          SETMAP:
017426                                  SAVREG                          ;SAVE R1-R4 UNTIL NEXT RETURN
017432  005737  003126                  TST     KTFLG                   ;SYSTEM HAVE ABOVE 28K?
017436  001433                          BEQ     10$                     ;BR IF NO
017440  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
017472  042701  000177                  BIC     #177,R1                 ;ALINE FOR LOWER 4K BOUNDARY
017476  020127  006000                  CMP     R1,#6000                ;HIGHER THAN EXISTING MEMORY?
017502  103011                          BHIS    10$                     ;BR IF YES
017504  010137  172352                  MOV     R1,@#KIPAR5             ;SETUP MAPPING REGISTER PAR5
017510  042702  160000                  BIC     #160000,R2              ;SETUP DISPLACEMENT IN PAGE
017514  062702  120000                  ADD     #120000,R2              ;ADD IN PAR5 BIAS
017520  010200                          MOV     R2,R0                   ;RETURN IN R0
017522  000261                          SEC                             ;SET SUCCESS
017524  000401                          BR      15$                     ;
017526  000241                  10$:    CLC                             ;SET FAILURE
017530  000207                  15$:    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
                                ;-
                                ;
017532                          FILLMEM:
017532                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
017536  004737  017404                  JSR     PC,KTOFF                ;DISABLE KT.
```

FILLMEM - FILL MEMORY WITH BACKGROUND PATTERN

```
3287 017542  010003                        MOV     R0,R3           ;COPY TEST PATTERN
3288 017544  013701  003120                MOV     FREE,R1         ;GET FIRST FREE LOCATION
3289 017550  013702  003122                MOV     FRESIZ,R2       ;SIZE OF FREE SPACE BELOW 28K.
3290 017554  010321              10$:      MOV     R3,(R1)+        ;STORE A BACKGROUND WORD
3291 017556  005302                        DEC     R2              ;DONE ALL MEMORY IN FREE SPACE?
3292 017560  003375                        BGT     10$             ;BR IF NO
3293 017562  005737  003126                TST     KTFLG           ; GOT KT?
3294 017566  001477                        BEQ     55$             ; NO. GET OUT.
3295 017570  004737  017366                JSR     PC,KTON         ; YES. ENABLE KT.
3296 017574  005000                        CLR     R0              ;HIGH ORDER ADDRESS START
3297 017576  013701  003146                MOV     PST32W,R1       ;GET >28K START ADDRESS (IN 32W BLOCKS)
3298         000006                        .REPT   6
3299                                       CLC                     ;CLEAR C BIT
3300                                       ROL     R1              ;CONVERT BLOCKS TO WORDS
3301                                       ROL     R0              ;MAKE IT DOUBLE PRECISION
3302                                       .ENDR
3303 017646  004737  017426                JSR     PC,SETMAP       ;SETUP PAR6 MAPPING REGISTER
3304 017652  010320              30$:      MOV     R3,(R0)+        ;STORE TEST PATTERN IN >28K ADDRESS
3305 017654  020027  140000                CMP     R0,#140000      ;END OF PAR5 MAPPING AREA?
3306 017660  103774                        BLO     30$             ;BR IF NO
3307 017662  162700  020000                SUB     #20000,R0       ;BACKUP INTO PAR5 MAPPING BEGIN
3308 017666  062737  000200  172352        ADD     #200,@#KIPAR5   ;POINT TO NEXT 4K BLOCK >28K.
3309 017674  023727  172352  006000        CMP     @#KIPAR5,#6000  ;END OF MEMORY?
3310 017702  001427                        BEQ     50$             ;BR IF YES
3311 017704  005737  003140                TST     T23A            ;11/23A?
3312 017710  001407                        BEQ     35$             ;NO KEEP GOING
3313 017712  013704  177572                MOV     SR0,R4          ;GET SR0 CONTENTS
3314 017716  042704  177761                BIC     #177761,R4      ;CLEAR ALL BUT PAGE NUMBER
3315 017722  022704  000016                CMP     #16,R4          ;SEE IF PAGE 7
3316 017726  001415                        BEQ     50$             ;EXIT IF THERE
3317 017730  005737  003142              35$:      TST     T23B            ;11/23B?
3318 017734  001410                        BEQ     45$             ;NO KEEP GOING
3319 017736  023727  172352  007600        CMP     @#KIPAR5,#7600  ;REACHED 18 BITS?
3320 017744  103001                        BHIS    40$             ;YES
3321 017746  000403                        BR      45$             ;NO KEEP GOING
3322 017750  012737  000020  172516  40$:  MOV     #20,SR3         ;SET 22 BIT RELOCATION
3323 017756  000137  017652        45$:    JMP     30$             ;KEEP GOING ON ETC.
3324 017762  004737  017404        50$:    JSR     PC,KTOFF        ; DISABLE KT.
3325 017766  000207              55$:      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
                                ;-
017770                          CMPMEM:
017770                                  SAVREG                  ;SAVE R1 R5 UNTIL NEXT RETURN
017774  010003                          MOV     R0,R3           ;COPY TEST PATTERN
017776  004737  017404                  JSR     PC,KTOFF        ;DISABLE KT.
020002  013701  003120                  MOV     FREE,R1         ;GET FIRST FREE LOCATION
020006  013702  003122                  MOV     FRESIZ,R2       ;SIZE OF FREE SPACE BELOW 28K.
020012  020311                  10$:    CMP     R3,(R1)         ;FREE SPACE LOCATION EQUAL TO EXPD?
020014  001411                          BEQ     15$             ;BR IF YES
020016  010137  002234                  MOV     R1,ERRLO        ;SAVE ADDRESS IN ERROR
020022  005037  002232                  CLR     ERRHI           ;NO HIGH ADDRESS
020026  010337  002226                  MOV     R3,EXPD         ;SAVE EXPD FOR ERROR REPORT
020032  011137  002230                  MOV     (R1),RECV       ;SAVE RECV FOR ERROR REPORT
020036  000474                          BR      50$             ;
020040  005721                  15$:    TST     (R1)+           ;POINT TO NEXT ADDRESS
020042  005302                          DEC     R2              ;DONE ALL MEMORY IN FREE SPACE?
020044  003362                          BGT     10$             ;BR IF NO
020046  005737  003126                  TST     KTFLG           ; GOT KT?
020052  001472                          BEQ     55$             ; NO. GET OUT.
020054  004737  017366                  JSR     PC,KTON         ; YES. ENABLE KT.
020060  005000                          CLR     R0              ;HIGH ORDER ADDRESS START
020062  013701  003146                  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
020116  042701  000177                  BIC     #177,R1         ;ALINE 4K BOUNDARY
020122  010046                          MOV     R0,-(SP)        ;SAVE HIGH ORDER
020124  010146                          MOV     R1,-(SP)        ;SAVE LOW ORDER
020126  004737  017426                  JSR     PC,SETMAP       ;SETUP PAR6 MAPPING REGISTER
020132  010004                          MOV     R0,R4           ;COPY ADDRESS BIASED TO PAR6
020134  012601                          MOV     (SP)+,R1        ;RESTORE LOW ORDER IN NON PAR6 FORMAT
020136  012600                          MOV     (SP)+,R0        ;RESTORE HIGH ORDER IN NON PAR6 FORMAT
020140  020314                  30$:    CMP     R3,(R4)         ;ABOVE 28K LOCATION EQUAL EXPD?
020142  001411                          BEQ     32$             ;BR IF YES
020144  010037  002232                  MOV     R0,ERRHI        ;SAVE HIGH ORDER IN ERROR
```

CMPMEM COMPARE MEMORY TO BACKGROUND PATTERN

```
3384 020150  010137  002234                    MOV     R1,ERRLO        ;SAVE LOW ORDER IN ERROR
3385 020154  010337  002226                    MOV     R3,EXPD         ;SAVE EXPD FOR ERROR REPORT
3386 020160  011437  002230                    MOV     (R4),RECV       ;SAVE RECV FOR ERROR REPORT
3387 020164  000421                            BR      50$             ;
3388 020166  062701  000002          32$:      ADD     #2,R1           ;UPDATE NON PAR6 ADDRESS
3389 020172  005500                            ADC     R0              ;MAKE IT DOUBLE PRECISION ADD
3390 020174  062704  000002                    ADD     #2,R4           ;UPDATE PAR FORMAT ADDRESS
3391 020200  020427  140000                    CMP     R4,#140000      ;END OF PAR5 MAPPING AREA?
3392 020204  103755                            BLO     30$             ;BR IF NO
3393 020206  162704  020000                    SUB     #20000,R4       ;BACKUP INTO PAR6 MAPPING BEGIN
3394 020212  062737  000200  172352            ADD     #200,@#KIPAR5   ;POINT TO NEXT 4K BLOCK >28K.
3395 020220  023737  172352  003126            CMP     @#KIPAR5,KTFLG  ;END OF MEMORY?
3396 020226  101744                            BLOS    30$             ;BR IF NO
3397 020230  004737  017404          50$:      JSR     PC,KTOFF        ;TURN OFF MEMORY MAPPING
3398 020234  000241                            CLC                     ;SET FAILURE
3399 020236  000403                            BR      60$             ;
3400 020240  004737  017404          55$:      JSR     PC,KTOFF        ;TURN OFF MEMORY MAPPING
3401 020244  000261                            SEC                     ;SET SUCCESS
3402 020246  000207                  60$:      RTS     PC
3403                                           .SBTTL  REGSAV  - SAVE R1 R5 ON STACK
3404                                 ;+
3405                                 ;
3406                                 ;ROUTINE TO
3407                                 ;SAVE R1 THROUGH R5 ON THE STACK
3408                                 ;
3409                                 ;CALLING SEQUENCE:
3410                                 ;
3411                                 ;       JSR     R5,REGSAV
3412                                 ;
3413                                 ;THIS IS A COOROUTINE WHICH TRANSFER CONTROL BACK TO
3414                                 ;THE CALLING ROUTINE. AT THE END OF THE CALLING ROUTINE,
3415                                 ;THE RTS PC RETURNS CONTROL TO THIS ROUTINE TO RESTORE
3416                                 ;REGISTERS.
3417                                 ;
3418                                 ;THIS ROUTINE SHOULD ONLY BE CALLED FROM ROUTINES WHICH ARE
3419                                 ;CALLED VIA A JSR PC INSTRUCTION
3420                                 ;
3421                                 ;
3422
3423 020250                       REGSAV:
3424 020250  010446                        MOV     R4,-(SP)
3425 020252  010346                        MOV     R3,-(SP)
3426 020254  010246                        MOV     R2,-(SP)
3427 020256  010146                        MOV     R1,-(SP)
3428 020260  010546                        MOV     R5,-(SP)
3429 020262  016605  000012                MOV     10.(SP),R5
3430 020266  004736                        JSR     PC,@(SP)+
3431 020270  012601                        MOV     (SP)+,R1
3432 020272  012602                        MOV     (SP)+,R2
3433 020274  012603                        MOV     (SP)+,R3
3434 020276  012604                        MOV     (SP)+,R4
3435 020300  012605                        MOV     (SP)+,R5
3436 020302  000207                        RTS     PC
```

J7


```
                                        .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
                                ;
020304                          GETPAT::
                                        SAVREG                          ;SAVE THE GENERAL REGISTERS
020304                          1$:     GMANID  DATASC,PATDAT,0,377,0,377,NO
020310  104443                          TRAP    C$GMAN
020312  000406                          BR      10000$
020314  020340                          .WORD   PATDAT
020316  000022                          .WORD   T$CODE
020320  020342                          .WORD   DATASC
020322  000377                          .WORD   377
020324  000000                          .WORD   T$LOLIM
020326  000377                          .WORD   T$HILIM
020330                          10000$:
020330                                  BNCOMPLETE      1$      ;RETRY IF ERROR
020330  103367                          BCC     1$
020332  013700  020340                  MOV     PATDAT,R0       ;DATA PATTERN FROM OPERATOR
020336  000207                          RTS     PC              ;RETURN TO CALLER

                                ;+
                                ;LOCAL DATA AREA
                                ;-

020340  000000                  PATDAT: .WORD   0               ;TEMPORARY STORAGE FOR DATA
020342      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
                                        ;-
020366                                  GETSEL::
020366                                          SAVREG                          ;SAVE GENERAL REGISTERS
020372  010002                                  MOV     R0,R2                   ;SAVE THE MENU ADDRESS
020374  010203                          1$:     MOV     R2,R3                   ;START OF MENU STRING
020376  005713                          2$:     TST     (R3)                    ;END OF ASCII ?
020400  001412                                  BEQ     3$                      ;BRANCH IF ALL LINES DISPLAYED
020402                                          PRINTF  #SELASC,(R3)+           ;DISPLAY THE MENU
020402  012346                                  MOV     (R3)+,(SP)
020404  012746  020552                          MOV     #SELASC,-(SP)
020410  012746  000002                          MOV     #2,-(SP)
020414  010600                                  MOV     SP,R0
020416  104417                                  TRAP    C$PNTF
020420  062706  000006                          ADD     #6,SP
020424  000764                                  BR      2$
020426                                  3$:     GMANID  MENASC,MENRES,D,-1,0,,1,NO
020426  104443                                  TRAP    C$GMAN
020430  000406                                  BR      10001$
020432  020606                                  .WORD   MENRES
020434  000042                                  .WORD   T$CODE
020436  020557                                  .WORD   MENASC
020440  177777                                  .WORD   -1
020442  000000                                  .WORD   T$LOLIM
020444  177777                                  .WORD   T$HILIM
020446                                  10001$:
020446                                          BNCOMPLETE      1$              ;RETRY IF ERROR
020446  103352                                  BCC     1$
020450  013700  020606                          MOV     MENRES,R0               ;GET THE OPERATOR'S REPLY
020454  020001                                  CMP     R0,R1                   ;COMPARE TO MAXIMUM ALLOWED
020456  101411                                  BLOS    5$                      ;BRANCH IF OK
020460                                          PRINTF  #MENERR                 ;DISPLAY ERROR MESSAGE
020460  012746  020504                          MOV     #MENERR,-(SP)
020464  012746  000001                          MOV     #1,-(SP)
020470  010600                                  MOV     SP,R0
020472  104417                                  TRAP    C$PNTF
020474  062706  000004                          ADD     #4,SP
020500  000735                                  BR      1$                      ;RETRY
020502  000207                          5$:     RTS     PC                      ;RETURN TO CALLER
020504     045     116     045  MENERR: .ASCIZ  '%N%A *** Menu Selection Too Large ***'
020552     045     116     045  SELASC: .ASCIZ  '%N%T'
020557     105     156     164  MENASC: .ASCIZ  'Enter Menu Selection: '
                                        .EVEN
020606  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.
                                ;
                                ;-

020610                          CHKMAN::
                                        SAVREG                  ;SAVE THE REGISTERS
020610                                  MANUAL                  ;SEE IF MANUAL INTERVENTION OK
020614  104450                          TRAP    C$MANI
020616                                  BCOMPLETE 1$            ;BRANCH IF ALLOWED
020616  103411                          BCS     1$
020620                                  PRINTF  #NOMAN          ;PRINT THE WARNING MESSAGE
020620  012746  020644                  MOV     #NOMAN,-(SP)
020624  012746  000001                  MOV     #1,-(SP)
020630  010600                          MOV     SP,R0
020632  104417                          TRAP    C$PNTF
020634  062706  000004                  ADD     #4,SP
020640  000241                          CLC                     ;CLEAR CARRY FOR ERROR
020642  000207                  1$:     RTS     PC              ;RETURN

020644      045     116     045 NOMAN:  .ASCIZ  '%N%A *** Manual Intervention not Allowed - Test Aborted ***'
                                        .even
```

M7


```
3531                                            .SBTTL  ENVIRN  - SETUP FREE DIAGNOSTIC SPACE
3532                                    ;
3533                                    ; SUBROUTINE TO SET-UP VARIOUS ENVIRONMENTAL PARAMETERS.
3534                                    ;
3535 020740                            ENVIRN: MEMORY  R0
     020740  104431                             TRAP    C$MEM
3536 020742  010037  003120                    MOV     R0,FREE         ; GET 1ST FREE ADDRESS...
3537 020746  062737  000002  003120            ADD     #2,FREE
3538 020754  011037  003122                    MOV     (R0),FRESIZ     ;...AND WORD COUNT.
3539 020760  162737  000004  003122            SUB     #4,FRESIZ
3540 020766  013702  002012                    MOV     L$UNIT,R2       ; GET NUMBER OF UNITS
3541 020772  162737  000007  003122  10$:      SUB     #7,FRESIZ       ; TAKE AWAY 7 WORDS PER UNIT
3542 021000  005302                            DEC     R2
3543 021002  001373                            BNE     10$
3544 021004  013700  003120                    MOV     FREE,R0         ;GET FIRST FREE ADDRESS
3545 021010  063700  003122                    ADD     FRESIZ,R0       ;POINT TO LAST FREE ADDRESS
3546 021014  162700  000002                    SUB     #2,R0           ;BACKUP 1 WORD
3547 021020  010037  003124                    MOV     R0,FREEHI       ;STORE LAST FREE ADDRESS
3548 021024  000240                            NOP                     ;*****************************************
3549 021026  012701  177520                    MOV     #BDVPCR,R1      ;GET BDV11 PCR ADDRESS
3550 021032  0  102                            MOV     R1,R2           ;COPY TO R2
3551 021034  062702  000002                    ADD     #2,R2           ;SET THE RANGE
3552 021040  004737  016506                    JSR     PC,XNXM         ;SEE IF WE HAVE ONE
3553 021044  103001                            BCC     15$             ;OK TO SET FLAGS
3554 021046  000423                            BR      40$             ;RETURN WITH FLAGS CLEAR
3555 021050  013701  177520            15$:    MOV     BDVPCR,R1       ;SAVE PCR CONTENTS
3556 021054  062701  000001                    ADD     #1,R1           ;ADD ONE TO IT
3557 021060  012702  177520                    MOV     #BDVPCR,R2      ;GET BDV11 PCR ADDRESS
3558 021064  005212                            INC     (R2)            ;TRY TO WRITE TO IT
3559 021066  013703  177520                    MOV     BDVPCR,R3       ;GET RESULTS
3560 021072  020103                            CMP     R1,R3           ;DID IT CHANGE?
3561 021074  001006                            BNE     20$             ;NO, MUST BE 11/238
3562 021076  005237  003140                    INC     T23A            ;SET THE FLAG
3563 021102  042737  170000  002120            BIC     #170000,L$HIME  ;SUPERVISOR COULD BE WRONG
3564                                    ;       NOP                     ;BR 40$ FOR RELEASE
3565                                    ;       PRINTF  #M8186          ;TELL THE SYSTEM TYPE
3566 021110  000402                            BR      40$             ;RETURN
3567 021112  005237  003142            20$:    INC     T238            ;SET THE FLAG
3568                                    ;       NOP                     ;BR 40$ FOR RELEASE
3569                                    ;       PRINTF  #M8189          ;TELL THE SYSTEM TYPE
3570 021116                            40$:
3571 021116  000207                            RTS     PC              ;RETURN
```

```
                                        .SBTTL  KTINIT  - SETUP KT11 MEMORY MANAGEMENT REGISTERS
                                ;*
                                ;
                                ;ROUTINE TO INIT KT-11
                                ;
                                ;-

021120                          KTINIT:
021120  005037  003126                  CLR     KTFLG           ; INIT >28K MEMORY FLAG
021124  005037  003130                  CLR     KTENABLE        ; INIT TEST >28K FLAG
021130  023727  002120  001577          CMP     L$HIME,#1577    ; GOT ENOUGH MEMORY (>28K)?
021136  101454                        BLOS    9$              ; NO.
021140  013700  000004                MOV     @#ERRVEC,R0     ; SAVE OLD ERR VEC PTR.
021144  012737  021256  000004        MOV     #2$,@#ERRVEC    ; SET ERR VEC PTR.
021152  005737  177572                TST     @#SR0           ; GOT KT11?
021156  000240                        NOP                     ;  (TRAP IF NO).
021160  013737  002120  003126        MOV     L$HIME,KTFLG    ; YES. SET KT FLAG.
021166  022737  007777  003126        CMP     #7777,KTFLG     ; GOT 22 BIT MACHINE?
021174  100404                        BMI     4$              ; NO
021176  042737  003777  003126        BIC     #3777,KTFLG     ; ALIGN ON BOUNDARY
021204  000403                        BR      5$
021206  042737  000177  003126  4$:   BIC     #177,KTFLG      ;
021214  010037  000004          5$:   MOV     R0,@#ERRVEC     ; RESTORE OLD ERR VEC PTR.
021220  005000                        CLR     R0              ; R0 = AR DATA.
021222  012701  172340                MOV     #KIPAR0,R1      ; R1 = KI REGS PTR.
021226  012761  077406  177740  1$:   MOV     #77406,-40(R1)  ; SET DESCRIPTOR REG.
021234  010021                        MOV     R0,(R1)+        ; SET KIPAR REG.
021236  062700  000200                ADD     #200,R0         ; BUMP AR DATA BY "4K".
021242  020027  002000                CMP     R0,#2000        ; AT "I/O"?
021246  001367                        BNE     1$              ; NO.
021250  012741  177600                MOV     #177600,-(R1)   ; YES. SET KTPAR7 FOR I/O.
021254  000405                        BR      9$

021256  012716  021264          2$:   MOV     #6$,(SP)        ; SET UP RETURN
021262  000002                        RTI                     ; RTI TO NEXT LOCATION

021264  010037  000004          6$:   MOV     R0,@#ERRVEC     ; RESTORE OLD ERR VEC PTR.

021270  000207                  9$:   RTS     PC
```

```
                                        ;*
                                        ;       SUBROUTINE TO SET EXTENDED FEATURES SWITCH
                                        ;
                                        ;       Requires that SOFINIT and WRTCHR have been done previous to call.
                                        ;
                                        ;
                                        ;INPUTS:
                                        ;       R5      CURRENT UNIT NUMBER
                                        ;OUTPUTS:
                                        ;       The Extended Features Switch is set.
                                        ;
                                        ;-


                                        ;       COMMAND PACKET.

                021274                  .       =       <.+3>&177774    ;MUST BE ON MOD 4 BOUNDRY.

021274  000000                         CMDPKT:: 0                      ;1ST WORD IS TSO5 COMMAND.
021276  000000                                  0                       ;2ND WORD IS THE BUFFER LOW ADDRESS.
021300  000000                                  0                       ;3RD WORD IS THE BUFFER HIGH ADDRESS.
021302  000000                                  0                       ;4TH WORD IS THE BYTE/RECORD/FILE COUNT.

                                        ;       WRITE SUB-SYSTEM MEMORY CHARACTERISTIC BLOCK.

021304  000000                         WSMBK:: 0                       ;1ST WORD:: SEL 0
021306  000000                                 0                       ;2ND WORD:: SEL 2
021310  000000                                 0                       ;3RD WORD:: SEL 4
                                               .EVEN
                                        ;*
                                        ;       SUBROUTINE TO CHECK WETHER OR NOT WE'LL TEST NXM
                                        ;
                                        ;
                                        ;INPUTS:
                                        ;OUTPUTS:
                                        ;       The NXMFLG is set if we can test.
                                        ;       The NXMLO and NXMHI addresses are setup.
                                        ;-

021312                                 MEMCK::

021312                                         SAVREG                          ;SAVE THE REGISTERS
021316  005037  003132                         CLR     NXMFLG                  ;CLEAR THE FLAG
021322  005037  003134                         CLR     NXMLO                   ;CLEAR THE TEST ADDRESS LO
021326  005037  003136                         CLR     NXMHI                   ;CLEAR THE TEST ADDRESS HI
021332  005737  003142                         TST     T23B                    ;IS IT A 11/23B?
021336  001407                               BEQ     1$                      ;NO
021340  023727  002120  007777                CMP     L$HIME,#7777            ; GREATER THAN 128K
021346  103406                               BLO     2$                      ; NO
021350  004737  021466                       JSR     PC,NXMTST               ;SETUP THE ADDRESS
021354  000427                               BR      13$                     ;SET THE FLAG AND EXIT
021356  005737  003140          1$:          TST     T23A                    ;IS IT A 11/23A?
021362  001413                               BEQ     4$                      ;NO
021364  023727  002120  005777  2$:          CMP     L$HIME,#5777            ;GREATER THAN 96K
021372  101023                               BHI     14$                     ;YES,23A/23B WITH 128K MEMORY
021374  023727  002120  003777                CMP     L$HIME,#3777            ;GREATER THAN 64K BUT LESS THAN 92K?
021402  103403                               BLO     4$                      ;NO, CHECK 24K
```

KTINIT - SETUP KT11 MEMORY MANAGEMENT REGISTERS

```
 3670 021404  004737  021466                    JSR     PC,NXMTST               ;SETUP THE ADDRESS
 3671 021410  000411                            BR      13$                     ;SET THE FLAG AND EXIT
 3672 021412  023727  002120  001577  4$:       CMP     L$HIME,#1577            ;GREATER THAN 24K BUT LESS THAN 64K?
 3673 021420  103410                            BLO     14$                     ;NO, TELL THEM AND EXIT WITH FLAG CLEAR
 3674 021422  004737  021466                    JSR     PC,NXMTST               ;SETUP THE ADDRESS
 3675 021426  062737  000077  003136            ADD     #77,NXMHI               ;FOOL THE 11/02 & 11/03
 3676 021434  005237  003132          13$:      INC     NXMFLG                  ;SET THE FLAG
 3677 021440  000411                            BR      15$                     ;EXIT
 3678 021442  000410                14$:       BR      15$                     ;NOP FOR PRINTOUT
 3679 021444                                    PRINTF  #NOMEM                  ;TELL THEM & EXIT ***NO PRINT*****
      021444  012746  005456                    MOV     #NOMEM,-(SP)
      021450  012746  000001                    MOV     #1,-(SP)
      021454  010600                            MOV     SP,R0
      021456  104417                            TRAP    C$PNTF
      021460  062706  000004                    ADD     #4,SP
 3680 021464  000207                15$:       RTS     PC                      ;RETURN
 3681
 3682                                           ;*
 3683                                           ;       SUBROUTINE TO SETUP THE NXM ADDRESS FOR TESTING
 3684                                           ;
 3685                                           ;OUTPUTS:NXMLO,NXMHI            ;SETUP WITH NXM ADDRESS
 3686                                           ;
 3687                                           ;-
 3688
 3689 021466  013701  002120          NXMTST: MOV     L$HIME,R1               ;GET TOP OF MEMORY
 3690 021472  062701  000200                    ADD     #200,R1                 ;MAKE IT I/O BLOCK OR OTHER NXM
 3691 021476  042701  000177                    BIC     #177,R1
 3692 021502  010102                            MOV     R1,R2                   ;RESAVE RESULTS
 3693         000006                            .REPT   6
 3694                                           ASL     R1                      ;PUT IN PLACE FOR XFER
 3695                                           .ENDR
 3696 021520  010137  003134                    MOV     R1,NXMLO                ;SAVE TEST ADDRESS LOW
 3697         000012                            .REPT   10.
 3698                                           ASR     R2                      ;PUT IN PLACE FOR XFER
 3699                                           .ENDR
 3700 021550  042702  177700                    BIC     #177700,R2              ;DON'T WANT ILA!
 3701 021554  010237  003136                    MOV     R2,NXMHI                ;SAVE TEST ADDRESS HIGH
 3702 021560  000207                            RTS     PC                      ;RETURN
 3703
 3704 021562                                    ENDMOD
 3713                                           .TITLE  TSV4 - MISCELLANEOUS SECTIONS
 3714
 3715 021562                                    BGNMOD  TSV4
      021562                        TSV4::
 3716
 3722
 3723
 3724
 3725                                           .SBTTL  PROTECTION TABLE
 3726 021562                                    BGNPROT
      021562                        L$PROT::
 3727 021562  177777  177777  177777            .WORD   -1, -1, -1, -1          ;NO DEVICE PROTECTION REQUIRED.
 3728 021572                                    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
021572                          L$INIT::
021572  005037  002220          40$:    CLR     EXTFEA
021576  005037  003132                  CLR     NXMFLG
021602  012737  006356  002172          MOV     #EPRT1,EPRTSW           ;SET UP PRIMARY MESSAGE FOR REPLACEMENT
021610  005037  003150                  CLR     SIFLAG                  ;CLEAR "SOFT INIT" FLAG
021614  005037  003130                  CLR     KTENABLE                ;CLEAR TEST ABOVE 28K FLAG
021620  005037  002276                  CLR     RAMSIZ                  ;CLEAR RAM SIZE FOR RAMERR ROUTINE
021624                                  READEF  #EF.CONTINUE
021624  012700  000036                  MOV     #EF.CONTINUE,R0
021630  104447                          TRAP    C$REFG
021632                                  BNCOMPLETE 1$
021632  103023                          BCC     1$
021634  023737  002174  002012          CMP     UNITN,L$UNIT            ;UNIT IN RANGE?
021642  103070                          BHIS    4$                      ;BR IF NO.
021644  005737  003106                  TST     DUFLG                   ;DROPPED UNIT?
021650  100472                          BMI     NXTU                    ;BR IF YES
021652  013701  002174                  MOV     UNITN,R1
021656  006301                          ASL     R1
021660  005761  003172                  TST     ERTABL(R1)
021664  001516                          BEQ     SETU
021666  032761  040000  003172          BIT     #BIT14,ERTABL(R1)       ;DROPPED?
021674  001060                          BNE     NXTU
021676                                  EXIT    INIT                    ;DO NOTHING IF "CONTINUE".
021676  104432                          TRAP    C$EXIT
021700  000416                          .WORD   L10030-.
021702                          1$:     READEF  #EF.NEW
021702  012700  000035                  MOV     #EF.NEW,R0
021706  104447                          TRAP    C$REFG
021710                                  BNCOMPLETE NXTU                 ;TAKE NEXT UNIT IF NOT NEW PASS.
021710  103052                          BCC     NXTU
021712                                  READEF  #EF.START
021712  012700  000040                  MOV     #EF.START,R0
021716  104447                          TRAP    C$REFG
021720                                  BCOMPLETE 2$
021720  103404                          BCS     2$
021722                                  READEF  #EF.RESTART
021722  012700  000037                  MOV     #EF.RESTART,R0
021726  104447                          TRAP    C$REFG
021730                                  BNCOMPLETE 31$
021730  103031                          BCC     31$
021732                          2$:                                     ;1ST PASS, BUS-INIT...
021732                                  BRESET                          ;BUS RESET.
021732  104433                          TRAP    C$RESET
```

INITIALIZE SECTION

```
3771 021734  005037  002206                CLR     TSTCNT                  ;NUMBER OF TESTS RUN IN PASS
3772 021740  005037  002214                CLR     FATFLG                  ;CLEAR FATAL ERROR COUNT
3773 021744  005037  003140                CLR     T23A                    ;CLEAR 11/23A FLAG
3774 021750  005037  003142                CLR     T23B                    ;CLEAR 11/23B FLAG
3775                              ;        MOV     #340,-(SP)
3776                              ;        MOV     #20$,-(SP)              ;RETURN TO DEBUGGER
3777                              ;        JMP     0.ODT           ;;@@ENTER THE DEBUGGER
3778 021754  005037  003374                CLR     SKIPT           ;CLEAR THE SUBTEST "SKIPPER"
3779 021760                       20$:
3780 021760  012737  177777  002176        MOV     #-1,@VP                 ;...QUICK VERIFY...
3781 021766  004737  020740                JSR     PC,ENVIRN               ;SET ENVIRONMENT.
3782 021772  004737  021120                JSR     PC,KTINIT               ;INITIALIZE KT MEMORY MANAGEMENT
3783 021776  012700  003172                MOV     #ERTABL,R0
3784 022002  005020                30$:    CLR     (R0)+                   ;CLEAR THE ERROR TABLE
3785 022004  020027  003372                CMP     R0,#ERTABE
3786 022010  103774                        BLO     30$
3787 022012  000404                        BR      4$
3788 022014  005037  002176        31$:    CLR     @VP
3789 022020  000137  022070                JMP     PASRPT                  ;GO REPORT THE STATUS
3790
3791 022024                       4$:
3792 022024  012737  177777  002174  NEWPAS: MOV     #-1,UNITN               ;INIT UNIT NUMBER...
3793 022032  005037  002212                CLR     DEVCNT                  ;CLEAR COUNT OF DEVICES RUNNING
3794 022036                       NXTU:   BREAK
     022036  104422                        TRAP    C$BRK
3795 022040  005237  002174                INC     UNITN                   ;...AND SET NEXT UNIT NUMBER.
3796 022044  023737  002174  002012        CMP     UNITN,L$UNIT
3797 022052  103423                        BLO     SETU
3798 022054  012737  177777  003106        MOV     #-1,DUFLG
3799 022062  000401                        BR      11$
3800 022064                               DOCLN                           ;ABORT, NO MORE UNITS.
     022064  104444                        TRAP    C$DCLN
3801 022066  000240                11$:    NOP
3802 022070                       PASRPT:
3803 022070  023727  002012  000001        CMP     L$UNIT,#1               ;HOW MANY UNITS SELECTED?
3804 022076  101752                        BLOS    NEWPAS                  ;BR IF ONLY 1
3805 022100  005737  002212                TST     DEVCNT                  ;ARE ANY STILL RUNNING?
3806 022104  001747                        BEQ     NEWPAS                  ;BR IF NO
3807 022106                               RFLAGS  R0
     022106  104421                        TRAP    C$RFLA
3808 022110  032700  000100                BIT     #ISR,R0                 ;SHOULD WE PRINT STATISTICS
3809 022114  001343                        BNE     NEWPAS                  ;BR IF NO
3810
3811 022116                               DORPT
     022116  104424                        TRAP    C$DRPT
3812 022120  000741                        BR      NEWPAS
3813 022122                       10$:
3814
3815 022122                       SETU:   GPHARD  UNITN,R0                ;GET UNIT N P-TABLE POINTER.
     022122  013700  002174                MOV     UNITN,R0
     022126  104442                        TRAP    C$GPHRD
3816 022130                               BNCOMPLETE NXTU                 ;BR IF UNIT NOT AVAILABLE.
     022130  103342                        BCC     NXTU
3817 022132  005037  003106                CLR     DUFLG                   ;CLEAR "DROPPED" FLAG.
3818 022136  005237  002212                INC     DEVCNT
3819 022142  012001                        MOV     (R0)+,R1                ;GET 1ST REGISTER ADDRESS.
3820 022144  010137  002200                MOV     R1,CSRADDR              ;ADDRESS OF REGISTERS OF UNIT UNDER TEST
```

F8

INITIALIZE SECTION

```
3821
3822 022150  012001                        MOV     (R0)+,R1                ;GET VECTOR ADDRESS.
3823                                        ;MOV    (R0),R2                 ;GET INTERRUPT PRIORITY
3824                                        ;MOV    R2,IPRI                 ;SET INTERRUPT PRIORITY.
3825 022152  010137  002202                MOV     R1,IVEC                 ;SET INTERRUPT VECTOR POINTER...
3826 022156  012721  016326                MOV     #INTR,(R1)+             ;...VECTOR...
3827 022162  013721  002204                MOV     IPRI,(R1)+              ;...AND PRIORITY.
3828
3829 022166                          1$:
3830                                 ;      TST     QVP             ;1ST PASS ??
3831                                 ;      BEQ     5$              ;NO, SKIP THE PASS 1 STUFF.
3832
3833                                 ;
3834                                 ;1ST PASS, CHECK THAT DEVICE ADDRESSES ARE VALID, AND
3835                                 ;THAT THE DISPLAY STATUS IS PROPERLY INITIALIZED.
3836                                 ;
3837 022166  013701  002174                MOV     UNITN,R1
3838 022172  006301                        ASL     R1
3839 022174  052761  100000  003172        BIS     #BIT15,ERTABL(R1)       ;SAY DEVICE RUNNING
3840 022202  005037  005770                CLR     EXTA                    ;CLEAR ERROR EXTENSION FLAG.
3841 022206  023727  002012  000001        CMP     L$UNIT,#1               ;ARE WE TESTING MULTIPLE UNITS?
3842 022214  101416                        BLOS    10$                     ;BR IF NO.
3843 022216                                RFLAGS  R0                      ;YES -- GET OPERATOR FLAGS.
     022216  104421                        TRAP    C$RFLA
3844 022220  032700  001000                BIT     #PNT,R0                 ;SHOULD WE PRINT UNIT #?
3845 022224  001412                        BEQ     10$                     ;BR IF NOT.
3846 022226                                PRINTF  #PUNIT,UNITN            ;PRINT THE UNIT #
     022226  013746  002174                MOV     UNITN,-(SP)
     022232  012746  022320                MOV     #PUNIT,-(SP)
     022236  012746  000002                MOV     #2,-(SP)
     022242  010600                        MOV     SP,R0
     022244  104417                        TRAP    C$PNTF
     022246  062706  000006                ADD     #6,SP
3847 022252                          10$:
3848 022252  005037  003110                CLR     NODEV
3849 022256  013701  002200                MOV     CSRADDR,R1              ;ADDRESS OF FIRST REGISTER
3850 022262  010102                        MOV     R1,R2                   ;START OF REGISTERS
3851 022264  062702  000002                ADD     #TSSR,R2                ;ADDRESS OF TSSR REGISTER
3852 022270  004737  016506                JSR     PC,XNXM                 ;TEST BOTH CONTROLLER REGISTERS...
3853 022274  103005                        BCC     2$                      ;...AND BR IF ALL OK.
3854 022276  010137  003110                MOV     R1,NODEV                ;FLAG DEVICE AS NON-EXISTENT
3855 022302  012737  177777  003106        MOV     #-1,DUFLG               ;DROP THIS UNIT.
3856 022310                          2$:
3857                                 ;
3858                                 ;FINALLY, SET CPU PRIORITY AND WE'RE DONE.
3859                                 ;
3860 022310                          5$:    SETPRI  #PRI00          ;ENABLE INTERRUPTS.
     022310  012700  000000                MOV     #PRI00,R0
     022314  104441                        TRAP    C$SPRI
3861 022316                                ENDINIT
     022316                          L10030:
     022316  104411                        TRAP    C$INIT
3862
3863 022320     045     116     045  PUNIT: .ASCIZ  /%N%N%A***** TESTING UNIT %D2%A *****/
3864                                        .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.
                                ;--
 3873 022366                            BGNAU
      022366                    L$AU::
 3874 022366  010001                    MOV     R0,R1                   ; GET UNIT TO BE ADDED (R0)
 3875 022370  006301                    ASL     R1                      ; MAKE IT A WORD INDEX
 3876 022372  052761  100000  003172     BIS     #100000,ERTABL(R1)      ; SET THE "ACTIVE" BIT
 3877 022400  042761  040000  003172     BIC     #40000,ERTABL(R1)       ; CLEAR THE "DROPPED" BIT
 3878 022406                            PRINTF  #1$,R0
      022406  010046                    MOV     R0,-(SP)
      022410  012746  022434            MOV     #1$,-(SP)
      022414  012746  000002            MOV     #2,-(SP)
      022420  010600                    MOV     SP,R0
      022422  104417                    TRAP    C$PNTF
      022424  062706  000006            ADD     #6,SP
 3879 022430                            EXIT    AU
      022430  000167                    .WORD   J$JMP
      022432  000026                    .WORD   L10031-2-.
 3880 022434     045     116     045  1$:     .ASCIZ  /%N%A  UNIT %D%A ADDED/
 3881                                   .EVEN
 3882
 3883 022462                            ENDAU           ; UNUSED.
      022462                    L10031:
      022462  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.

 3895 022464                            BGNDU
      022464                    L$DU::
 3896 022464  012737  177777  003106     MOV     #-1,DUFLG
 3897 022472  010001                    MOV     R0,R1
 3898 022474  006301                    ASL     R1
 3899 022476  052761  140000  003172     BIS     #140000,ERTABL(R1)      ; SAY DROPPED
 3900 022504  000240  000240  000240     240,240,240                     ; ?????????
 3901 022512                            PRINTF  #1$,R0
      022512  010046                    MOV     R0,-(SP)
      022514  012746  022540            MOV     #1$,-(SP)
      022520  012746  000002            MOV     #2,-(SP)
      022524  010600                    MOV     SP,R0
      022526  104417                    TRAP    C$PNTF
      022530  062706  000006            ADD     #6,SP
 3902 022534                            EXIT    DU
      022534  000167                    .WORD   J$JMP
      022536  000030                    .WORD   L10032-2-.
```

H8

ADD AND DROP UNITS SECTIONS

```
 3903 022540     045     116     045 1$:     .ASCIZ  /%N%A  UNIT %D%A DROPPED/
 3904                                 .EVEN
 3905 022570                          ENDDU
      022570                     L10032:
      022570  104453                      TRAP    C$DU
 3906                                 ;++
 3907                                 ; AUTO-DROP CODE SECTION.
 3908                                 ;--
 3909 022572                          BGNAUTO
      022572                     L$AUTO::
 3910 022572  013705  002200             MOV     CSRADDR,R5              ;POINT TO DEVICE REGISTER
 3911 022576  012703  000550             MOV     #360.,R3                ;ENOUGH TIME FOR 2400' REEL TO REWIND
 3912 022602  004737  016360        10$: JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 3913 022606  103420                     BCS     20$                     ;LEAVE WHEN SSR IS SET
 3914 022610                             DELAY   250.                    ;WAIT FOR .25 SECONDS
      022610  012727  000372             MOV     #250.,(PC)+
      022614  000000                     .WORD   0
      022616  013727  002116             MOV     L$DLY,(PC)+
      022622  000000                     .WORD   0
      022624  005367  177772             DEC     -6(PC)
      022630  001375                     BNE     .-4
      022632  005367  177756             DEC      22(PC)
      022636  001367                     BNE     .-20
 3915 022640  005303                     DEC     R3                      ;BUMP COUNTER DOWN
 3916 022642  001357                     BNE     10$                     ;KEEP GOING
 3917 022644  004737  017312             JSR     PC,CKDROP               ;TRY AND DROP UNIT
 3918 022650                         20$:
 3919 022650                          ENDAUTO                    ; UNUSED.
      022650                     L10033:
      022650  104461                      TRAP    C$AUTO
```

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

                                ;++
                                ; THE CLEANUP CODING SECTION CONTAINS THE CODING THAT IS
                                ; EXECUTED AT THE END OF EACH PASS (OR SUB PASS).
                                ; USE TO RETURN DEVICE UNDER TEST TO A NEUTRAL STATE.
                                ;--
022652                                  BGNCLN
022652                          L$CLEAN::
022652  013705  002200                   MOV     CSRADDR,R5              ;POINT TO DEVICE REGISTER
022656  005737  003106                   TST     DUFLG           ;"DROPPED" FLAG IS SET ON...
022662  100405                           BMI     1$              ;...AND GROSS CONTROLLER FAULT...
                                                                 ;...DON'T TRY TO XCT CLEANUP CODE.
022664  012765  000000  000002           MOV     #0,TSSR(R5)     ;DO SOFT INIT
022672  004737  016360                   JSR     PC,WAITF
022676                          1$:
022676                          2$:     ENDCLN
022676                          L10034:
022676  104412                           TRAP    C$CLEAN
                                ;++
                                ; THE REPORT CODING SECTION CONTAINS THE
                                ; "PRINTS" CALLS THAT GENERATE STATISTICAL REPORTS.
                                ;-
022700                                  BGNRPT
022700                          L$RPT::
022700                                  PRINTS  #DEVSUM
022700  012746  023142                   MOV     #DEVSUM,(SP)
022704  012746  000001                   MOV     #1,-(SP)
022710  010600                           MOV     SP,R0
022712  104416                           TRAP    C$PNTS
022714  062706  000004                   ADD     #4,SP
022720  010246                           MOV     R2,(SP)
022722  010346                           MOV     R3,-(SP)
022724  010446                           MOV     R4,-(SP)
022726  012704  003172                   MOV     #ERTABL,R4      ; GET START OF ERROR TABLE.
022732  005003                           CLR     R3              ; CLEAR UNIT NUMBER
022734  011402                  1$:      MOV     (R4),R2         ; GET ERROR TABLE ENTRY & TEST IT.
022736  001467                           BEQ     4$              ; ZERO IF UNIT NOT RUN
022740  100066                           BPL     4$
022742  032702  040000                   BIT     #BIT14,R2       ; WAS UNIT DROPPED?
022746  001015                           BNE     2$              ; BR IF YES
022750  042702  170000                   BIC     #^C7777,R2      ; GET ERROR COUNT FIELD
022754                                   PRINTS  #DEVONL,R3,R2   ; PRINT
022754  010246                           MOV     R2,-(SP)
022756  010346                           MOV     R3,(SP)
022760  012746  023177                   MOV     #DEVONL,-(SP)
022764  012746  000003                   MOV     #3,(SP)
022770  010600                           MOV     SP,R0
022772  104416                           TRAP    C$PNTS
022774  062706  000010                   ADD     #10,SP
023000  000446                           BR      4$
023002  020227  160000          2$:      CMP     R2,#160000      ; WAS UNIT NON-EXISTENT?
023006  001012                           BNE     3$              ; BR IF NO
023010                                   PRINTS  #DEVNXR,R3
023010  010346                           MOV     R3,(SP)
023012  012746  023247                   MOV     #DEVNXR,-(SP)
```

J8

SEQ 0100

CLEAN UP AND REPORT CODING SECTIONS

```
                023016  012746  000002                  MOV     #2,-(SP)
                023022  010600                          MOV     SP,R0
                023024  104416                          TRAP    C$PNTS
                023026  062706  000006                  ADD     #6,SP
        3960    023032  000431                          BR      4$
        3961    023034  020227  160001          3$:     CMP     R2,#160001      ; WAS UNIT NOT READY AT STARTUP?
        3962    023040  001012                          BNE     30$             ; BR IF NO.
        3963    023042                                  PRINTS  #DEVNRD,R3
                023042  010346                          MOV     R3,-(SP)
                023044  012746  023331                  MOV     #DEVNRD,-(SP)
                023050  012746  000002                  MOV     #2,-(SP)
                023054  010600                          MOV     SP,R0
                023056  104416                          TRAP    C$PNTS
                023060  062706  000006                  ADD     #6,SP
        3964    023064  000414                          BR      4$
        3965    023066  042702  170000          30$:    BIC     #^C7777,R2
        3966    023072                                  PRINTS  #DEVDRO,R3,R2
                023072  010246                          MOV     R2,-(SP)
                023074  010346                          MOV     R3,-(SP)
                023076  012746  023412                  MOV     #DEVDRO,-(SP)
                023102  012746  000003                  MOV     #3,-(SP)
                023106  010600                          MOV     SP,R0
                023110  104416                          TRAP    C$PNTS
                023112  062706  000010                  ADD     #10,SP
        3967    023116  062704  000002          4$:     ADD     #2,R4
        3968    023122  005203                          INC     R3
        3969    023124  020427  003372                  CMP     R4,#ERTABE
        3970    023130  103701                          BLO     1$
        3971    023132  012604                          MOV     (SP)+,R4
        3972    023134  012603                          MOV     (SP)+,R3
        3973    023136  012602                          MOV     (SP)+,R2
        3974    023140                                  ENDRPT          ; UNUSED.
                023140                          L10035:
                023140  104425                          TRAP    C$RPT
        3975
        3976    023142      045     116     045 DEVSUM: .ASCIZ  /%N%ADEVICE STATUS SUMMARY:%N/
        3977    023177      045     101     040 DEVONL: .ASCIZ  /%A  UNIT %D3%A    ONLINE,  ERRORS = %D%N/
        3978    023247      045     101     040 DEVNXR: .ASCIZ  /%A  UNIT %D3%A    DROPPED, NON-EXISTENT REGISTER%N/
        3979    023331      045     101     040 DEVNRD: .ASCIZ  /%A  UNIT %D3%A    DROPPED, NOT READY AT STARTUP%N/
        3980    023412      045     101     040 DEVDRO: .ASCIZ  /%A  UNIT %D3%A    DROPPED, ERRORS = %D%N/
        3981                                            .EVEN
        3982
        3983    023462                                  ENDMOD
        3984
```

K8

CLEAN-UP AND REPORT CODING SECTIONS

```
3988
3989                                        .TITLE  TEST 1   HARDWARE TEST 1 8 TESTS
3990
3997
3998 023462                                 BGNMOD  TSV7B
     023462                         TSV7B::
4004
```

```
                                                .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
                                        ;
                                        ;
                                        ;
                                        ;
023462                                          BGNTST
023462                                                                                  T1::
023462  012737  006356  002172                  MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
023470  012700  032047                          MOV     #TST29ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
023474  004737  016620                          JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
023500  012737  000005  002210                  MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
023506  005037  026424                          CLR     T29CNT                  ;CLEAR TAPE RECORD COUNTER
023512                                  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.
                                        ;
                                        ;
                                        ;
                                        ;-
023512                                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
023512                                                                                  T1.1:
023512  104402                                                                          TRAP    C$BSUB
023514  004737  032076                  JSR     PC,T29REST              ;SET COMMAND PACKET
023520  004737  032170                  JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
023524  004737  032232                  JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
023530  012737  023420  026430          MOV     #10000.,T29DLY          ;SET UP DELAY ROUTINE
023536  004737  016104          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
023542  103426                          BCS     20$                     ;BR IF INIT WAS OK
023544                                  DELAY   250                     ;DELAY ABOUT .25 SECONDS
023544  012727  000250                                                          MOV     #250.,(PC)+
023550  000000                                                                  .WORD   0
023552  013727  002116                                                          MOV     L$DLY,(PC)+
023556  000000                                                                  .WORD   0
023560  005367  177772                                                          DEC     -6(PC)
023564  001375                                                                  BNE     .-4
023566  005367  177756                                                          DEC     -22(PC)
023572  001367                                                                  BNE     .-20
023574  005337  026430                  DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
023600  001356                          BNE     10$                     ;BR, IF MORE DELAY TIME LEFT
023602  005237  002214                  INC     FATFLG                          ;ERROR COUNT
023606  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
023610                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
023610  104455                                                                  TRAP    C$ERDF
023612  000145                                                                  .WORD   101
023614  003650                                                                  .WORD   SFIERR
```

TEST 1: WRITE TAPE MARK RETRY

```
        023616  012144                                                          .WORD   SFIMSG
 4063   023620  013737  002174  026270  20$:    MOV     UNITN,T29DSW           ;SET UP UNIT NUMBER
 4064
 4065   023626  012704  026250                  MOV     #T29PACKET,R4          ;SUBROUTINE NEEDS PACKET ADDRESS
 4066   023632  004737  010742                  JSR     PC,WRTCHR              ;ISSUE WRITE CHARACTERISTICS
 4067   023636  103407                          BCS     25$                    ;BR, IF COMMAND ISSUED OK
 4068   023640  005237  002214                  INC     FATFLG                         ;ERROR COUNT
 4072   023644  010001                          MOV     R0,R1                  ;SAVE CONTENTS OF TSSR
 4073   023646                                  ERRHRD  ERRNO,WRTMSG,SFIMSG    ;WRITE CHARACTERISTISC FAILED
        023646  104456                                                          TRAP    C$ERHRD
        023650  000146                                                          .WORD   102
        023652  005054                                                          .WORD   WRTMSG
        023654  012144                                                          .WORD   SFIMSG
 4074   023656                          25$:    CKLOOP                         ;LOOP IF SELECTED
        023656  104406                                                          TRAP    C$CLP1
 4075   023660  016501  000002                  MOV     TSSR(R5),R1            ;GET THE TSSR
 4076   023664  010102                          MOV     R1,R2                  ;SET UP EXPECTED
 4077   023666  042702  000100                  BIC     #OFL,R2                ;OFF LINE SHOULD NOT BE SET
 4078   023672  020102                          CMP     R1,R2                  ;THEY SHOULD BE EQUAL
 4079   023674  001406                          BEQ     26$                    ;BR, IF OFL IS NOT SET
 4083   023676                                  ERRDF   ERRNO,T29OFL,EXPREC    ;DRIVE IS OFF LINE
        023676  104455                                                          TRAP    C$ERDF
        023700  000147                                                          .WORD   103
        023702  026432                                                          .WORD   T29OFL
        023704  015604                                                          .WORD   EXPREC
 4084   023706  004737  017312                  JSR     PC,CKDROP              ;TRY AND DROP DRIVE
 4085   023712  004737  011126          26$:    JSR     PC,REWIND              ;CALL TAPE REWIND COMMAND
 4086   023716  016501  000002                  MOV     TSSR(R5),R1            ;GET TSSR
 4087   023722  012702  000200                  MOV     #SSR,R2                ;SET UP EXPECTED TSSR
 4088   023726  103407                          BCS     30$                    ;BR, IF NO PROBLEM
 4089   023730  010004                          MOV     R0,R4                  ;PACKET ADDRESS SET UP
 4090   023732  005237  002214                  INC     FATFLG                         ;ERROR COUNT
 4094   023736                                  ERRHRD  ERRNO,T29RWN,PKTSSR    ;REWIND NOT ACCEPTED
        023736  104456                                                          TRAP    C$ERHRD
        023740  000150                                                          .WORD   104
        023742  030235                                                          .WORD   T29RWN
        023744  012156                                                          .WORD   PKTSSR
 4095   023746                          30$:    CKLOOP                         ;LOOP IF SELECTED
        023746  104406                                                          TRAP    C$CLP1
 4096   023750  013701  026300                  MOV     T29BFR+6,R1            ;PICK UP XSTO
 4097   023754  010102                          MOV     R1,R2                  ;SET UP EXPECTED
 4098   023756  052702  000002                  BIS     #BIT1,R2               ;SET BOT BIT IN EXPECTED
 4099   023762  020102                          CMP     R1,R2                  ;DOES EXP = REC'D
 4100   023764  001406                          BEQ     40$                    ;BR, IF EQUAL (OK)
 4101   023766  005237  002214                  INC     FATFLG                         ;ERROR COUNT
 4105   023772                                  ERRHRD  ERRNO,T29BOT,EXPREC    ;TAPE NOT AT BOT AFTER REWIND
        023772  104456                                                          TRAP    C$ERHRD
        023774  000151                                                          .WORD   105
        023776  027726                                                          .WORD   T29BOT
        024000  015604                                                          .WORD   EXPREC
 4106   024002                          40$:    CKLOOP                         ;LOOP IF SELECTED
        024002  104406                                                          TRAP    C$CLP1
 4107   024004  013737  003120  026372          MOV     FREE,T29RB             ;ADDRESS OF READ BUFFER
 4108   024012  012737  141011  026370          MOV     #141011,T29PK3         ;WRITE TAPE MARK RETRY,CVC=1,ACK COMMAND
 4109   024020  012704  026370                  MOV     #T29PK3,R4             ;SET UP R4 WITH PACKET ADDRESS
 4110   024024  010465  000000                  MOV     R4,TSDB(R5)            ;ISSUE COMMAND
 4111   024030  004737  016360                  JSR     PC,WAITF               ;WAIT FOR SSR TO SET
```

TEST 1: WRITE TAPE MARK RETRY

```
4112 024034  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4113 024040  012702  100206                MOV     #SSR!SC!BIT1!BIT2,R2    ;SET UP EXPECTED
4114 024044  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
4115 024046  001406                        BEQ     75$                     ;BR, IF OK
4116 024050  005237  002214                INC     FATFLG                          ;ERROR COUNT
4120 024054                                ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     024054  104456                                                                TRAP    C$ERHRD
     024056  000152                                                                .WORD   106
     024060  027512                                                                .WORD   T29WDE
     024062  012156                                                                .WORD   PKTSSR
4121 024064                        75$:    CKLOOP                          ;LOOP IF SELECTED
     024064  104406                                                                TRAP    C$CLP1
4122 024066  013701  026300                MOV     T29BFR+6,R1             ;GET XSTO STATUS WORD
4123 024072  010102                        MOV     R1,R2                   ;SET UP EXPECTED
4124 024074  052702  002000                BIS     #BIT10,R2               ;SET THE NEF BIT
4125 024100  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
4126 024102  001406                        BEQ     170$                    ;BR, IF EQUAL (GOOD)
4127 024104  005237  002214                INC     FATFLG                          ;ERROR COUNT
4131 024110                                ERRHRD  ERRNO,T29NEF,EXPREC     ;NEF SHOULD BE SET
     024110  104456                                                                TRAP    C$ERHRD
     024112  000153                                                                .WORD   107
     024114  026560                                                                .WORD   T29NEF
     024116  015604                                                                .WORD   EXPREC
4132 024120                        170$:
4133 024120  005103                        COM     R3                      ;RESET THE SWITCH
4134 024122  001273                        BNE     26$                     ;BR, IF FIRST TIME THROUGH HERE
4135 024124                                ENDSUB
     024124                                                                 L10037:
     024124  104403                                                                TRAP    C$ESUB
4136 024126  023727  002214  000017        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
4137 024134  103402                        BLO     999$                            ;BR, IF LESS THAN 25
4138 024136  004737  017312                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
4139 024142                        999$:
4140                               ;*
4141                               ;
4142                               ;TEST 1, SUBTEST 2
4143                               ;
4144                               ;VERIFIES THAT A WRITE TAPE MARK RETRY COMMAND ISSUED WHILE THE TAPE
4145                               ;IS POSITIONED BEFORE THE FIRST RECORD ON TAPE (BUT NOT AT BOT) RESULTS IN
4146                               ;TAPE STATUS ALERT TERMINATION, WITH THE REVERSE INTO BOT (RIB) STATUS BIT
4147                               ;SET.
4148                               ;
4149                               ;
4150                               ;
4151                               ;-
4152 024142                                BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     024142                                                                 T1.2:
     024142  104402                                                                TRAP    C$BSUB
4153 024144  004737  032076                JSR     PC,T29REST              ;SET COMMAND PACKET
4154 024150  004737  032170                JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
4155 024154  004737  032232                JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
4156 024160  004737  016104                JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
4157 024164  103407                        BCS     20$                     ;BR IF INIT WAS OK
4158 024166  005237  002214                INC     FATFLG                          ;ERROR COUNT
4162 024172  010001                        MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
4163 024174                                ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     024174  104455                                                                TRAP    C$ERDF
```

TEST 1: WRITE TAPE MARK RETRY

```
                024176  000154                                                          .WORD   108
                024200  003650                                                          .WORD   SFIERR
                024202  012144                                                          .WORD   SFIMSG
  4164          024204  013737  002174  026270  20$:    MOV     UNITN,T29DSW          ;SET UP UNIT NUMBER
  4165
  4166          024212  012704  026250                   MOV     #T29PACKET,R4         ;SUBROUTINE NEEDS PACKET ADDRESS
  4167          024216  004737  010742                   JSR     PC,WRTCHR             ;ISSUE WRITE CHARACTERISTICS
  4168          024222  103407                           BCS     25$                   ;BR, IF COMMAND ISSUED OK
  4169          024224  005237  002214                   INC     FATFLG                        ;ERROR COUNT
  4173          024230  010001                           MOV     R0,R1                 ;SAVE CONTENTS OF TSSR
  4174          024232                                   ERRHRD  ERRNO,WRTMSG,SFIMSG   ;WRITE CHARACTERISTISC FAILED
                024232  104456                                                          TRAP    C$ERHRD
                024234  000155                                                          .WORD   109
                024236  005054                                                          .WORD   WRTMSG
                024240  012144                                                          .WORD   SFIMSG
  4175          024242                   25$:    CKLOOP                                ;LOOP IF SELECTED
                024242  104406                                                          TRAP    C$CLP1
  4176          024244  004737  011126   26$:    JSR     PC,REWIND             ;CALL TAPE REWIND COMMAND
  4177          024250  016501  000002           MOV     TSSR(R5),R1           ;GET TSSR
  4178          024254  012702  000200           MOV     #SSR,R2               ;SET UP EXPECTED TSSR
  4179          024260  103407                   BCS     30$                   ;BR, IF NO PROBLEM
  4180          024262  010004                   MOV     R0,R4                 ;PACKET ADDRESS SET UP
  4181          024264  005237  002214           INC     FATFLG                        ;ERROR COUNT
  4185          024270                           ERRHRD  ERRNO,T29RWN,PKTSSR   ;REWIND NOT ACCEPTED
                024270  104456                                                          TRAP    C$ERHRD
                024272  000156                                                          .WORD   110
                024274  030235                                                          .WORD   T29RWN
                024276  012156                                                          .WORD   PKTSSR
  4186          024300                   30$:    CKLOOP                                ;LOOP IF SELECTED
                024300  104406                                                          TRAP    C$CLP1
  4187          024302  013701  026300           MOV     T29BFR+6,R1           ;PICK UP XSTO
  4188          024306  010102                   MOV     R1,R2                 ;SET UP EXPECTED
  4189          024310  052702  000002           BIS     #BIT1,R2              ;SET BOT BIT IN EXPECTED
  4190          024314  020102                   CMP     R1,R2                 ;DOES EXP = REC'D
  4191          024316  001406                   BEQ     40$                   ;BR, IF EQUAL (OK)
  4192          024320  005237  002214           INC     FATFLG                        ;ERROR COUNT
  4196          024324                           ERRHRD  ERRNO,T29BOT,EXPREC   ;TAPE NOT AT BOT AFTER REWIND
                024324  104456                                                          TRAP    C$ERHRD
                024326  000157                                                          .WORD   111
                024330  027726                                                          .WORD   T29BOT
                024332  015604                                                          .WORD   EXPREC
  4197          024334  012737  000001  026372   40$:    MOV     #1,T29RB              ;NUMBER OF RECORDS TO SPACE OVER
  4198          024342  012737  000400  026376           MOV     #256.,T29SZ           ;SET UP RECORD SIZE
  4199          024350  012737  14000*  026370           MOV     #140005,T29PK3        ;WRITE FORWARD,CVC=1,ACK COMMAND
  4200          024356  012704  026370                   MOV     #T29PK3,R4            ;SET UP R4 WITH PACKET ADDRESS
  4201          024362  010465  000000                   MOV     R4,TSDB(R5)           ;ISSUE COMMAND
  4202          024366  004737  016360                   JSR     PC,WAITF              ;WAIT FOR SSR TO SET
  4203          024372  016501  000002                   MOV     TSSR(R5),R1           ;GET TSSR CONTENTS
  4204          024376  012702  000200                   MOV     #SSR,R2               ;SET UP EXPECTED
  4205          024402  020102                           CMP     R1,R2                 ;ARE THEY EQUAL
  4206          024404  001420                           BEQ     75$                   ;BR, IF OK
  4207          024406  013703  026300                   MOV     T29BFR+6,R3           ;PICK UP XTSO
  4208          024412  032703  000004                   BIT     #4,R3                 ;IS UNIT WRITE-LOCKED?
  4209          024416  001405                           BEQ     41$                   ;NO,PROCEED WITH NORMAL ERROR
  4210          024420                                   ERRDF   ERRNO,T29WLK,SFIMSG   ;TAPE IS WRITE LOCKED
                024420  104455                                                          TRAP    C$ERDF
                024422  000157                                                          .WORD   111
```

TEST 1: WRITE TAPE MARK RETRY

```
        024424  027574                                                          .WORD   T29WLK
        024426  012144                                                          .WORD   SFIMSG
  4211  024430                          DOCLN                   ;DROP IT
        024430  104444                                                          TRAP    C$DCLN
  4212  024432  005237  002214    41$:  INC     FATFLG                    ;ERROR COUNT
  4216  024436                        ERRHRD  ERRNO,T29WRT,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        024436  104456                                                          TRAP    C$ERHRD
        024440  000160                                                          .WORD   112
        024442  027661                                                          .WORD   T29WRT
        024444  012156                                                          .WORD   PKTSSR
  4217  024446                        75$:    CKLOOP                  ;LOOP IF SELECTED
        024446  104406                                                          TRAP    C$CLP1
  4218  024450  012737  000001  026372        MOV     #1,T29RB        ;NUMBER OF RECORDS TO SPACE OVER
  4219  024456  012737  140410  026370        MOV     #140410,T29PK3  ;SET UP COMMAND IN APCKET                       ;SET
UP SPACE REVERSE
  4220  024464  012704  026370                MOV     #T29PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
  4221  024470  010465  000000                MOV     R4,TSDB(R5)     ;ISSUE COMMAND
  4222  024474  004737  016360                JSR     PC,WAITF        ;WAIT FOR SSR TO SET
  4223  024500  016501  000002                MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
  4224  024504  012702  000200                MOV     #SSR,R2         ;SET UP EXPECTED
  4225  024510  020102                        CMP     R1,R2           ;ARE THEY EQUAL
  4226  024512  001406                        BEQ     175$            ;BR. IF OK
  4227  024514  005237  002214                INC     FATFLG                    ;ERROR COUNT
  4231  024520                        ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
        024520  104456                                                          TRAP    C$ERHRD
        024522  000161                                                          .WORD   113
        024524  027512                                                          .WORD   T29WDE
        024526  012156                                                          .WORD   PKTSSR
  4232  024530                        175$:   CKLOOP                  ;LOOP IF SELECTED
        024530  104406                                                          TRAP    C$CLP1
  4233  024532  013737  003120  026372        MOV     FREE,T29RB      ;ADDRESS OF BUFFER
  4234  024540  012737  141011  026370        MOV     #141011,T29PK3  ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMD.
  4235  024546  012704  026370                MOV     #T29PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
  4236  024552  010465  000000                MOV     R4,TSDB(R5)     ;ISSUE COMMAND
  4237  024556  004737  016360                JSR     PC,WAITF        ;WAIT FOR SSR TO SET
  4238  024562  016501  000002                MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
  4239  024566  012702  100204                MOV     #SSR!SC!BIT2,R2 ;SET UP EXPECTED
  4240  024572  020102                        CMP     R1,R2           ;ARE THEY EQUAL
  4241  024574  001406                        BEQ     180$            ;BR. IF OK
  4242  024576  005237  002214                INC     FATFLG                    ;ERROR COUNT
  4246  024602                        ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
        024602  104456                                                          TRAP    C$ERHRD
        024604  000162                                                          .WORD   114
        024606  027512                                                          .WORD   T29WDE
        024610  012156                                                          .WORD   PKTSSR
  4247  024612                        180$:   CKLOOP                  ;LOOP IF SELECTED
        024612  104406                                                          TRAP    C$CLP1
  4248  024614  013701  026306                MOV     T298FR+14,R1    ;GET XST3 STATUS WORD
  4249  024620  010102                        MOV     R1,R2           ;SET UP EXPECTED
  4250  024622  052702  000001                BIS     #BIT0,R2        ;SET THE RIB BIT
  4251  024626  020102                        CMP     R1,R2           ;ARE THEY EQUAL
  4252  024630  001406                        BEQ     190$            ;BR. IF EQUAL (GOOD)
  4253  024632  005237  002214                INC     FAILFLG                   ;ERROR COUNT
  4257  024636                        ERRHRD  ERRNO,T29RIB,EXPREC     ;NEF SHOULD BE SET
        024636  104456                                                          TRAP    C$ERHRD
        024640  000163                                                          .WORD   115
        024642  031654                                                          .WORD   T29RIB
        024644  015604                                                          .WORD   EXPREC
```

TEST 1: WRITE TAPE MARK RETRY

```
                                190$:
                                        ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
                                                                                        L10040:
                                                                                                TRAP    C$ESUB
                                        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
                                        BLO     999$                            ;BR, IF LESS THAN 25
                                        JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
                                999$:
                                ;*
                                ;
                                ;TEST 1, SUBTEST 3
                                ;
                                ;VERIFIES THAT A WRITE TAPE MARK RETRY COMMAND TERMINATES
                                ;PROPERLY AND WRITES THE TAPE MARK ONTO TAPE (BY ISSUING A READ REVERSE
                                ;COMMAND AND CHECKING FOR TAPE STATUS ALERT TERMINATION AND TMK=1).
                                ;
                                ;-
                                        BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
                                                                                        T1.3:
                                                                                                TRAP    C$BSUB
                                        JSR     PC,T29REST              ;SET COMMAND PACKET
                                        JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
                                        JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
                                        MOV     #10000.,T29DLY          ;SET UP DELAY ROUTINE
                                10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
                                        BCS     20$                     ;BR IF INIT WAS OK
                                        DELAY   250                     ;DELAY ABOUT .25 SECONDS
                                                                                                MOV     #250,(PC)+
                                                                                                .WORD   0
                                                                                                MOV     L$DLY,(PC)+
                                                                                                .WORD   0
                                                                                                DEC     -6(PC)
                                                                                                BNE     .-4
                                                                                                DEC     -22(PC)
                                                                                                BNE     .-20
                                        DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
                                        BNE     10$                     ;BR, IF MORE DELAY TIME LEFT
                                        INC     FATFLG                          ;ERROR COUNT
                                        MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
                                        ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
                                                                                                TRAP    C$ERDF
                                                                                                .WORD   116
                                                                                                .WORD   SFIERR
                                                                                                .WORD   SFIMSG
                                20$:    MOV     UNITN,T29DSW            ;SET UP DRIVE NUMBER
                                        MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
                                        JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
                                        BCS     23$                     ;BR, IF COMMAND ISSUED OK
                                        INC     FATFLG                          ;ERROR COUNT
                                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
                                        ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
                                                                                                TRAP    C$ERHRD
                                                                                                .WORD   117
                                                                                                .WORD   WRTMSG
                                                                                                .WORD   SFIMSG
                                23$:    CKLOOP                          ;LOOP IF SELECTED
                                                                                                TRAP    C$CLP1
```

E9

SEQ 0108

TEST 1: WRITE TAPE MARK RETRY

```
4300 025032  004737  011126                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4301 025036  103411                          BCS     30$                     ;BR, IF NO PROBLEM
4302 025040  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR
4303 025044  010004                          MOV     R0,R4                   ;SAVE PACKET ADDRESS
4304 025046  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4308 025052                                  ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
     025052  104456                                                              TRAP    C$ERHRD
     025054  000166                                                              .WORD   118
     025056  030235                                                              .WORD   T29RWN
     025060  012156                                                              .WORD   PKTSSR
4309 025062                          30$:    CKLOOP                          ;LOOP IF SELECTED
     025062  104406                                                              TRAP    C$CLP1
4310 025064  013701  026300                  MOV     T29BFR+6,R1             ;PICK UP XSTO
4311 025070  010102                          MOV     R1,R2                   ;SET UP EXPECTED
4312 025072  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4313 025076  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
4314 025100  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
4315 025102  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4319 025106                                  ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     025106  104456                                                              TRAP    C$ERHRD
     025110  000167                                                              .WORD   119
     025112  027726                                                              .WORD   T29BOT
     025114  015604                                                              .WORD   EXPREC
4320 025116                          40$:    CKLOOP                          ;LOOP IF SELECTED
     025116  104406                                                              TRAP    C$CLP1
4321 025120  012737  140011  026370            MOV     #140011,T29PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
4322 025126  012704  026370                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4323 025132  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4324 025136  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4325 025142  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4326 025146  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
4327 025152  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4328 025154  001406                          BEQ     70$                     ;BR, IF OK
4329 025156  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4333 025162                                  ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE TAPE MARK
     025162  104456                                                              TRAP    C$ERHRD
     025164  000170                                                              .WORD   120
     025166  030627                                                              .WORD   T29WDC
     025170  012156                                                              .WORD   PKTSSR
4334 025172                          70$:    CKLOOP                          ;LOOP IF SELECTED
     025172  104406                                                              TRAP    C$CLP1
4335 025174  012703  000001          150$:   MOV     #1.,R3                  ;NUMBER OF RECORDS TO WRITE TM
4336 025200  012737  141011  026370          MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMMAND
4337 025206  012704  026370                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4338 025212  010465  000000          155$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4339 025216  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4340 025222  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
4341 025226  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
4342 025232  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
4343 025234  001406                          BEQ     165$                    ;BR, IF TERMINATION WAS GOOD
4344 025236  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4348 025242                                  ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     025242  104456                                                              TRAP    C$ERHRD
     025244  000171                                                              .WORD   121
     025246  030627                                                              .WORD   T29WDC
     025250  012156                                                              .WORD   PKTSSR
4349 025252                          165$:   CKLOOP                          ;LOOP IF SELECTED
```

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TEST 1: WRITE TAPE MARK RETRY

```
      025252  104406                                                          TRAP    C$CLP1
 4350 025254  012737  140401  026370          MOV     #140401,T29PK3          ;READ REVERSE,ACK, COMMAND
 4351 025262  013737  003120  026372          MOV     FREE,T29R8              ;NUMBER OF RECORDS TO SPACE BACK
 4352 025270  012704  026370                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 4353 025274  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 4354 025300  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 4355 025304  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 4356 025310  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
 4357 025314  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 4358 025316  001406                          BEQ     222$                    ;BR, IF OK
 4359 025320  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 4363 025324                                  ERRHRD  ERRNO,T29RDG,PKTSSR     ;TSSR INCORRECT AFTER SPACE CMD.
      025324  104456                                                                  TRAP    C$ERHRD
      025326  000172                                                                  .WORD   122
      025330  031573                                                                  .WORD   T29RDG
      025332  012156                                                                  .WORD   PKTSSR
 4364 025334                          222$:   CKLOOP                          ;LOOP IF SELECTED
      025334  104406                                                                  TRAP    C$CLP1
 4365 025336  013701  026300                  MOV     T29BFR+6,R1             ;PICK UP XSTO
 4366 025342  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 4367 025344  052702  100000                  BIS     #BIT15,R2               ;TMK SHOULD BE SET
 4368 025350  020102                          CMP     R1,R2                   ;IS TMK SET
 4369 025352  001406                          BEQ     226$                    ;BR, IF TMK WAS SET (GOOD)
 4370 025354  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 4374 025360                                  ERRHRD  ERRNO,T29RRN,EXPREC     ;TMK NOT SET AFTER READ REV
      025360  104456                                                                  TRAP    C$ERHRD
      025362  000173                                                                  .WORD   123
      025364  031754                                                                  .WORD   T29RRN
      025366  015604                                                                   WORD   EXPREC
 4375 025370                          226$:   CKLOOP                          ;LOOP IF SELECTED
      025370  104406                                                                  TRAP    C$CLP1
 4376 025372                                  ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
      025372                                                                        L10041:
      025372  104403                                                                  TRAP    C$ESUB
 4377 025374  023727  002214  000017                  CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
 4378 025402  103402                          BLO     999$                    ;BR, IF LESS THAN 25
 4379 025404  004737  017312                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
 4380 025410                          999$:
 4381                                 ;*
 4382                                 ;
 4383                                 ;TEST 1, SUBTEST 4
 4384                                 ;
 4385                                 ;VERIFIES THAT THE SPACE-REVERSE PORTION OF THE WRITE TAPE MARK
 4386                                 ;RETRY OPERATION IS PERFORMED BY REWINDING THE TAPE, ISSUING SEVERAL
 4387                                 ;WRITE TAPE MARK RETRY COMMANDS IN SUCCESSION, THEN ISSUING TWO SPACE
 4388                                 ;RECORDS REVERSE COMMANDS IN SUCCESSION.  THE SECOND SPACE RECORDS REVERSE
 4389                                 ;COMMAND SHOULD TERMINATE WITH REVERSE INTO BOT (RIB) STATUS SET.
 4390                                 ;
 4391                                 ;-
 4392 025410                                  BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      025410                                                                        T1.4:
      025410  104402                                                                  TRAP    C$BSUB
 4393 025412  004737  032076                  JSR     PC,T29REST              ;SET COMMAND PACKET
 4394 025416  004737  032170                  JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
 4395 025422  004737  032232                  JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
 4396 025426  012737  023420  026430          MOV     #10000.,T29DLY          ;SET UP DELAY ROUTINE
 4397 025434  004737  016104          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
```

TEST 1: WRITE TAPE MARK RETRY

```
4398 025440  103426                          BCS     20$                     ;BR IF INIT WAS OK
4399 025442                                  DELAY   250                     ;DELAY ABOUT .25 SECONDS
     025442  012727  000250                                                          MOV     #250.,(PC)+
     025446  000000                                                                  .WORD   0
     025450  013727  002116                                                          MOV     L$DLY,(PC)+
     025454  000000                                                                  .WORD   0
     025456  005367  177772                                                          DEC     -6(PC)
     025462  001375                                                                  BNE     .-4
     025464  005367  177756                                                          DEC     -22(PC)
     025470  001367                                                                  BNE     .-20
4400 025472  005337  026430                  DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
4401 025476  001356                          BNE     10$                     ;BR, IF MORE DELAY TIME LEFT
4402 025500  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4406 025504  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
4407 025506                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     025506  104455                                                                  TRAP    C$ERDF
     025510  000174                                                                  .WORD   124
     025512  003650                                                                  .WORD   SFIERR
     025514  012144                                                                  .WORD   SFIMSG
4408 025516  013737  002174  026270  20$:    MOV     UNITN,T29DSW            ;SET UP DRIVE NUMBER
4409 025524  012704  026250                  MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4410 025530  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4411 025534  103407                          BCS     23$                     ;BR, IF COMMAND ISSUED OK
4412 025536  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4416 025542  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4417 025544                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     025544  104456                                                                  TRAP    C$ERHRD
     025546  000175                                                                  .WORD   125
     025550  005054                                                                  .WORD   WRTMSG
     025552  012144                                                                  .WORD   SFIMSG
4418 025554                          23$:    CKLOOP                          ;LOOP IF SELECTED
     025554  104406                                                                  TRAP    C$CLP1
4419 025556  004737  011126                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4420 025562  103411                          BCS     30$                     ;BR, IF NO PROBLEM
4421 025564  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR
4422 025570  010004                          MOV     R0,R4                   ;SAVE PACKET ADDRESS
4423 025572  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4427 025576                                  ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
     025576  104456                                                                  TRAP    C$ERHRD
     025600  000176                                                                  .WORD   126
     025602  030235                                                                  .WORD   T29RWN
     025604  012156                                                                  .WORD   PKTSSR
4428 025606                          30$:    CKLOOP                          ;LOOP IF SELECTED
     025606  104406                                                                  TRAP    C$CLP1
4429 025610  013701  026300                  MOV     T29BFR+6,R1             ;PICK UP XSTO
4430 025614  010102                          MOV     R1,R2                   ;SET UP EXPECTED
4431 025616  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4432 025622  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
4433 025624  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
4434 025626  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4438 025632                                  ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     025632  104456                                                                  TRAP    C$ERHRD
     025634  000177                                                                  .WORD   127
     025636  027726                                                                  .WORD   T29BOT
     025640  015604                                                                  .WORD   EXPREC
4439 025642                          40$:    CKLOOP                          ;LOOP IF SELECTED
     025642  104406                                                                  TRAP    C$CLP1
```

TEST 1: WRITE TAPE MARK RETRY

```
4440 025644  012737  140011  026370          MOV     #140011,T29PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
4441 025652  012704  026370                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4442 025656  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4443 025662  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4444 025666  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4445 025672  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
4446 025676  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4447 025700  001406                          BEQ     70$                     ;BR, IF OK
4448 025702  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4452 025706                                  ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE TAPE MARK
     025706  104456                                                              TRAP    C$ERHRD
     025710  000200                                                              .WORD   128
     025712  030627                                                              .WORD   T29WDC
     025714  012156                                                              .WORD   PKTSSR
4453 025716                          70$:    CKLOOP                          ;LOOP IF SELECTED
     025716  104406                                                              TRAP    C$CLP1
4454 025720  012703  000012          150$:   MOV     #10.,R3                 ;NUMBER OF RECORDS TO WRITE TM
4455 025724  012737  000001  026372          MOV     #1,T29RB                ;SET UP PACKET
4456 025732  012737  141011  026370          MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMMAND
4457 025740  012704  026370                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4458 025744  010465  000000          155$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4459 025750  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4460 025754  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
4461 025760  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
4462 025764  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
4463 025766  001406                          BEQ     165$                    ;BR, IF TERMINATION WAS GOOD
4464 025770  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4468 025774                                  ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     025774  104456                                                              TRAP    C$ERHRD
     025776  000201                                                              .WORD   129
     026000  030627                                                              .WORD   T29WDC
     026002  012156                                                              .WORD   PKTSSR
4469 026004                          165$:   CKLOOP                          ;LOOP IF SELECTED
     026004  104406                                                              TRAP    C$CLP1
4470 026006  005303                          DEC     R3                      ;BUMP COUNTER DOWN
4471 026010  001355                          BNE     155$                    ;BR, IF LESS THAN 10 TAPE MARKS
4472 026012  012737  140410  026370          MOV     #140410,T29PK3          ;SPACE REVERSE,ACK,CVC=1, COMMAND
4473 026020  012737  000001  026372          MOV     #1,T29RB                ;NUMBER OF RECORDS TO SPACE BACK
4474 026026  012704  026370                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4475 026032  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4476 026036  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4477 026042  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4478 026046  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
4479 026052  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4480 026054  001406                          BEQ     222$                    ;BR, IF OK
4481 026056  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4485 026062                                  ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER SPACE CMD.
     026062  104456                                                              TRAP    C$ERHRD
     026064  000202                                                              .WORD   130
     026066  027512                                                              .WORD   T29WDE
     026070  012156                                                              .WORD   PKTSSR
4486 026072                          222$:   CKLOOP                          ;LOOP IF SELECTED
     026072  104406                                                              TRAP    C$CLP1
4487 026074  012737  100410  026370          MOV     #100410,T29PK3          ;SPACE REVERSE,ACK, COMMAND
4488 026102  012737  000005  026372          MOV     #5,T29RB                ;NUMBER OF RECORDS TO SPACE BACK
4489 026110  012704  026370                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4490 026114  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
```

TEST 1: WRITE TAPE MARK RETRY

```
4491 026120  004737  016360                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4492 026124  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4493 026130  012702  100204                MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
4494 026134  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
4495 026136  001406                        BEQ     260$                    ;BR, IF OK
4496 026140  005237  002214                INC     FATFLG                          ;ERROR COUNT
4500 026144                                ERRHRD  ERRNO,T29RDG,PKTSSR     ;TSSR INCORRECT AFTER SPACE REV CMD.
     026144  104456                                                                TRAP    C$ERHRD
     026146  000203                                                                .WORD   131
     026150  031573                                                                .WORD   T29RDG
     026152  012156                                                                .WORD   PKTSSR
4501 026154                        260$:   CKLOOP                          ;LOOP IF SELECTED
     026154  104406                                                                TRAP    C$CLP1
4502 026156  013701  026306                MOV     T29BFR+14,R1            ;PICK UP XST3
4503 026162  010102                        MOV     R1,R2                   ;SET UP EXPECTED
4504 026164  052702  000001                BIS     #BIT0,R2                ;RIB SHOULD BE SET
4505 026170  020102                        CMP     R1,R2                   ;IS RIB SET
4506 026172  001406                        BEQ     270$                    ;BR, IF RIB WAS SET (GOOD)
4507 026174  005237  002214                INC     FATFLG                          ;ERROR COUNT
4511 026200                                ERRHRD  ERRNO,T29RIB,EXPREC     ;TMK NOT SET AFTER READ REV
     026200  104456                                                                TRAP    C$ERHRD
     026202  000204                                                                .WORD   132
     026204  031654                                                                .WORD   T29RIB
     026206  015604                                                                .WORD   EXPREC
4512 026210                        270$:   CKLOOP                          ;LOOP IF SELECTED
     026210  104406                                                                TRAP    C$CLP1
4513 026212                        330$:   CKLOOP                          ;LOOP IF SELECTED
     026212  104406                                                                TRAP    C$CLP1
4514 026214                                ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     026214                                                                     L10042:
     026214  104403                                                                TRAP    C$ESUB
4515 026216  023727  002214  000017        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
4516 026224  103402                        BLO     999$                            ;BR, IF LESS THAN 25
4517 026226  004737  017312                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
4518 026232                        999$:
4519                               ;
4520                               ;
4521                               ;
4522 026232  004737  016566                JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
4523 026236  103002                        BCC     163$                    ;BR, IF NO LOOP REQUIRED
4524 026240  000137  023512                JMP     T29LOOP                 ;EXECUTE AGAIN
4525 026244                        163$:   EXIT    TST                     ;ALL DONE THIS TEST
     026244  104432                                                                TRAP    C$EXIT
     026246  004014                                                                .WORD   L10036-.
4526                               ;*
4527                               ;LOCAL STORAGE FOR THIS TEST
4528                               ;-
4532 026250                        T29PACKET:                              ;COMMAND PACKET FOR TEST
4533 026250  014004                        .WORD   14004                   ;WRITE CHARACTERISTICS COMMAND, WITH CVC=1, ACK
4534 026252  026260                        .WORD   T29DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
4535 026254  000000                        .WORD   0
4536 026256  000012                        .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
4537 026260                        T29DATA:                                ;CHARACTERISTICS DATA BLOCK
4538 026260  026272                        .WORD   T29BFR                  ;ADDRESS OF MESSAGE BUFFER
4539 026262  000000                        .WORD   0
4540 026264  000024                        .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
4541 026266  000000                        .WORD   0
```

J9


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TEST  1: WRITE TAPE MARK RETRY

4542 026270  000000                  T29DSW: .WORD   0                       ;SELECT DRIVE 0
4543 026272                          T298FR: .BLKW   25.                     ;MESSAGE BUFFER
4544                                 ;
4545                                 ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
4546                                 ;
4548         026360                          .=<.+10>&177770
4550 026360                          T29PK2:
4551 026360  100006                          .WORD   100006                  ;WRITE SUB SYS MEM COMMAND, AND ACK
4552 026362  026400                          .WORD   T298F2                  ;ADDRESS OF SELECT BLOCK DATA
4553 026364  000000                          .WORD   0
4554 026366  000006                          .WORD   6.                      ;SIZE OF DATA PACKET
4555
4559 026370                          T29PK3:
4560 026370  140005                          .WORD   140005                  ;WRITE TAPE MARK RETRY COMMAND, CVC=1 AND ACK
4561 026372                          T29RB:
4562 026372  003120                  T29WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
4563 026374  000000                          .WORD   0
4564 026376  000000                  T29SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
4565                                         .EVEN
4566                                 ;
4567                                 ;
4568                                 ;
4569 026400                          T298F2:
4570 026400     010                  T298S0: .BYTE   10                      ;BSEL0 AREA
4571 026401     200                  T298S1: .BYTE   200                     ;BSEL1 AREA
4572 026402  000000                  T29S2:  .WORD   0                       ;SEL 2 AREA
4573 026404  000000                  T29S3:  .WORD   0                       ;DATA AREA
4574                                 ;
4575                                 ;
4576                                         .EVEN
4577                                 ;TAPE MOTION PACKET COMMAND VALUES
4578
4579 026406  140001                  T29RN:  .WORD   140001                  ;READ DATA
4580 026410  140401                  T29WDR: .WORD   140401                  ;READ DATA REVERSE
4581 026412  141001                  T29CON: .WORD   141001                  ;READ PREVIOUS OPP=0
4582 026414  161001                          .WORD   161001                  ;READ PREVIOUS OPP=1
4583 026416  141401                          .WORD   141401                  ;WRITE TAPE MARK RETRY NEXT OPP=0
4584 026420  161401                          .WORD   161401                  ;WRITE TAPE MARK RETRY NEXT OPP=1
4585 026422  177777                          .WORD   177777                  ;END OF DATA
4586
4587                                 ;
4588 026424  000000                  T29CNT: .WORD   0                       ;TAPE RECORD COUNTER STORAGE AREA
4589
4590 026426  000000                  T29RSZ: .WORD   0                       ;RECORD STORAGE SIZE  AREA
4591 026430  000000                  T29DLY: .WORD                   ;DELAY COUNTER STORAGE AREA
4592                                 ;+
4593                                 ;LOCAL TEXT MESSAGES FOR TEST
4594                                 ;-
4595
4596 026432     104     162     151 T29OFL: .ASCIZ  'Drive is OFFLINE'
4597 026453     124     141     160 T29WNG: .ASCIZ  'Tape Position Incorrect After WRITE TAPE MARK RETRY Previous (OPP=1)'
4598 026560     127     122     111 T29NEF: .ASCIZ  'WRITE TAPE MARK RETRY, At BOT, Failed To Set NEF (XST0)'
4599 026650     124     123     123 T29RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
4600 026717     127     122     111 T29RRF: .ASCIZ  'WRITE TAPE MARK RETRY Previous (Space Reverse, Read Forward) Command Failed
'
4601 027033     127     122     111 T29RRG: .ASCIZ  'WRITE TAPE MARK RETRY Previous (Read Forward, Space Reverse) Command Failed
'
4602 027147     120     117     123 T29SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct
4603 027231     122     111     102 T29LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
```

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TEST  1: WRITE TAPE MARK RETRY

 4604 027301      124      123      123  T29WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
 4605 027356      111      154      154  T29LOG: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
 4606 027437      127      122      111  T29SSR: .ASCIZ  'WRITE TAPE MARK RETRY COMMAND Not Accepted'
 4607 027512      124      123      123  T29WDE: .ASCIZ  'TSSR Not Correct After SPACE REVERSE DATA Command'
 4608 027574      052      052      052  T29WLK: .ASCIZ  '*****TAPE IS WRITE-LOCKED AND WILL CAUSE ERRORS*****'
 4609 027661      124      123      123  T29WRT: .ASCIZ  'TSSR Not Correct After WRITE Command'
 4610 027726      124      141      160  T29BOT: .ASCIZ  'Tape Not At BOT After REWIND Command'
 4611 027773      104      141      164  T29DTA: .ASCIZ  'Data Written To Tape Not Equal To Data Read From Tape'
 4612 030061      127      122      111  T29EOT: .ASCIZ  'WRITE TAPE MARK RETRY DATA OVER EOT GAVE NO TAPE STATUS ALERT'
 4613 030157      124      123      123  T29TM:  .ASCIZ  'TSSR Not Correct After SPACE REVERSE Into BOT'
 4614 030235      122      145      167  T29RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
 4615 030304      122      101      115  T29RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
 4616 030357      124      123      123  T29AM3: .ASCIZ  'TSSR Init. Failed After WRITE TAPE MARK RETRY COMMAND'
 4617 030445      104      162      151  T29DF7: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
 4618 030520      124      123      123  T29WDD: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK RETRY DATA Command, SWB Bit Set'
 4619 030627      124      123      123  T29WDC: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK RETRY DATA Command'
 4620 030721      103      126      103  T29VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
 4621 030774      124      123      102  T29BA:  .ASCIZ  'TSBA Not Correct After WRITE TAPE MARK RETRY DATA Command'
 4622 031066      127      122      111  T29WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
 4623 031155      122      145      141  T29LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XSTO'
 4624 031237      122      145      141  T29LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
 4625 031321      122      145      163  T29PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
 4626 031407      122      145      141  T29TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
 4627 031475      104      141      164  T29NEQ: .ASCIZ  'Data WRITE TAPE MARK RETRY From Tape Not Correct, After SWB=1'
 4628 031573      124      123      123  T29RDG: .ASCIZ  'TSSR Incorrect After READ REVERSE Into Tape Mark'
 4629 031654      127      122      111  T29RIB: .ASCIZ  'WRITE TAPE MARK RETRY At First Record, Failed To Set RIB (XST3)'
 4630 031754      124      115      113  T29RRN: .ASCIZ  'TMK (XSTO) Failed To Set After READ REVERSE Into Tape Mark'
 4631 032047      127      162      151  TST29ID:        .ASCIZ  'Write Tape Mark Retry'
 4632                                                     .EVEN
 4633                                                 ;*
 4634                                                 ;
 4635                                                 ;ROUTINE TO RESTORE COMMAND PACKET TO START UP (DEFAULT) VALUES
 4636                                                 ;WRITE SUBSYSTEM MEMORY COMMAND
 4637                                                 ;
 4638                                                 ;-
 4639
 4640 032076                                         T29REST:
 4641 032076                                                 SAVREG                          ;SAVE THE REGISTERS
 4642 032102  012701  026250                                   MOV     #T29PACKET,R1       ;START OF THE PACKET
 4643 032106  012721  140004                                   MOV     #140004,(R1)+       ;WRITE SUBSYSTEM MEM. WITH ACK, CVC=1
 4644 032112  012721  026260                                   MOV     #T29DATA,(R1)+      ;ADDRESS OF CHARAISTICS DATA BLOCK
 4645 032116  005021                                           CLR     (R1)+               ;EXTENDED ADDRESS
 4646 032120  012721  000012                                   MOV     #10.,(R1)+          ;SIZE OF DATA BLOCK IN BYTES
 4647 032124  012721  026272                                   MOV     #T29BFR,(R1)+       ;ADDRESS OF MESSAGE BUFFER
 4648 032130  005021                                           CLR     (R1)+
 4649 032132  012721  000024                                   MOV     #20.,(R1)+          ;LENGTH OF MESSAGE BUFFER
 4650 032136  005021                                           CLR     (R1)+
 4651 032140  012711  000000                                   MOV     #0,(R1)             ;SELECT DRIVE ZERO (0)
 4652 032144  012702  000030                                   MOV     #24.,R2             ;NUMBER OF LOCATIONS TO BE CLEARED
 4653 032150  012762  177777  026272  64$:                    MOV     #177777,T29BFR(R2)  ;ALL ONES TO MESSAGE BUFFER
 4654 032156  005742                                           TST     -(R2)               ;NEXT LOCATION
 4655 032160  020227  000000                                   CMP     R2,#0               ;CHECK FOR END OF LOOP
 4656 032164  001371                                           BNE     64$                 ;KEEP GOING UNTIL DONE
 4657 032166  000207                                           RTS     PC                  ;RETURN
 4658
 4659 032170                                         T29RT2:
 4660 032170                                                 SAVREG                          ;SAVE THE REGISTERS
```

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TEST  1: WRITE TAPE MARK RETRY

 4661 032174  012701  026360                MOV     #T29PK2,R1              ;START OF THE PACKET
 4662 032200  012721  140006                MOV     #140006.,(R1)+          ;WRITE SUBSYSTEM MEM. WITH ACK,CVC=1,
 4663 032204  012721  026400                MOV     #T29BF2,(R1)+           ;ADDRESS OF DATA BLOCK
 4664 032210  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
 4665 032212  012721  000006                MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
 4666 032216  005021                        CLR     (R1)+
 4667 032220  012701  026400                MOV     #T29BF2,R1              ;POINT TO DATA SEL AREA
 4668 032224  005021                        CLR     (R1)+
 4669 032226  005011                        CLR     (R1)
 4670 032230  000207                        RTS     PC                      ;RETURN
 4671 032232                        T29RT3:
 4672 032232                                SAVREG                          ;SAVE THE REGISTERS
 4673 032236  012701  026370                MOV     #T29PK3,R1              ;START OF THE PACKET
 4674 032242  012721  000000                MOV     #0,(R1)+                ;WRITE SUBSYSTEM MEM. WITH ACK,
 4675 032246  012721  000000                MOV     #0,(R1)+                ;ADDRESS OF DATA BLOCK
 4676 032252  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
 4677 032254  012711  000000                MOV     #0,(R1)         ;SIZE OF DATA BLOCK IN BYTES
 4678 032260  000207                        RTS     PC                      ;RETURN
 4679 032262                                ENDTST
      032262                                                                  L10036:
      032262  104401                                                                TRAP    C$ETST
 4680                                       .SBTTL  TEST  2: SKIP TAPE MARKS
 4681                               ;+
 4682                               ;
 4683                               ;THIS TEST VERIFIES PROPER OPERATION OF THE SKIP TAPE MARKS
 4684                               ;FORWARD AND SKIP TAPE MARKS REVERSE COMMANDS. PROPER OPERATION
 4685                               ;UNDER CONTROL OF ALL COMBINATIONS OF THE ENABLE SKIP TAPE MARKS
 4686                               ;STOP (ESS) AND ENABLE TAPE MARKS STOP OFF BOT (ENB) BITS SPECIFIED
 4687                               ;BY THE WRITE CHARACTERISTICS COMMAND. THE TEST CONSISTS OF THE
 4688                               ;FOLLOWING SUBTESTS (FOR EACH SUBTEST, THE TAPE IS FIRST WRITTEN
 4689                               ;WITH AN APPROPRIATE SERIES OF DATA RECORDS AND/OR TAPE MARKS
 4690                               ;AND/OR DOUBLE TAPE MARKS.
 4691                               ;
 4692                               ;
 4693                               ;THE TEST CONSISTS OF THE FOLLOWING 11 SUBTESTS
 4694                               ;
 4695                               ;
 4696                               ;
 4697                               ;-
 4698 032264                                BGNTST
      032264                                                                  T2::
 4699 032264  012737  006356  002172        MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
 4704 032272  012700  041161                MOV     #TST30ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
 4705 032276  004737  016620                JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
 4706 032302  012737  000005  002210        MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
 4707                               ;+
 4708                               ;
 4709                               ;TEST 2, SUBTEST 1
 4710                               ;
 4711                               ;
 4712                               ;VERIFIES THAT A SKIP TAPE MARKS FORWARD COMMAND WITH
 4713                               ;A TAPE MARK COUNT OF 1 OPERATES OPERATES PROPERLY. THE TAPE
 4714                               ;IS FIRST REWOUND, THEN WRITTEN WITH SEVERAL "FILES";
 4715                               ;EACH FILE CONSISTS OF A NUMBER OF DATA RECORDS
 4716                               ;FOLLOWED BY A TAPE MARK. THE FINAL FILE IS
 4717                               ;TERMINATED BY A DOUBLE TAPE MARK. EACH DATA RECORD
 4718                               ;CONTAINS A FILE NUMBER AND THE RECORD NUMBER WITHIN
```

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

032310                                  T30LOOP:
032310                                          BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
                                                                                        T2.1:
032310  104402                                                                          TRAP    C$BSUB
032312  004737  041202                          JSR     PC,T30REST              ;SET COMMAND PACKET
032316  005037  036604                          CLR     T30FCN                  ;CLEAR FILE COUNTER
032322  004737  041274                          JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
032326  004737  041336                          JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
032332  012737  176750  036606                  MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
032340  004737  016104                  10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
032344  103426                                  BCS     20$                     ;BR IF INIT WAS OK
032346                                          DELAY   250                     ;DELAY ROUTINE CALL
032346  012727  000250                                                                  MOV     #250.,(PC)+
032352  000000                                                                          .WORD   0
032354  013727  002116                                                                  MOV     L$DLY,(PC)+
032360  000000                                                                          .WORD   0
032362  005367  177772                                                                  DEC     -6(PC)
032366  001375                                                                          BNE     .-4
032370  005367  177756                                                                  DEC     -22(PC)
032374  001367                                                                          BNE     .-20
032376  005337  036606                          DEC     T30DLY                  ;BUMP COUNTER
032402  001356                                  BNE     10$                     ;BR, IF MORE COUNTING TO DO
032404  005237  002214                          INC     FATFLG                          ;ERROR COUNT
032410  010001                                  MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
032412                                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
032412  104455                                                                          TRAP    C$ERDF
032414  000311                                                                          .WORD   201
032416  003650                                                                          .WORD   SFIERR
032420  012144                                                                          .WORD   SFIMSG
032422                                  20$:
032422  013737  002174  036450                  MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
032430  012704  036430                          MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

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

032434  004737  010742                          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
032440  103407                                  BCS     23$                     ;BR, IF COMMAND ISSUED OK
032442  005237  002214                          INC     FATFLG                          ;ERROR COUNT
```

N9

TEST 2: SKIP TAPE MARKS

```
4768 032446  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4769 032450                                 ERRHRD  ERRNO,WRTMSG,SFIMSC     ;WRITE CHARACTERISTISC FAILED
     032450  104456                                                                 TRAP    C$ERHRD
     032452  000312                                                                 .WORD   202
     032454  005054                                                                 .WORD   WRTMSG
     032456  012144                                                                 .WORD   SFIMSG
4770 032460                         23$:    CKLOOP                          ;LOOP IF SELECTED
     032460  104406                                                                 TRAP    C$CLP1
4771
4772                                ;*************************************************************
4773                                ;
4774                                ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
4775                                ;
4776                                ;*************************************************************
4777
4778 032462  004737  011126                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4779 032466  103411                        BCS     30$                     ;BR, IF NO PROBLEM
4780 032470  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
4781 032472  016501  000002                MOV     TSSR(R5),R1             ;GET STATUS REGISTER
4782 032476  005237  002214                INC     FATFLG                          ;ERROR COUNT
4786 032502                                 ERRHRD  ERRNO,T3ORWN,PKTSSR     ;REWIND NOT ACCEPTED
     032502  104456                                                                 TRAP    C$ERHRD
     032504  000313                                                                 .WORD   203
     032506  040170                                                                 .WORD   T3ORWN
     032510  012156                                                                 .WORD   PKTSSR
4787 032512                         30$:    CKLOOP                          ;LOOP IF SELECTED
     032512  104406                                                                 TRAP    C$CLP1
4788
4789                                ;*************************************************************
4790                                ;
4791                                ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
4792                                ;
4793                                ;*************************************************************
4794
4795 032514  013701  036460                MOV     T30BFR+6,R1             ;PICK UP XST0
4796 032520  010102                        MOV     R1,R2                   ;SET UP EXPECTED
4797 032522  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4798 032526  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
4799 032530  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
4800 032532  005237  002214                INC     FATFLG                          ;ERROR COUNT
4804 032536                                 ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     032536  104456                                                                 TRAP    C$ERHRD
     032540  000314                                                                 .WORD   204
     032542  037771                                                                 .WORD   T30BOT
     032544  015604                                                                 .WORD   EXPREC
4805 032546                         40$:    CKLOOP                          ;LOOP IF SELECTED
     032546  104406                                                                 TRAP    C$CLP1
4806 032550  012737  000001  036604        MOV     #1.,T3OFCN              ;SET "FILE" COUNTER AT 1 DECIMAL
4807 032556  012703  000001        64$:    MOV     #1,R3                   ;ONE RECORD  PER "FILE"
4808 032562  013737  003120  036552  65$:  MOV     FREE,T30WB              ;SET UP PACKETS'S WRITE BUFFER
4809 032570  012737  003720  036556        MOV     #2000.,T30SZ            ;SET RECORD SIZE AT 2000 BYTES
4810
4811                                ;*************************************************************
4812                                ;
4813                                ;WRITE DATA,ACK,CVC=1 COMMAND
4814                                ;
4815                                ;*************************************************************
```

TEST 2: SKIP TAPE MARKS

```
4816
4817 032576  012737  140005  036550          MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
4818 032604  012704  036550                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4819 032610  013702  036604                  MOV     T30FCN,R2               ;GET FILE COUNTER
4820 032614  000302                          SWAB    R2                      ;MOVE TO UPPER BYTE
4821 032616  010301                          MOV     R3,R1                   ;GET RECORD COUNTER
4822 032620  060201                          ADD     R2,R1                   ;FILE COUNTER IN UPPER, RECORD # LOW
4823 032622  010177  150272                  MOV     R1,@FREE                ;MOV TO OUT PUT BUFFER
4824 032626  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4825 032632  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4826 032636  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4827 032642  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
4828 032646  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4829 032650  001406                          BEQ     70$                     ;BR, IF OK
4830 032652  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4834 032656                                  ERRHRD  ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     032656  104456                                                                  TRAP    C$ERHRD
     032660  000315                                                                  .WORD   205
     032662  037120                                                                  .WORD   T30WDD
     032664  012156                                                                  .WORD   PKTSSR
4835 032666                          70$:    CKLOOP                          ;LOOP IF SELECTED
     032666  104406                                                                  TRAP    C$CLP1
4836 032670  005203                          INC     R3                      ;COUNT THE RECORD COUNTER DOWN
4837 032672  020327  000021                  CMP     R3,#21                  ;AT 20 YET
4838 032676  001331                          BNE     65$                     ;BR, IF NOT AT 20 RECORDS WRITTEN
4839
4840                                 ;*************************************************************
4841                                 ;
4842                                 ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
4843                                 ;
4844                                 ;*************************************************************
4845
4846 032700  012737  141011  036550          MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
4847 032706  012704  036550                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4848 032712  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4849 032716  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4850 032722  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
4851 032726  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
4852 032732  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
4853 032734  001406                          BEQ     160$                    ;BR, IF TERMINATION WAS GOOD
4854 032736  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4858 032742                                  ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     032742  104456                                                                  TRAP    C$ERHRD
     032744  000316                                                                  .WORD   206
     032746  040312                                                                  .WORD   T30WDC
     032750  012156                                                                  .WORD   PKTSSR
4859 032752                          160$:   CKLOOP                          ;LOOP IF SELECTED
     032752  104406                                                                  TRAP    C$CLP1
4860 032754  005237  036604                  INC     T30FCN                  ;COUNT THE "FILE" COUNTER DOWN
4861 032760  023727  036604  000006          CMP     T30FCN,#6               ;WRITE 5 FILE TO TAPE
4862 032766  001273                          BNE     64$                     ;BR, IF NOT AT 5 FILES WRITTEN
4863
4864                                 ;*************************************************************
4865                                 ;
4866                                 ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
4867                                 ;
4868                                 ;*************************************************************
```

TEST 2: SKIP TAPE MARKS

```
4869
4870 032770  012737  141011  036550          MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
4871 032776  012704  036550                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4872 033002  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4873 033006  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4874 033012  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
4875 033016  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
4876 033022  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
4877 033024  001406                          BEQ     165$                    ;BR, IF TERMINATION WAS GOOD
4878 033026  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4882 033032                                  ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     033032  104456                                                              TRAP    C$ERHRD
     033034  000317                                                              .WORD   207
     033036  040312                                                              .WORD   T30WDC
     033040  012156                                                              .WORD   PKTSSR
4883 033042                          165$:   CKLOOP                          ;LOOP IF SELECTED
     033042  104406                                                              TRAP    C$CLP1
4884
4885                                 ;*************************************************************
4886                                 ;
4887                                 ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
4888                                 ;
4889                                 ;*************************************************************
4890
4891 033044  004737  011126                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4892 033050  103411                          BCS     170$                    ;BR, IF NO PROBLEM
4893 033052  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
4894 033054  016501  000002                  MOV     TSSP(R5),R1             ;GET STATUS REGISTER
4895 033060  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4899 033064                                  ERRHRD  ERRNO,T30RUN,PKTSSR     ;REWIND NOT ACCEPTED
     033064  104456                                                              TRAP    C$ERHRD
     033066  000320                                                              .WORD   208
     033070  040170                                                              .WORD   T30RUN
     033072  012156                                                              .WORD   PKTSSR
4900 033074                          170$:   CKLOOP                          ;LOOP IF SELECTED
     033074  104406                                                              TRAP    C$CLP1
4901
4902                                 ;*************************************************************
4903                                 ;
4904                                 ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
4905                                 ;
4906                                 ;*************************************************************
4907
4908 033076  013701  036460                  MOV     T30BFR+6,R1             ;PICK UP XST0
4909 033102  010102                          MOV     R1,R2                   ;SET UP EXPECTED
4910 033104  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4911 033110  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
4912 033112  001406                          BEQ     180$                    ;BR, IF EQUAL (OK)
4913 033114  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4917 033120                                  ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     033120  104456                                                              TRAP    C$ERHRD
     033122  000321                                                              .WORD   209
     033124  037771                                                              .WORD   T30BOT
     033126  015604                                                              .WORD   EXPREC
4918 033130                          180$:   CKLOOP                          ;LOOP IF SELECTED
     033130  104406                                                              TRAP    C$CLP1
4919 033132  012703  036566                  MOV     #T30IMV,R3              ;SET UP POINTER TO COMMAND TABLE
```

TEST 2: SKIP TAPE MARKS

```
4920 033136  013737  002174  036450          MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
4921 033144  011337  036446          182$:   MOV     (R3),T30ETM             ;GET NEXT COMMAND
4922 033150  012704  036430                  MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4923
4924                                ;*************************************************************
4925                                ;
4926                                ;ISSUE WRITE CHARACTERISTICS COMMAND
4927                                ;
4928                                ;*************************************************************
4929
4930 033154  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4931 033160  103407                          BCS     188$                    ;BR, IF COMMAND ISSUED OK
4932 033162  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4936 033166  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4937 033170                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     033170  104456                                                                  TRAP    C$ERHRD
     033172  000322                                                                  .WORD   210
     033174  005054                                                                  .WORD   WRTMSG
     033176  012144                                                                  .WORD   SFIMSG
4938 033200                          188$:   CKLOOP                          ;LOOP IF SELECTED
     033200  104406                                                                  TRAP    C$CLP1
4939
4940                                ;*************************************************************
4941                                ;
4942                                ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
4943                                ;
4944                                ;*************************************************************
4945
4946 033202  012737  141010  036550          MOV     #141010,T30PK3          ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
4947 033210  012737  000001  036552          MOV     #1,T30RB                ;SET UP NUMBER TO SKIP
4948 033216  012704  036550                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4949 033222  010465  000000          189$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4950 033226  012737  176750  036606          MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
4951 033234  004737  016360          190$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4952 033240  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
4953 033244  032701  000200                  BIT     #SSR,R1                 ;IS SSR SET YET
4954 033250  001017                          BNE     191$                    ;BR, IF SSR IS SET
4955 033252                                  DELAY   250                     ;CALL DELAY ROUTINE
     033252  012727  000250                                                          MOV     #250.,(PC)+
     033256  000000                                                                  .WORD   0
     033260  013727  002116                                                          MOV     L$DLY,(PC)+
     033264  000000                                                                  .WORD   0
     033266  005367  177772                                                          DEC     -6(PC)
     033272  001375                                                                  BNE     .-4
     033274  005367  177756                                                          DEC     -22(PC)
     033300  001367                                                                  BNE     .-20
4956 033302  005337  036606                  DEC     T30DLY                  ;BUMP DELAY ROUTINE
4957 033306  001352                          BNE     190$                    ;BR, IF MORE DELAY TO GO
4958 033310  012702  000200          191$:   MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
4959 033314  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
4960 033316  001406                          BEQ     192$                    ;BR, IF TERMINATION WAS GOOD
4961 033320  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4965 033324                                  ERRHRD  ERRNO,T30SKM,PKTSSR     ;TSSR NOT CORRECT AFTER SKIP TAPE M.
     033324  104456                                                                  TRAP    C$ERHRD
     033326  000323                                                                  .WORD   211
     033330  037044                                                                  .WORD   T30SKM
     033332  012156                                                                  .WORD   PKTSSR
```

```
 4966 033334                          192$:   CKLOOP                          ;LOOP IF SELECTED
      033334  104406                                                                  TRAP    C$CLP1
 4967
 4968                                 ;*************************************************************
 4969                                 ;
 4970                                 ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
 4971                                 ;
 4972                                 ;*************************************************************
 4973
 4974 033336  013701  036460                  MOV     T30BFR+6,R1             ;PICK UP XST0
 4975 033342  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 4976 033344  052702  100000                  BIS     #BIT15,R2               ;SET TMK BIT IN EXPECTED
 4977 033350  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
 4978 033352  001406                          BEQ     195$                    ;BR, IF EQUAL (OK)
 4979 033354  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 4983 033360                                  ERRHRD  ERRNO,T30TMK,EXPREC     ;TMK NOT SET AFTER WRT TAPE MARK
      033360  104456                                                                  TRAP    C$ERHRD
      033362  000324                                                                  .WORD   212
      033364  040444                                                                  .WORD   T30TMK
      033366  015604                                                                  .WORD   EXPREC
 4984 033370                          195$:   CKLOOP                          ;LOOP IF SELECTED
      033370  104406                                                                  TRAP    C$CLP1
 4985 033372  012700  177777                  MOV     #177777,R0              ;VALUE TO WRITTEN TO MEMORY
 4986 033376  004737  017532                  JSR     PC,FILLMEM              ;FILL MEM WITH ALL ONES
 4987 033402  013737  003120  036552          MOV     FREE,T30RB              ;STARTING READ BUFFER ADDRESS
 4988
 4989                                 ;*************************************************************
 4990                                 ;
 4991                                 ;READ FORWARD,ACK,CVC=1 COMMAND
 4992                                 ;
 4993                                 ;*************************************************************
 4994
 4995 033410  012737  140001  036550          MOV     #140001,T30PK3          ;READ FORWARD,ACK,CVC=1 COMMAND
 4996 033416  012704  036550                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 4997 033422  012737  003720  036556          MOV     #2000.,T30SZ            ;SET UP RECORD SIZE IN PACKET
 4998 033430  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 4999 033434  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 5000 033440  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 5001 033444  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 5002 033450  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 5003 033452  001406                          BEQ     200$                    ;BR, IF OK
 5004 033454  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 5008 033460                                  ERRHRD  ERRNO,T30RDF,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      033460  104456                                                                  TRAP    C$ERHRD
      033462  000325                                                                  .WORD   213
      033464  037343                                                                  .WORD   T30RDF
      033466  012156                                                                  .WORD   PKTSSR
 5009 033470                          200$:   CKLOOP                          ;LOOP IF SELECTED
      033470  104406                                                                  TRAP    C$CLP1
 5010 033472  017701  147422                  MOV     @FREE,R1                ;FIRST LOC IN READ BUFFER
 5011 033476  012702  177777                  MOV     #177777,R2              ;EXPECTED IF NO DATA TRANS.
 5012 033502  020102                          CMP     R1,R2                   ;DID ANY DATA GET TRANSFERRED
 5013 033504  001006                          BNE     220$                    ;BR, IF NO DATA TRANS (GOOD)
 5014 033506  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 5018 033512                                  ERRHRD  ERRNO,T30DTR,EXPREC     ;DATA TRANSFERRED ON READ TAPE MARK
      033512  104456                                                                  TRAP    C$ERHRD
      033514  000326                                                                  .WORD   214
```

F10

TEST 2: SKIP TAPE MARKS

```
                033516  041020                                                                  .WORD   T30DTR
                033520  015604                                                                  .WORD   EXPREC
   5019         033522                          220$:   CKLOOP                          ;LOOP IF SELECTED
                033522  104406                                                                  TRAP    C$CLP1
   5020         033524  012702  001001                  MOV     #1001,R2                ;SET UP RECORD NUMBER EXPECTED (FILE 2)
   5021         033530  017701  147364                  MOV     @FREE,R1                ;GET INFO FROM BUFFER
   5022         033534  020201                          CMP     R2,R1                   ;ARE THEY EQUAL
   5023         033536  001406                          BEQ     228$                    ;BR, IF EQUAL (OK)
   5024         033540  005237  002214                  INC     FATFLG                          ;ERROR COUNT
   5028         033544                                  ERRHRD  ERRNO,T30PTB,EXPREC     ;RECORD POSITION WAS NOT CORRECT
                033544  104456                                                                  TRAP    C$ERHRD
                033546  000327                                                                  .WORD   215
                033550  037172                                                                  .WORD   T30PTB
                033552  015604                                                                  .WORD   EXPREC
   5029         033554                          228$:   CKLOOP                          ;LOOP IF SELECTED
                033554  104406                                                                  TRAP    C$CLP1
   5030
   5031                                         ;*************************************************************
   5032                                         ;
   5033                                         ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
   5034                                         ;
   5035                                         ;*************************************************************
   5036
   5037         033556  004737  011126                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
   5038         033562  103411                          BCS     230$                    ;BR, IF NO PROBLEM
   5039         033564  010004                          MOV     R0,R4                   ;SAVE PACKET ADDRESS
   5040         033566  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR STATUS
   5041         033572  005237  002214                  INC     FATFLG                          ;ERROR COUNT
   5045         033576                                  ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
                033576  104456                                                                  TRAP    C$ERHRD
                033600  000330                                                                  .WORD   216
                033602  040170                                                                  .WORD   T30RWN
                033604  012156                                                                  .WORD   PKTSSR
   5046         033606                          230$:   CKLOOP                          ;LOOP IF SELECTED
                033606  104406                                                                  TRAP    C$CLP1
   5047
   5048                                         ;*************************************************************
   5049                                         ;
   5050                                         ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
   5051                                         ;
   5052                                         ;*************************************************************
   5053
   5054         033610  013701  036460                  MOV     T30BFR+6,R1             ;PICK UP XSTO
   5055         033614  010102                          MOV     R1,R2                   ;SET UP EXPECTED
   5056         033616  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
   5057         033622  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
   5058         033624  001406                          BEQ     240$                    ;BR, IF EQUAL (OK)
   5059         033626  005237  002214                  INC     FATFLG                          ;ERROR COUNT
   5063         033632                                  ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                033632  104456                                                                  TRAP    C$ERHRD
                033634  000331                                                                  .WORD   217
                033636  037771                                                                  .WORD   T30BOT
                033640  015604                                                                  .WORD   EXPREC
   5064         033642                          240$:   CKLOOP                          ;LOOP IF SELECTED
                033642  104406                                                                  TRAP    C$CLP1
   5065         033644  005723                          TST     (R3)+                   ;POINT TO NEXT POSITION
   5066         033646  011301                          MOV     (R3),R1                 ;GET NEXT COMMAND ETC.
```

TEST 2: SKIP TAPE MARKS

```
 5067 033650  020127  177777                CMP     R1,#177777              ;END OF TABLE MARKER
 5068 033654  001402                        BEQ     330$                    ;BR, IF AT END OF TABLE
 5069 033656  000137  033144                JMP     182$                    ;JUMP TO MORE COMMANDS TO DO
 5070 033662                        330$:   CKLOOP                          ;LOOP IF SELECTED
      033662  104406                                                                  TRAP    C$CLP1
 5071 033664                                ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
      033664                                                                      L10044:
      033664  104403                                                                TRAP    C$ESUB
 5072 033666  023727  002214  000017        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
 5073 033674  103402                        BLO     999$                            ;BR, IF LESS THAN 25
 5074 033676  004737  017312                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
 5075 033702                        999$:
 5076                               ;*
 5077                               ;
 5078                               ;TEST 2, SUBTEST 2
 5079                               ;
 5080                               ;VERIFIES THAT SKIP TAPE MARKS COMMANDS WITH A TAPE
 5081                               ;MARK COUNT GREATER THAN 1 OPERATE PROPERLY. COUNTS
 5082                               ;OF 2,3,8,64,256, AND 512 ARE TESTED. THE
 5083                               ;TESTING SEQUENCE IS SIMILAR TO THAT USED IN SUBTEST 1.
 5084                               ;
 5085                               ;
 5086                               ;
 5087                               ;-
 5088
 5089 033702                                BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      033702                                                                      T2.2:
      033702  104402                                                                TRAP    C$BSUB
 5090 033704  004737  041202                JSR     PC,T30REST              ;SET COMMAND PACKET
 5091 033710  005037  036604                CLR     T30FCN                  ;CLEAR FILE COUNTER
 5092 033714  004737  041274                JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
 5093 033720  004737  041336                JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
 5094 033724  012737  176750  036606        MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
 5095 033732  004737  016104        10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 5096 033736  103426                        BCS     20$                     ;BR IF INIT WAS OK
 5097 033740                                DELAY   250                     ;DELAY ROUTINE CALL
      033740  012727  000250                                                        MOV     #250.,(PC)+
      033744  000000                                                                .WORD   C
      033746  013727  002116                                                        MOV     L$DLY,(PC)+
      033752  000000                                                                .WORD   0
      033754  005367  177772                                                        DEC     -6(PC)
      033760  001375                                                                BNE     .-4
      033762  005367  177756                                                        DEC     -22(PC)
      033766  001367                                                                BNE     .-20
 5098 033770  005337  036606                DEC     T30DLY                  ;BUMP COUNTER
 5099 033774  001356                        BNE     10$                     ;BR, IF MORE COUNTING TO DO
 5100 033776  005237  002214                INC     FATFLG                          ;ERROR COUNT
 5104 034002  010001                        MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 5105 034004                                ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      034004  104455                                                                TRAP    C$ERDF
      034006  000332                                                                .WORD   218
      034010  003650                                                                .WORD   SFIERR
      034012  012144                                                                .WORD   SFIMSG
 5106 034014                        20$:
 5107 034014  013737  002174  036450        MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
 5108 034022  012704  036430                MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 5109
```

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

034026  004737  010742                        JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
034032  103407                                BCS     23$                     ;BR, IF COMMAND ISSUED OK
034034  005237  002214                        INC     FATFLG                          ;ERROR COUNT
034040  010001                                MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
034042                                        ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
034042  104456                                                                        TRAP    C$ERHRD
034044  000333                                                                        .WORD   219
034046  005054                                                                        .WORD   WRTMSG
034050  012144                                                                        .WORD   SFIMSG
034052                                  23$:    CKLOOP                          ;LOOP IF SELECTED
034052  104406                                                                        TRAP    C$CLP1

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

034054  004737  011126                        JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
034060  103411                                BCS     30$                     ;BR, IF NO PROBLEM
034062  010004                                MOV     R0,R4                   ;GET PACKET ADDRESS
034064  016501  000002                        MOV     TSSR(R5),R1             ;GET STATUS REGISTER
034070  005237  002214                        INC     FATFLG                          ;ERROR COUNT
034074                                        ERRHRD  ERRNO,T3ORWN,PKTSSR     ;REWIND NOT ACCEPTED
034074  104456                                                                        TRAP    C$ERHRD
034076  000334                                                                        .WORD   220
034100  040170                                                                        .WORD   T3ORWN
034102  012156                                                                        .WORD   PKTSSR
034104                                  30$:    CKLOOP                          ;LOOP IF SELECTED
034104  104406                                                                        TRAP    C$CLP1

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

034106  013701  036460                        MOV     T30BFR+6,R1             ;PICK UP XST0
034112  010102                                MOV     R1,R2                   ;SET UP EXPECTED
034114  052702  000002                        BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
034120  020102                                CMP     R1,R2                   ;DOES EXP = REC'D
034122  001406                                BEQ     40$                     ;BR, IF EQUAL (OK)
034124  005237  002214                        INC     FATFLG                          ;ERROR COUNT
034130                                        ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
034130  104456                                                                        TRAP    C$ERHRD
034132  000335                                                                        .WORD   221
034134  037771                                                                        .WORD   T30BOT
034136  015604                                                                        .WORD   EXPREC
034140                                  40$:    CKLOOP                          ;LOOP IF SELECTED
034140  104406                                                                        TRAP    C$CLP1
034142  012737  000001  036604                MOV     #1.,T30FCN              ;SET "FILE" COUNTER AT 1 DECIMAL
```

TEST 2: SKIP TAPE MARKS

```
 5161 034150  012703  000001            64$:    MOV     #1,R3                   ;ONE RECORD  PER "FILE"
 5162 034154  013737  003120  036552    65$:    MOV     FREE,T30WB              ;SET UP PACKETS'S WRITE BUFFER
 5163 034162  012737  000024  036556            MOV     #20.,T30SZ              ;SET RECORD SIZE AT 2000 BYTES
 5164
 5165                                    ;*************************************************************
 5166                                    ;
 5167                                    ;WRITE DATA,ACK,CVC=1 COMMAND
 5168                                    ;
 5169                                    ;*************************************************************
 5170
 5171 034170  012737  140005  036550            MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
 5172 034176  012704  036550                    MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 5173 034202  013702  036604                    MOV     T30FCN,R2               ;GET FILE COUNTER
 5174 034206  000302                            SWAB    R2                      ;MOVE TO UPPER BYTE
 5175 034210  010301                            MOV     R3,R1                   ;GET RECORD COUNTER
 5176 034212  060201                            ADD     R2,R1                   ;FILE COUNTER IN UPPER, RECORD # LOW
 5177 034214  010177  146700                    MOV     R1,@FREE                ;MOV TO OUT PUT BUFFER
 5178 034220  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 5179 034224  004737  016360                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 5180 034230  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 5181 034234  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
 5182 034240  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
 5183 034242  001406                            BEQ     70$                     ;BR, IF OK
 5184 034244  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 5188 034250                                    ERRHRD  ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      034250  104456                                                                    TRAP    C$ERHRD
      034252  000336                                                                    .WORD   222
      034254  037120                                                                    .WORD   T30WDD
      034256  012156                                                                    .WORD   PKTSSR
 5189 034260                            70$:    CKLOOP                          ;LOOP IF SELECTED
      034260  104406                                                                    TRAP    C$CLP1
 5190 034262  005203                            INC     R3                      ;COUNT THE RECORD COUNTER DOWN
 5191 034264  020327  000021                    CMP     R3,#21                  ;AT 20 YET
 5192 034270  001331                            BNE     65$                     ;BR, IF NOT AT 20 RECORDS WRITTEN
 5193
 5194                                    ;*************************************************************
 5195                                    ;
 5196                                    ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
 5197                                    ;
 5198                                    ;*************************************************************
 5199
 5200 034272  012737  141011  036550            MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
 5201 034300  012704  036550                    MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 5202 034304  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 5203 034310  004737  016360                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 5204 034314  016501  000002                    MOV     TSSR(R5),R1             ;PICK UP TSSR
 5205 034320  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
 5206 034324  020102                            CMP     R1,R2                   ;WAS STATUS GOOD
 5207 034326  001406                            BEQ     160$                    ;BR, IF TERMINATION WAS GOOD
 5208 034330  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 5212 034334                                    ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
      034334  104456                                                                    TRAP    C$ERHRD
      034336  000337                                                                    .WORD   223
      034340  040312                                                                    .WORD   T30WDC
      034342  012156                                                                    .WORD   PKTSSR
 5213 034344                            160$:   CKLOOP                          ;LOOP IF SELECTED
      034344  104406                                                                    TRAP    C$CLP1
```

```
5214 034346  005237  036604                 INC     T30FCN                  ;COUNT THE "FILE" COUNTER DOWN
5215 034352  023727  036604  000031         CMP     T30FCN,#25.             ;WRITE 25 FILES TO TAPE
5216 034360  001273                         BNE     64$                     ;BR, IF NOT AT 25 FILES WRITTEN
5217
5218                                ;*************************************************************
5219                                ;
5220                                ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
5221                                ;
5222                                ;*************************************************************
5223
5224 034362  012737  141011  036550         MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
5225 034370  012704  036550                 MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5226 034374  010465  000000                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5227 034400  004737  016360                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5228 034404  016501  000002                 MOV     TSSR(R5),R1             ;PICK UP TSSR
5229 034410  012702  000200                 MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
5230 034414  020102                         CMP     R1,R2                   ;WAS STATUS GOOD
5231 034416  001406                         BEQ     165$                    ;BR  IF TERMINATION WAS GOOD
5232 034420  005237  002214                 INC     FATFLG                          ;ERROR COUNT
5236 034424                                 ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     034424  104456                                                                 TRAP    C$ERHRD
     034426  000340                                                                 .WORD   224
     034430  040312                                                                 .WORD   T30WDC
     034432  012156                                                                 .WORD   PKTSSR
5237 034434                         165$:   CKLOOP                          ;LOOP IF SELECTED
     034434  104406                                                                 TRAP    C$CLP1
5238
5239                                ;*************************************************************
5240                                ;
5241                                ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
5242                                ;
5243                                ;*************************************************************
5244
5245 034436  004737  011126                 JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5246 034442  103411                         BCS     170$                    ;BR, IF NO PROBLEM
5247 034444  010004                         MOV     R0,R4                   ;GET PACKET ADDRESS
5248 034446  016501  000002                 MOV     TSSR(R5),R1             ;GET STATUS REGISTER
5249 034452  005237  002214                 INC     FATFLG                          ;ERROR COUNT
5253 034456                                 ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     034456  104456                                                                 TRAP    C$ERHRD
     034460  000341                                                                 .WORD   225
     034462  040170                                                                 .WORD   T30RWN
     034464  012156                                                                 .WORD   PKTSSR
5254 034466                         170$:   CKLOOP                          ;LOOP IF SELECTED
     034466  104406                                                                 TRAP    C$CLP1
5255
5256                                ;*************************************************************
5257                                ;
5258                                ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
5259                                ;
5260                                ;*************************************************************
5261
5262 034470  013701  036460                 MOV     T30BFR+6,R1             ;PICK UP XST0
5263 034474  010102                         MOV     R1,R2                   ;SET UP EXPECTED
5264 034476  052702  000002                 BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5265 034502  020102                         CMP     R1,R2                   ;DOES EXP = REC'D
5266 034504  001406                         BEQ     180$                    ;BR, IF EQUAL (OK)
```

TEST 2: SKIP TAPE MARKS

```
 5267 034506  005237  002214                 INC     FATFLG                          ;ERROR COUNT
 5271 034512                                 ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      034512  104456                                                                TRAP    C$ERHRD
      034514  000342                                                                .WORD   226
      034516  037771                                                                .WORD   T30BOT
      034520  015604                                                                .WORD   EXPREC
 5272 034522                         180$:   CKLOOP                          ;LOOP IF SELECTED
      034522  104406                                                                TRAP    C$CLP1
 5273 034524  012737  000002  036604         MOV     #2,T30FCN               ;SET TO NUMBER OF SKIP "FILES"
 5274 034532  012703  036566                 MOV     #T30IMV,R3              ;SET UP POINTER TO COMMAND TABLE
 5275 034536  013737  002174  036450         MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
 5276 034544  011337  036446         182$:   MOV     (R3),T30ETM             ;GET NEXT COMMAND
 5277 034550  012704  036430                 MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 5278
 5279                                 ;*************************************************************
 5280                                 ;
 5281                                 ;ISSUE WRITE CHARACTERISTICS COMMAND
 5282                                 ;
 5283                                 ;*************************************************************
 5284
 5285 034554  004737  010742                 JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 5286 034560  103407                         BCS     188$                    ;BR. IF COMMAND ISSUED OK
 5287 034562  005237  002214                 INC     FATFLG                          ;ERROR COUNT
 5291 034566  010001                         MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 5292 034570                                 ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      034570  104456                                                                TRAP    C$ERHRD
      034572  000343                                                                .WORD   227
      034574  005054                                                                .WORD   WRTMSG
      034576  012144                                                                .WORD   SFIMSG
 5293 034600                         188$:   CKLOOP                          ;LOOP IF SELECTED
      034600  104406                                                                TRAP    C$CLP1
 5294
 5295                                 ;*************************************************************
 5296                                 ;
 5297                                 ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
 5298                                 ;
 5299                                 ;*************************************************************
 5300
 5301 034602  012737  141010  036550         MOV     #141010,T30PK3          ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
 5302 034610  013737  036604  036552         MOV     T30FCN,T30R8            ;SET UP NUMBER TO SKIP
 5303 034616  012704  036550                 MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 5304 034622  010465  000000         189$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 5305 034626  012737  176750  036606         MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
 5306 034634  004737  016360         190$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 5307 034640  016501  000002                 MOV     TSSR(R5),R1             ;PICK UP TSSR
 5308 034644  032701  000200                 BIT     #SSR,R1                 ;IS SSR SET YET
 5309 034650  001017                         BNE     191$                    ;BR. IF SSR IS SET
 5310 034652                                 DELAY   250                     ;CALL DELAY ROUTINE
      034652  012727  000250                                                                MOV     #250.,(PC)+
      034656  000000                                                                        .WORD   0
      034660  013727  002116                                                                MOV     L$DLY,(PC)+
      034664  000000                                                                        .WORD   0
      034666  005367  177772                                                                DEC     -6(PC)
      034672  001375                                                                        BNE     .-4
      034674  005367  177756                                                                DEC     -22(PC)
      034700  001367                                                                        BNE     .-20
 5311 034702  005337  036606                 DEC     T30DLY                  ;BUMP DELAY ROUTINE
```

TEST 2: SKIP TAPE MARKS

```
5312 034706  001352                        BNE     190$                    ;BR, IF MORE DELAY TO GO
5313 034710  012702  000200          191$:  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
5314 034714  020102                        CMP     R1,R2                   ;WAS STATUS GOOD
5315 034716  001406                        BEQ     192$                    ;BR, IF TERMINATION WAS GOOD
5316 034720  005237  002214                INC     FATFLG                          ;ERROR COUNT
5320 034724                                ERRHRD  ERRNO,T30SKM,PKTSSR     ;TSSR NOT CORRECT AFTER SKIP TAPE M.
     034724  104456                                                               TRAP    C$ERHRD
     034726  000344                                                               .WORD   228
     034730  037044                                                               .WORD   T30SKM
     034732  012156                                                               .WORD   PKTSSR
5321 034734                          192$:  CKLOOP                          ;LOOP IF SELECTED
     034734  104406                                                               TRAP    C$CLP1
5322
5323                                 ;*************************************************************
5324                                 ;
5325                                 ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
5326                                 ;
5327                                 ;*************************************************************
5328
5329 034736  013701  036460                MOV     T30BFR+6,R1             ;PICK UP XSTO
5330 034742  010102                        MOV     R1,R2                   ;SET UP EXPECTED
5331 034744  052702  100000                BIS     #BIT15,R2               ;SET TMK BIT IN EXPECTED
5332 034750  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
5333 034752  001406                        BEQ     195$                    ;BR, IF EQUAL (OK)
5334 034754  005237  002214                INC     FATFLG                          ;ERROR COUNT
5338 034760                                ERRHRD  ERRNO,T30TMK,EXPREC     ;TMK NOT SET AFTER WRT TAPE MARK
     034760  104456                                                               TRAP    C$ERHRD
     034762  000345                                                               .WORD   229
     034764  040444                                                               .WORD   T30TMK
     034766  015604                                                               .WORD   EXPREC
5339 034770                          195$:  CKLOOP                          ;LOOP IF SELECTED
     034770  104406                                                               TRAP    C$CLP1
5340 034772  012700  177777                MOV     #177777,R0              ;VALUE TO WRITTEN TO MEMORY
5341 034776  004737  017532                JSR     PC,FILLMEM              ;FILL MEM WITH ALL ONES
5342 035002  013737  003120  036552        MOV     FREE,T30RB              ;STARTING READ BUFFER ADDRESS
5343
5344                                 ;*************************************************************
5345                                 ;
5346                                 ;READ FORWARD,ACK,CVC=1 COMMAND
5347                                 ;
5348                                 ;*************************************************************
5349
5350 035010  012737  140001  036550        MOV     #140001,T30PK3          ;READ FORWARD,ACK,CVC=1 COMMAND
5351 035016  012704  036550                MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5352 035022  012737  000024  036556        MOV     #20.,T30SZ              ;SET UP RECORD SIZE IN PACKET
5353 035030  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5354 035034  004737  016360                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5355 035040  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5356 035044  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
535' 035050  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
5358 035052  001406                        BEQ     200$                    ;BR, IF OK
5359 035054  005237  002214                INC     FATFLG                          ;ERROR COUNT
5363 035060                                ERRHRD  ERRNO,T30RDF,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     035060  104456                                                               TRAP    C$ERHRD
     035062  000346                                                               .WORD   230
     035064  037343                                                               .WORD   T30RDF
     035066  012156                                                               .WORD   PKTSSR
```

TEST 2: SKIP TAPE MARKS

```
 5364 035070                        200$:   CKLOOP                          ;LOOP IF SELECTED
      035070  104406                                                                TRAP    C$CLP1
 5365 035072  017701  146022                MOV     @FREE,R1                ;FIRST LOC IN READ BUFFER
 5366 035076  012702  177777                MOV     #177777,R2              ;EXPECTED IF NO DATA TRANS.
 5367 035102  020102                        CMP     R1,R2                   ;DID ANY DATA GET TRANSFERRED
 5368 035104  001006                        BNE     220$                    ;BR. IF NO DATA TRANS (GOOD)
 5369 035106  005237  002214                INC     FATFLG                          ;ERROR COUNT
 5373 035112                                ERRHRD  ERRNO,T30DTR,EXPREC     ;DATA TRANSFERRED ON READ TAPE MARK
      035112  104456                                                                TRAP    C$ERHRD
      035114  000347                                                                .WORD   231
      035116  041020                                                                .WORD   T30DTR
      035120  015604                                                                .WORD   EXPREC
 5374 035122                        220$:   CKLOOP                          ;LOOP IF SELECTED
      035122  104406                                                                TRAP    C$CLP1
 5375 035124  013702  036604                MOV     T30FCN,R2               ;GET NUMBER OF SKIPS
 5376 035130  005202                        INC     R2                      ;SET TO CORRECT FILE VALUE
 5377 035132  000302                        SWAB    R2                      ;SWAP BYTE HALVES
 5378 035134  052702  000001                BIS     #P*TO,R2                ;SET FOR RECORD #1
 5379 035140  017701  145754                MOV     @F*EE,R1                ;GET INFO FROM BUFFER
 5380 035144  020201                        CMP     R2,R1                   ;ARE THEY EQUAL
 5381 035146  001406                        BEQ     228$                    ;BR. IF EQUAL (OK)
 5382 035150  005237  002214                INC     FATFLG                          ;ERROR COUNT
 5386 035154                                ERRHRD  ERRNO,T30PTB,EXPREC     ;RECORD POSITION WAS NOT CORRECT
      035154  104456                                                                TRAP    C$ERHRD
      035156  000350                                                                .WORD   232
      035160  037172                                                                .WORD   T30PTB
      035162  015604                                                                .WORD   EXPREC
 5387 035164                        228$:   CKLOOP                          ;LOOP IF SELECTED
      035164  104406                                                                TRAP    C$CLP1
 5388
 5389                               ;***************************************************************
 5390                               ;
 5391                               ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
 5392                               ;
 5393                               ;***************************************************************
 5394
 5395 035166  004737  011126                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 5396 035172  103411                        BCS     230$                    ;BR. IF NO PROBLEM
 5397 035174  010004                        MOV     R0,R4                   ;SAVE PACKET ADDRESS
 5398 035176  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR STATUS
 5399 035202  005237  002214                INC     FATFLG                          ;ERROR COUNT
 5403 035206                                ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
      035206  104456                                                                TRAP    C$ERHRD
      035210  000351                                                                .WORD   233
      035212  040170                                                                .WORD   T30RWN
      035214  012156                                                                .WORD   PKTSSR
 5404 035216                        230$:   CKLOOP                          ;LOOP IF SELECTED
      035216  104406                                                                TRAP    C$CLP1
 5405
 5406                               ;***************************************************************
 5407                               ;
 5408                               ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
 5409                               ;
 5410                               ;***************************************************************
 5411
 5412 035220  013701  036460                MOV     T30BFR+6,R1             ;PICK UP XST0
 5413 035224  010102                        MOV     R1,R2                   ;SET UP EXPECTED
```

TEST 2: SKIP TAPE MARKS

```
5414 035226  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5415 035232  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
5416 035234  001406                        BEQ     240$                    ;BR, IF EQUAL (OK)
5417 035236  005237  002214                INC     FATFLG                          ;ERROR COUNT
5421 035242                                ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     035242  104456                                                               TRAP    C$ERHRD
     035244  000352                                                               .WORD   234
     035246  037771                                                               .WORD   T30BOT
     035250  015604                                                               .WORD   EXPREC
5422 035252                        240$:   CKLOOP                          ;LOOP IF SELECTED
     035252  104406                                                               TRAP    C$CLP1
5423 035254  005723                        TST     (R3)+                   ;POINT TO NEXT POSITION
5424 035256  011301                        MOV     (R3),R1                 ;GET NEXT COMMAND ETC.
5425 035260  020127  177777                CMP     R1,#177777              ;END OF TABLE MARKER
5426 035264  001410                        BEQ     330$                    ;BR, IF AT END OF TABLE
5427 035266  013701  036604                MOV     T30FCN,R1               ;GET NUMBER OF SKIPS
5428 035272  000241                        CLC                             ;CLEAR THE CARRY BIT
5429 035274  006101                        ROL     R1                      ;PUSH OVER ONE POSITION
5430 035276  010137  036604                MOV     R1,T30FCN               ;PUT BACK IN COUNTER
5431 035302  000137  034544                JMP     182$                    ;JUMP TO MORE COMMANDS TO DO
5432 035306                        330$:   CKLOOP                          ;LOOP IF SELECTED
     035306  104406                                                               TRAP    C$CLP1
5433 035310                                ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     035310                                                                     L10045:
     035310  104403                                                               TRAP    C$ESUB
5434 035312  023727  002214  000017                CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
5435 035320  103402                                BLO     999$                            ;BR, IF LESS THAN 25
5436 035322  004737  017312                        JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
5437 035326                        999$:
5438                               ;*
5439                               ;
5440                               ;TEST 2, SUBTEST 3
5441                               ;
5442                               ;
5443                               ;VERIFIES THAT A SKIP TAPE MARKS REVERSE COMMAND
5444                               ;ISSUED WHILE THE TAPE IS POSITIONED AT BOT CAUSES
5445                               ;FUNCTION REJECT TERMINATION, WITH THE NON-EXECUTABLE
5446                               ;FUNCTION (NEF) ERROR BIT SET.
5447                               ;
5448                               ;
5449                               ;
5450                               ;
5451                               ;
5452                               ;-
5453 035326                                BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     035326                                                                     T2.3:
     035326  104402                                                               TRAP    C$BSUB
5454 035330  004737  041202                JSR     PC,T30REST              ;SET COMMAND PACKET
5455 035334  005037  036604                CLR     T30FCN                  ;CLEAR FILE COUNTER
5456 035340  004737  041274                JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
5457 035344  004737  041336                JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
5458 035350  012737  176750  036606        MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
5459 035356  004737  016104        10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
5460 035362  103426                        BCS     20$                     ;BR IF INIT WAS OK
5461 035364                                DELAY   250                     ;DELAY ROUTINE CALL
     035364  012727  000250                                                       MOV     #250.,(PC)+
     035370  000000                                                               .WORD   0
```

TEST 2: SKIP TAPE MARKS

```
        035372  013727  002116                                                  MOV     L$DLY,(PC)+
        035376  000000                                                          .WORD   0
        035400  005367  177772                                                  DEC     -6(PC)
        035404  001375                                                          BNE     .-4
        035406  005367  177756                                                  DEC     -22(PC)
        035412  001367                                                          BNE     .-20
  5462  035414  005337  036606          DEC     T30DLY                  ;BUMP COUNTER
  5463  035420  001356                  BNE     10$                     ;BR, IF MORE COUNTING TO DO
  5464  035422  005237  002214          INC     FATFLG                          ;ERROR COUNT
  5468  035426  010001                  MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
  5469  035430                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
        035430  104455                                                          TRAP    C$ERDF
        035432  000353                                                          .WORD   235
        035434  003650                                                          .WORD   SFIERR
        035436  012144                                                          .WORD   SFIMSG
  5470  035440                  20$:
  5471  035440  013737  002174  036450          MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
  5472  035446  012704  036430                  MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
  5473
  5474                          ;*************************************************************
  5475                          ;
  5476                          ;ISSUE WRITE CHARACTERISTICS COMMAND
  5477                          ;
  5478                          ;*************************************************************
  5479
  5480  035452  004737  010742          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
  5481  035456  103407                  BCS     23$                     ;BR, IF COMMAND ISSUED OK
  5482  035460  005237  002214          INC     FATFLG                          ;ERROR COUNT
  5486  035464  010001                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
  5487  035466                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        035466  104456                                                          TRAP    C$ERHRD
        035470  000354                                                          .WORD   236
        035472  005054                                                          .WORD   WRTMSG
        035474  012144                                                          .WORD   SFIMSG
  5488  035476                  23$:    CKLOOP                          ;LOOP IF SELECTED
        035476  104406                                                          TRAP    C$CLP1
  5489
  5490                          ;*************************************************************
  5491                          ;
  5492                          ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
  5493                          ;
  5494                          ;*************************************************************
  5495
  5496  035500  004737  011126          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
  5497  035504  103411                  BCS     30$                     ;BR, IF NO PROBLEM
  5498  035506  010004                  MOV     R0,R4                   ;GET PACKET ADDRESS
  5499  035510  016501  000002          MOV     TSSR(R5),R1             ;GET STATUS REGISTER
  5500  035514  005237  002214          INC     FATFLG                          ;ERROR COUNT
  5504  035520                          ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
        035520  104456                                                          TRAP    C$ERHRD
        035522  000355                                                          .WORD   237
        035524  040170                                                          .WORD   T30RWN
        035526  012156                                                          .WORD   PKTSSR
  5505  035530                  30$:    CKLOOP                          ;LOOP IF SELECTED
        035530  104406                                                          TRAP    C$CLP1
  5506
  5507                          ;*************************************************************
```

```
5508                                    ;
5509                                    ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
5510                                    ;
5511                                    ;*************************************************************
5512
5513 035532  013701  036460                    MOV     T30BFR+6,R1             ;PICK UP XST0
5514 035536  010102                            MOV     R1,R2                   ;SET UP EXPECTED
5515 035540  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5516 035544  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
5517 035546  001406                            BEQ     40$                     ;BR, IF EQUAL (OK)
5518 035550  005237  002214                    INC     FATFLG                          ;ERROR COUNT
5522 035554                                    ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      035554  104456                                                                  TRAP    C$ERHRD
      035556  000356                                                                  .WORD   238
      035560  037771                                                                  .WORD   T30BOT
      035562  015604                                                                  .WORD   EXPREC
5523 035564                            40$:    CKLOOP                          ;LOOP IF SELECTED
      035564  104406                                                                  TRAP    C$CLP1
5524 035566  012737  000001  036552            MOV     #1,T30WB                ;SET # OF TM TO SKIP
5525
5526                                    ;*************************************************************
5527                                    ;
5528                                    ;SKIP TAPE MARK REVERSE,ACK,CVC=1 COMMAND
5529                                    ;
5530                                    ;*************************************************************
5531
5532 035574  012737  141410  036550            MOV     #141410,T30PK3          ;SKIP TAPE MARK REVERSE,ACK,CVC=1 CMD
5533 035602  012704  036550                    MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5534 035606  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5535 035612  004737  016360                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5536 035616  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5537 035622  012702  100206                    MOV     #SSR!SC!BIT1!BIT2,R2    ;SET UP EXPECTED
5538 035626  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
5539 035630  001406                            BEQ     70$                     ;BR, IF OK
5540 035632  005237  002214                    INC     FATFLG                          ;ERROR COUNT
5544 035636                                    ERRHRD  ERRNO,T30IBT,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      035636  104456                                                                  TRAP    C$ERHRD
      035640  000357                                                                  .WORD   239
      035642  036761                                                                  .WORD   T30IBT
      035644  012156                                                                  .WORD   PKTSSR
5545 035646                            70$:    CKLOOP                          ;LOOP IF SELECTED
      035646  104406                                                                  TRAP    C$CLP1
5546
5547                                    ;*************************************************************
5548                                    ;
5549                                    ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
5550                                    ;
5551                                    ;*************************************************************
5552
5553 035650  013701  036460                    MOV     T30BFR+6,R1             ;PICK UP XST0
5554 035654  010102                            MOV     R1,R2                   ;SET UP EXPECTED
5555 035656  052702  002000                    BIS     #BIT10,R2               ;SET NEF BIT IN EXPECTED
5556 035662  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
5557 035664  001406                            BEQ     180$                    ;BR, IF EQUAL (OK)
5558 035666  005237  002214                    INC     FATFLG                          ;ERROR COUNT
5562 035672                                    ERRHRD  ERRNO,T30NEF,EXPREC     ;TAPE NOT AT NEF
      035672  104456                                                                  TRAP    C$ERHRD
```

TEST 2: SKIP TAPE MARKS

```
        035674  000360                                                          .WORD   240
        035676  040526                                                          .WORD   T3OREF
        035700  015604                                                          .WORD   EXPREC
  5563  035702                          180$:   CKLOOP                  ;LOOP IF SELECTED
        035702  104406                                                          TRAP    C$CLP1
  5564  035704                                  ENDSUB                  ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
        035704                                                                  L10046:
        035704  104403                                                          TRAP    C$ESUB
  5565  035706  023727  002214  000017          CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
  5566  035714  103402                          BLO     999$                    ;BR, IF LESS THAN 25
  5567  035716  004737  017312                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
  5568  035722                          999$:
  5569                                  ;*
  5570                                  ;
  5571                                  ;TEST 2, SUBTEST 4
  5572                                  ;
  5573                                  ;
  5574                                  ;VERIFIES THAT A SKIP TAPE MARKS REVERSE COMMAND
  5575                                  ;ISSUED WHILE THE TAPE IS POSITIONED JUST BEFORE THE
  5576                                  ;FIRST RECORD ON ON TAPE (BUT NOT AT BOT) CAUSES TAPE
  5577                                  ;STATUS ALERT TERMINATION, WITH THE REVERSE INTO BOT
  5578                                  ;(RIB) STATUS BIT SET.
  5579                                  ;
  5580                                  ;
  5581                                  ;
  5582                                  ;
  5583                                  ;
  5584                                  ;-
  5585  035722                                  BGNSUB                  ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
        035722                                                                  T2.4:
        035722  104402                                                          TRAP    C$BSUB
  5586  035724  004737  041202                  JSR     PC,T3OREST              ;SET COMMAND PACKET
  5587  035730  005037  036604                  CLR     T3OFCN                  ;CLEAR FILE COUNTER
  5588  035734  004737  041274                  JSR     PC,T3ORT2               ;SET UP OTHER COMMAND PACKET
  5589  035740  004737  041336                  JSR     PC,T3ORT3               ;SET UP OTHER COMMAND PACKET
  5590  035744  012737  176750  036606          MOV     #65000.,T3ODLY          ;SET UP DELAY COUNTER
  5591  035752  004737  016104          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
  5592  035756  103426                          BCS     20$                     ;BR IF INIT WAS OK
  5593  035760                                  DELAY   250                     ;DELAY ROUTINE CALL
        035760  012727  000250                                                  MOV     #250.,(PC)+
        035764  000000                                                          .WORD   0
        035766  013727  002116                                                  MOV     L$DLY,(PC)+
        035772  000000                                                          .WORD   0
        035774  005367  177772                                                  DEC     -6(PC)
        036000  001375                                                          BNE     .-4
        036002  005367  177756                                                  DEC     -22(PC)
        036006  001367                                                          BNE     .-20
  5594  036010  005337  036606                  DEC     T3ODLY                  ;BUMP COUNTER
  5595  036014  001356                          BNE     10$                     ;BR, IF MORE COUNTING TO DO
  5596  036016  005237  002214                  INC     FATFLG                  ;ERROR COUNT
  5600  036022  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
  5601  036024                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
        036024  104455                                                          TRAP    C$ERDF
        036026  000361                                                          .WORD   241
        036030  003650                                                          .WORD   SFIERR
        036032  012144                                                          .WORD   SFIMSG
  5602  036034                          20$:
```

TEST 2: SKIP TAPE MARKS

```
5603 036034  013737  002174  036450          MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
5604 036042  012704  036430                  MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5605
5606                                 ;*************************************************************
5607                                 ;
5608                                 ;ISSUE WRITE CHARACTERISTICS COMMAND
5609                                 ;
5610                                 ;*************************************************************
5611
5612 036046  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5613 036052  103407                          BCS     23$                     ;BR, IF COMMAND ISSUED OK
5614 036054  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5618 036060  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5619 036062                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     036062  104456                                                                  TRAP    C$ERHRD
     036064  000362                                                                  .WORD   242
     036066  005054                                                                  .WORD   WRTMSG
     036070  012144                                                                  .WORD   SFIMSG
5620 036072                          23$:    CKLOOP                          ;LOOP IF SELECTED
     036072  104406                                                                  TRAP    C$CLP1
5621
5622                                 ;*************************************************************
5623                                 ;
5624                                 ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
5625                                 ;
5626                                 ;*************************************************************
5627
5628 036074  004737  011126                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5629 036100  103411                          BCS     30$                     ;BR, IF NO PROBLEM
5630 036102  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
5631 036104  016501  000002                  MOV     TSSR(R5),R1             ;GET STATUS REGISTER
5632 036110  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5636 036114                                  ERRHRD  ERRNO,T3ORWN,PKTSSR     ;REWIND NOT ACCEPTED
     036114  104456                                                                  TRAP    C$ERHRD
     036116  000363                                                                  .WORD   243
     036120  040170                                                                  .WORD   T3ORWN
     036122  012156                                                                  .WORD   PKTSSR
5637 036124                          30$:    CKLOOP                          ;LOOP IF SELECTED
     036124  104406                                                                  TRAP    C$CLP1
5638
5639                                 ;*************************************************************
5640                                 ;
5641                                 ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
5642                                 ;
5643                                 ;*************************************************************
5644
5645 036126  013701  036460                  MOV     T30BFR+6,R1             ;PICK UP XST0
5646 036132  010102                          MOV     R1,R2                   ;SET UP EXPECTED
5647 036134  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5648 036140  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
5649 036142  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
5650 036144  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5654 036150                                  ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     036150  104456                                                                  TRAP    C$ERHRD
     036152  000364                                                                  .WORD   244
     036154  037771                                                                  .WORD   T30BOT
     036156  015604                                                                  .WORD   EXPREC
```

F11

TEST 2: SKIP TAPE MARKS

```
5655 036160                          40$:    CKLOOP                          ;LOOP IF SELECTED
     036160  104406                                                                  TRAP    C$CLP1
5656 036162  013737  003120  036552          MOV     FREE,T30WB              ;SET UP GOOD WRITE BUFFER
5657 036170  012737  000400  036556          MOV     #256.,T30SZ             ;SET UP SIZE
5658
5659                                 ;*************************************************************
5660                                 ;
5661                                 ;WRITE DATA,ACK,CVC=1 COMMAND
5662                                 ;
5663                                 ;*************************************************************
5664
5665 036176  012737  140005  036550          MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
5666 036204  012704  036550                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5667 036210  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5668 036214  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5669 036220  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5670 036224  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
5671 036230  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
5672 036232  001406                          BEQ     70$                     ;BR, IF OK
5673 036234  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5677 036240                                  ERRHRD  ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     036240  104456                                                                  TRAP    C$ERHRD
     036242  000365                                                                  .WORD   245
     036244  037120                                                                  .WORD   T30WDD
     036246  012156                                                                  .WORD   PKTSSR
5678 036250                          70$:    CKLOOP                          ;LOOP IF SELECTED
     036250  104406                                                                  TRAP    C$CLP1
5679
5680                                 ;*************************************************************
5681                                 ;
5682                                 ;SKIP TAPE MARK REVERSE,ACK,CVC=1 COMMAND
5683                                 ;
5684                                 ;*************************************************************
5685
5686 036252  012737  000001  036552          MOV     #1,T30WB                ;# OF TM TO SKIP
5687 036260  012737  141410  036550          MOV     #141410,T30PK3          ;SKIP TAPE MARK REVERSE,ACK,CVC=1 CMD
5688 036266  012704  036550                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5689 036272  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5690 036276  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5691 036302  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
5692 036306  012702  100204                  MOV     #SSR!BIT2!SC,R2         ;SET UP EXPECTED (SSR AND SC ONLY)
5693 036312  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
5694 036314  001406                          BEQ     160$                    ;BR, IF TERMINATION WAS GOOD
5695 036316  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5699 036322                                  ERRHRD  ERRNO,T30IBU,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     036322  104456                                                                  TRAP    C$ERHRD
     036324  000366                                                                  .WORD   246
     036326  036610                                                                  .WORD   T30IBU
     036330  012156                                                                  .WORD   PKTSSR
5700 036332                          160$:   CKLOOP                          ;LOOP IF SELECTED
     036332  104406                                                                  TRAP    C$CLP1
5701
5702                                 ;*************************************************************
5703                                 ;
5704                                 ;GET EXTENDED STATUS REGISTER ZERO (XST3) FROM MESSAGE BUFFER
5705                                 ;
5706                                 ;*************************************************************
```

TEST 2: SKIP TAPE MARKS

```
5707
5708 036334  013701  036466                  MOV     T30BFR+14,R1            ;PICK UP XST3
5709 036340  010102                          MOV     R1,R2                   ;SET UP EXPECTED
5710 036342  052702  000001                  BIS     #BIT0,R2                ;SET RIB BIT IN EXPECTED
5711 036346  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
5712 036350  001406                          BEQ     170$                    ;BR, IF EQUAL (OK)
5713 036352  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5717 036356                                  ERRHRD  ERRNO,T30RIB,EXPREC     ;TAPE NOT AT RIB
     036356  104456                                                                  TRAP    C$ERHRD
     036360  000367                                                                  .WORD   247
     036362  036675                                                                  .WORD   T30RIB
     036364  015604                                                                  .WORD   EXPREC
5718 036366                          170$:   CKLOOP                          ;LOOP IF SELECTED
     036366  104406                                                                  TRAP    C$CLP1
5719 036370                                  ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     036370                                                                       L10047:
     036370  104403                                                                  TRAP    C$ESUB
5720 036372  023727  002214  000017          CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
5721 036400  103402                          BLO     999$                            ;BR, IF LESS THAN 25
5722 036402  004737  017312                  JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
5723 036406                          999$:
5724                                 ;SUBTEST END
5725                                 ;
5726                                 ;
5727 036406  004737  016566                  JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
5728 036412  103002                          BCC     400$                    ;BR, IF NO LOOP REQUIRED
5729 036414  000137  032310                  JMP     T30LOOP                 ;EXECUTE AGAIN
5730 036420                          400$:   EXIT    TST                     ;ALL DONE THIS TEST
     036420  104432                                                                  TRAP    C$EXIT
     036422  002736                                                                  .WORD   L10043-.
5731                                 ;*
5732                                 ;LOCAL STORAGE FOR THIS TEST
5733                                 ;
5735         036430                          .=<.+10>&177770
5737 036430                          T30PACKET:                              ;COMMAND PACKET FOR TEST
5738 036430  100004                          .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
5739 036432  036440                          .WORD   T30DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
5740 036434  000000                          .WORD   0
5741 036436  000012                          .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
5742 036440                          T30DATA:                                ;CHARACTERISTICS DATA BLOCK
5743 036440  036452                          .WORD   T30BFR                  ;ADDRESS OF MESSAGE BUFFER
5744 036442  000000                          .WORD   0
5745 036444  000024                          .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
5746 036446  000000                  T30ETM: .WORD   0                       ;SKIP TAPE MARK CONTROL
5747 036450  000000                  T30DSW: .WORD   0                       ;SELECT DRIVE 0
5748 036452                          T30BFR: .BLKW   25.                     ;MESSAGE BUFFER
5749                                 ;
5750                 .               ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
5751                                 ;
5753         036540                          .=<.+10>&177770
5755 036540                          T30PK2:
5756 036540  100006                          .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
5757 036542  036560                          .WORD   T30BF2                  ;ADDRESS OF SELECT BLOCK DATA
5758 036544  000000                          .WORD   0
5759 036546  000006                          .WORD   6.                      ;SIZE OF DATA PACKET
5760
5764 036550                          T30PK3:
```

TEST 2: SKIP TAPE MARKS

```
5765 036550  100205                        .WORD   100205                  ;REREAD COMMAND, IE AND ACK
5766 036552                          T30RB:
5767 036552  003120                  T30WB:  .WORD   FREE                    ;ADDRESS OF WRITE PUFFER
5768 036554  000000                          .WORD   0
5769 036556  000000                  T30SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
5770                                         .EVEN
5771                                 ;
5772                                 ;
5773                                 ;
5774 036560                          T30BF2:
5775 036560     010                  T30BS0: .BYTE   10                      ;BSELO AREA
5776 036561     200                  T30BS1: .BYTE   200                     ;BSEL1 AREA
5777 036562  000000                  T30S2:  .WORD   0                       ;SEL 2 AREA
5778 036564  000000                  T30S3:  .WORD   0                       ;DATA AREA
5779                                 ;
5780                                 ;
5781                                         .EVEN
5782                                 ;TAPE MOTION PACKET COMMAND VALUES
5783
5784 036566                          T30IMV:
5785 036566                          T30RN:
5786 036566  000000                          .WORD   000000                  ;NEITHER EWB NOR ESS
5787 036570  000100                          .WORD   000100                  ;EWB SET
5788 036572  000200                          .WORD   000200                  ;ESS SET
5789 036574  000300                          .WORD   000300                  ;BOTH EWB AND ESS SET
5790 036576  177777                          .WORD   177777                  ;END OF DATA
5791
5792                                 ;
5793 036600  000000                  T30CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
5794 036602  000000                  T30CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
5795 036604  000000                  T30FCN: .WORD   0                       ;FILE NUMBER COUNTER
5796 036606  000000                  T30DLY: .WORD   0                       ;DELAY COUNTER STORAGE
5797                                 ;*
5798                                 ;LOCAL TEXT MESSAGES FOR TEST
5799                                 ;
5800
5801 036610     124     123     123  T30IBU: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE Into BOT'
5802 036675     122     111     102  T30RIB: .ASCIZ  'RIB Bit (XST3) Failed To Set After Reverse Into BOT'
5803 036761     124     123     123  T30IBT: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE At BOT'
5804 037044     124     123     123  T30SKM: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK Command'
5805 037120     124     123     123  T30WDD: .ASCIZ  'TSSR Not Correct After WRITE DATA Command'
5806 037172     124     141     160  T30PTB: .ASCIZ  'Tape Not Positioned On Correct Record After READ REVERSE'
5807 037263     124     141     160  T30TPB: .ASCIZ  'Tape Not Positioned On Second File First Record'
5808 037343     124     123     123  T30RDF: .ASCIZ  'TSSR Incorrect After READ FORWARD Into "File"'
5809 037421     124     123     123  T30RDG: .ASCIZ  'TSSR Incorrect After SPACE Command Into TAPE MARK'
5810 037503     124     123     123  T30WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
5811 037560     111     154     154  T30LOG: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
5812 037641     127     122     111  T30SSR: .ASCIZ  'WRITE MISCELLANEOUS Command Not Accepted'
5813 037712     124     123     123  T30WDE: .ASCIZ  'TSSR Not Correct After SKIP TAPE MARKS, At BOT'
5814 037771     124     141     160  T30BOT: .ASCIZ  'Tape Not At BOT After REWIND Command'
5815 040036     124     123     123  T30TM:  .ASCIZ  'TSSR Not Correct After SPACE FORWARD Command'
5816 040113     124     123     123  T30TM2: .ASCIZ  'TSSR Not Correct After SPACE REVERSE Command'
5817 040170     122     145     167  T30RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
5818 040237     104     162     151  T30OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
5819 040312     124     123     123  T30WDC: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK Command'
5820 040371     103     126     103  T30VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
5821 040444     124     115     113  T30TMK: .ASCIZ  'TMK Not Set After WRITE TAPE MARK (RETRY) Command'
```

```
TEST  2: SKIP TAPE MARKS

 5822 040526      123      113      111  T3ONEF: .ASCIZ  'SKIP TAPE MARKS, At BOT, Failed To Set NEF Bit'
 5823 040605      124      115      113  T3ORRM: .ASCIZ  'TMK Not Set After READ REVERSE Into TAPE MARK'
 5824 040663      124      115      113  T3ORRN: .ASCIZ  'TMK Not Set After SPACE REVERSE Into TAPE MARK'
 5825 040742      124      115      113  T3ORRP: .ASCIZ  'TMK Not Set After READ FORWARD Into TAPE MARK'
 5826 041020      116      117      040  T3ODTR: .ASCIZ  'NO Data Transferred On READ FORWARD'
 5827 041064      104      141      164  T3ODTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written
 5828 041161      123      153      151  TST3OID:        .ASCIZ   Skip Tape Marks'
 5829                                           .EVEN
 5830                                    ;+
 5831                                    ;
 5832                                    ; ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
 5833                                    ; WRITE SUBSYSTEM MEMORY COMMAND
 5834                                    ;
 5835                                    ;-
 5836
 5837 041202                            T3OREST:
 5838 041202                                    SAVREG                          ;SAVE THE REGISTERS
 5839 041206  012701  036430                       MOV     #T3OPACKET,R1       ;START OF THE PACKET
 5840 041212  012721  100004                       MOV     #100004,(R1)+       ;WRITE SUBSYSTEM MEM. WITH ACK.
 5841 041216  012721  036440                       MOV     #T3ODATA,(R1)+      ;ADDRESS OF CHARAISTICS DATA BLOCK
 5842 041222  005021                               CLR     (R1)+               ;EXTENDED ADDRESS
 5843 041224  012721  000012                       MOV     #10.,(R1)+          ;SIZE OF DATA BLOCK IN BYTES
 5844 041230  012721  036452                       MOV     #T3OBFR,(R1)+       ;ADDRESS OF MESSAGE BUFFER
 5845 041234  005021                               CLR     (R1)+
 5846 041236  012721  000024                       MOV     #20.,(R1)+          ;LENGTH OF MESSAGE BUFFER
 5847 041242  005021                               CLR     (R1)+
 5848 041244  012711  000000                       MOV     #0,(R1)             ;SELECT DRIVE ZERO
 5849 041250  012702  000030                       MOV     #24.,R2             ;NUMBER OF LOCATIONS TO BE CLEARED
 5850 041254  012762  177777  036452  64$:        MOV     #177777,T3OBFR(R2)  ;ALL ONES TO MESSAGE BUFFER
 5851 041262  005742                               TST     (R2)                ;NEXT LOCATION
 5852 041264  022702  000000                       CMP     #0.,R2                      ;CHECK R2 FOR DONE
 5853 041270  001371                               BNE     64$                 ;KEEP GOING UNTIL DONE
 5854 041272  000207                               RTS     PC                  ;RETURN
 5855
 5856 041274                            T3ORT2:
 5857 041274                                    SAVREG                          ;SAVE THE REGISTERS
 5858 041300  012701  036540                       MOV     #T3OPK2,R1          ;START OF THE PACKET
 5859 041304  012721  100006                       MOV     #100006,(R1)+       ;WRITE SUBSYSTEM MEM. WITH ACK.
 5860 041310  012721  036560                       MOV     #T3OBF2,(R1)+       ;ADDRESS OF DATA BLOCK
 5861 041314  005021                               CLR     (R1)+               ;EXTENDED ADDRESS
 5862 041316  012721  000006                       MOV     #6.,(R1)+           ;SIZE OF DATA BLOCK IN BYTES
 5863 041322  005021                               CLR     (R1)+
 5864 041324  012701  036560                       MOV     #T3OBF2,R1          ;POINT TO DATA SEL AREA
 5865 041330  005021                               CLR     (R1)+
 5866 041332  005011                               CLR     (R1)
 5867 041334  000207                               RTS     PC                  ;RETURN
 5868 041336                            T3ORT3:
 5869 041336                                    SAVREG                          ;SAVE REGISTERS
 5870 041342  012701  036550                       MOV     #T3OPK3,R1          ;SET UP POINTER ADDRESS
 5871 041346  005021                               CLR     (R1)+               ;COMMAND SPACE
 5872 041350  005021                               CLR     (R1)+               ;ADDRESS OF DATA BLOCK
 5873 041352  005021                               CLR     (R1)+               ;EXTENDED ADDRESS
 5874 041354  005011                               CLR     (R1)                ;SIZE OF DATA TRANSFER BLOCK
 5875 041356  000207                               RTS     PC                  ;RETURN
 5876 041360                                    ENDTST
      041360                                                                  L10043:
      041360  104401                                                                   .RAP    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
                                ;
                                ;
                                ;
041362                                  BGNTST
041362                                                                  T3::
041362  012737  006356  002172        MOV     @#PRT1,PRTSW            ;PRIMARY ERROR MESSAGE
041370  012700  046473                MOV     #TST31ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
041374  004737  016620                JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
041400  012737  000005  002210        MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
041406  005037  043266                CLR     T31CNT                  ;CLEAR TAPE RECORD COUNTER
                                ;
                                ;-
041412                          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.
                                ;
                                ;
                                ;
                                ;
                                ;
                                ;
                                ;-
041412                                  BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
041412                                                                          T3.1:
041412  104402                                                                  TRAP    C$BSUB
041414  004737  046540                JSR     PC,T31REST              ;SET COMMAND PACKET
041420  004737  046632                JSR     PC,T31RT2               ;SET UP OTHER COMMAND PACKET
041424  004737  046674                JSR     PC,T31RT3               ;SET UP OTHER COMMAND PACKET
041430  012737  176750  043272        MOV     #65000.,T31DLY          ;SET UP DELAY COUNTER
041436  004737  016104          10$:  JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
041442  103426                        BCS     20$                     ;BR IF INIT WAS OK
041444                                DELAY   250                     ;DELAY ABOUT .25 SEC
041444  012727  000250                                                  MOV     #250.,(PC)+
041450  000000                                                          .WORD   0
041452  013727  002116                                                  MOV     L$DLY,(PC)+
```

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

```
        041456  000000                                                          .WORD   0
        041460  005367  177772                                                DEC     -6(PC)
        041464  001375                                                        BNE     .-4
        041466  005367  177756                                                DEC     -22(PC)
        041472  001367                                                        BNE     .-20
  5932  041474  005337  043272          DEC     T31DLY          ;BUMP COUNTER
  5933  041500  001356                  BNE     10$             ;BR. IF COUNTER NOT DONE
  5934  041502  005237  002214          INC     FATFLG                  ;ERROR COUNT
  5938  041506  010001                  MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
  5939  041510                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
        041510  104455                                                          TRAP    C$ERDF
        041512  000455                                                          .WORD   301
        041514  003650                                                          .WORD   SFIERR
        041516  012144                                                          .WORD   SFIMSG
  5940  041520  013737  002174  043140  20$:     MOV     UNITN,T31DSW    ;SET UP UNIT NUMBER IN PACKET
  5941  041526  012704  043120          MOV     #T31PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
  5942  041532  004737  010742          JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
  5943  041536  103407                  BCS     23$             ;BR. IF COMMAND ISSUED OK
  5944  041540  005237  002214          INC     FATFLG                  ;ERROR COUNT
  5948  041544  010001                  MOV     R0,R1           ;SAVE CONTENTS OF TSSR
  5949  041546                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        041546  104456                                                          TRAP    C$ERHRD
        041550  000456                                                          .WORD   302
        041552  005054                                                          .WORD   WRTMSG
        041554  012144                                                          .WORD   SFIMSG
  5950  041556                  23$:    CKLOOP                          ;LOOP IF SELECTED
        041556  104406                                                          TRAP    C$CLP1
  5951  041560  004737  011126          JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
  5952  041564  103407                  BCS     30$             ;BR, IF NO PROBLEM
  5953  041566  010004                  MOV     R0,R4           ;SET UP REWIND PACKET ADDRESS
  5954  041570  005237  002214          INC     FATFLG                  ;ERROR COUNT
  5958  041574                          ERRHRD  ERRNO,T31RWN,PKTSSR     ;REWIND NOT ACCEPTED
        041574  104456                                                          TRAP    C$ERHRD
        041576  000457                                                          .WORD   303
        041600  044624                                                          .WORD   T31RWN
        041602  012156                                                          .WORD   PKTSSR
  5959  041604                  30$:    CKLOOP                          ;LOOP IF SELECTED
        041604  104406                                                          TRAP    C$CLP1
  5960  041606  013701  043150          MOV     T31BFR+6,R1     ;PICK UP XSTO
  5961  041612  010102                  MOV     R1,R2           ;SET UP EXPECTED
  5962  041614  052702  000002          BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
  5963  041620  020102                  CMP     R1,R2           ;DOES EXP = REC'D
  5964  041622  001406                  BEQ     40$             ;BR. IF EQUAL (OK)
  5965  041624  005237  002214          INC     FATFLG                  ;ERROR COUNT
  5969  041630                          ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        041630  104456                                                          TRAP    C$ERHRD
        041632  000460                                                          .WORD   304
        041634  044275                                                          .WORD   T31BOT
        041636  015604                                                          .WORD   EXPREC
  5970  041640                  40$:    CKLOOP                          ;LOOP IF SELECTED
        041640  104406                                                          TRAP    C$CLP1
  5971  041642  013737  003120  043242          MOV     FREE,T31WB      ;STARTING WRITE BUFFER ADDRESS
  5972  041650  012737  140005  043240  65$:     MOV     #140005,T31PK3  ;WRITE DATA,CVC=1,ACK COMMAND
  5973  041656  012704  043240          MOV     #T31PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
  5974  041662  012700  000144          MOV     #100.,R0                ;SET PATTERN IN CORRECT REGISTER
  5975  041666  004737  017532          JSR     PC,FILLMEM      ;FILL MEMORY WITH RECORD SIZE
  5976  041672  012737  000144  043246  MOV     #100.,T31SZ     ;SET UP RECORD SIZE IN PACKET
```

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

```
 5977 041700  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 5978 041704  004737  016360                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 5979 041710  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 5980 041714  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
 5981 041720  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
 5982 041722  001406                            BEQ     80$                     ;BR, IF OK
 5983 041724  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 5987 041730                                    ERRHRD  ERRNO,T31WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      041730  104456                                                                    TRAP    C$ERHRD
      041732  000461                                                                    .WORD   305
      041734  045160                                                                    .WORD   T31WDC
      041736  012156                                                                    .WORD   PKTSSR
 5988 041740                            80$:    CKLOOP                          ;LOOP IF SELECTED
      041740  104406                                                                    TRAP    C$CLP1
 5989 041742  004737  011126                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 5990 041746  103407                            BCS     230$                    ;BR, IF NO PROBLEM
 5991 041750  010001                            MOV     R0,R1                   ;SAVE TSSR
 5992 041752  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 5996 041756                                    ERRHRD  ERRNO,T31RWN,EXPREC     ;REWIND NOT ACCEPTED
      041756  104456                                                                    TRAP    C$ERHRD
      041760  000462                                                                    .WORD   306
      041762  044624                                                                    .WORD   T31RWN
      041764  015604                                                                    .WORD   EXPREC
 5997 041766                            230$:   CKLOOP                          ;LOOP IF SELECTED
      041766  104406                                                                    TRAP    C$CLP1
 5998 041770  013701  043150                    MOV     T31BFR+6,R1             ;PICK UP XSTO
 5999 041774  010102                            MOV     R1,R2                   ;SET UP EXPECTED
 6000 041776  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 6001 042002  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
 6002 042004  001406                            BEQ     240$                    ;BR, IF EQUAL (OK)
 6003 042006  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 6007 042012                                    ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      042012  104456                                                                    TRAP    C$ERHRD
      042014  000463                                                                    .WORD   307
      042016  044275                                                                    .WORD   T31BOT
      042020  015604                                                                    .WORD   EXPREC
 6008 042022                            240$:   CKLOOP                          ;LOOP IF SELECTED
      042022  104406                                                                    TRAP    C$CLP1
 6009 042024  012737  041012  043240    265$:   MOV     #041012,T31PK3          ;NO-OP,CVC=1 COMMAND
 6010 042032  012704  043240                    MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 6011 042036  010337  043246                    MOV     R3,T31SZ                ;SET UP RECORD SIZE IN PACKET
 6012 042042  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 6013 042046  004737  016360                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6014 042052  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6015 042056  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
 6016 042062  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
 6017 042064  001406                            BEQ     280$                    ;BR, IF OK
 6018 042066  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 6022 042072                                    ERRHRD  ERRNO,T31RDF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      042072  104456                                                                    TRAP    C$ERHRD
      042074  000464                                                                    .WORD   308
      042076  043473                                                                    .WORD   T31RDF
      042100  012156                                                                    .WORD   PKTSSR
 6023 042102                            280$:   CKLOOP                          ;LOOP IF SELECTED
      042102  104406                                                                    TRAP    C$CLP1
 6024 042104  013701  043150                    MOV     T31BFR+6,R1             ;PICK UP XSTO
 6025 042110  010102                            MOV     R1,R2                   ;SET UP EXPECTED
```

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

```
 6026 042112  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 6027 042116  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 6028 042120  001406                        BEQ     285$                    ;BR, IF EQUAL (OK)
 6029 042122  005237  002214                INC     FATFLG                          ;ERROR COUNT
 6033 042126                                ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      042126  104456                                                            TRAP    C$ERHRD
      042130  000465                                                            .WORD   309
      042132  044275                                                            .WORD   T31BOT
      042134  015604                                                            .WORD   EXPREC
 6034 042136                        285$:   CKLOOP                          ;LOOP IF SELECTED
      042136  104406                                                            TRAP    C$CLP1
 6035 042140  012737  140001  043240        MOV     #140001,T31PK3          ;READ,ACK,CVC=1 COMMAND
 6036 042146  012704  043240                MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 6037 042152  012737  000144  043246        MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
 6038 042160  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 6039 042164  004737  016360                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6040 042170  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6041 042174  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 6042 042200  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 6043 042202  001406                        BEQ     290$                    ;BR, IF OK
 6044 042204  005237  002214                INC     FATFLG                          ;ERROR COUNT
 6048 042210                                ERRHRD  ERRNO,T31RDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      042210  104456                                                            TRAP    C$ERHRD
      042212  000466                                                            .WORD   310
      042214  043274                                                            .WORD   T31RDE
      042216  012156                                                            .WORD   PKTSSR
 6049 042220                        290$:   CKLOOP                          ;LOOP IF SELECTED
      042220  104406                                                            TRAP    C$CLP1
 6050 042222  017701  140672                MOV     @FREE,R1                ;GET DATA READ
 6051 042226  012702  000144                MOV     #100.,R2                ;READ EXPECTED
 6052 042232  020102                        CMP     R1,R2                   ;DID TAPE STAY POSITIONED
 6053 042234  001406                        BEQ     330$                    ;BR, IF EXPD = RECD
 6054 042236  005237  002214                INC     FATFLG                          ;ERROR COUNT
 6058 042242                                ERRHRD  ERRNO,T31WNG,EXPREC     ;TAPE DATA NOT CORRECT
      042242  104456                                                            TRAP    C$ERHRD
      042244  000467                                                            .WORD   311
      042246  043421                                                            .WORD   T31WNG
      042250  015604                                                            .WORD   EXPREC
 6059 042252                        330$:
 6060 042252                                ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
      042252                                                                        L10051:
      042252  104403                                                            TRAP    C$ESUB
 6061 042254  023727  002214  000017                CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
 6062 042262  103402                                BLO     999$                            ;BR, IF LESS THAN 25
 6063 042264  004737  017312                        JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
 6064 042270                        999$:
 6065                               ;*
 6066                               ;
 6067                               ;TEST 3, SUBTEST 2
 6068                               ;
 6069                               ;
 6070                               ;       VERIFIES THAT THE INITIALIZE COMMAND OPERATES AS A NO-OP,
 6071                               ;       ASSUMING NO MICRODIAGNOSTIC ERRORS ARE PRESENT (THEY WOULD
 6072                               ;       ALREADY HAVE BEEN DETECTED IN PREVIOUS TESTS).  THE TEST
 6073                               ;       SEQUENCE IS SIMILAR TO THAT USED IN SUBTEST 1.
 6074                               ;
 6075                               ;
```

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

```
 6076                                           ;
 6077                                           ;-
 6078 042270                            BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      042270                                                                    T3.2:
      042270  104402                                                              TRAP    C$BSUB
 6079 042272  004737  046540                    JSR     PC,T31REST      ;SET COMMAND PACKET
 6080 042276  004737  046632                    JSR     PC,T31RT2       ;SET UP OTHER COMMAND PACKET
 6081 042302  004737  046674                    JSR     PC,T31RT3       ;SET UP OTHER COMMAND PACKET
 6082 042306  004737  016104                    JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
 6083 042312  103407                            BCS     20$             ;BR IF INIT WAS OK
 6084 042314  005237  002214                    INC     FATFLG                  ;ERROR COUNT
 6088 042320  010001                            MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
 6089 042322                            ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      042322  104455                                                              TRAP    C$ERDF
      042324  000470                                                              .WORD   312
      042326  003650                                                              .WORD   SFIERR
      042330  012144                                                              .WORD   SFIMSG
 6090 042332  013737  002174  043140  20$:     MOV     UNITN,T31DSW    ;SET UP UNIT NUMBER IN PACKET
 6091 042340  012704  043120                    MOV     #T31PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
 6092 042344  004737  010742                    JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
 6093 042350  103407                            BCS     23$             ;BR, IF COMMAND ISSUED OK
 6094 042352  005237  002214                    INC     FATFLG                  ;ERROR COUNT
 6098 042356  010001                            MOV     R0,R1           ;SAVE CONTENTS OF TSSR
 6099 042360                            ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      042360  104456                                                              TRAP    C$ERHRD
      042362  000471                                                              .WORD   313
      042364  005054                                                              .WORD   WRTMSG
      042366  012144                                                              .WORD   SFIMSG
 6100 042370                            23$:     CKLOOP                          ;LOOP IF SELECTED
      042370  104406                                                              TRAP    C$CLP1
 6101 042372  004737  011126                    JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
 6102 042376  103407                            BCS     30$             ;BR, IF NO PROBLEM
 6103 042400  010004                            MOV     R0,R4           ;SET UP REWIND PACKET ADDRESS
 6104 042402  005237  002214                    INC     FATFLG                  ;ERROR COUNT
 6108 042406                            ERRHRD  ERRNO,T31RWN,PKTSSR     ;REWIND NOT ACCEPTED
      042406  104456                                                              TRAP    C$ERHRD
      042410  000472                                                              .WORD   314
      042412  044624                                                              .WORD   T31RWN
      042414  012156                                                              .WORD   PKTSSR
 6109 042416                            30$:     CKLOOP                          ;LOOP IF SELECTED
      042416  104406                                                              TRAP    C$CLP1
 6110 042420  013701  043150                    MOV     T31BFR+6,R1     ;PICK UP XSTO
 6111 042424  010102                            MOV     R1,R2           ;SET UP EXPECTED
 6112 042426  052702  000002                    BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
 6113 042432  020102                            CMP     R1,R2           ;DOES EXP = REC'D
 6114 042434  001406                            BEQ     40$             ;BR, IF EQUAL (OK)
 6115 042436  005237  002214                    INC     FATFLG                  ;ERROR COUNT
 6119 042442                            ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      042442  104456                                                              TRAP    C$ERHRD
      042444  000473                                                              .WORD   315
      042446  044275                                                              .WORD   T31BOT
      042450  015604                                                              .WORD   EXPREC
 6120 042452                            40$:     CKLOOP                          ;LOOP IF SELECTED
      042452  104406                                                              TRAP    C$CLP1
 6121 042454  013737  003120  043242            MOV     FREE,T31WB      ;STARTING WRITE BUFFER ADDRESS
 6122 042462  012737  140005  043240  65$:     MOV     #140005,T31PK3  ;WRITE DATA,CVC=1,ACK COMMAND
 6123 042470  012704  043240                    MOV     #T31PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
```

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

```
 6124 042474  012700  000144                MOV     #100.,R0                ;SET PATTERN IN CORRECT REGISTER
 6125 042500  004737  017532                JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
 6126 042504  012737  000144  043246        MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
 6127 042512  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 6128 042516  004737  016360                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6129 042522  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6130 042526  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 6131 042532  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 6132 042534  001406                        BEQ     80$                     ;BR, IF OK
 6133 042536  005237  002214                INC     FATFLG                      ;ERROR COUNT
 6137 042542                                ERRHRD  ERRNO,T31WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      042542  104456                                                            TRAP    C$ERHRD
      042544  000174                                                            .WORD   316
      042546  045160                                                            .WORD   T31WDC
      042550  012156                                                            .WORD   PKTSSR
 6138 042552                        80$:    CKLOOP                          ;LOOP IF SELECTED
      042552  104406                                                            TRAP    C$CLP1
 6139 042554  004737  011126                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 6140 042560  103407                        BCS     230$                    ;BR, IF NO PROBLEM
 6141 042562  010001                        MOV     R0,R1                   ;SAVE TSSR
 6142 042564  005237  002214                INC     FATFLG                      ;ERROR COUNT
 6146 042570                                ERRHRD  ERRNO,T31RWN,EXPREC     ;REWIND NOT ACCEPTED
      042570  104456                                                            TRAP    C$ERHRD
      042572  000475                                                            .WORD   317
      042574  044624                                                            .WORD   T31RWN
      042576  015604                                                            .WORD   EXPREC
 6147 042600                        230$:   CKLOOP                          ;LOOP IF SELECTED
      042600  104406                                                            TRAP    C$CLP1
 6148 042602  013701  043150                MOV     T318FR+6,R1             ;PICK UP XSTO
 6149 042606  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 6150 042610  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 6151 042614  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 6152 042616  001406                        BEQ     240$                    ;BR, IF EQUAL (OK)
 6153 042620  005237  002214                INC     FATFLG                      ;ERROR COUNT
 6157 042624                                ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      042624  104456                                                            TRAP    C$ERHRD
      042626  000476                                                            .WORD   318
      042630  044275                                                            .WORD   T31BOT
      042632  015604                                                            .WORD   EXPREC
 6158 042634                        240$:   CKLOOP                          ;LOOP IF SELECTED
      042634  104406                                                            TRAP    C$CLP1
 6159 042636  012737  041012  043240  265$:  MOV     #041012,T31PK3          ;INITIALIZE,CVC=1 COMMAND
 6160 042644  012704  043240                MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 6161 042650  010337  043246                MOV     R3,T31SZ                ;SET UP RECORD SIZE IN PACKET
 6162 042654  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 6163 042660  004737  016360                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6164 042664  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6165 042670  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 6166 042674  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 6167 042676  001406                        BEQ     280$                    ;BR, IF OK
 6168 042700  005237  002214                INC     FATFLG                      ;ERROR COUNT
 6172 042704                                ERRHRD  ERRNO,T31RDF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      042704  104456                                                            TRAP    C$ERHRD
      042706  000477                                                            .WORD   319
      042710  043473                                                            .WORD   T31RDF
      042712  012156                                                            .WORD   PKTSSR
 6173 042714                        280$:   CKLOOP                          ;LOOP IF SELECTED
```

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

```
      042714  104406                                                          TRAP    C$CLP1
6174  042716  013701  043150                MOV     T31BFR+6,R1             ;PICK UP XSTO
6175  042722  010102                        MOV     R1,R2                   ;SET UP EXPECTED
6176  042724  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
6177  042730  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
6178  042732  001406                        BEQ     285$                    ;BR, IF EQUAL (OK)
6179  042734  005237  002214                INC     FATFLG                          ;ERROR COUNT
6183  042740                                ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      042740  104456                                                          TRAP    C$ERHRD
      042742  000500                                                          .WORD   320
      042744  044275                                                          .WORD   T31BOT
      042746  015604                                                          .WORD   EXPREC
6184  042750                        285$:   CKLOOP                          ;LOOP IF SELECTED
      042750  104406                                                          TRAP    C$CLP1
6185  042752  012737  140001  043240        MOV     #140001,T31PK3          ;READ,ACK,CVC=1 COMMAND
6186  042760  012704  043240                MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6187  042764  012737  000144  043246        MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
6188  042772  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6189  042776  004737  016360                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6190  043002  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6191  043006  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
6192  043012  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
6193  043014  001406                        BEQ     290$                    ;BR, IF OK
6194  043016  005237  002214                INC     FATFLG                          ;ERROR COUNT
6198  043022                                ERRHRD  ERRNO,T31RDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      043022  104456                                                          TRAP    C$ERHRD
      043024  000501                                                          .WORD   321
      043026  043274                                                          .WORD   T31RDE
      043030  012156                                                          .WORD   PKTSSR
6199  043032                        290$:   CKLOOP                          ;LOOP IF SELECTED
      043032  104406                                                          TRAP    C$CLP1
6200  043034  017701  140060                MOV     @FREE,R1                ;GET DATA READ
6201  043040  012702  000144                MOV     #100.,R2                ;READ EXPECTED
6202  043044  020102                        CMP     R1,R2                   ;DID TAPE STAY POSITIONED
6203  043046  001406                        BEQ     330$                    ;BR, IF EXPD = RECD
6204  043050  005237  002214                INC     FATFLG                          ;ERROR COUNT
6208  043054                                ERRHRD  ERRNO,T31WNH,EXPREC     ;TAPE POSITION NOT CORRECT AFTER INIT
      043054  104456                                                          TRAP    C$ERHRD
      043056  000502                                                          .WORD   322
      043060  043340                                                          .WORD   T31WNH
      043062  015604                                                          .WORD   EXPREC
6209  043064                        330$:
6210  043064                                ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
      043064                                                                  L10052:
      043064  104403                                                          TRAP    C$ESUB
6211  043066  023727  002214  000017        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
6212  043074  103402                        BLO     999$                            ;BR, IF LESS THAN 25
6213  043076  004737  017312                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
6214  043102                        999$:
6215                                ;
6216                                ;
6217                                ;
6218  043102  004737  016566                JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
6219  043106  103002                        BCC     163$                    ;BR, IF NO LOOP REQUIRED
6220  043110  000137  041412                JMP     T31LOOP                 ;EXECUTE AGAIN
6221  043114                        163$:   EXIT    TST                     ;ALL DONE THIS TEST
      043114  104432                                                          TRAP    C$EXIT
```

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

```
043116  003600                                                          .WORD   L10050-.
6222                            ;*
6223                            ;LOCAL STORAGE FOR THIS TEST
6224                            ;
6228 043120                     T31PACKET:                              ;COMMAND PACKET FOR TEST
6229 043120  100004                     .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
6230 043122  043130                     .WORD   T31DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
6231 043124  000000                     .WORD   0
6232 043126  000012                     .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
6233 043130                     T31DATA:                                ;CHARACTERISTICS DATA BLOCK
6234 043130  043142                     .WORD   T31BFR                  ;ADDRESS OF MESSAGE BUFFER
6235 043132  000000                     .WORD   0
6236 043134  000024                     .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
6237 043136  000000                     .WORD   0
6238 043140  000000             T31DSW: .WORD   0                       ;SELECT DRIVE 0
6239 043142                     T31BFR: .BLKW   25.                     ;MESSAGE BUFFER
6240                            ;
6241                            ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
6242                            ;
6244            043230                   .=<.+10>&177770
6246 043230                     T31PK2:
6247 043230  100006                     .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
6248 043232  043250                     .WORD   T31BF2                  ;ADDRESS OF SELECT BLOCK DATA
6249 043234  000000                     .WORD   0
6250 043236  000006                     .WORD   6.                      ;SIZE OF DATA PACKET
6251
6255 043240                     T31PK3:
6256 043240  100005                     .WORD   100005                  ;REREAD COMMAND, AND ACK
6257 043242                     T31RB:
6258 043242  003120             T31WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
6259 043244  000000                     .WORD   0
6260 043246  000000             T31SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
6261                                    .EVEN
6262                            ;
6263                            ;
6264                            ;
6265 043250                     T31BF2:
6266 043250     010             T31BS0: .BYTE   10                      ;BSEL0 AREA
6267 043251     200             T31BS1: .BYTE   200                     ;BSEL1 AREA
6268 043252  000000             T31S2:  .WORD   0                       ;SEL 2 AREA
6269 043254  000000             T31S3:  .WORD   0                       ;DATA AREA
6270                            ;
6271                            ;
6272                                    .EVEN
6273                            ;TAPE MOTION PACKET COMMAND VALUES
6274
6275 043256  100205             T31RN:  .WORD   100205                  ;REREAD DATA (NEXT)
6276 043260  100605             T31WDR: .WORD   100605                  ;REREAD DATA RETRY
6277 043262  102205             T31CON: .WORD   102205                  ;WRITE CONTINOUS
6278 043264  177777                     .WORD   177777                  ;END OF DATA
6279
6280                            ;
6281 043266  000000             T31CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
6282 043270  000000             T31CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
6283 043272  000000             T31DLY: .WORD   0                       ;DELAY COUNTER
6284                            ;*
6285                            ;LOCAL TEXT MESSAGES FOR TEST
```

```
                                        ;-
                                        ;
043274      124     123     123  T31RDE: .ASCIZ  'TSSR Not Correct After READ Command'
043340      124     141     160  T31WNH: .ASCIZ  'Tape Position Incorrect After INITIALIZE Command'
043421      124     141     160  T31WNG: .ASCIZ  'Tape Position Incorrect After NOP Command'
043473      124     123     123  T31RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
043542      122     105     122  T31RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
043637      120     117     123  T31SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
043721      122     111     102  T31LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
043771      124     123     123  T31WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
044046      111     154     154  T31LOG: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
044127      122     105     122  T31SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
044163      124     123     123  T31WDE: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE Command,At BOT'
044275      124     141     160  T31BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XSTO)'
044370      116     117     055  T31TIM: .ASCIZ  'NO-OP ("CLEAN TAPE") AND INITIALIZE''S Erase Tape Not Long Enough'
044470      122     105     122  T31EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
044547      124     123     123  T31TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
044624      122     145     167  T31RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
044673      122     101     115  T31RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
044746      124     123     123  T31AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
045015      104     162     151  T31OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
045070      124     123     123  T31WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
045160      124     123     123  T31WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
045233      103     126     103  T31VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
045306      124     123     102  T31BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
045361      127     122     111  T31WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
045450      122     145     141  T31LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XSTO'
045532      122     145     141  T31LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
045614      122     145     163  T31PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
045702      122     145     141  T31TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
045770      116     117     055  T31NEF: .ASCIZ  'NO-OP ("CLEAN TAPE") AND INITIALIZE, At First Record, Failed To Set RIB Bit
X
046111      124     123     123  T31SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
046166      124     123     123  T31TSA: .ASCIZ  'TSSR Not Correct After NO OP ("CLEAN TAPE") AND INITIALIZE, Into BOT'
046273      124     123     123  T31WRF: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE Command'
046376      104     141     164  T31DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
046473      116     117     055  TST31ID:        .ASCIZ  'NO-OP ("Clean Tape") And INITIALIZE'
                                        .EVEN
                                        ;*
                                        ;
                                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                        ;WRITE SUBSYSTEM MEMORY COMMAND
                                        ;
                                        ;-

046540                                  T31REST:
046540                                          SAVREG                          ;SAVE THE REGISTERS
046544  012701  043120                          MOV     #T31PACKET,R1           ;START OF THE PACKET
046550  012721  100004                          MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
046554  012721  043130                          MOV     #T31DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
046560  005021                                  CLR     (R1)+                   ;EXTENDED ADDRESS
046562  012721  000012                          MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
046566  012721  043142                          MOV     #T31BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
046572  005021                                  CLR     (R1)+
046574  012721  000024                          MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
046600  005021                                  CLR     (R1)+
046602  012711  000000                          MOV     #0,(R1)                 ;SELECT DRIVE ZERO
046606  012702  000030                          MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
```

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

```
6343 046612  012762  177777  043142  64$:    MOV     #177777,T31BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
6344 046620  005742                          TST     -(R2)                   ;NEXT LOCATION
6345 046622  022702  000000                  CMP     #0,R2                   ;AT END OF LOOP YET
6346 046626  001371                          BNE     64$                     ;KEEP GOING UNTIL DONE
6347 046630  000207                          RTS     PC                      ;RETURN
6348
6349 046632                          T31RT2:
6350 046632                                  SAVREG                          ;SAVE THE REGISTERS
6351 046636  012701  043230                  MOV     #T31PK2,R1              ;START OF THE PACKET
6352 046642  012721  100006                  MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
6353 046646  012721  043250                  MOV     #T31BF2,(R1)+           ;ADDRESS OF DATA BLOCK
6354 046652  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
6355 046654  012721  000006                  MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
6356 046660  005021                          CLR     (R1)+
6357 046662  012701  043250                  MOV     #T31BF2,R1              ;POINT TO DATA SEL AREA
6358 046666  005021                          CLR     (R1)+
6359 046670  005011                          CLR     (R1)
6360 046672  000207                          RTS     PC                      ;RETURN
6361 046674                          T31RT3:
6362 046674                                  SAVREG                          ;SAVE REGISTERS
6363 046700  012701  043240                  MOV     #T31PK3,R1              ;SET UP POINTER ADDRESS
6364 046704  005021                          CLR     (R1)+                   ;COMMAND SPACE
6365 046706  005021                          CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
6366 046710  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
6367 046712  005011                          CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
6368 046714  000207                          RTS     PC                      ;RETURN
6369 046716                                  ENDTST
     046716                                                          L10050:
     046716  104401                                                          TRAP    C$ETST
6370                                         .SBTTL  TEST  4: Erase And Operation Incomplete
6371                                 ;+
6372                                 ;
6373                                 ;       VERIFIES THAT AN ERASE COMMAND ISSUED WHEN THE TAPE IS
6374                                 ;       POSITIONED AT BOT OPERATES PROPERLY AND ACTUALLY ERASES TAPE.
6375                                 ;       THE FOLLOWING TEST SEQUENCE IS PERFORMED:
6376                                 ;
6377                                 ;
6378                                 ;            1.  THE TAPE IS FIRST REWOUND, SEVERAL TEST RECORDS ARE
6379                                 ;                WRITTEN, AND THE TAPE IS REWOUND AGAIN.
6380                                 ;
6381                                 ;            2.  AN ERASE COMMAND IS ISSUED, WHICH SHOULD ERASE A NUMBER
6382                                 ;                OF THE TEST RECORDS.
6383                                 ;
6384                                 ;            3.  NORMAL TERMINATION IS VERIFIED AND STATUS IS CHECKED
6385                                 ;                (BOT SHOULD BE 0).
6386                                 ;
6387                                 ;            4.  A READ REVERSE COMMAND IS ISSUED.  IT IS VERIFIED THAT
6388                                 ;                THE COMMAND TERMINATES WITH TAPE STATUS ALERT, THAT THE
6389                                 ;                REVERSE INTO BOT (RIB) STATUS BIT IS SET, AND THAT NO
6390                                 ;                DATA IS TRANSFERRED.  THIS DEMONSTRATES THAT NO DATA
6391                                 ;                WAS ENCOUNTERED IN THE AREA ERASED BY THE ERASE
6392                                 ;                COMMAND.
6393                                 ;
6394                                 ;
6395                                 ;
6396                                 ;
6397                                 ;
```

```
TEST  4: Erase And Operation Incomplete

                                        ;
                                        ;
                                        ;THE TEST CONSISTS OF THE FOLLOWING 3 SUBTESTS
                                        ;
                                        ;
                                        ;-
                                                BGNTST
                                                                                        T4::
                                                MOV     @EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
                                                MOV     @TST32ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
                                                JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
                                                MOV     @5,LOOPCNT              ;PERFORM 5 ITERATIONS
                                                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.
                                        ;
                                        ;
                                        ;-
                                        T32LOOP:
                                        ;
                                        ;
                                        ;-
                                                BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
                                                                                                T4.1:
                                                                                                TRAP    C$BSUB
                                                JSR     PC,T32REST              ;SET COMMAND PACKET
                                                JSR     PC,T32RT2               ;SET UP OTHER COMMAND PACKET
                                                JSR     PC,T32RT3               ;SET UP OTHER COMMAND PACKET
                                                MOV     @65000..T32DLY          ;SET UP DELAY COUNTER
                                        10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
                                                BCS     20$                     ;BR IF INIT WAS OK
                                                DELAY   250                     ;DELAY ABOUT .25 SEC
                                                                                                MOV     @250,(PC)+
                                                                                                .WORD   0
                                                                                                MOV     L$DLY,(PC)+
                                                                                                .WORD   0
                                                                                                DEC     -6(PC)
                                                                                                BNE     .-4
                                                                                                DEC     -22(PC)
                                                                                                BNE     .-20
                                                DEC     T32DLY                  ;BUMP COUNTER
                                                BNE     10$                     ;BR, IF COUNTER NOT DONE
                                                INC     FATFLG                          ;ERROR COUNT
                                                MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
                                                ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
                                                                                                TRAP    C$ERDF
                                                                                                .WORD   401
                                                                                                .WORD   SFIERR
```

TEST 4: Erase And Operation Incomplete

```
        047054  012144                                                          .WORD   SFIMSG
6448    047056  013737  002174  051300  20$:    MOV     UNITN,T32DSW           ;SET UP DRIVE NUMBER
6449    047064  012704  051260                  MOV     #T32PACKET,R4          ;SUBROUTINE NEEDS PACKET ADDRESS
6450    047070  004737  010742                  JSR     PC,WRTCHR              ;ISSUE WRITE CHARACTERISTICS
6451    047074  103407                          BCS     25$                    ;BR, IF COMMAND ISSUED OK
6452    047076  005237  002214                  INC     FATFLG                         ;ERROR COUNT
6456    047102  010001                          MOV     R0,R1                  ;SAVE CONTENTS OF TSSR
6457    047104                                  ERRHRD  ERRNO,WRTMSG,SFIMSG    ;WRITE CHARACTERISTISC FAILED
        047104  104456                                                          TRAP    C$ERHRD
        047106  000622                                                          .WORD   402
        047110  005054                                                          .WORD   WRTMSG
        047112  012144                                                          .WORD   SFIMSG
6458    047114                          25$:    CKLOOP                         ;LOOP IF SELECTED
        047114  104406                                                          TRAP    C$CLP1
6459    047116  004737  011126                  JSR     PC,REWIND              ;CALL TAPE REWIND COMMAND
6460    047122  103411                          BCS     26$                    ;BR, IF NO PROBLEM
6461    047124  010004                          MOV     R0,R4                  ;SET UP REWIND PACKET ADDRESS
6462    047126  016501  000002                  MOV     TSSR(R5),R1            ;GET TSSR CONTENTS
6463    047132  005237  002214                  INC     FATFLG                         ;ERROR COUNT
6467    047136                                  ERRHRD  ERRNO,T32RWN,PKTSSR    ;REWIND NOT ACCEPTED
        047136  104456                                                          TRAP    C$ERHRD
        047140  000623                                                          .WORD   403
        047142  051630                                                          .WORD   T32RWN
        047144  012156                                                          .WORD   PKTSSR
6468    047146                          26$:    CKLOOP                         ;LOOP IF SELECTED
        047146  104406                                                          TRAP    C$CLP1
6469    047150  012703  000400                  MOV     #256.,R3               ;STARTING RECORD SIZE
6470    047154  013737  003120  051402          MOV     FREE,T32WB             ;STARTING WRITE BUFFER ADDRESS
6471    047162  012737  140005  051400          MOV     #140005,T32PK3         ;WRITE DATA,CVC=1,ACK COMMAND
6472    047170  012704  051400                  MOV     #T32PK3,R4             ;SET UP R4 WITH PACKET ADDRESS
6473    047174  010337  051406          27$:    MOV     R3,T32SZ               ;SET UP RECORD SIZE IN PACKET
6474    047200  010465  000000                  MOV     R4,TSDB(R5)            ;ISSUE COMMAND
6475    047204  004737  016360                  JSR     PC,WAITF               ;WAIT FOR SSR TO SET
6476    047210  016501  000002                  MOV     TSSR(R5),R1            ;GET TSSR CONTENTS
6477    047214  012702  000200                  MOV     #SSR,R2                ;SET UP EXPECTED
6478    047220  020102                          CMP     R1,R2                  ;ARE THEY EQUAL
6479    047222  001406                          BEQ     28$                    ;BR, IF OK
6480    047224  005237  002214                  INC     FATFLG                         ;ERROR COUNT
6484    047230                                  ERRHRD  ERRNO,T32WDC,PKTSSR    ;TSSR INCORRECT AFTER WRITE DATA
        047230  104456                                                          TRAP    C$ERHRD
        047232  000624                                                          .WORD   404
        047234  052466                                                          .WORD   T32WDC
        047236  012156                                                          .WORD   PKTSSR
6485    047240                          28$:    CKLOOP                         ;LOOP IF SELECTED
        047240  104406                                                          TRAP    C$CLP1
6486    047242  005723                          TST     (R3)+                  ;BUMP RECORD COUNTER
6487    047244  020327  001002                  CMP     R3,#514.               ;AT MAX SIZE YET
6488    047250  001351                          BNE     27$                    ;BR, IF NOT AT END OF LOOP
6489    047252  004737  011126                  JSR     PC,REWIND              ;CALL TAPE REWIND COMMAND
6490    047256  103411                          BCS     30$                    ;BR, IF NO PROBLEM
6491    047260  016501  000002                  MOV     TSSR(R5),R1            ;GET TSSR CONTENTS
6492    047264  010004                          MOV     R0,R4                  ;SET UP REWIND PACKET ADDRESS
6493    047266  005237  002214                  INC     FATFLG                         ;ERROR COUNT
6497    047272                                  ERRHRD  ERRNO,T32RWN,PKTSSR    ;REWIND NOT ACCEPTED
        047272  104456                                                          TRAP    C$ERHRD
        047274  000625                                                          .WORD   405
        047276  051630                                                          .WORD   T32RWN
```

TEST 4: Erase And Operation Incomplete

```
        047300  012156                                                          .WORD   PKTSSR
  6498  047302                          30$:    CKLOOP                          ;LOOP IF SELECTED
        047302  104406                                                          TRAP    C$CLP1
  6499  047304  013701  051310                  MOV     T32BFR+6,R1             ;PICK UP XSTO
  6500  047310  010102                          MOV     R1,R2                   ;SET UP EXPECTED
  6501  047312  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
  6502  047316  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
  6503  047320  001406                          BEQ     40$                     ;BR. IF EQUAL (OK)
  6504  047322  005237  002214                  INC     FATFLG                          ;ERROR COUNT
  6508  047326                                  ERRHRD  ERRNO,T32BOE,EXPREC     ;TAPE AT BOT AFTER ERASE
        047326  104456                                                          TRAP    C$ERHRD
        047330  000626                                                          .WORD   406
        047332  052316                                                          .WORD   T32BOE
        047334  015604                                                          .WORD   EXPREC
  6509  047336                          40$:    CKLOOP                          ;LOOP IF SELECTED
        047336  104406                                                          TRAP    C$CLP1
  6510  047340  012737  140411  051400          MOV     #140411,T32PK3          ;ERASE TAPE,CVC=1,ACK COMMAND
  6511  047346  012704  051400                  MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
  6512  047352  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
  6513  047356  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
  6514  047362  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
  6515  047366  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
  6516  047372  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
  6517  047374  001406                          BEQ     50$                     ;BR. IF OK
  6518  047376  005237  002214                  INC     FATFLG                          ;ERROR COUNT
  6522  047402                                  ERRHRD  ERRNO,T32ERA,PKTSSR     ;TSSR INCORRECT AFTER ERASE DATA
        047402  104456                                                          TRAP    C$ERHRD
        047404  000627                                                          .WORD   407
        047406  051746                                                          .WORD   T32ERA
        047410  012156                                                          .WORD   PKTSSR
  6523  047412                          50$:    CKLOOP                          ;LOOP IF SELECTED
        047412  104406                                                          TRAP    C$CLP1
  6524  047414  013701  051310                  MOV     T32BFR+6,R1             ;PICK UP XSTO
  6525  047420  010102                          MOV     R1,R2                   ;SET UP EXPECTED
  6526  047422  042702  000002                  BIC     #BIT1,R2                ;SET BOT BIT IN EXPECTED
  6527  047426  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
  6528  047430  001406                          BEQ     55$                     ;BR. IF EQUAL (OK)
  6529  047432  005237  002214                  INC     FATFLG                          ;ERROR COUNT
  6533  047436                                  ERRHRD  ERRNO,T32BOE,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        047436  104456                                                          TRAP    C$ERHRD
        047440  000630                                                          .WORD   408
        047442  052316                                                          .WORD   T32BOE
        047444  015604                                                          .WORD   EXPREC
  6534  047446                          55$:    CKLOOP                          ;LOOP IF SELECTED
        047446  104406                                                          TRAP    C$CLP1
  6535  047450  013737  003120  051402          MOV     FREE,T32RB              ;ADDRESS OF BUFFER
  6536  047456  012737  140401  051400          MOV     #140401,T32PK3          ;READ REVERSE,ACK,CVC=1 COMMAND
  6537  047464  012737  000400  051406          MOV     #256.,T32SZ             ;SET UP THE SIZE OF RECORD
  6538  047472  012704  051400                  MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
  6539  047476  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
  6540  047502  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
  6541  047506  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
  6542  047512  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED TAPE STATUS ALERT
  6543  047516  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
  6544  047520  001406                          BEQ     180$                    ;BR. IF OK
  6545  047522  005237  002214                  INC     FATFLG                          ;ERROR COUNT
  6549  047526                                  ERRHRD  ERRNO,T32TSA,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
```

TEST 4: Erase And Operation Incomplete

```
        047526  104456                                                          TRAP    C$ERMRO
        047530  000631                                                          .WORD   409
        047532  052241                                                          .WORD   T32TSA
        047534  012156                                                          .WORD   PKTSSR
  6550  047536                  180$:   CKLOOP                          ;LOOP IF SELECTED
        047536  104406                                                          TRAP    C$CLP1
  6551  047540  013701  051316          MOV     T32BFR+14,R1            ;GET XST3 STATUS WORD
  6552  047544  010102                  MOV     R1,R2                   ;SET UP EXPECTED
  6553  047546  052702  000001          BIS     #BIT0,R2                ;SET THE RIB BIT
  6554  047552  020102                  CMP     R1,R2                   ;ARE THEY EQUAL
  6555  047554  001406                  BEQ     190$                    ;BR. IF EQUAL (GOOD)
  6556  047556  005237  002214          INC     FATFLG                          ;ERROR COUNT
  6560  047562                          ERRMRO  ERRNO,T32RIB,EXPREC     ;RIB SHOULD BE SET
        047562  104456                                                          TRAP    C$ERMRO
        047564  000632                                                          .WORD   410
        047566  052066                                                          .WORD   T32RIB
        047570  015604                                                          .WORD   EXPREC
  6561  047572                  190$:
  6562  047572                  ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
        047572                                                          L10054:
        047572  104403                                                          TRAP    C$ESUB
  6563  047574  023727  002214  000017          CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
  6564  047602  103402                  BLO     999$                    ;BR, IF LESS THAN 25
  6565  047604  004737  017312          JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
  6566  047610                  999$:
  6567                          ;*
  6568                          ;
  6569                          ;TEST 4, SUBTEST 2
  6570                          ;
  6571                          ;       VERIFIES THAT AN ERASE COMMAND EXECUTED WHEN THE TAPE IS NOT
  6572                          ;       POSITIONED AT BOT OPERATES PROPERLY AND DOES NOT CORRUPT
  6573                          ;       PREVIOUS TAPE RECORDS.  THE TEST SEQUENCE IS:
  6574                          ;
  6575                          ;
  6576                          ;       1.  THE TAPE IS FIRST REWOUND, SEVERAL TEST RECORDS ARE
  6577                          ;           WRITTEN, AND THE TAPE IS REWOUND AGAIN.
  6578                          ;
  6579                          ;
  6580                          ;       2.  A SPACE RECORDS FORWARD COMMAND IS ISSUED TO MOVE THE
  6581                          ;           TAPE OFF OF BOT AND SKIP OVER THE FIRST SEVERAL
  6582                          ;           RECORDS.
  6583                          ;
  6584                          ;       3.  AN ERASE COMMAND IS ISSUED, WHICH SHOULD ERASE A NUMBER
  6585                          ;           OF THE TEST RECORDS.
  6586                          ;
  6587                          ;       4.  NORMAL TERMINATION IS VERIFIED AND STATUS IS CHECKED.
  6588                          ;
  6589                          ;       5.  A READ REVERSE COMMAND IS ISSUED.  IT IS VERIFIED THAT
  6590                          ;           NORMAL TERMINATION IS ACCOMPLISHED AND THAT THE DATA
  6591                          ;           TRANSFERRED CORRESPONDS TO THAT FOR THE EXPECTED
  6592                          ;           RECORD.  THIS DEMONSTRATES THAT NO DATA WAS ENCOUNTERED
  6593                          ;           IN THE AREA ERASED BY THE ERASE COMMAND, AND THAT THE
  6594                          ;           PREVIOUS RECORD WAS NOT CORRUPTED.
  6595                          ;
  6596                          ;
  6597                          ;
  6598                          ;
```

K12

TEST 4: Erase And Operation Incomplete

```
                                        ;
                                        ;-
6601 047610                             BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
     047610                                                                          T4.2:
     047610  104402                                                                      TRAP    C$BSUB
6602 047612  004737  052630                     JSR     PC,T32REST      ;SET COMMAND PACKET
6603 047616  004737  052722                     JSR     PC,T32RT2       ;SET UP OTHER COMMAND PACKET
6604 047622  004737  052752                     JSR     PC,T32RT3       ;SET UP OTHER COMMAND PACKET
6605 047626  004737  016104                     JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
6606 047632  103407                             BCS     20$             ;BR IF INIT WAS OK
6607 047634  005237  002214                     INC     FATFLG                  ;ERROR COUNT
6611 047640  010001                             MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
6612 047642                             ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     047642  104455                                                                      TRAP    C$ERDF
     047644  000633                                                                      .WORD   411
     047646  003650                                                                      .WORD   SFIERR
     047650  012144                                                                      .WORD   SFIMSG
6613 047652  013737  002174  051300  20$:       MOV     UNITN,T32DSW    ;SET UP UNIT NUMBER IN PACKET
6614 047660  012704  051260                     MOV     #T32PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
6615 047664  004737  010742                     JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
6616 047670  103407                             BCS     23$             ;BR, IF COMMAND ISSUED OK
6617 047672  005237  002214                     INC     FATFLG                  ;ERROR COUNT
6621 047676  010001                             MOV     R0,R1           ;SAVE CONTENTS OF TSSR
6622 047700                             ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     047700  104456                                                                      TRAP    C$ERHRD
     047702  000634                                                                      .WORD   412
     047704  005054                                                                      .WORD   WRTMSG
     047706  012144                                                                      .WORD   SFIMSG
6623 047710                             23$:    CKLOOP                          ;LOOP IF SELECTED
     047710  104406                                                                      TRAP    C$CLP1
6624 047712  004737  011126                     JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
6625 047716  103407                             BCS     30$             ;BR, IF NO PROBLEM
6626 047720  010004                             MOV     R0,R4           ;SET UP REWIND PACKET ADDRESS
6627 047722  005237  002214                     INC     FATFLG                  ;ERROR COUNT
6631 047726                             ERRHRD  ERRNO,T32RUN,PKTSSR     ;REWIND NOT ACCEPTED
     047726  104456                                                                      TRAP    C$ERHRD
     047730  000635                                                                      .WORD   413
     047732  051630                                                                      .WORD   T32RUN
     047734  012156                                                                      .WORD   PKTSSR
6632 047736                             30$:    CKLOOP                          ;LOOP IF SELECTED
     047736  104406                                                                      TRAP    C$CLP1
6633 047740  013701  051310                     MOV     T32BFR-6,R1     ;PICK UP XSTO
6634 047744  010102                             MOV     R1,R2           ;SET UP EXPECTED
6635 047746  052702  000002                     BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
6636 047752  020102                             CMP     R1,R2           ;DOES EXP = REC'D
6637 047754  001406                             BEQ     40$             ;BR, IF EQUAL (OK)
6638 047756  005237  002214                     INC     FATFLG                  ;ERROR COUNT
6642 047762                             ERRHRD  ERRNO,T32BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     047762  104456                                                                      TRAP    C$ERHRD
     047764  000636                                                                      .WORD   414
     047766  051446                                                                      .WORD   T32BOT
     047770  015604                                                                      .WORD   EXPREC
6643 047772                             40$:    CKLOOP                          ;LOOP IF SELECTED
     047772  104406                                                                      TRAP    C$CLP1
6644 047774  012703  000144                     MOV     #100.,R3        ;STARTING RECORD SIZE
6645 050000  010300                             MOV     R3,R0           ;SET UP MEMORY FILL
6646 050002  004737  017532                     JSR     PC,FILLMEM      ;CALL MEMORY FILLER
```

TEST 4: Erase And Operation Incomplete

```
 6647 050006  013737  003120  051402          MOV     FREE,T32WB              ;STARTING WRITE BUFFER ADDRESS
 6648 050014  012737  140005  051400  65$:    MOV     #140005,T32PK3          ;WRITE DATA,CVC=1,ACK COMMAND
 6649 050022  012704  051400                  MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 6650 050026  010300                          MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
 6651 050030  004737  017532                  JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
 6652 050034  010337  051406                  MOV     R3,T32SZ                ;SET UP RECORD SIZE IN PACKET
 6653 050040  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 6654 050044  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6655 050050  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6656 050054  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 6657 050060  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 6658 050062  001406                          BEQ     80$                     ;BR. IF OK
 6659 050064  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 6663 050070                                  ERRHRD  ERRNO,T32WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      050070  104456                                                                  TRAP    C$ERHRD
      050072  000637                                                                  .WORD   415
      050074  052466                                                                  .WORD   T32WDC
      050076  012156                                                                  .WORD   PKTSSR
 6664 050100                          80$:    CKLOOP                          ;LOOP IF SELECTED
      050100  104406                                                                  TRAP    C$CLP1
 6665 050102  005723                          TST     (R3)+                   ;BUMP RECORD SIZE COUNTER
 6666 050104  020327  000156                  CMP     R3,#110.                ;AT 160 SIZE YET
 6667 050110  001341                          BNE     65$                     ;BR. IF MORE RECORDS TO WRITE
 6668 050112  004737  011126                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 6669 050116  103407                          BCS     230$                    ;BR. IF NO PROBLEM
 6670 050120  010001                          MOV     R0,R1                   ;SAVE TSSR
 6671 050122  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 6675 050126                                  ERRHRD  ERRNO,T32RWN,EXPREC     ;REWIND NOT ACCEPTED
      050126  104456                                                                  TRAP    C$ERHRD
      050130  000640                                                                  .WORD   416
      050132  051630                                                                  .WORD   T32RWN
      050134  015604                                                                  .WORD   EXPREC
 6676 050136                          230$:   CKLOOP                          ;LOOP IF SELECTED
      050136  104406                                                                  TRAP    C$CLP1
 6677 050140  013701  051310                  MOV     T32BFR+6,R1             ;PICK UP XSTO
 6678 050144  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 6679 050146  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 6680 050152  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
 6681 050154  001406                          BEQ     240$                    ;BR. IF EQUAL (OK)
 6682 050156  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 6686 050162                                  ERRHRD  ERRNO,T32BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      050162  104456                                                                  TRAP    C$ERHRD
      050164  000641                                                                  .WORD   417
      050166  051446                                                                  .WORD   T32BOT
      050170  015604                                                                  .WORD   EXPREC
 6687 050172                          240$:   CKLOOP                          ;LOOP IF SELECTED
      050172  104406                                                                  TRAP    C$CLP1
 6688 050174  012703  000001                  MOV     #1,R3                   ;SET UP FOR SPACE COMMAND
 6689 050200  004737  010546                  JSR     PC,SPACE                ;ISSUE SPACE COMMAND 1 FORWARD
 6690 050204  012737  140411  051400  265$:   MOV     #140411,T32PK3          ;ERASE DATA,ACK COMMAND
 6691 050212  012704  051400                  MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 6692 050216  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 6693 050222  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6694 050226  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6695 050232  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 6696 050236  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 6697 050240  001406                          BEQ     280$                    ;BR. IF OK
```

TEST 4: Erase And Operation Incomplete

```
 6698 050242  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 6702 050246                                     ERRHRD  ERRNO,T32ERA,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      050246  104456                                                                    TRAP    C$ERHRD
      050250  000642                                                                    .WORD   418
      050252  051746                                                                    .WORD   T32ERA
      050254  012156                                                                    .WORD   PKTSSR
 6703 050256                          280$:      CKLOOP                          ;LOOP IF SELECTED
      050256  104406                                                                    TRAP    C$CLP1
 6704 050260  013737  003120  051402              MOV     FREE,T32RB              ;ADDRESS OF BUFFER
 6705 050266  012737  140401  051400              MOV     #140401,T32PK3          ;READ REVERSE,ACK,CVC=1 COMMAND
 6706 050274  012737  000144  051406              MOV     #100.,T32SZ             ;SET UP THE SIZE OF RECORD
 6707 050302  012704  051400                      MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 6708 050306  010465  000000                      MOV     R4,TSD8(R5)             ;ISSUE COMMAND
 6709 050312  004737  016360                      JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6710 050316  016501  000002                      MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6711 050322  012702  000200                      MOV     #SSR,R2                 ;SET UP EXPECTED TAPE STATUS ALERT
 6712 050326  020102                              CMP     R1,R2                   ;ARE THEY EQUAL
 6713 050330  001406                              BEQ     290$                    ;BR, IF OK
 6714 050332  005237  002214                      INC     FATFLG                          ;ERROR COUNT
 6718 050336                                     ERRHRD  ERRNO,T32TSA,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      050336  104456                                                                    TRAP    C$ERHRD
      050340  000643                                                                    .WORD   419
      050342  052241                                                                    .WORD   T32TSA
      050344  012156                                                                    .WORD   PKTSSR
 6719 050346                          290$:      CKLOOP                          ;LOOP IF SELECTED
      050346  104406                                                                    TRAP    C$CLP1
 6720 050350  017701  132544                      MOV     @FREE,R1                ;GET DATA READ
 6721 050354  012702  000144                      MOV     #100.,R2                ;SHOULD BE 100
 6722 050360  020102                              CMP     R1,R2                   ;CHECK'EM OUT
 6723 050362  001406                              BEQ     300$                    ;BR, IF OK
 6724 050364  005237  002214                      INC     FATFLG                          ;ERROR COUNT
 6728 050370                                     ERRHRD  ERRNO,T32ECF,EXPREC     ;ERASE COMMAND DIDN'T WORK
      050370  104456                                                                    TRAP    C$ERHRD
      050372  000644                                                                    .WORD   420
      050374  052405                                                                    .WORD   T32ECF
      050376  015604                                                                    .WORD   EXPREC
 6729 050400                          300$:      CKLOOP                          ;LOOP IF SELECTED
      050400  104406                                                                    TRAP    C$CLP1
 6730 050402                          330$:
 6731 050402                                     ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      050402                                                                          L10055:
      050402  104403                                                                    TRAP    C$ESUB
 6732 050404  023727  002214  000017              CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
 6733 050412  103402                              BLO     999$                    ;BR, IF LESS THAN 25
 6734 050414  004737  017312                      JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
 6735 050420                          999$:
 6736                                 ;*
 6737                                 ;
 6738                                 ;TEST 4, SUBTEST 3
 6739                                 ;
 6740                                 ;       VERIFIES THAT AN ERASE COMMAND ENCOUNTERING THE EOT MARKER, OR
 6741                                 ;       EXECUTED BEYOND THE EOT MARKER, CAUSES TAPE STATUS ALERT
 6742                                 ;       TERMINATION WITH THE EOT STATUS BIT SET.  ALSO VERIFIES THAT THE
 6743                                 ;       OTHER TAPE MOTION COMMANDS EXECUTED WHEN THE TAPE IS BLANK
 6744                                 ;       RESULT IN UNRECOVERABLE ERROR TERMINATION AND OPERATION
 6745                                 ;       INCOMPLETE STATUS.  THE FOLLOWING TEST SEQUENCE IS EXECUTED:
 6746                                 ;
```

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
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-
 6774 050420                                BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      050420                                                                                T4.3:
      050420  104402                                                                          TRAP    C$BSUB
 6775 050422  004737  052630                JSR     PC,T32REST              ;SET COMMAND PACKET
 6776 050426  004737  052722                JSR     PC,T32RT2               ;SET UP OTHER COMMAND PACKET
 6777 050432  004737  052752                JSR     PC,T32RT3               ;SET UP OTHER COMMAND PACKET
 6778 050436  012737  176750  051444        MOV     #65000.,T32DLY          ;SET UP DELAY COUNTER
 6779 050444  004737  016104          10$:  JSR     PC,$OFINIT              ;DO INITIALIZE ON CONTROLLER
 6780 050450  103426                        BCS     20$                     ;BR IF INIT WAS OK
 6781 050452                                DELAY   250                     ;DELAY ABOUT .25 SEC
      050452  012727  000250                                                          MOV     #250.,(PC)+
      050456  000000                                                                  .WORD   0
      050460  013727  002116                                                          MOV     L$DLY,(PC)+
      050464  000000                                                                  .WORD   0
      050466  005367  177772                                                          DEC     -6(PC)
      050472  001375                                                                  BNE     .-4
      050474  005367  177756                                                          DEC     -22(PC)
      050500  001367                                                                  BNE     .-20
 6782 050502  005337  051444                DEC     T32DLY                  ;BUMP COUNTER
 6783 050506  001356                        BNE     10$                     ;BR, IF COUNTER NOT DONE
 6784 050510  005237  002214                INC     FATFLG                  ;ERROR COUNT
 6788 050514  010001                        MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 6789 050516                                ERRDF   ERRNO.SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      050516  104455                                                                  TRAP    C$ERDF
      050520  000645                                                                  .WORD   421
      050522  003650                                                                  .WORD   SFIERR
      050524  012144                                                                  .WORD   SFIMSG
 6790 050526  013737  002174  051300  20$:   MOV     UNITN,T32DSW            ;SET UP UNIT (DRIVE) NUMBER
 6791 050534  052737  000040  051300        BIS     #BIT5,T32DSW            ;TURN ON HIGH SPEED TO SAVE TIME
 6792 050542  012704  051260                MOV     #T32PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
```

TEST 4: Erase And Operation Incomplete

```
6793 050546  004737  010742                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
6794 050552  103407                            BCS     23$                     ;BR, IF COMMAND ISSUED OK
6795 050554  005237  002214                    INC     FATFLG                          ;ERROR COUNT
6799 050560  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
6800 050562                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     050562  104456                                                                    TRAP    C$ERHRD
     050564  000646                                                                    .WORD   422
     050566  005054                                                                    .WORD   WRTMSG
     050570  012144                                                                    .WORD   SFIMSG
6801 050572                            23$:    CKLOOP                          ;LOOP IF SELECTED
     050572  104406                                                                    TRAP    C$CLP1
6802 050574  004737  011126                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
6803 050600  103411                            BCS     30$                     ;BR, IF NO PROBLEM
6804 050602  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6805 050606  010004                            MOV     R0,R4                   ;GET PACKET ADDRESS
6806 050610  005237  002214                    INC     FATFLG                          ;ERROR COUNT
6810 050614                                    ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
     050614  104456                                                                    TRAP    C$ERHRD
     050616  000647                                                                    .WORD   423
     050620  051630                                                                    .WORD   T32RWN
     050622  012156                                                                    .WORD   PKTSSR
6811 050624                            30$:    CKLOOP                          ;LOOP IF SELECTED
     050624  104406                                                                    TRAP    C$CLP1
6812 050626  013701  051310                    MOV     T32BFR+6,R1             ;PICK UP XSTO
6813 050632  010102                            MOV     R1,R2                   ;SET UP EXPECTED
6814 050634  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
6815 050640  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
6816 050642  001406                            BEQ     40$                     ;BR, IF EQUAL (OK)
6817 050644  005237  002214                    INC     FATFLG                          ;ERROR COUNT
6821 050650                                    ERRHRD  ERRNO,T32BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     050650  104456                                                                    TRAP    C$ERHRD
     050652  000650                                                                    .WORD   424
     050654  051446                                                                    .WORD   T32BOT
     050656  015604                                                                    .WORD   EXPREC
6822 050660                            40$:    CKLOOP                          ;LOOP IF SELECTED
     050660  104406                                                                    TRAP    C$CLP1
6823 050662  012737  140411  051400    65$:    MOV     #140411,T32PK3          ;ERASE DATA,CVC=1,ACK COMMAND
6824 050670  012704  051400                    MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
6825 050674  010337  051406                    MOV     R3,T32SZ                ;SET UP RECORD SIZE IN PACKET
6826 050700  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
6827 050704  004737  016360                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
6828 050710  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
6829 050714  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
6830 050720  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
6831 050722  001757                            BEQ     65$                     ;BR, IF OK
6832 050724  032701  000004                    BIT     #BIT2,R1                ;CHECK FOR TAPE STATUS ALERT
6833 050730  001006                            BNE     80$                     ;BR, IF TAPE STATUS ALERT SET
6834 050732  005237  002214                    INC     FATFLG                          ;ERROR COUNT
6838 050736                                    ERRHRD  ERRNO,T32WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     050736  104456                                                                    TRAP    C$ERHRD
     050740  000651                                                                    .WORD   425
     050742  052466                                                                    .WORD   T32WDC
     050744  012156                                                                    .WORD   PKTSSR
6839 050746                            80$:    CKLOOP                          ;LOOP IF SELECTED
     050746  104406                                                                    TRAP    C$CLP1
6840 050750  013701  051310                    MOV     T32BFR+6,R1             ;PICK UP XSTO
6841 050754  010102                            MOV     R1,R2                   ;SET UP EXPECTED
```

TEST 4: Erase And Operation Incomplete

```
 6842 050756  052702  000001            BIS     #BIT0,R2                ;SET EOT BIT IN EXPECTED
 6843 050762  020102                    CMP     R1,R2                   ;DOES EXP = REC'D
 6844 050764  001406                    BEQ     240$                    ;BR, IF EQUAL (OK)
 6845 050766  005237  002214            INC     FATFLG                          ;ERROR COUNT
 6849 050772                            ERRHRD  ERRNO,T32EOT,EXPREC     ;TAPE NOT AT EOT AFTER ERASE COMMANDS
      050772  104456                                                            TRAP    C$ERHRD
      050774  000652                                                            .WORD   426
      050776  051541                                                            .WORD   T32EOT
      051000  015604                                                            .WORD   EXPREC
 6850 051002                    240$:   CKLOOP                          ;LOOP IF SELECTED
      051002  104406                                                            TRAP    C$CLP1
 6851 051004  012703  051410            MOV     #T32CMD,R3              ;STARTING RECORD SIZE
 6852 051010  013737  003120  051402    MOV     FREE,T32RB              ;STARTING READ BUFFER ADDRESS
 6853 051016  011337  051400    265$:   MOV     (R3),T32PK3             ;READ DATA,ACK COMMAND
 6854 051022  012704  051400            MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 6855 051026  012700  177777            MOV     #177777,R0              ;SET PATTERN IN CORRECT REGISTER
 6856 051032  004737  017532            JSR     PC,FILLMEM              ;FILL MEMORY WITH ALL ONES
 6857 051036  012737  000144  051406    MOV     #100.,T32SZ             ;SET UP RECORD SIZE IN PACKET
 6858 051044  010465  000000            MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 6859 051050  012737  000062  051444    MOV     #50.,T32DLY             ;SET UP DELAY COUNTER
 6860 051056  004737  016360    270$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 6861 051062  016501  000002            MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 6862 051066  012702  100214            MOV     #SSR!SC!BIT2!BIT3,R2    ;SET UP EXPECTED
 6863 051072  020102                    CMP     R1,R2                   ;ARE THEY EQUAL
 6864 051074  001425                    BEQ     280$                    ;BR, IF OK
 6865 051076                            DELAY   250                     ;DELAY FOR SSR TO BE SET
      051076  012727  000250                                                    MOV     #250,(PC)+
      051102  000000                                                            .WORD   0
      051104  013727  002116                                                    MOV     L$DLY,(PC)+
      051110  000000                                                            .WORD   0
      051112  005367  177772                                                    DEC     -6(PC)
      051116  001375                                                            BNE     .-4
      051120  005367  177756                                                    DEC     -22(PC)
      051124  001367                                                            BNE     .-20
 6866 051126  005337  051444            DEC     T32DLY                  ;COUNT DELAY ROUTINE DOWN
 6867 051132  001351                    BNE     270$                    ;BR, IF DELAY HAS NOT ENDED
 6868 051134  005237  002214            INC     FATFLG                          ;ERROR COUNT
 6872 051140                            ERRHRD  ERRNO,T32ECF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      051140  104456                                                            TRAP    C$ERHRD
      051142  000653                                                            .WORD   427
      051144  052405                                                            .WORD   T32ECF
      051146  012156                                                            .WORD   PKTSSR
 6873 051150                    280$:   CKLOOP                          ;LOOP IF SELECTED
      051150  104406                                                            TRAP    C$CLP1
 6874 051152  013701  051316            MOV     T32BFR+14,R1            ;PICK UP XST3
 6875 051156  010102                    MOV     R1,R2                   ;SET UP EXPECTED
 6876 051160  052702  000100            BIS     #BIT6,R2                ;SET OPI BIT IN EXPECTED
 6877 051164  020102                    CMP     R1,R2                   ;IS OPI BIT SET
 6878 051166  001406                    BEQ     290$                    ;BR, IF BIT IS SET
 6879 051170  005237  002214            INC     FATFLG                          ;ERROR COUNT
 6883 051174                            ERRHRD  ERRNO,T320PI,EXPREC     ;OPI BIT NOT SET
      051174  104456                                                            TRAP    C$ERHRD
      051176  000654                                                            .WORD   428
      051200  052533                                                            .WORD   T320PI
      051202  015604                                                            .WORD   EXPREC
 6884 051204                    290$:   CKLOOP                          ;LOOP IF SELECTED
      051204  104406                                                            TRAP    C$CLP1
```

TEST 4: Erase And Operation Incomplete

```
6885 051206  005723                        TST     (R3)+                   ;BUMP COMMAND POINTER
6886 051210  021327  177777                CMP     (R3),#177777            ;AT END OF TABLE YET
6887 051214  001300                        BNE     265$                    ;BR, KEEP TRYING COMMANDS
6888 051216                                ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     051216                                                                        L10056:
     051216  104403                                                                  TRAP    C$ESUB
6889 051220  023727  002214  000017        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
6890 051226  103402                        BLO     999$                            ;BR, IF LESS THAN 25
6891 051230  004737  017312                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
6892 051234                          999$:
6893                                 ;
6894                                 ;
6895                                 ;
6896 051234  004737  016566                JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
6897 051240  103002                        BCC     163$                    ;BR, IF NO LOOP REQUIRED
6898 051242  000137  046750                JMP     T32LOOP                 ;EXECUTE AGAIN
6899 051246                          163$: EXIT    TST                     ;ALL DONE THIS TEST
     051246  104432                                                                TRAP    C$EXIT
     051250  001524                                                                .WORD   L10053-.
6900                                 ;+
6901                                 ;LOCAL STORAGE FOR THIS TEST
6902                                 ;-
6904         051260                          .=<.+10>&177770
6906 051260                          T32PACKET:
6907 051260  100004                        .WORD   100004                  ;COMMAND PACKET FOR TEST
6908 051262  051270                        .WORD   T32DATA                 ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
6909 051264  000000                        .WORD   0                       ;ADDRESS OF CHARACTERISTICS BLOCK
6910 051266  000012                        .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
6911 051270                          T32DATA:                              ;CHARACTERISTICS DATA BLOCK
6912 051270  051302                        .WORD   T32BFR                  ;ADDRESS OF MESSAGE BUFFER
6913 051272  000000                        .WORD   0
6914 051274  000024                        .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
6915 051276  000000                        .WORD   0
6916 051300  000000                  T32DSW: .WORD   0                       ;SELECT DRIVE 0
6917 051302                          T32BFR: .BLKW   25.                     ;MESSAGE BUFFER
6918                                 ;
6919                                 ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
6920                                 ;
6922         051370                          .=<.+10>&177770
6924 051370                          T32PK2:
6925 051370  100006                        .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
6926 051372  000000                        .WORD   0                       ;ADDRESS OF SELECT BLOCK DATA
6927 051374  000000                        .WORD   0
6928 051376  000006                        .WORD   6.                      ;SIZE OF DATA PACKET
6929
6933 051400                          T32PK3:
6934 051400  100005                        .WORD   100005                  ;REREAD COMMAND, AND ACK
6935 051402                          T32RB:
6936 051402  003120                  T32WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
6937 051404  000000                        .WORD   0
6938 051406  000000                  T32SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
6939                                       .EVEN
6940                                 ;
6941                                 ;
6942                                 ;
6943                                 ;
6944                                 ;
```

```
                                        .EVEN
                                ;TAPE MOTION PACKET COMMAND VALUES
                                T32CMD:
051410  140410                          .WORD   140410          ;SPACE RECORDS REVERSE
051412  141410                          .WORD   141410          ;SKIP TAPE MARKS REVERSE
051414  140401                          .WORD   140401          ;READ REVERSE
051416  141001                          .WORD   141001          ;REREAD PREVIOUS (OPP=0)
051420  161401                          .WORD   161401          ;REREAD NEXT (OPP=1)
051422  161001                          .WORD   161001          ;REREAD PREVIOUS (OPP=1)
051424  141401                          .WORD   141401          ;REREAD NEXT (OPP=0)
051426  140001                          .WORD   140001          ;READ NEXT
051430  141410                          .WORD   141410          ;SKIP TAPE MARKS REVERSE
051432  141010                          .WORD   141010          ;SKIP RECORDS FORWARD
051434  141005                          .WORD   141005          ;WRITE DATA RETRY
051436  177777                          .WORD   177777          ;END OF DATA

                                ;
051440  000000                  T32CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
051442  000000                  T32CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
051444  000000                  T32DLY: .WORD   0               ;DELAY COUNTER
                                ;*
                                ;LOCAL TEXT MESSAGES FOR TEST
                                ;-

051446     124     141     160  T32BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
051541     124     141     160  T32EOT: .ASCIZ  'Tape Status Alert During Erase To EOT, But EOT Not Set'
051630     122     145     167  T32RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
051677     124     123     123  T32AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
051746     124     123     123  T32ERA: .ASCIZ  'TSSR Not Correct After ERASE Command'
052013     124     123     102  T32BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
052066     122     105     101  T32RIB: .ASCIZ  'READ REVERSE, After ERASE From BOT, Failed To Set RIB In XST3'
052164     124     123     123  T32SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
052241     124     123     123  T32TSA: .ASCIZ  'TSSR Not Correct After READ REVERSE Into BOT'
052316     102     117     124  T32BOE: .ASCIZ 'BOT (XST0) Still Set After Erase From Tape''s BOT Marker'
052405     105     122     101  T32ECF: .ASCIZ  'ERASE Failed To Clear Tape (Erase) Tape Properly'
052466     124     123     123  T32WDC: .ASCIZ  'TSSR Not Correct After ERASE Command'
052533     117     120     111  T32OPI: .ASCIZ  'OPI Bit (XST3) Failed To Set'
052570     105     162     141  TST32ID:        .ASCIZ  'Erase And Operation Incomplete'
                                        .EVEN
                                ;*
                                ;
                                ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                ;WRITE SUBSYSTEM MEMORY COMMAND
                                ;
                                ;-

052630                          T32REST:
052630                                  SAVREG                  ;SAVE THE REGISTERS
052634  012701  051260                  MOV     #T32PACKET,R1   ;START OF THE PACKET
052640  012721  100004                  MOV     #100004,(R1)+   ;WRITE SUBSYSTEM MEM. WITH ACK.
052644  012721  051270                  MOV     #T32DATA,(R1)+  ;ADDRESS OF CHARAISTICS DATA BLOCK
052650  005021                          CLR     (R1)+           ;EXTENDED ADDRESS
052652  012721  000012                  MOV     #10.,(R1)+      ;SIZE OF DATA BLOCK IN BYTES
052656  012721  051302                  MOV     #T32BFR,(R1)+   ;ADDRESS OF MESSAGE BUFFER
052662  005021                          CLR     (R1)+
052664  012721  000024                  MOV     #20.,(R1)+      ;LENGTH OF MESSAGE BUFFER
```

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TEST 4: Erase And Operation Incomplete

```
7002 052670  005021                          CLR     (R1)+
7003 052672  012711  000000                  MOV     #0,(R1)                 ;SELECT DRIVE ZERO
7004 052676  012702  000030                  MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
7005 052702  012762  177777  051302  64$:    MOV     #177777,T32BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
7006 052710  005742                         TST     -(R2)                   ;NEXT LOCATION
7007 052712  022702  000000                  CMP     #0,R2                   ;AT END OF LOOP YET
7008 052716  001371                         BNE     64$                     ;KEEP GOING UNTIL DONE
7009 052720  000207                         RTS     PC                      ;RETURN
7010
7011 052722                          T32RT2:
7012 052722                                  SAVREG                          ;SAVE THE REGISTERS
7013 052726  012701  051370                  MOV     #T32PK2,R1              ;START OF THE PACKET
7014 052732  012721  100006                  MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
7015 052736  005021                          CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
7016 052740  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
7017 052742  012721  000006                  MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
7018 052746  005021                          CLR     (R1)+
7019 052750  000207                          RTS     PC                      ;RETURN
7020 052752                          T32RT3:
7021 052752                                  SAVREG                          ;SAVE REGISTERS
7022 052756  012701  051400                  MOV     #T32PK3,R1              ;SET UP POINTER ADDRESS
7023 052762  005021                          CLR     (R1)+                   ;COMMAND SPACE
7024 052764  005021                          CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
7025 052766  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
7026 052770  005011                          CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
7027 052772  000207                          RTS     PC                      ;RETURN
7028 052774                                  ENDTST
     052774                                                          L10053:
     052774  104401                                                          TRAP    C$ETST
7029                                 .SBTTL  TEST  5: DATA PARITY TEST
7030                                 ;+
7031                                 ;
7032                                 ;
7033                                 ;
7034                                 ;
7035                                 ;
7036                                 ;TEST 5 -- Data Parity Test
7037                                 ;
7038                                 ;
7039                                 ;This test verifies that the data parity circuitry in both the controller and the
7040                                 ;transport  is operating properly by forcing data records with wrong parity to be
7041                                 ;written onto tape and checking the results obtained when the data is read.  The
7042                                 ;following test sequence is performed:
7043                                 ;
7044                                 ;     1.  A Write Characteristics command is issued and the resulting  status  is
7045                                 ;         examined to determine the states of the Extended Features and Buffering
7046                                 ;         Enable switches on the controller module.  If buffering is disabled, no
7047                                 ;         further  actions need be taken in this step and the program proceeds to
7048                                 ;         the next step.  If buffering is enabled, it is disabled via the  Buffer
7049                                 ;         Control  field  in the extended characteristics data word supplied by a
7050                                 ;         Write Characteristics command.  (The module must be in  Extended  mode,
7051                                 ;         so  if it is not already, a Write Subsystem Memory command is issued to
7052                                 ;         change the logical sense of the Extended Features switch.)
7053                                 ;
7054                                 ;     2.  The Write Subsystem Memory command is  used  to  set  the  Force  Wrong
7055                                 ;         Parity control flip-flop.
7056                                 ;
```

TEST 5: DATA PARITY TEST

```
7057                                    ;     3.  The tape is rewound.
7058                                    ;
7059                                    ;     4.  A Write Data command is issued to write a data  record  containing  all
7060                                    ;         0's.   It  is  verified  that this command results in Recoverable Error
7061                                    ;         termination (TC=4) and that the Uncorrectable Data  Error  (UNC)  error
7062                                    ;         bit is set.
7063                                    ;
7064                                    ;     5.  The previous step is  repeated  for  each  data  value  2  through  377
7065                                    ;         (octal).
7066                                    ;
7067                                    ;     6.  The tape is rewound.
7068                                    ;
7069                                    ;     7.  A Read Next command is issued to read a record with faulty parity.   It
7070                                    ;         is  verified that this command results in Recoverable Error termination
7071                                    ;         (TC=4) and that both the Uncorrectable Data (UNC) and Read  Bus  Parity
7072                                    ;         (RBP)  error  bits are set.  It is also verified that the data actually
7073                                    ;         read is correct.
7074                                    ;
7075                                    ;     8.  A Read Reverse command with OPP=1 is issued to read,  in  reverse,  the
7076                                    ;         same  record  with  faulty  parity as read in the previous step.  It is
7077                                    ;         verified that this command results  in  Recoverable  Error  termination
7078                                    ;         (TC=4)  and  that both the Uncorrectable Data (UNC) and Read Bus Parity
7079                                    ;         (RBP) error bits are set.  It is also verified that the  data  actually
7080                                    ;         read is correct.
7081                                    ;
7082                                    ;     9.  Tape is spaced forward one record.
7083                                    ;
7084                                    ;    10.  The previous three steps are executed for each test  record  originally
7085                                    ;         written.
7086                                    ;
7087                                    ;    11.  The controller is initialized to  clear  the  special  test  conditions
7088                                    ;         previously set up.
7089                                    ;
7090                                    ;
7091                                    ;
7092                                    ;-
7093 052776                                        BGNTST
     052776                                                                                T5::
7094 052776  012737  006415  002172               MOV     #EPRT2,EPRTSW           ;SECONDARY ERROR MESSAGE
7099 053004  012700  055575                       MOV     #TST33ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
7100 053010  004737  016620                       JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
7101 053014  012737  000005  002210               MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
7102 053022  005037  054646                       CLR     T33CNT                  ;CLEAR TAPE RECORD COUNTER
7103                                    ;*
7104                                    ;
7105 053026                             T33LOOP:
7106 053026                                        BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     053026                                                                                T5.1:
     053026  104402                                                                            TRAP    C$BSUB
7107 053030  005037  002216                       CLR     INTRECV                 ;INTERRUPT INDICATOR
7108 053034  005037  054646                       CLR     T33CNT                  ;TIMER FOR WRITE DATA SPACING
7109 053040  005037  054650                       CLR     T33CNU                  ;TIMER FOR WRITE DATA RETRY SPACING
7110 053044  004737  055612                       JSR     PC,T33REST              ;SET COMMAND PACKET
7111 053050  004737  055704                       JSR     PC,T33RT2               ;SET UP OTHER COMMAND PACKET
7112 053054  004737  055746                       JSR     PC,T33RT3               ;SET UP OTHER COMMAND PACKET
7113 053060  012737  176750  054652               MOV     #65000.,T33DLY          ;SET UP DELAY COUNTER
7114 053066  004737  016104             10$:      JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
```

TEST 5: DATA PARITY TEST

```
 7115 053072  103426                    BCS     20$                     ;BR IF INIT WAS OK
 7116 053074                            DELAY   250                     ;DELAY ABOUT .25 SEC
      053074  012727  000250                                                    MOV     #250,(PC)+
      053100  000000                                                            .WORD   0
      053102  013727  002116                                                    MOV     L$DLY,(PC)+
      053106  000000                                                            .WORD   0
      053110  005367  177772                                                    DEC     -6(PC)
      053114  001375                                                            BNE     .-4
      053116  005367  177756                                                    DEC     -22(PC)
      053122  001367                                                            BNE     .-20
 7117 053124  005337  054652                    DEC     T33DLY                  ;BUMP COUNTER
 7118 053130  001356                    BNE     10$                     ;BR. IF COUNTER NOT DONE
 7119 053132  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 7123 053136  010001                    MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 7124 053140                            ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      053140  104455                                                            TRAP    C$ERDF
      053142  000765                                                            .WORD   501
      053144  003650                                                            .WORD   SFIERR
      053146  012144                                                            .WORD   SFIMSG
 7125 053150  013737  002174  054520  20$:      MOV     UNITN,T33DSW            ;SET UP UNIT NUMBER
 7126
 7127 053156  012704  054500                    MOV     #T33PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 7128 053162  004737  010742                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 7129 053166  103407                    BCS     23$                     ;BR. IF COMMAND ISSUED OK
 7130 053170  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 7134 053174  010001                    MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 7135 053176                            ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      053176  104456                                                            TRAP    C$ERHRD
      053200  000766                                                            .WORD   502
      053202  005054                                                            .WORD   WRTMSG
      053204  012144                                                            .WORD   SFIMSG
 7136 053206                    23$:    CKLOOP                          ;LOOP IF SELECTED
      053206  104406                                                            TRAP    C$CLP1
 7137 053210  004737  011126                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 7138 053214  103411                    BCS     30$                     ;BR. IF NO PROBLEM
 7139 053216  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 7140 053222  010004                    MOV     R0,R4                   ;GET PACKET ADDRESS
 7141 053224  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 7145 053230                            ERRHRD  ERRNO,T33RWN,PKTSSR     ;REWIND NOT ACCEPTED
      053230  104456                                                            TRAP    C$ERHRD
      053232  000767                                                            .WORD   503
      053234  055350                                                            .WORD   T33RWN
      053236  012156                                                            .WORD   PKTSSR
 7146 053240                    30$:    CKLOOP                          ;LOOP IF SELECTED
      053240  104406                                                            TRAP    C$CLP1
 7147 053242  013701  054530                    MOV     T33BFR+6,R1             ;PICK UP XSTO
 7148 053246  010102                    MOV     R1,R2                   ;SET UP EXPECTED
 7149 053250  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 7150 053254  020102                    CMP     R1,R2                   ;DOES EXP = REC'D
 7151 053256  001406                    BEQ     40$                     ;BR. IF EQUAL (OK)
 7152 053260  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 7156 053264                            ERRHRD  ERRNO,T33BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      053264  104456                                                            TRAP    C$ERHRD
      053266  000770                                                            .WORD   504
      053270  055255                                                            .WORD   T33BOT
      053272  015604                                                            .WORD   EXPREC
 7157 053274                    40$:    CKLOOP                          ;LOOP IF SELECTED
```

TEST 5: DATA PARITY TEST

```
                053274  104406                                                          TRAP    C$CLP1
7158            053276  005737  002220          42$:    TST     EXTFEA          ;CHECK FOR EXTENDED FEATURES SW SWITCH
7159            053302  001025                  BNE     55$             ;BR IF SWITCH IS ON
7160            053304  112737  000200  054631          MOVB    #200,T33BS1     ;WRITE MISCELLANEOUS CONT/READ STATUS
7161            053312  112737  000010  054630          MOVB    #10,T33BSO      ;FUNC. SEL. BIT (TURN ON EXTFEA SWITCH)
7162            053320  012704  054610                  MOV     #T33PK2,R4      ;WRITE SUBSYS MEM PACKET
7163            053324  010465  000000                  MOV     R4,TSDB(R5)     ;ISSUE COMMAND
7164            053330  004737  016446                  JSR     PC,CHKTSSR      ;WAIT FOR SSR
7165            053334  103407                          BCS     50$             ;BR, IF NO ERROR
7166            053336  010001                          MOV     R0,R1           ;ERROR, SAVE TSSR
7167            053340  005237  002214                  INC     FATFLG                  ;ERROR COUNT
7171            053344                                  ERRHRD  ERRNO,T33SSR,PKTSSR     ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
                053344  104456                                                          TRAP    C$ERHRD
                053346  000771                                                          .WORD   505
                053350  055171                                                          .WORD   T33SSR
                053352  012156                                                          .WORD   PKTSSR
7172            053354                          50$:    CKLOOP                  ;LOOP IF SELECTED
                053354  104406                                                          TRAP    C$CLP1
7173            053356  005737  002224          55$:    TST     BENBSW          ;CHECK FOR BUFFER ENABLED
7174            053362  001426                  BEQ     70$             ;BR, IF BUFFERING NOT ENABLED
7175            053364  013737  002174  054520          MOV     UNITN,T33DSW    ;SET UP UNIT NUMBER
7176            053372  042737  000020  054520          BIC     #BIT4,T33DSW    ;BUFFER DISABLE
7177            053400  052737  000010  054520          BIS     #BIT3,T33DSW    ;BUFFER DISABLE SEND 01 TO BITS 4 AND 3
7178            053406  012704  054500                  MOV     #T33PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
7179            053412  004737  010742                  JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
7180            053416  103407                          BCS     60$             ;BR, IF COMMAND ISSUED OK
7181            053420  005237  002214                  INC     FATFLG                  ;ERROR COUNT
7185            053424  010001                          MOV     R0,R1           ;SAVE CONTENTS OF TSSR
7186            053426                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
                053426  104456                                                          TRAP    C$ERHRD
                053430  000772                                                          .WORD   506
                053432  005054                                                          .WORD   WRTMSG
                053434  012144                                                          .WORD   SFIMSG
7187            053436                          60$:    CKLOOP                  ;LOOP IF SELECTED
                053436  104406                                                          TRAP    C$CLP1
7188            053440                          70$:
7189            053440  112737  000100  054631          MOVB    #100,T33BS1     ;WRITE MISCELLANEOUS CONT/READ STATUS
7190            053446  112737  000011  054630          MOVB    #11,T33BSO      ;FUNC. SEL. BIT (SET WRONG PARITY)
7191            053454  012704  054610                  MOV     #T33PK2,R4      ;WRITE SUBSYS MEM PACKET
7192            053460  010465  000000                  MOV     R4,TSDB(R5)     ;ISSUE COMMAND
7193            053464  004737  016446                  JSR     PC,CHKTSSR      ;WAIT FOR SSR
7194            053470  103407                          BCS     80$             ;BR, IF NO ERROR
7195            053472  010001                          MOV     R0,R1           ;ERROR, SAVE TSSR
7196            053474  005237  002214                  INC     FATFLG                  ;ERROR COUNT
7200            053500                                  ERRHRD  ERRNO,T33SSR,PKTSSR     ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
                053500  104456                                                          TRAP    C$ERHRD
                053502  000773                                                          .WORD   507
                053504  055171                                                          .WORD   T33SSR
                053506  012156                                                          .WORD   PKTSSR
7201            053510                          80$:    CKLOOP                  ;LOOP IF SELECTED
                053510  104406                                                          TRAP    C$CLP1
7202            053512  012703  000026                  MOV     #22.,R3         ;NUMBER OF RECORDS TO BE WRITTEN
7203            053516  013737  003120  054622          MOV     FREF,T33WB      ;STARTING WRITE BUFFER ADDRESS
7204            053524  005037  054650                  CLR     T33CNU          ;MAKE SURE ITS CLEAR
7205            053530  012737  140005  054620  110$:   MOV     #140005,T33PK3  ;WRITE DATA,ACK,CYC-1 COMMAND
7206            053536  012704  054620                  MOV     #T33PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
7207            053542  012737  000024  054626          MOV     #20.,T33SZ      ;SET UP RECORD SIZE IN PACKET
```

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TEST 5: DATA PARITY TEST

```
 7208 053550  013777  054650  127342          MOV     T33CNU,@FREE            ;MEMORY FILLED WITH DATA IN RECORD
 7209 053556  005237  054650                  INC     T33CNU                  ;READY FOR NEXT RECORD
 7210 053562  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 7211 053566  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 7212 053572  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 7213 053576  012702  100210                  MOV     #SSR!SC!BIT3,R2         ;SET UP EXPECTED
 7214 053602  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 7215 053604  001406                          BEQ     120$                    ;BR. IF OK
 7216 053606  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 7220 053612                                  ERRHRD  ERRNO,T33WPW,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      053612  104456                                                                  TRAP    C$ERHRD
      053614  000774                                                                  .WORD   508
      053616  054732                                                                  .WORD   T33WPW
      053620  012156                                                                  .WORD   PKTSSR
 7221 053622                          120$:   CKLOOP                          ;LOOP IF SELECTED
      053622  104406                                                                  TRAP    C$CLP1
 7222 053624  013701  054532                  MOV     T33BFR+10,R1            ;PICK UP XST1
 7223 053630  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 7224 053632  052702  000002                  BIS     #BIT1,R2                ;SET UNC BIT IN EXPECTED
 7225 053636  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
 7226 053640  001406                          BEQ     130$                    ;BR. IF EQUAL (OK)
 7227 053642  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 7231 053646                                  ERRHRD  ERRNO,T33UNC,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      053646  104456                                                                  TRAP    C$ERHRD
      053650  000775                                                                  .WORD   509
      053652  055012                                                                  .WORD   T33UNC
      053654  015604                                                                  .WORD   EXPREC
 7232 053656                          130$:   CKLOOP                          ;LOOP IF SELECTED
      053656  104406                                                                  TRAP    C$CLP1
 7233 053660  005303                          DEC     R3                      ;DEC RECORD COUNTER
 7234 053662  001322                          BNE     110$                    ;BR. IF MORE RECORDS TO WRITE
 7235 053664  004737  011126                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 7236 053670  103411                          BCS     140$                    ;BR. IF NO PROBLEM
 7237 053672  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 7238 053676  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
 7239 053700  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 7243 053704                                  ERRHRD  ERRNO,T33RWN,PKTSSR     ;REWIND NOT ACCEPTED
      053704  104456                                                                  TRAP    C$ERHRD
      053706  000776                                                                  .WORD   510
      053710  055350                                                                  .WORD   T33RWN
      053712  012156                                                                  .WORD   PKTSSR
 7244 053714                          140$:   CKLOOP                          ;LOOP IF SELECTED
      053714  104406                                                                  TRAP    C$CLP1
 7245 053716  013701  054530                  MOV     T33BFR+6,R1             ;PICK UP XST0
 7246 053722  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 7247 053724  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 7248 053730  020102                          CMP     R1,R2                   ;DOES EXP = REC D
 7249 053732  001406                          BEQ     150$                    ;BR. IF EQUAL (OK)
 7250 053734  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 7254 053740                                  ERRHRD  ERRNO,T33BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      053740  104456                                                                  TRAP    C$ERHRD
      053742  000777                                                                  .WORD   511
      053744  055255                                                                  .WORD   T33BOT
      053746  015604                                                                  .WORD   EXPREC
 7255 053750                          150$:   CKLOOP                          ;LOOP IF SELECTED
      053750  104406                                                                  TRAP    C$CLP1
 7256 053752  005037  054650                  CLR     T33CNU                  ;CLEAR DATA VALUE IN RECORD
```

K13

SEQ 0166

TEST 5: DATA PARITY TEST

```
 7257 053756  012703  000024                    MOV     #20.,R3                 ;RECORD SIZE
 7258 053762  013737  003120  054622  155$:     MOV     FREE,T33R8              ;STARTING WRITE BUFFER ADDRESS
 7259 053770  012737  140001  054620            MOV     #140001,T33PK3          ;READ DATA,CVC=1,ACK COMMAND
 7260 053776  012704  054620                    MOV     #T33PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 7261 054002  012737  000024  054626            MOV     #20.,T33SZ              ;SET UP RECORD SIZE IN PACKET
 7262 054010  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 7263 054014  004737  016360                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 7264 054020  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 7265 054024  012702  100210                    MOV     #SSR!SC!BIT3,R2         ;SET UP EXPECTED
 7266 054030  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
 7267 054032  001406                            BEQ     160$                    ;BR, IF OK
 7268 054034  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 7272 054040                                    ERRHRD  ERRNO,T33WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      054040  104456                                                                    TRAP    C$ERHRD
      054042  001000                                                                    .WORD   512
      054044  055417                                                                    .WORD   T33WDC
      054046  012156                                                                    .WORD   PKTSSR
 7273 054050                            160$:   CKLOOP                          ;LOOP IF SELECTED
      054050  104406                                                                    TRAP    C$CLP1
 7274 054052  013701  054532                    MOV     T33BFR+10,R1            ;PICK UP XST1
 7275 054056  010102                            MOV     R1,R2                   ;SET UP EXPECTED
 7276 054060  052702  000002                    BIS     #BIT1,R2                ;SET UNC BIT IN EXPECTED
 7277 054064  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
 7278 054066  001406                            BEQ     170$                    ;BR, IF EQUAL (OK)
 7279 054070  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 7283 054074                                    ERRHRD  ERRNO,T33UND,EXPREC     ;UNC BIT NOT SET AFTER READ CMD.
      054074  104456                                                                    TRAP    C$ERHRD
      054076  001001                                                                    .WORD   513
      054100  055102                                                                    .WORD   T33UND
      054102  015604                                                                    .WORD   EXPREC
 7284 054104                            170$:   CKLOOP                          ;LOOP IF SELECTED
      054104  104406                                                                    TRAP    C$CLP1
 7285 054106  013701  054532                    MOV     T33BFR+10,R1            ;PICK UP XST1
 7286 054112  010102                            MOV     R1,R2                   ;SET UP EXPECTED
 7287 054114  052702  000400                    BIS     #BIT8,R2                ;SET RBP BIT IN EXPECTED
 7288 054120  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
 7289 054122  001406                            BEQ     180$                    ;BR, IF EQUAL (OK)
 7290 054124  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 7294 054130                                    ERRHRD  ERRNO,T33RBP,EXPREC     ;READ BUS PARITY ERROR BIT NOT SET
      054130  104456                                                                    TRAP    C$ERHRD
      054132  001002                                                                    .WORD   514
      054134  054654                                                                    .WORD   T33RBP
      054136  015604                                                                    .WORD   EXPREC
 7295 054140                            180$:   CKLOOP                          ;LOOP IF SELECTED
      054140  104406                                                                    TRAP    C$CLP1
 7296 054142  017701  126752                    MOV     @FREE,R1                ;GET DATA READ
 7297 054146  013702  054650                    MOV     T33CNU,R2                       ;GET PATTERN
 7298 054152  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
 7299 054154  001406                            BEQ     182$                    ;BR, IF OK
 7300 054156  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 7304 054162                                    ERRHRD  ERRNO,T33DTA,EXPREC     ;DATA NOT CORRECT
      054162  104456                                                                    TRAP    C$ERHRD
      054164  001003                                                                    .WORD   515
      054166  055500                                                                    .WORD   T33DTA
      054170  015604                                                                    .WORD   EXPREC
 7305 054172                            182$:   CKLOOP                          ;LOOP IF SELECTED
      054172  104406                                                                    TRAP    C$CLP1
```

L13

SEQ 0167

TEST 5: DATA PARITY TEST

```
 7306 054174  013737  003120  054622          MOV     FREE,T33WB              ;STARTING WRITE BUFFER ADDRESS
 7307 054202  012737  140401  054620  195$:   MOV     #140401,T33PK3          ;READ REVERSE DATA RETRY,ACK COMMAND
 7308 054210  012704  054620                  MOV     #T33PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 7309 054214  012737  000024  054626          MOV     #20.,T33SZ              ;SET UP RECORD SIZE IN PACKET
 7310 054222  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 7311 054226  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 7312 054232  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 7313 054236  012702  100210                  MOV     #SC!SSR!BIT3,R2                 ;SET UP EXPECTED
 7314 054242  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 7315 054244  001406                          BEQ     190$                    ;BR. IF OK
 7316 054246  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 7320 054252                                  ERRHRD  ERRNO,T33WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      054252  104456                                                                  TRAP    C$ERHRD
      054254  001004                                                                  .WORD   516
      054256  055417                                                                  .WORD   T33WDC
      054260  012156                                                                  .WORD   PKTSSR
 7321 054262                          190$:   CKLOOP                          ;LOOP IF SELECTED
      054262  104406                                                                  TRAP    C$CLP1
 7322 054264  013701  054532                  MOV     T338FR+10,R1            ;PICK UP XST1
 7323 054270  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 7324 054272  052702  000002                  BIS     #BIT1,R2                ;SET UNC BIT IN EXPECTED
 7325 054276  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
 7326 054300  001406                          BEQ     200$                    ;BR. IF EQUAL (OK)
 7327 054302  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 7331 054306                                  ERRHRD  ERRNO,T33UND,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      054306  104456                                                                  TRAP    C$ERHRD
      054310  001005                                                                  .WORD   517
      054312  055102                                                                  .WORD   T33UND
      054314  015604                                                                  .WORD   EXPREC
 7332 054316                          200$:   CKLOOP                          ;LOOP IF SELECTED
      054316  104406                                                                  TRAP    C$CLP1
 7333 054320  013701  054532                  MOV     T338FR+10,R1            ;PICK UP XST0
 7334 054324  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 7335 054326  052702  000400                  BIS     #BIT8,R2                ;SET RBP BIT IN EXPECTED
 7336 054332  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
 7337 054334  001406                          BEQ     210$                    ;BR. IF EQUAL (OK)
 7338 054336  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 7342 054342                                  ERRHRD  ERRNO,T33RBP,EXPREC     ;READ BUS PARITY ERROR BIT NOT SET
      054342  104456                                                                  TRAP    C$ERHRD
      054344  001006                                                                  .WORD   518
      054346  054654                                                                  .WORD   T33RBP
      054350  015604                                                                  .WORD   EXPREC
 7343 054352                          210$:   CKLOOP                          ;LOOP IF SELECTED
      054352  104406                                                                  TRAP    C$CLP1
 7344 054354  017701  126540                  MOV     @FREE,R1                ;GET DATA READ
 7345 054360  013702  054650                  MOV     T33CNU,R2                       ;GET PATTERN
 7346 054364  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 7347 054366  001406                          BEQ     215$                    ;BR. IF OK
 7348 054370  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 7352 054374                                  ERRHRD  ERRNO,T33DTA,EXPREC     ;DATA NOT CORRECT
      054374  104456                                                                  TRAP    C$ERHRD
      054376  001007                                                                  .WORD   519
      054400  055500                                                                  .WORD   T33DTA
      054402  015604                                                                  .WORD   EXPREC
 7353 054404                          215$:   CKLOOP                          ;LOOP IF SELECTED
      054404  104406                                                                  TRAP    C$CLP1
 7354 054406  010302                          MOV     R3,R2                   ;SAVE R3 FOR A MOMENT
```

TEST 5: DATA PARITY TEST

```
7355 054410  012703  000001                MOV     #1,R3                   ;SPACE FORWARD ONE RECORD
7356 054414  004737  010546                JSR     PC,SPACE                ;CALL ROUTINE
7357 054420  010203                        MOV     R2,R3                   ;RESTORE R3
7358 054422  005237  054650                INC     T33CNU                  ;BUMP TO NEXT RECORD NUMBER
7359 054426  005303                        DEC     R3                      ;BUMP COUNTER
7360 054430  001402                        BEQ     220$                    ;BR. IF DONE
7361 054432  000137  053762                JMP     155$                    ;BR. IF NOT DONE YET
7362 054436                        220$:
7363 054436                        ENDSUB                                  ;<<<<<<<<<<<<< END SUBTEST >>>>>>>>>>>>
     054436                                                                          L10060:
     054436  104403                                                                  TRAP    C$ESUB
7364 054440  023727  002214  000017        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
7365 054446  103402                        BLO     999$                            ;BR. IF LESS THAN 25
7366 054450  004737  017312                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
7367 054454                        999$:
7368                               ;
7369                               ;
7370                               ;
7371 054454  004737  016566                JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
7372 054460  103002                        BCC     230$                    ;BR. IF NO LOOP REQUIRED
7373 054462  000137  053026                JMP     T33LOOP                 ;EXECUTE AGAIN
7374 054466                        230$:   EXIT    TST                     ;ALL DONE THIS TEST
     054466  104432                                                                  TRAP    C$EXIT
     054470  001300                                                                  .WORD   L10057-.
7375                               ;*
7376                               ;LOCAL STORAGE FOR THIS TEST
7377                               ;-
7379          054500                       .=<.+10>&177770
7381 054500                        T33PACKET:
7382 054500  100004                        .WORD   100004                  ;COMMAND PACKET FOR TEST
7383 054502  054510                        .WORD   T33DATA                 ;WRITE CHARACTERISTICS COMMAND, WITH . ACK
7384 054504  000000                        .WORD   0                       ;ADDRESS OF CHARACTERISTICS BLOCK
7385 054506  000012                        .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
7386 054510                        T33DATA:                                ;CHARACTERISTICS DATA BLOCK
7387 054510  054522                        .WORD   T33BFR                  ;ADDRESS OF MESSAGE BUFFER
7388 054512  000000                        .WORD   0
7389 054514  000024                        .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
7390 054516  000000                        .WORD   0
7391 054520  000000                T33DSW: .WORD   0                       ;SELECT DRIVE 0
7392 054522                        T33BFR: .BLKW   25.                     ;MESSAGE BUFFER
7393                               ;
7394                               ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
7395                               ;
7397          054610                       .=<.+10>&177770
7399 054610                        T33PK2:
7400 054610  100006                        .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
7401 054612  054630                        .WORD   T33BF2                  ;ADDRESS OF SELECT BLOCK DATA
7402 054614  000000                        .WORD   0
7403 054616  000006                        .WORD   6.                      ;SIZE OF DATA PACKET
7404
7408 054620                        T33PK3:
7409 054620  100005                        .WORD   100005                  ;REREAD COMMAND, AND ACK
7410 054622                        T33RB:
7411 054622  003120                T33WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
7412 054624  000000                        .WORD   0
7413 054626  000000                T33SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
7414                                       .EVEN
```

TEST 5: DATA PARITY TEST

```
                                        ;
                                        ;
                                        ;
054630                                  T33BF2:
054630      010                         T33BS0: .BYTE   10                      ;BSEL0 AREA
054631      200                         T33BS1: .BYTE   200                     ;BSEL1 AREA
054632  000000                          T33S2:  .WORD   0                       ;SEL 2 AREA
054634  000000                          T33S3:  .WORD   0                       ;DATA AREA
                                        ;
                                        ;
                                                .EVEN
                                        ;TAPE MOTION PACKET COMMAND VALUES

054636  100205                          T33RN:  .WORD   100205                  ;REREAD DATA (NEXT)
054640  100605                          T33WDR: .WORD   100( 5                  ;REREAD DATA RETRY
054642  102205                          T33CON: .WORD   102205                  ;WRITE CONTINOUS
054644  177777                                  .WORD   177777                  ;END OF DATA

                                        ;
054646  000000                          T33CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
054650  000000                          T33CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
054652  000000                          T33DLY: .WORD   0                       ;DELAY COUNTER
                                        ;+
                                        ;LOCAL TEXT MESSAGES FOR TEST
                                        ;-

054654      122     145     141         T33RBP: .ASCIZ  'Read Bus Parity Bit Not Set (XST1), Should Be'
054732      124     123     123         T33WPW: .ASCIZ  'TSSR Incorrect After Wrong Parity Write Command'
055012      125     116     103         T33UNC: .ASCIZ  'UNC Bit (XST1) Not Set After Wrong Parity WRITE Command'
055102      125     116     103         T33UND: .ASCIZ  'UNC Bit (XST1) Not Set After Wrong Parity READ Command'
055171      127     122     111         T33SSR: .ASCIZ  'WRITE MISSCELLANEOUS CONT/READ COMMAND Not Accepted'
055255      124     141     160         T33BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
055350      122     145     167         T33RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
055417      124     123     123         T33WDC: .ASCIZ  'TSSR Not Correct After READ Wrong Parity Command'
055500      104     141     164         T33DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
055575      104     141     164         TST33ID:        .ASCIZ  'Data Parity'
                                                .EVEN
                                        ;+
                                        ;
                                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                        ;WRITE SUBSYSTEM MEMORY COMMAND
                                        ;
                                        ;-

055612                                  T33REST:
055612                                          SAVREG                          ;SAVE THE REGISTERS
055616  012701  054500                          MOV     #T33PACKET,R1           ;START OF THE PACKET
055622  012721  100004                          MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
055626  012721  054510                          MOV     #T33DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
055632  005021                                  CLR     (R1)+                   ;EXTENDED ADDRESS
055634  012721  000012                          MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
055640  012721  054522                          MOV     #T33BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
055644  005021                                  CLR     (R1)+
055646  012721  000024                          MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
055652  005021                                  CLR     (R1)+
055654  012711  000000                          MOV     #0,(R1)                 ;SELECT DRIVE ZERO
055660  012702  000030                          MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
```

TEST 5: DATA PARITY TEST

```
7472 055664  012762  177777  054522  64$:    MOV     #177777,T33BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
7473 055672  005742                           TST     -(R2)                   ;NEXT LOCATION
7474 055674  022702  000000                   CMP     #0,R2                   ;AT END OF LOOP YET
7475 055700  001371                           BNE     64$                     ;KEEP GOING UNTIL DONE
7476 055702  000207                           RTS     PC                      ;RETURN
7477
7478 055704                           T33RT2:
7479 055704                                   SAVREG                          ;SAVE THE REGISTERS
7480 055710  012701  054610                   MOV     #T33PK2,R1              ;START OF THE PACKET
7481 055714  012721  100006                   MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
7482 055720  012721  054630                   MOV     #T33BF2,(R1)+           ;ADDRESS OF DATA BLOCK
7483 055724  005021                           CLR     (R1)+                   ;EXTENDED ADDRESS
7484 055726  012721  000006                   MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
7485 055732  005021                           CLR     (R1)+
7486 055734  012701  054630                   MOV     #T33BF2,R1              ;POINT TO DATA SEL AREA
7487 055740  005021                           CLR     (R1)+
7488 055742  005011                           CLR     (R1)
7489 055744  000207                           RTS     PC                      ;RETURN
7490 055746                           T33RT3:
7491 055746                                   SAVREG                          ;SAVE REGISTERS
7492 055752  012701  054620                   MOV     #T33PK3,R1              ;SET UP POINTER ADDRESS
7493 055756  005021                           CLR     (R1)+                   ;COMMAND SPACE
7494 055760  005021                           CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
7495 055762  005021                           CLR     (R1)+                   ;EXTENDED ADDRESS
7496 055764  005011                           CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
7497 055766  000207                           RTS     PC                      ;RETURN
7498 055770                                   ENDTST
     055770                                                                                L10057:
     055770  104401                                                                                TRAP    C$ETST
7499                                          .SBTTL  TEST  6: OPERATIONS AT EOT
7500                                  ;+
7501                                  ;
7502                                  ;THIS TEST VERIFIES PROPER OPERATION OF THE WRITE DATA RETRY
7503                                  ;COMMAND (SPACE REVERSE, ERASE, WRITE DATA)
7504                                  ;
7505                                  ;
7506                                  ;THE TEST CONSISTS OF THE FOLLOWING 1 SUBTEST
7507                                  ;
7508                                  ;
7509                                  ;
7510                                  ;-
7511 055772                                   BGNTST
     055772                                                                                T6::
7512 055772  012737  006356  002172           MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
7517 056000  012700  063137                   MOV     #TST34ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
7518 056004  004737  016620                   JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
7519 056010  012737  000005  002210           MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
7520 056016  005037  060622                   CLR     T34CNT                  ;CLEAR TAPE RECORD COUNTER
7521                                  ;+
7522                                  ;
7523                                  ;TEST 6, SUBTEST 1
7524                                  ;
7525                                  ;
7526                                  ;       THIS TEST VERIFIES THAT THE EOT STATUS IS HANDLED PROPERLY BY
7527                                  ;       THE VARIOUS TAPE MOTION COMMANDS.  THE FOLLOWING TEST SEQUENCE
7528                                  ;       IS PERFORMED:
7529                                  ;
```

TEST 6: OPERATIONS AT EOT

```
7530                    ;
7531                    ;       1.  THE TAPE IS REWOUND.
7532                    ;
7533                    ;       2.  WRITE DATA COMMANDS ARE REPEATEDLY ISSUED UNTIL TAPE
7534                    ;           STATUS ALERT TERMINATION IS SEEN WITH EOT=1.  ERRORS
7535                    ;           OTHER THAN OCCASIONAL CORRECTABLE OR UNCORRECTABLE DATA
7536                    ;           ERRORS CAUSE A FATAL ERROR REPORT.  RECORDS WITH DATA
7537                    ;           ERRORS ARE RETRIED, SO THE TAPE ENDS UP WITH GOOD DATA.
7538                    ;
7539                    ;       3.  ANOTHER WRITE DATA COMMAND IS ISSUED, AND IT IS CHECKED
7540                    ;           THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=1.
7541                    ;
7542                    ;       4.  A WRITE TAPE MARK COMMAND IS ISSUED, AND IT IS CHECKED
7543                    ;           THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=1.
7544                    ;
7545                    ;       5.  A SKIP TAPE MARKS REVERSE COMMAND IS ISSUED, AND IT IS
7546                    ;           CHECKED THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH
7547                    ;           EOT=1 AND TMK=1.
7548                    ;
7549                    ;       6.  A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF
7550                    ;           1, IS ISSUED, AND IT IS CHECKED THAT TAPE STATUS ALERT
7551                    ;           TERMINATION OCCURS, WITH EOT=1 AND TMK=1.
7552                    ;
7553                    ;       7.  A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF
7554                    ;           1, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
7555                    ;           OCCURS, WITH EOT=1.
7556                    ;
7557                    ;       8.  A SPACE RECORDS FORWARD COMMAND, WITH A RECORD COUNT OF
7558                    ;           1, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
7559                    ;           OCCURS, WITH EOT=1.
7560                    ;
7561                    ;       9.  A READ REVERSE COMMAND IS ISSUED, AND IT IS CHECKED
7562                    ;           THAT NORMAL TERMINATION OCCURS, WITH EOT=1.
7563                    ;
7564                    ;       10. A READ FORWARD COMMAND IS ISSUED, AND IT IS CHECKED
7565                    ;           THAT NORMAL TERMINATION OCCURS, WITH EOT=1.
7566                    ;
7567                    ;       11. A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF
7568                    ;           3, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
7569                    ;           OCCURS, WITH EOT=0.
7570                    ;
7571                    ;       12. A SPACE RECORDS FORWARD COMMAND, WITH A RECORD COUNT OF
7572                    ;           3, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
7573                    ;           OCCURS, WITH EOT=1.
7574                    ;
7575                    ;       13. A SKIP FILE MARKS REVERSE COMMAND IS ISSUED, WHICH
7576                    ;           SHOULD SKIP ALL THE WAY TO BOT, AND IT IS CHECKED THAT
7577                    ;           TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=0,
7578                    ;           BOT=1, AND RIB=1.
7579                    ;
7580                    ;
7581                    ;
7582                    ;-
7583
7584 056022           T34LOOP:
7585                    ;*
7586                    ;
```

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.
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;
7608 056022                                     BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     056022                                                                     T6.1:
     056022  104402                                                             TRAP    C$BSUB
7609 056024  004737  063162                     JSR     PC,T34REST      ;SET COMMAND PACKET
7610 056030  004737  063316                     JSR     PC,T34RT3       ;RESTORE PACKET
7611 056034  004737  063254                     JSR     PC,T34RT2       ;SET UP OTHER COMMAND PACKET
7612 056040  012737  176750  060624             MOV     #65000.,T34DLY  ;SET UP COUNTER
7613 056046  004737  016104             10$:    JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
7614 056052  103433                             BCS     20$             ;BR IF INIT WAS OK
7615 056054                                     DELAY   250             ;DELAY A WHILE
     056054  012727  000250                                                    MOV     #250.,(PC)+
     056060  000000                                                            .WORD   0
     056062  013727  002116                                                    MOV     L$DLY,(PC)+
     056066  000000                                                            .WORD   0
     056070  005367  177772                                                    DEC     -6(PC)
     056074  001375                                                            BNE     .-4
     056076  005367  177756                                                    DEC      22(PC)
     056102  001367                                                            BNE     .-20
7616 056104  016501  000002                     MOV     TSSR(R5),R1     ;GET TSSR STATUS
7617 056110  032701  000200                     BIT     #SSR,R1         ;CHECK FOR SSR SET
7618 056114  001012                             BNE     20$             ;BR, WHEN SSR IS SET
7619 056116  005337  060624                     DEC     T34DLY          ;BUMP COUNTER DOWN
7620 056122  001351                             BNE     10$             ;BR, IF MORE DELAY REQUIRED
7621 056124  005237  002214                     INC     FATFLG                  ;ERROR COUNT
7625 056130  010001                             MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
7626 056132                                     ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     056132  104455                                                             TRAP    C$ERDF
     056134  001131                                                            .WORD   601
     056136  003650                                                            .WORD   SFIERR
     056140  012144                                                            .WORD   SFIMSG
7627 056142                             20$:    CKLOOP                  ;LOOP IF SELECTED
     056142  104406                                                             TRAP    C$CLP1
7628 056144  013737  002174  060510             MOV     UNITN,T34DSW    ;SET UP DRIVE NUMBER
7629 056152  052737  000040  060510             BIS     #BIT5,T34DSW    ;TURN ON HIGH SPEED TO SAVE TIME
7630 056160  012704  060470                     MOV     #T34PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
7631 056164  004737  010742                     JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
```

TEST 6: OPERATIONS AT EOT

```
7632 056170  103407                    BCS     30$                     ;BR, IF COMMAND ISSUED OK
7633 056172  005237  002214            INC     FATFLG                          ;ERROR COUNT
7637 056176  010001                    MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
7638 056200                            ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     056200  104456                                                            TRAP    C$ERHRD
     056202  001132                                                            .WORD   602
     056204  005054                                                            .WORD   WRTMSG
     056206  012144                                                            .WORD   SFIMSG
7639 056210                    30$:    CKLOOP                          ;LOOP IF SELECTED
     056210  104406                                                            TRAP    C$CLP1
7640 056212  004737  011126            JSR     PC,REWIND               ;REWIND CALL
7641 056216  103411                    BCS     35$                     ;BR, IF TSSR IS OK (GOOD)
7642 056220  016501  000002            MOV     TSSR(R5),R1             ;GET TSSR
7643 056224  010004                    MOV     R0,R4                   ;SET UP PACKET
7644 056226  005237  002214            INC     FATFLG                          ;ERROR COUNT
7648 056232                            ERRHRD  ERRNO,T34RWN,PKTSSR     ;TSSR IS INCORRECT AFTER REWIND
     056232  104456                                                            TRAP    C$ERHRD
     056234  001133                                                            .WORD   603
     056236  062267                                                            .WORD   T34RWN
     056240  012156                                                            .WORD   PKTSSR
7649 056242                    35$:    CKLOOP                          ;LOOP IF SELECTED
     056242  104406                                                            TRAP    C$CLP1
7650 056244  012737  140005  060610        MOV     #140005,T34PK3          ;WRITE DATA, ACK, CVC=1
7651 056252  012703  176750                MOV     #65000.,R3              ;SET MAX NUMBER OF WRITES
7652 056256  013737  003120  060612        MOV     FREE,T34WB              ;SET UP WRITE BUFFER ADDRESS
7653 056264  012737  006654  060616        MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (4K BYTES)
7654 056272  012704  060610                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7655 056276  010465  000000    40$:        MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7656 056302  004737  016360                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7657 056306  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7658 056312  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
7659 056316  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
7660 056320  001010                        BNE     50$                     ;BR, IT MIGHT BE END OF TAPE
7661 056322  005303                        DEC     R3                      ;DEC RECORD COUNTER
7662 056324  001364                        BNE     40$                     ;BR, IF MORE TO GO
7663 056326  005237  002214                INC     FATFLG                          ;ERROR COUNT
7667 056332                            ERRDF   ERRNO,T34ET,PKTSSR      ;EOT NOT FOUND (USE SHORTER TAPE?)
     056332  104455                                                                TRAP    C$ERDF
     056334  001134                                                                .WORD   604
     056336  062046                                                                .WORD   T34ET
     056340  012156                                                                .WORD   PKTSSR
7668 056342  032701  000004    50$:        BIT     #BIT2,R1                ;CHECK FOR TAPE STATUS ALERT
7669 056346  001001                        BNE     60$                     ;BR, IF SET
7670 056350  000752                        BR      40$                     ;KEEP GOING
7671 056352  013701  060520    60$:        MOV     T34BFR+6,R1             ;PICK UP XSTO
7672 056356  010102                        MOV     R1,R2                   ;SET UP EXPECTED
7673 056360  052702  000001                BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
7674 056364  020102                        CMP     R1,R2                   ;WAS THE BIT ON
7675 056366  001402                        BEQ     80$                     ;BR, IF EOT WAS FOUND
7676 056370  000137  056276                JMP     40$                     ;KEEP LOOKING
7677 056374                    80$:        CKLOOP                          ;LOOP IF SELECTED
     056374  104406                                                                TRAP    C$CLP1
7678 056376  012737  140005  060610        MOV     #140005,T34PK3          ;WRITE DATA, ACK, CVC=1
7679 056404  013737  003120  060612        MOV     FREE,T34WB              ;SET UP WRITE BUFFER ADDRESS
7680 056412  012737  006654  060616        MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (4K BYTES)
7681 056420  012704  060610                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7682 056424  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
```

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TEST 6: OPERATIONS AT EOT

```
7683 056430  004737  016360            JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7684 056434  016501  000002            MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7685 056440  012702  100204            MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
7686 056444  020102                    CMP     R1,R2                   ;ARE THEY EQUAL
7687 056446  001406                    BEQ     90$                     ;BR. IF THEY ARE OK
7688 056450  005237  002214                    INC     FATFLG                  ;ERROR COUNT
7692 056454                            ERRHRD  ERRNO,T34ET2,PKTSSR     ;WRITE TAPE AT EOT FAILED TO SET TSA
     056454  104456                                                            TRAP    C$ERHRD
     056456  001135                                                            .WORD   605
     056460  061317                                                            .WORD   T34ET2
     056462  012156                                                            .WORD   PKTSSR
7693 056464                    90$:    CKLOOP                          ;LOOP IF SELECTED
     056464  104406                                                            TRAP    C$CLP1
7694 056466  013701  060520            MOV     T34BFR+6,R1             ;PICK UP XSTO
7695 056472  010102                    MOV     R1,R2                   ;SET UP EXPECTED
7696 056474  052702  000001            BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
7697 056500  020102                    CMP     R1,R2                   ;WAS THE BIT ON
7698 056502  001406                    BEQ     100$                    ;BR. IF EOT WAS FOUND
7699 056504  005237  002214                    INC     FATFLG                  ;ERROR COUNT
7703 056510                            ERRHRD  ERRNO,T34ETN,EXPREC     ;EOT BIT (XSTO) NOT SET
     056510  104456                                                            TRAP    C$ERHRD
     056512  001136                                                            .WORD   606
     056514  061401                                                            .WORD   T34ETN
     056516  015604                                                            .WORD   EXPREC
7704 056520                    100$:   CKLOOP                          ;LOOP IF SELECTED
     056520  104406                                                            TRAP    C$CLP1
7705 056522  012737  140011  060610        MOV     #140011,T34PK3          ;WRITE TAPE MARK, ACK, CVC=1 COMMAND
7706 056530  012704  060610            MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7707 056534  010465  000000            MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7708 056540  004737  016360            JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7709 056544  016501  000002            MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7710 056550  012702  100204            MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
7711 056554  020102                    CMP     R1,R2                   ;ARE THEY EQUAL
7712 056556  001406                    BEQ     110$                    ;BR. IF STATUS IS GOOD (OK)
7713 056560  005237  002214                    INC     FATFLG                  ;ERROR COUNT
7717 056564                            ERRHRD  ERRNO,T34WTM,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     056564  104456                                                            TRAP    C$ERHRD
     056566  001137                                                            .WORD   607
     056570  061230                                                            .WORD   T34WTM
     056572  012156                                                            .WORD   PKTSSR
7718 056574                    110$:   CKLOOP                          ;LOOP IF SELECTED
     056574  104406                                                            TRAP    C$CLP1
7719 056576  013701  060520            MOV     T34BFR+6,R1             ;PICK UP XSTO
7720 056602  010102                    MOV     R1,R2                   ;SET UP EXPECTED
7721 056604  052702  000001            BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
7722 056610  020102                    CMP     R1,R2                   ;WAS THE BIT ON
7723 056612  001406                    BEQ     120$                    ;BR. IF EOT WAS FOUND
7724 056614  005237  002214                    INC     FATFLG                  ;ERROR COUNT
7728 056620                            ERRHRD  ERRNO,T34ET0,EXPREC     ;EOT BIT (XSTO) NOT SET
     056620  104456                                                            TRAP    C$ERHRD
     056622  001140                                                            .WORD   608
     056624  060732                                                            .WORD   T34ET0
     056626  015604                                                            .WORD   EXPREC
7729 056630                    120$:   CKLOOP                          ;LOOP IF SELECTED
     056630  104406                                                            TRAP    C$CLP1
7730 056632  012737  141410  060610        MOV     #141410,T34PK3          ;SKIP TAPE MARK REVERSE ACK,CVC=1 COMMAND
7731 056640  012737  000001  060612        MOV     #1,T34W8                ;SET NUMBER (1) OF TMS TO SKIP
```

TEST 6: OPERATIONS AT EOT

```
7732 056646  012704  060610              MOV     #T34PK3,R4          ;R4 = POINTER TO PACKET
7733 056652  010465  000000              MOV     R4,TSDB(R5)         ;ISSUE COMMAND
7734 056656  004737  016360              JSR     PC,WAITF            ;WAIT FOR SSR TO SET
7735 056662  016501  000002              MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
7736 056666  012702  000200              MOV     #SSH,R2             ;SET UP EXPECTED
7737 056672  020102                      CMP     R1,R2               ;ARE THEY EQUAL
7738 056674  001406                      BEQ     130$                ;BR. IF STATUS IS GOOD (OK)
7739 056676  005237  002214                      INC     FATFLG              ;ERROR COUNT
7743 056702                              ERRHRD  ERRNO,T34STM,PKTSSR ;SKIP TAPE MARK REV. DIDN'T SET TSA
     056702  104456                                                      TRAP    C$ERHRD
     056704  001141                                                      .WORD   609
     056706  061630                                                      .WORD   T34STM
     056710  012156                                                      .WORD   PKTSSR
7744 056712                      130$:   CKLOOP                      ;LOOP IF SELECTED
     056712  104406                                                      TRAP    C$CLP1
7745 056714  013701  060520              MOV     T34BFR+6,R1         ;PICK UP XSTO
7746 056720  010102                      MOV     R1,R2               ;SET UP EXPECTED
7747 056722  052702  000001              BIS     #BIT0,R2            ;SET THE EOT BIT ON IN EXPECTED
7748 056726  020102                      CMP     R1,R2               ;WAS THE BIT ON
7749 056730  001406                      BEQ     140$                ;BR. IF EOT WAS FOUND
7750 056732  005237  002214                      INC     FATFLG              ;ERROR COUNT
7754 056736                              ERRHRD  ERRNO,T34ETN,EXPREC ;EOT BIT (XSTO) NOT SET
     056736  104456                                                      TRAP    C$ERHRD
     056740  001142                                                      .WORD   610
     056742  061401                                                      .WORD   T34ETN
     056744  015604                                                      .WORD   EXPREC
7755 056746                      140$:   CKLOOP                      ;LOOP IF SELECTED
     056746  104406                                                      TRAP    C$CLP1
7756 056750  013701  060520              MOV     T34BFR+6,R1         ;PICK UP XSTO
7757 056754  010102                      MOV     R1,R2               ;SET UP EXPECTED
7758 056756  052702  100000              BIS     #BIT15,R2           ;SET THE TMK BIT ON IN EXPECTED
7759 056762  020102                      CMP     R1,R2               ;WAS THE BIT ON
7760 056764  001406                      BEQ     150$                ;BR. IF TMK WAS FOUND
7761 056766  005237  002214                      INC     FATFLG              ;ERROR COUNT
7765 056772                              ERRHRD  ERRNO,T34TMK,EXPREC ;EOT BIT (XSTO) NOT SET
     056772  104456                                                      TRAP    C$ERHRD
     056774  001143                                                      .WORD   611
     056776  061713                                                      .WORD   T34TMK
     057000  015604                                                      .WORD   EXPREC
7766 057002                      150$:   CKLOOP                      ;LOOP IF SELECTED
     057002  104406                                                      TRAP    C$CLP1
7767 057004  012737  140410  060610      MOV     #140410,T34PK3      ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD
7768 057012  012737  000001  060612      MOV     #1,T34WB            ;SPACE ONE RECORD REVERSE
7769 057020  012704  060610              MOV     #T34PK3,R4          ;R4 = POINTER TO PACKET
7770 057024  010465  000000              MOV     R4,TSDB(R5)         ;ISSUE COMMAND
7771 057030  004737  016360              JSR     PC,WAITF            ;WAIT FOR SSR TO SET
7772 057034  016501  000002              MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
7773 057040  012702  100204              MOV     #SC!SSR!BIT2,R2     ;SET UP EXPECTED
7774 057044  020102                      CMP     R1,R2               ;ARE THEY EQUAL
7775 057046  001006                      BNE     160$                ;BR. IT MIGHT BE END OF TAPE
7776 057050  005237  002214                      INC     FATFLG              ;ERROR COUNT
7780 057054                              ERRHRD  ERRNO,T34POS,PKTSSR ;EOT NOT FOUND (USE SHORTER TAPE?)
     057054  104456                                                      TRAP    C$ERHRD
     057056  001144                                                      .WORD   612
     057060  060644                                                      .WORD   T34POS
     057062  012156                                                      .WORD   PKTSSR
7781 057064                      160$:   CKLOOP                      ;LOOP IF SELECTED
```

TEST 6: OPERATIONS AT EOT

```
      057064  104406                                                          TRAP    C$CLP1
 7782 057066  013701  060520                MOV     T34BFR+6,R1             ;PICK UP XSTO
 7783 057072  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 7784 057074  052702  000001                BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
 7785 057100  020102                        CMP     R1,R2                   ;WAS THE BIT ON
 7786 057102  001406                        BEQ     163$                    ;BR. IF EOT WAS FOUND
 7787 057104  005237  002214                INC     FATFLG                          ;ERROR COUNT
 7791 057110                                ERRHRD  ERRNO,T34ETN,EXPREC     ;EOT BIT (XSTO) NOT SET
      057110  104456                                                          TRAP    C$ERHRD
      057112  001145                                                          .WORD   613
      057114  061401                                                          .WORD   T34ETN
      057116  015604                                                          .WORD   EXPREC
 7792 057120                        163$:   CKLOOP                          ;LOOP IF SELECTED
      057120  104406                                                          TRAP    C$CLP1
 7793 057122  013701  060520                MOV     T34BFR+6,R1             ;PICK UP XSTO
 7794 057126  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 7795 057130  042702  100000                BIC     #BIT15,R2               ;CLEAR THE TMK BIT ON IN EXPECTED
 7796 057134  020102                        CMP     R1,R2                   ;WAS THE BIT ON
 7797 057136  001406                        BEQ     165$                    ;BR. IF TMK WAS FOUND
 7798 057140  005237  002214                INC     FATFLG                          ;ERROR COUNT
 7802 057144                                ERRHRD  ERRNO,T34TMK,EXPREC     ;EOT BIT (XSTO) NOT SET
      057144  104456                                                          TRAP    C$ERHRD
      057146  001146                                                          .WORD   614
      057150  061713                                                          .WORD   T34TMK
      057152  015604                                                          .WORD   EXPREC
 7803 057154                        165$:   CKLOOP                          ;LOOP IF SELECTED
      057154  104406                                                          TRAP    C$CLP1
 7804 057156  012737  140410  060610        MOV     #140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD
 7805 057164  012737  000001  060612        MOV     #1,T34WB                ;SPACE ONE RECORD REVERSE
 7806 057172  012704  060610                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
 7807 057176  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 7808 057202  004737  016360                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 7809 057206  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 7810 057212  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 7811 057216  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 7812 057220  001406                        BEQ     167$                    ;BR. IT MIGHT BE END OF TAPE
 7813 057222  005237  002214                INC     FATFLG                          ;ERROR COUNT
 7817 057226                                ERRHRD  ERRNO,T34POS,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
      057226  104456                                                          TRAP    C$ERHRD
      057230  001147                                                          .WORD   615
      057232  060644                                                          .WORD   T34POS
      057234  012156                                                          .WORD   PKTSSR
 7818 057236                        167$:   CKLOOP                          ;LOOP IF SELECTED
      057236  104406                                                          TRAP    C$CLP1
 7819 057240  013701  060520                MOV     T34BFR+6,R1             ;PICK UP XSTO
 7820 057244  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 7821 057246  042702  000001                BIC     #BIT0,R2                ;CLEAR THE EOT BIT ON IN EXPECTED
 7822 057252  020102                        CMP     R1,R2                   ;WAS THE BIT OFF
 7823 057254  001400                        BEQ     170$                    ;BR. IF EOT WAS FOUND
 7824 057256                        170$:   CKLOOP                          ;LOOP IF SELECTED
      057256  104406                                                          TRAP    C$CLP1
 7825 057260  012737  140010  060610        MOV     #140010,T34PK3          ;SPACE RECORDS FORWARD, ACK, CVC=1
 7826 057266  012737  000002  060612        MOV     #2,T34WB                ;SPACE TWO RECORDS
 7827 057274  012704  060610                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
 7828 057300  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 7829 057304  004737  016360                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 7830 057310  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
```

TEST 6: OPERATIONS AT EOT

```
7831 057314  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
7832 057320  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
7833 057322  001406                        BEQ     190$                    ;BR. IT MIGHT BE END OF TAPE
7834 057324  005237  002214                INC     FATFLG                          ;ERROR COUNT
7838 057330                                ERRMRD  ERRNO,T34POS,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     057330  104456                                                               TRAP    C$ERMRD
     057332  001150                                                               .WORD   616
     057334  060644                                                               .WORD   T34POS
     057336  012156                                                               .WORD   PKTSSR
7839 057340                        190$:   CKLOOP                          ;LOOP IF SELECTED
     057340  104406                                                               TRAP    C$CLP1
7840 057342  013701  060520                MOV     T34BFR+6,R1             ;PICK UP XSTO
7841 057346  010102                        MOV     R1,R2                   ;SET UP EXPECTED
7842 057350  052702  000001                BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
7843 057354  020102                        CMP     R1,R2                   ;WAS THE BIT ON
7844 057356  001406                        BEQ     200$                    ;BR. IF EOT WAS FOUND
7845 057360  005237  002214                INC     FATFLG                          ;ERROR COUNT
7849 057364                                ERRMRD  ERRNO,T34ETS,EXPREC     ;EOT BIT (XSTO) NOT SET
     057364  104456                                                               TRAP    C$ERMRD
     057366  001151                                                               .WORD   617
     057370  061460                                                               .WORD   T34ETS
     057372  015604                                                               .WORD   EXPREC
7850 057374                        200$:   CKLOOP                          ;LOOP IF SELECTED
     057374  104406                                                               TRAP    C$CLP1
7851 057376  012737  140401  060610        MOV     #140401,T34PK3          ;READ REVERSE, ACK, CVC=1
7852 057404  013737  003120  060612        MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
7853 057412  012704  060610                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7854 057416  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7855 057422  004737  016360                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7856 057426  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7857 057432  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
7858 057436  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
7859 057440  001406                        BEQ     205$                    ;BR. ONLY SSR IS SET
7860 057442  005237  002214                INC     FATFLG                          ;ERROR COUNT
7864 057446                                ERRMRD  ERRNO,T34RRE,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     057446  104456                                                               TRAP    C$ERMRD
     057450  001152                                                               .WORD   618
     057452  061016                                                               .WORD   T34RRE
     057454  012156                                                               .WORD   PKTSSR
7865 057456                        205$:   CKLOOP                          ;LOOP IF SELECTED
     057456  104406                                                               TRAP    C$CLP1
7866 057460  012737  140401  060610        MOV     #140401,T34PK3          ;READ REVERSE, ACK, CVC=1
7867 057466  013737  003120  060612        MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
7868 057474  012704  060610                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7869 057500  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7870 057504  004737  016360                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7871 057510  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7872 057514  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
7873 057520  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
7874 057522  001406                        BEQ     210$                    ;BR. IT MIGHT BE END OF TAPE
7875 057524  005237  002214                INC     FATFLG                          ;ERROR COUNT
7879 057530                                ERRMRD  ERRNO,T34RRE,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     057530  104456                                                               TRAP    C$ERMRD
     057532  001153                                                               .WORD   619
     057534  061016                                                               .WORD   T34RRE
     057536  012156                                                               .WORD   PKTSSR
7880 057540                        210$:   CKLOOP                          ;LOOP IF SELECTED
```

J14

TEST 6: OPERATIONS AT EOT

```
                057540  104406                                                          TRAP    C$CLP1
7881            057542  012737  140001  060610          MOV     #140001,T34PK3          ;READ DATA, ACK, CVC=1
7882            057550  013737  003120  060612          MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
7883            057556  012737  006654  060616          MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (4K BYTES)
7884            057564  012704  060610                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7885            057570  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7886            057574  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7887            057600  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7888            057604  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
7889            057610  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
7890            057612  001406                          BEQ     230$                    ;BR. IT MIGHT BE END OF TAPE
7891            057614  005237  002214                  INC     FATFLG                          ;ERROR COUNT
7895            057620                                  ERRMRO  ERRNO,T34RRE,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
                057620  104456                                                          TRAP    C$ERMRO
                057622  001154                                                          .WORD   620
                057624  061016                                                          .WORD   T34RRE
                057626  012156                                                          .WORD   PKTSSR
7896            057630                          230$:   CKLOOP                          ;LOOP IF SELECTED
                057630  104406                                                          TRAP    C$CLP1
7897            057632  012737  140001  060610          MOV     #140001,T34PK3          ;READ DATA, ACK, CVC=1
7898            057640  013737  003120  060612          MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
7899            057646  012737  006654  060616          MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (4K BYTES)
7900            057654  012704  060610                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7901            057660  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7902            057664  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7903            057670  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7904            057674  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
7905            057700  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
7906            057702  001406                          BEQ     235$                    ;BR. IT MIGHT BE END OF TAPE
7907            057704  005237  002214                  INC     FATFLG                          ;ERROR COUNT
7911            057710                                  ERRMRO  ERRNO,T34RRE,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
                057710  104456                                                          TRAP    C$ERMRO
                057712  001155                                                          .WORD   621
                057714  061016                                                          .WORD   T34RRE
                057716  012156                                                          .WORD   PKTSSR
7912            057720                          235$:   CKLOOP                          ;LOOP IF SELECTED
                057720  104406                                                          TRAP    C$CLP1
7913            057722  013701  060520                  MOV     T34BFR-6,R1             ;PICK UP XSTO
7914            057726  010102                          MOV     R1,R2                   ;SET UP EXPECTED
7915            057730  052702  000001                  BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
7916            057734  020102                          CMP     R1,R2                   ;WAS THE BIT ON
7917            057736  001406                          BEQ     240$                    ;BR. IF EOT WAS FOUND
7918            057740  005237  002214                  INC     FATFLG                          ;ERROR COUNT
7922            057744                                  ERRMRO  ERRNO,T34ETZ,EXPREC     ;EOT BIT (XSTO) NOT SET
                057744  104456                                                          TRAP    C$ERMRO
                057746  001156                                                          .WORD   622
                057750  061552                                                          .WORD   T34ETZ
                057752  015604                                                          .WORD   EXPREC
7923            057754                          240$:   CKLOOP                          ;LOOP IF SELECTED
                057754  104406                                                          TRAP    C$CLP1
7924            057756  012737  140410  060610          MOV     #140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD.
7925            057764  012737  000005  060612          MOV     #5,T34RB                ;NUMBER OF RECORDS TO SPACE
7926            057772  012704  060610                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7927            057776  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7928            060002  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7929            060006  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7930            060012  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
```

K14

TEST 6: OPERATIONS AT EOT

```
7931 060016 020102                          CMP     R1,R2                   ;ARE THEY EQUAL
7932 060020 001406                          BEQ     250$                    ;BR. IT MIGHT BE END OF TAPE
7933 060022 005237  002214                  INC     FATFLG                          ;ERROR COUNT
7937 060026                                 ERRHRD  ERRNO.T34POS,PKTSSR     ;POSITION COMMAND DIDN'T WORK
     060026 104456                                                                  TRAP    C$ERHRD
     060030 001157                                                                  .WORD   623
     060032 060644                                                                  .WORD   T34POS
     060034 012156                                                                  .WORD   PKTSSR
7938 060036                         250$:   CKLOOP                          ;LOOP IF SELECTED
     060036 104406                                                                  TRAP    C$CLP1
7939 060040 013701  060520                  MOV     T34BFR+6,R1             ;PICK UP XSTO
7940 060044 010102                          MOV     R1,R2                   ;SET UP EXPECTED
7941 060046 042702  000001                  BIC     #BIT0,R2                ;CLEAR THE EOT BIT ON IN EXPECTED
7942 060052 020102                          CMP     R1,R2                   ;WAS THE BIT ON
7943 060054 001406                          BEQ     260$                    ;BR. IF EOT WAS FOUND
7944 060056 005237  002214                  INC     FATFLG                          ;ERROR COUNT
7948 060062                                 ERRHRD  ERRNO.T34ETC,EXPREC     ;EOT BIT (XSTO) NOT CLEAR
     060062 104456                                                                  TRAP    C$ERHRD
     060064 001160                                                                  .WORD   624
     060066 061107                                                                  .WORD   T34ETC
     060070 015604                                                                  .WORD   EXPREC
7949 060072                         260$:   CKLOOP                          ;LOOP IF SELECTED
     060072 104406                                                                  TRAP    C$CLP1
7950 060074 012737  140010  060610           MOV     #140010,T34PK3          ;SPACE RECORDS FORWARD, ACK. CVC=1 CMD.
7951 060102 012737  000005  060612           MOV     #5,T34RB                ;NUMBER OF RECORDS TO SPACE
7952 060110 012704  060610                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7953 060114 010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7954 060120 004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7955 060124 016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7956 060130 012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
7957 060134 020102                          CMP     R1,R2                   ;ARE THEY EQUAL
7958 060136 001406                          BEQ     270$                    ;BR. IT MIGHT BE END OF TAPE
7959 060140 005237  002214                  INC     FATFLG                          ;ERROR COUNT
7963 060144                                 ERRHRD  ERRNO.T34ET,PKTSSR      ;TSSR NOT CORRECT
     060144 104456                                                                  TRAP    C$ERHRD
     060146 001161                                                                  .WORD   625
     060150 062046                                                                  .WORD   T34ET
     060152 012156                                                                  .WORD   PKTSSR
7964 060154                         270$:   CKLOOP                          ;LOOP IF SELECTED
     060154 104406                                                                  TRAP    C$CLP1
7965 060156 013701  060520                  MOV     T34BFR+6,R1             ;PICK UP XSTO
7966 060162 010102                          MOV     R1,R2                   ;SET UP EXPECTED
7967 060164 052702  000001                  BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
7968 060170 020102                          CMP     R1,R2                   ;WAS THE BIT ON
7969 060172 001400                          BEQ     280$                    ;BR. IF EOT WAS FOUND
7970 060174                         280$:   CKLOOP                          ;LOOP IF SELECTED
     060174 104406                                                                  TRAP    C$CLP1
7971 060176 012737  141410  060610           MOV     #141410,T34PK3          ;SKIP FILE MARKS REVERSE,ACK,CVC=1 COMMAND
7972 060204 012737  000003  060612           MOV     #3.,T34RB               ;NUMBER OF FILE MARKS
7973 060212 012704  060610                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
7974 060216 010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
7975 060222 012737  176750  060624           MOV     #65000.,T34DLY          ;SET UP DELAY COUNTER
7976 060230 004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
7977 060234 016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
7978 060240 032701  000200                  BIT     #SSR,R1                 ;CHECK FOR SSR SET
7979 060244 001017                          BNE     286$                    ;BR. WHEN SSR IS SET
7980 060246                                 DELAY   250                     ;WAIT ABOUT .25 SECONDS
```

TEST 6: OPERATIONS AT EOT

```
        060246  012727  000250                                                          MOV     #250.,(PC)+
        060252  000000                                                                  .WORD   0
        060254  013727  002116                                                          MOV     L$DLY,(PC)+
        060260  000000                                                                  .WORD   0
        060262  005367  177772                                                          DEC     6(PC)
        060266  001375                                                                  BNE     .-4
        060270  005367  177756                                                          DEC     22(PC)
        060274  001367                                                                  BNE     .-20
  7981  060276  005337  060624          DEC     T34DLY          ;BUMP COUNTER
  7982  060302  001352                  BNE     285$            ;BR, IF MORE TO COUNT
  7983  060304  012702  000200  286$:   MOV     #SSR,R2         ;SET UP EXPECTED
  7984  060310  020102                  CMP     R1,R2           ;ARE THEY EQUAL
  7985  060312  001007                  BNE     290$            ;BR, IT MIGHT BE END OF TAPE
  7986  060314  005303                  DEC     R3              ;DEC RECORD COUNTER
  7987  060316  005237  002214          INC     FATFLG                  ;ERROR COUNT
  7991  060322                          ERRHRD  ERRNO,T34ET,PKTSSR      ;EOT NOT FOUND (USE SHORTER TAPE?)
        060322  104456                                                                  TRAP    C$ERHRD
        060324  001162                                                                  .WORD   626
        060326  062046                                                                  .WORD   T34ET
        060330  012156                                                                  .WORD   PKTSSR
  7992  060332  032701  000004  290$:   BIT     #BIT2,R1        ;CHECK FOR TAPE STATUS ALERT
  7993  060336  013701  060520          MOV     T34BFR+6,R1     ;PICK UP XSTO
  7994  060342  010102                  MOV     R1,R2           ;SET UP EXPECTED
  7995  060344  042702  000001          BIC     #BIT0,R2        ;CLEAR THE EOT BIT IN EXPECTED
  7996  060350  020102                  CMP     R1,R2           ;WAS THE BIT ON
  7997  060352  001406                  BEQ     300$            ;BR, IF EOT WAS FOUND
  7998  060354  005237  002214          INC     FATFLG                  ;ERROR COUNT
  8002  060360                          ERRHRD  ERRNO,T34ETC,EXPREC     ;EOT BIT (XSTO) NOT CLEAR
        060360  104456                                                                  TRAP    C$ERHRD
        060362  001163                                                                  .WORD   627
        060364  061107                                                                  .WORD   T34ETC
        060366  015604                                                                  .WORD   EXPREC
  8003  060370                  300$:   CKLOOP                  ;LOOP IF SELECTED
        060370  104406                                                                  TRAP    C$CLP1
  8004  060372  013701  060520          MOV     T34BFR+6,R1     ;PICK UP XSTO
  8005  060376  010102                  MOV     R1,R2           ;SET UP EXPECTED
  8006  060400  052702  000002          BIS     #BIT1,R2        ;SET THE BOT BIT ON IN EXPECTED
  8007  060404  020102                  CMP     R1,R2           ;WAS THE BIT ON
  8008  060406  001406                  BEQ     320$            ;BR, IF BOT WAS FOUND
  8009  060410  005237  002214          INC     FATFLG                  ;ERROR COUNT
  8013  060414                          ERRHRD  ERRNO,T34BOT,EXPREC     ;EOT BIT (XSTO) NOT CLEAR
        060414  104456                                                                  TRAP    C$ERHRD
        060416  001164                                                                  .WORD   628
        060420  061164                                                                  .WORD   T34BOT
        060422  015604                                                                  .WORD   EXPREC
  8014  060424                  320$:   CKLOOP                  ;LOOP IF SELECTED
        060424  104406                                                                  TRAP    C$CLP1
  8015  060426                  600$:
  8016  060426                          ENDSUB                  ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
        060426                                                          L10062:
        060426  104403                                                                  TRAP    C$ESUB
  8017  060430  023727  002214  000017          CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
  8018  060436  103402                          BLO     999$                    ;BR, IF LESS THAN 25
  8019  060440  004737  017312                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
  8020  060444                  999$:
  8021  060444  004737  016566          JSR     PC,TSTLOOP      ;DO WE NEED TO ITERATE TEST
  8022  060450  103002                  BCC     163$            ;BR, IF NO LOOP REQUIRED
```

TEST 6: OPERATIONS AT EOT

```
8023 060452  000137  056022                    JMP     T34LOOP                 ;EXECUTE AGAIN
8024 060456                            163$:    EXIT    TST                     ;ALL DONE THIS TEST
     060456  104432                                                                    TRAP    C$EXIT
     060460  002662                                                                    .WORD   L10061-.
8025                                   ;*
8026                                   ;LOCAL STORAGE FOR THIS TEST
8027                                   ;-
8029            060470                         .=<.+10>&177770
8031 060470                            T34PACKET:                              ;COMMAND PACKET FOR TEST
8032 060470  100004                            .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH ACK
8033 060472  060500                            .WORD   T34DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
8034 060474  000000                            .WORD   0
8035 060476  000010                            .WORD   8.                      ;STARTING VALUE OF BLOCK SIZE
8036 060500                            T34DATA:                                ;CHARACTERISTICS DATA BLOCK
8037 060500  060512                            .WORD   T34BFR                  ;ADDRESS OF MESSAGE BUFFER
8038 060502  000000                            .WORD   0
8039 060504  000012                            .WORD   10.                     ;LENGTH OF MESSAGE BUFFER
8040 060506  000000                            .WORD   0
8041 060510  000000                    T34DSW: .WORD   0                       ;SELECT DRIVE 0
8042 060512                            T34BFR: .BLKW   25.                     ;MESSAGE BUFFER
8043                                   ;
8044                                   ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
8045                                   ;
8047            060600                         .=<.+10>&177770
8049 060600                            T34PK2:
8050 060600  100006                            .WORD   100006                  ;WRITE SUB SYS MEM COMMAND, AND ACK
8051 060602  060626                            .WORD   T34BF2                  ;ADDRESS OF SELECT BLOCK DATA
8052 060604  000000                            .WORD   0
8053 060606  000006                            .WORD   6.                      ;SIZE OF DATA PACKET
8054
8058 060610                            T34PK3:
8059 060610  100005                            .WORD   100005                  ;WRITE COMMAND,  AND ACK
8060 060612                            T34RB:
8061 060612  000000                    T34WB:  .WORD   0                       ;ADDRESS OF WRITE/READ BUFFER
8062 060614  000000                            .WORD   0
8063 060616  000000                    T34SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
8064                                           .EVEN
8065                                   ;
8066 060620  000000                    T34RSZ: .WORD   0                       ;LARGEST TAPE RECORD IN BYTES
8067 060622  000000                    T34CNT: .WORD   0                       ;TAPE RECORD COUNTER
8068 060624  000000                    T34DLY: .WORD   0                       ;DELAY COUNTER
8069                                   ;
8070                                   ;
8071 060626                            T34BF2:
8072 060626     010                    T34BS0: .BYTE   10                      ;BSEL0 AREA
8073 060627     200                    T34BS1: .BYTE   200                     ;BSEL1 AREA
8074 060630  000000                    T34S2:  .WORD   0                       ;SEL 2 AREA
8075 060632  000000                    T34S3:  .WORD   0                       ;DATA AREA
8076                                   ;
8077                                   ;
8078                                           .EVEN
8079                                   ;TAPE MOTION PACKET COMMAND VALUES
8080
8081 060634  100005                    T34WD:  .WORD   100005                  ;WRITE DATA (NEXT)
8082 060636  100405                    T34WDR: .WORD   100405                  ;WRITE DATA RETRY
8083 060640  102005                    T34CON: .WORD   102005                  ;WRITE CONTINOUS
8084 060642  177777                            .WORD   177777                  ;END OF DATA
```

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

060644  124 123 123  T34POS: .ASCIZ  'TSSR Incorrect After Position (SPACE RECORDS) Command'
060732  127 122 111  T34ETO: .ASCIZ  'WRITE TAPE MARK At EOT Failed To Set EOT Bit (XSTO)'
061016  122 105 101  T34RRE: .ASCIZ  'READ Command At EOT Didn''t Give Normal Termination (TSSR)'
061107  125 156 141  T34ETC: .ASCIZ  'Unable To Clear EOT Indication, (XSTO) Bit 0'
061164  122 105 127  T34BOT: .ASCIZ  'REWIND Failed To Set BOT (XSTO) Bit'
061230  127 122 111  T34WTM: .ASCIZ  'WRITE TAPE MARK At EOT Failed To Set Tape Status Alert'
061317  127 122 111  T34ET2: .ASCIZ  'WRITE DATA At EOT Failed To Set Tape Status Alert'
061401  127 122 111  T34ETN: .ASCIZ  'WRITE DATA At EOT Failed To Set EOT Bit (XSTO)'
061460  123 120 101  T34ETS: .ASCIZ  'SPACE RECORDS FORWARD At EOT Failed To Set EOT Bit (XSTO)'
061552  122 105 101  T34ETZ: .ASCIZ  'READ DATA At EOT Failed To Set EOT Bit (XSTO)'
061630  124 123 123  T34STM: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE At EOT'
061713  120 117 123  T34TMK: .ASCIZ  'POSITION Command At EOT Onto Tape Mark Failed To Set TMK (XSTO)'
062013  127 122 111  T34SSR: .ASCIZ  'WRITE Command Not Accepted'
062046  105 117 124  T34ET:  .ASCIZ  'EOT Not Found In 65000 3.5K Writes, (Use Shorter Tape)'
062135  127 122 111  T34EOT: .ASCIZ  'WRITE DATA OVER EOT GAVE NO TAPE STATUS ALERT'
062213  124 123 123  T34TM:  .ASCIZ  'TSSR Not Correct After WRITE Command Reject'
062267  122 145 167  T34RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
062336  122 101 115  T34RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
062411  124 123 123  T34AM3: .ASCIZ  'TSSR Init. Failed After WRITE Command'
062457  104 162 151  T34OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
062532  124 123 123  T34WDD: .ASCIZ  'TSSR Not Correct After WRITE DATA Command, SWB Bit Set'
062621  124 123 123  T34WDC: .ASCIZ  'TSSR Not Correct After WRITE DATA Command, Check For Tape Offline'
062723  103 126 103  T34VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
062776  124 123 102  T34BA:  .ASCIZ  'TSBA Not Correct After WRITE DATA Command'
063050  127 122 111  T34WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
063137  117 160 145  TST34ID:        .ASCIZ  'Operations At EOT'
                              .EVEN
                                        ;*
                                        ;
                                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                        ;WRITE SUBSYSTEM MEMORY COMMAND
                                        ;
                                        ;-

063162                                  T34REST:
063162                                          SAVREG                          ;SAVE THE REGISTERS
063166  012701  060470                          MOV     #T34PACKET,R1           ;START OF THE PACKET
063172  012721  100004                          MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK
063176  012721  060500                          MOV     #T34DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
063202  005021                                  CLR     (R1)+                   ;EXTENDED ADDRESS
063204  012721  000012                          MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
063210  012721  060512                          MOV     #T34BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
063214  005021                                  CLR     (R1)+
063216  012721  000024                          MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
063222  005021                                  CLR     (R1)+
063224  012711  000000                          MOV     #0,(R1)                 ;SELECT DRIVE ZERO
063230  012702  000030                          MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
063234  012762  177777  060512  64$:     MOV     #177777,T34BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
063242  005742                                  TST     -(R2)                   ;BUMP DOWN TO NEXT LOCATION
063244  020227  000000                          CMP     R2,#0                   ;R2 AT ZERO YET
063250  001371                                  BNE     64$                     ;KEEP GOING UNTIL DONE
063252  000207                                  RTS     PC                      ;RETURN
```

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 8142 063254                                T34RT2:
 8143 063254                                        SAVREG                          ;SAVE THE REGISTERS
 8144 063260  012701  060600                        MOV     #T34PK2,R1              ;START OF THE PACKET
 8145 063264  012721  100006                        MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK
 8146 063270  012721  060626                        MOV     #T34BF2,(R1)+           ;ADDRESS OF DATA BLOCK
 8147 063274  005021                                CLR     (R1)+                   ;EXTENDED ADDRESS
 8148 063276  012721  000006                        MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
 8149 063302  012701  060626                        MOV     #T34BF2,R1              ;POINT TO DATA SEL AREA
 8150 063306  005021                                CLR     (R1)+
 8151 063310  005021                                CLR     (R1)+
 8152 063312  005011                                CLR     (R1)
 8153 063314  000207                                RTS     PC                      ;RETURN
 8154 063316                                T34RT3:
 8155 063316                                        SAVREG                          ;SAVE THE REGISTERS
 8156 063322  012701  060610                        MOV     #T34PK3,R1              ;START OF THE PACKET
 8157 063326  012721  100005                        MOV     #100005,(R1)+           ;WRITE  TAPE. WITH ACK
 8158 063332  005021                                CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
 8159 063334  005021                                CLR     (R1)+                   ;EXTENDED ADDRESS
 8160 063336  005011                                CLR     (R1)                    ;SIZE OF DATA BLOCK
 8161 063340  000207                                RTS     PC                              ;RETURN
 8162 063342                                        ENDTST
      063342                                                                                  L10061:
      063342  104401                                                                              TRAP    C$ETST
 8163                                       .SBTTL  TEST  7: EXTENDED MODE FEATURES
 8164                                       ;+
 8165                                       ;
 8166                                       ;       THIS TEST VERIFIES THE OPERATION OF COMMANDS ONLY AVAILABLE WHEN
 8167                                       ;       THE CONTROLLER IS IN THE EXTENDED FEATURES MODE.  THESE COMMANDS
 8168                                       ;       ARE:
 8169                                       ;
 8170                                       ;               REWIND WITH IMMEDIATE INTERRUPT
 8171                                       ;
 8172                                       ;       IF THE CONTROLLER IS NOT ALREADY IN EXTENDED FEATURES MODE, IT
 8173                                       ;       IS PLACED THERE VIA A WRITE SUBSYSTEM MEMORY COMMAND.
 8174                                       ;
 8175                                       ;
 8176                                       ;
 8177                                       ;THE TEST CONSISTS OF THE FOLLOWING 7 SUBTESTS
 8178                                       ;
 8179                                       ;
 8180                                       ;
 8181                                       ;-
 8182 063344                                        BGNTST
      063344                                                                                  T7::
 8183 063344  012737  006356  002172                MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
 8188 063352  012700  073063                        MOV     #TST35ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
 8189 063356  004737  016620                        JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
 8190 063362  012737  000005  002210                MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
 8191 063370  005037  067466                        CLR     T35CNT                  ;CLEAR TAPE RECORD COUNTER
 8192                                       ;+
 8193                                       ;
 8194                                       ;TEST 7, SUBTEST 1
 8195                                       ;
 8196                                       ;
 8197                                       ;       VERIFIES THAT A REWIND WITH IMMEDIATE INTERRUPT COMMAND, ISSUED
 8198                                       ;       WITH THE INTERRUPT ENABLE (IE) BIT CLEAR (0), CAUSES ALMOST
 8199                                       ;       IMMEDIATE TERMINATION BUT NO INTERRUPT.  STATUS IN THE MESSAGE
```

```
 8200                                   ;       BUFFER IS CHECKED TO VERIFY THAT THE MOTION (MOT) AND OPERATION
 8201                                   ;       IN PROGRESS (OPM) STATUS BITS ARE BOTH SET.
 8202                                   ;
 8203                                   ;
 8204                                   ;
 8205                                   ;
 8206                                   ;
 8207                                   ;-
 8208
 8209 063374                           T35LOOP:
 8210 063374                                   BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      063374                                                                                   T7.1:
      063374  104402                                                                             TRAP    C$BSUB
 8211 063376  004737  073114                    JSR     PC,T35REST              ;SET COMMAND PACKET
 8212 063402  005037  002216                    CLR     INTRECV                 ;CLEAR INTERRUPT RECEIVED FLAG
 8213 063406  004737  073206                    JSR     PC,T35RT2               ;SET UP OTHER COMMAND PACKET
 8214 063412  004737  073250                    JSR     PC,T35RT3               ;SET UP OTHER COMMAND PACKET
 8215 063416  012737  176750  067472            MOV     #65000.,T35DLY          ;SET UP DELAY COUNTER
 8216 063424  005037  067466                    CLR     T35CNT                  ;CLEAR COUNTER
 8217 063430  004737  016104            10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 8218 063434  103426                            BCS     20$                     ;BR IF INIT WAS OK
 8219 063436                                    DELAY   250                     ;DELAY ABOUT .25 SEC
      063436  012727  000250                                                                    MOV     #250,(PC)+
      063442  000000                                                                            .WORD   0
      063444  013727  002116                                                                    MOV     L$DLY,(PC)+
      063450  000000                                                                            .WORD   0
      063452  005367  177772                                                                    DEC     -6(PC)
      063456  001375                                                                            BNE     .-4
      063460  005367  177756                                                                    DEC     -22(PC)
      063464  001367                                                                            BNE     .-20
 8220 063466  005337  067472                    DEC     T35DLY                  ;BUMP COUNTER
 8221 063472  001356                            BNE     10$                     ;BR, IF COUNTER NOT DONE
 8222 063474  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 8226 063500  010001                            MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 8227 063502                                    ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      063502  104455                                                                          TRAP    C$ERDF
      063504  001275                                                                          .WORD   701
      063506  003650                                                                          .WORD   SFIERR
      063510  012144                                                                          .WORD   SFIMSG
 8228 063512  013737  002174  067340    20$:    MOV     UNITN,T35DSW            ;SET UP DRIVE NUMBER
 8229 063520  012704  067320                    MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 8230 063524  004737  010742                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 8231 063530  103407                            BCS     25$                     ;BR, IF COMMAND ISSUED OK
 8232 063532  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 8236 063536  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 8237 063540                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      063540  104456                                                                          TRAP    C$ERHRD
      063542  001276                                                                          .WORD   702
      063544  005054                                                                          .WORD   WRTMSG
      063546  012144                                                                          .WORD   SFIMSG
 8238 063550                            25$:    CKLOOP                          ;LOOP IF SELECTED
      063550  104406                                                                          TRAP    C$CLP1
 8239 063552  004737  011126                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 8240 063556  103411                            BCS     30$                     ;BR, IF NO PROBLEM
 8241 063560  010004                            MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
 8242 063562  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR FOR PRINTOUT
 8243 063566  005237  002214                    INC     FATFLG                          ;ERROR COUNT
```

TEST 7: EXTENDED MODE FEATURES

```
8247 063572                                    ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
     063572  104456                                                                TRAP    C$ERHRD
     063574  001277                                                                .WORD   703
     063576  070574                                                                .WORD   T35RWN
     063600  012156                                                                .WORD   PKTSSR
8248 063602                            30$:     CKLOOP                          ;LOOP IF SELECTED
     063602  104406                                                                TRAP    C$CLP1
8249 063604  013701  067350                      MOV     T35BFR+6,R1             ;PICK UP XSTO
8250 063610  010102                              MOV     R1,R2                   ;SET UP EXPECTED
8251 063612  052702  000002                      BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
8252 063616  020102                              CMP     R1,R2                   ;DOES EXP = REC'D
8253 063620  001406                              BEQ     40$                     ;BR, IF EQUAL (OK)
8254 063622  005237  002214                      INC     FATFLG                          ;ERROR COUNT
8258 063626                                      ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     063626  104456                                                                TRAP    C$ERHRD
     063630  001300                                                                .WORD   704
     063632  070270                                                                .WORD   T35BOT
     063634  015604                                                                .WORD   EXPREC
8259 063636                            40$:     CKLOOP                          ;LOOP IF SELECTED
     063636  104406                                                                TRAP    C$CLP1
8260 063640  012703  000024                      MOV     #20.,R3                 ;NUMBER OF RECORDS
8261 063644  012737  000400  067446              MOV     #256.,T35SZ             ;SET UP RECORD SIZE
8262 063652  013737  003120  067442              MOV     FREE,T35WB              ;ADDRESS OF WRITE BUFFER
8263
8264                                   ;*****************************************
8265                                   ;
8266                                   ;WRITE DATA,ACK,CVC=1 COMMAND
8267                                   ;
8268                                   ;*****************************************
8269
8270 063660  012737  140005  067440              MOV     #140005,T35PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
8271 063666  012704  067440                      MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
8272 063672  010465  000000            50$:     MOV     R4,TSDB(R5)             ;ISSUE COMMAND
8273 063676  004737  016360                      JSR     PC,WAITF                ;WAIT FOR SSR TO SET
8274 063702  016501  000002                      MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
8275 063706  012702  000200                      MOV     #SSR,R2                 ;SET UP EXPECTED
8276 063712  020102                              CMP     R1,R2                   ;ARE THEY EQUAL
8277 063714  001406                              BEQ     60$                     ;BR, IF OK
8278 063716  005237  002214                      INC     FATFLG                          ;ERROR COUNT
8282 063722                                      ERRHRD  ERRNO,T35WDE,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     063722  104456                                                                TRAP    C$ERHRD
     063724  001301                                                                .WORD   705
     063726  070216                                                                .WORD   T35WDE
     063730  012156                                                                .WORD   PKTSSR
8283 063732                            60$:     CKLOOP                          ;LOOP IF SELECTED
     063732  104406                                                                TRAP    C$CLP1
8284 063734  005303                              DEC     R3                      ;BUMP RECORD COUNTER
8285 063736  001355                              BNE     50$                     ;BR, IF MORE RRECORDS TO COUNT
8286
8287                                   ;*****************************************
8288                                   ;
8289                                   ;WAIT FOR TAPE TO STOP ALL MOTION
8290                                   ;
8291                                   ;*****************************************
8292
8293 063740  012737  000012  067472              MOV     #10.,T35DLY             ;SET UP DELAY COUNTER
8294 063746                            70$:     DELAY   250                     ;WAIT ABOUT .25 SEC
```

TEST 7: EXTENDED MODE FEATURES

```
        063746  012727  000250                                                          MOV     #250.,(PC)+
        063752  000000                                                                  .WORD   0
        063754  013727  002116                                                          MOV     L$DLY,(PC)+
        063760  000000                                                                  .WORD   0
        063762  005367  177772                                                          DEC     -6(PC)
        063766  001375                                                                  BNE     .-4
        063770  005367  177756                                                          DEC     -22(PC)
        063774  001367                                                                  BNE     .-20
  8295  063776  005337  067472                DEC     T35DLY          ;BUMP COUNTER DOWN
  8296  064002  001361                        BNE     70$             ;BR, IF MORE TO DELAY
  8297  064004  005737  002220                TST     EXTFEA          ;CHECK FOR EXTENDED FEATURES SW SWITCH
  8298  064010  001042                        BNE     110$            ;BR IF SWITCH IS ON
  8299  064012  112737  000200  067451        MOVB    #200,T35BS1     ;WRITE MISCELLANEOUS CONT/READ STATUS
  8300  064020  112737  000010  067450        MOVB    #10,T35BSO      ;FUNCTION SELECTION BIT (TURN ON EXTFEA HW SWITCH)
  8301  064026  012704  067430                MOV     #T35PK2,R4      ;WRITE SUBSYS MEM PACKET
  8302  064032  010465  000000                MOV     R4,TSDB(R5)     ;ISSUE COMMAND
  8303  064036  004737  016446                JSR     PC,CHKTSSR      ;WAIT FOR SSR
  8304  064042  103407                        BCS     90$             ;BR, IF NO ERROR
  8305  064044  010001                        MOV     R0,R1           ;ERROR, SAVE TSSR
  8306  064046  005237  002214                INC     FATFLG                  ;ERROR COUNT
  8310  064052                                ERRHRD  ERRNO,T35SSR,PKTSSR     ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
        064052  104456                                                          TRAP    C$ERHRD
        064054  001302                                                          .WORD   706
        064056  072352                                                          .WORD   T35SSR
        064060  012156                                                          .WORD   PKTSSR
  8311  064062                        90$:    CKLOOP                          ;LOOP IF SELECTED
        064062  104406                                                          TRAP    C$CLP1
  8312  064064  012704  067320                MOV     #T35PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
  8313  064070  004737  010742                JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
  8314  064074  103407                        BCS     100$            ;BR, IF COMMAND ISSUED OK
  8315  064076  005237  002214                INC     FATFLG                  ;ERROR COUNT
  8319  064102  010001                        MOV     R0,R1           ;SAVE CONTENTS OF TSSR
  8320  064104                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        064104  104456                                                          TRAP    C$ERHRD
        064106  001303                                                          .WORD   707
        064110  005054                                                          .WORD   WRTMSG
        064112  012144                                                          .WORD   SFIMSG
  8321  064114                        100$:   CKLOOP                          ;SCOPE LOOP
        064114  104406                                                          TRAP    C$CLP1
  8322  064116  012737  176750  067472  110$:   MOV     #65000.,T35DLY  ;SET UP DELAY COUNTER
  8323  064124  005037  067466                CLR     T35CNT          ;DELAY COUNTER
  8324
  8325                                  ;*****************************************
  8326                                  ;
  8327                                  ;REWIND IMED. INTERRUPT,ACK,CVC=1,IE=0 COMMAND
  8328                                  ;
  8329                                  ;*****************************************
  8330
  8331  064130  012737  142012  067440        MOV     #142012,T35PK3  ;REWIND IMED. INTERRUPT,ACK,CVC=1,IE=0 COMMAND
  8332  064136  012704  067440                MOV     #T35PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
  8333  064142  010465  000000                MOV     R4,TSDB(R5)     ;ISSUE COMMAND
  8334  064146  016501  000002        120$:   MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
  8335  064152  032701  000200                BIT     #SSR,R1         ;CHECK FOR SSR SET
  8336  064156  001021                        BNE     130$            ;BR, WHEN SSR IS SET
  8337  064160  005237  067466                INC     T35CNT          ;BUMP THE CYCLE COUNTER
  8338  064164                                DELAY   1               ;DELAY TO KEEP COUNTER DOWN
        064164  012727  000001                                                          MOV     #1,(PC)+
```

```
        064170  000000                                                          .WORD   0
        064172  013727  002116                                                  MOV     L$DLY,(PC)+
        064176  000000                                                          .WORD   0
        064200  005367  177772                                                  DEC     -6(PC)
        064204  001375                                                          BNE     .-4
        064206  005367  177756                                                  DEC     -22(PC)
        064212  001367                                                          BNE     .-20
  8339  064214  005337  067472              DEC     T35DLY          ;DROP DEAD TIMER BUMP DOWN
  8340  064220  001352                      BNE     120$            ;BR, IF MORE TIME TO GO
  8341  064222  012702  000200      130$:   MOV     #SSR,R2         ;SET UP EXPECTED
  8342  064226  020102                      CMP     R1,R2           ;ARE THEY EQUAL
  8343  064230  001406                      BEQ     140$            ;BR, IF OK
  8344  064232  005237  002214              INC     FATFLG                  ;ERROR COUNT
  8348  064236                              ERRHRD  ERRNO,T35RWE,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        064236  104456                                                          TRAP    C$ERHRD
        064240  001304                                                          .WORD   708
        064242  072720                                                          .WORD   T35RWE
        064244  012156                                                          .WORD   PKTSSR
  8349  064246                      140$:   CKLOOP                  ;LOOP IF SELECTED
        064246  104406                                                          TRAP    C$CLP1
  8350  064250  005737  002216              TST     INTRECV         ;CHECK FOR INTERRUPTS
  8351  064254  001410                      BEQ     150$            ;BR, IF NO INTERRUPTS DETECTED
  8352  064256  016501  000002              MOV     TSSR(R5),R1     ;GET TSSR STATUS FOR PRINTOUT
  8353  064262  005237  002214              INC     FATFLG                  ;ERROR COUNT
  8357  064266                              ERRHRD  ERRNO,T35INT,PKTSSR     ;INTERRUPT RECEIVED (BAD)
        064266  104456                                                          TRAP    C$ERHRD
        064270  001305                                                          .WORD   709
        064272  072531                                                          .WORD   T35INT
        064274  012156                                                          .WORD   PKTSSR
  8358  064276                      150$:   CKLOOP                  ;LOOP IF SELECTED
        064276  104406                                                          TRAP    C$CLP1
  8359
  8360                          ;****************************************
  8361                          ;
  8362                          ;NOW CHECK FOR THE MOTION BITS SET
  8363                          ;
  8364                          ;****************************************
  8365
  8366  064300  013701  067350              MOV     T35BFR+6,R1     ;PICK UP XSTO
  8367  064304  010102                      MOV     R1,R2           ;SET UP EXPECTED
  8368  064306  052702  000200              BIS     #BIT7,R2        ;SET MOT BIT IN EXPECTED
  8369  064312  020102                      CMP     R1,R2           ;DOES EXP = REC'D
  8370  064314  001406                      BEQ     160$            ;BR, IF EQUAL (OK)
  8371  064316  005237  002214              INC     FATFLG                  ;ERROR COUNT
  8375  064322                              ERRHRD  ERRNO,T35MOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        064322  104456                                                          TRAP    C$ERHRD
        064324  001306                                                          .WORD   710
        064326  072433                                                          .WORD   T35MOT
        064330  015604                                                          .WORD   EXPREC
  8376  064332                      160$:   CKLOOP                  ;LOOP IF SELECTED
        064332  104406                                                          TRAP    C$CLP1
  8377  064334  013701  067354              MOV     T35BFR+12,R1    ;PICK UP XST2
  8378  064340  010102                      MOV     R1,R2           ;SET UP EXPECTED
  8379  064342  052702  100000              BIS     #BIT15,R2       ;SET OPM BIT IN EXPECTED
  8380  064346  020102                      CMP     R1,R2           ;DOES EXP = REC'D
  8381  064350  001406                      BEQ     170$            ;BR, IF EQUAL (OK)
  8382  064352  005237  002214              INC     FATFLG                  ;ERROR COUNT
```

TEST 7: EXTENDED MODE FEATURES

```
8386 064356                                    ERRHRD  ERRNO,T35OPM,EXPREC     ;OPM BIT NOT SET
     064356  104456                                                                    TRAP    C$ERHRD
     064360  001307                                                                    .WORD   711
     064362  072622                                                                    .WORD   T35OPM
     064364  015604                                                                    .WORD   EXPREC
8387 064366                            170$:   CKLOOP                          ;LOOP IF SELECTED
     064366  104406                                                                    TRAP    C$CLP1
8388 064370  012737  000027  067472            MOV     #23.,T35DLY             ;SET UP DELAY COUNTER
8389 064376                            175$:   DELAY   250                     ;START DELAY
     064376  012727  000250                                                            MOV     #250.,(PC)+
     064402  000000                                                                    .WORD   0
     064404  013727  002116                                                            MOV     L$DLY,(PC)+
     064410  000000                                                                    .WORD   0
     064412  005367  177772                                                            DEC     -6(PC)
     064416  001375                                                                    BNE     .-4
     064420  005367  177756                                                            DEC     -22(PC)
     064424  001367                                                                    BNE     .-20
8390 064426  005337  067472                    DEC     T35DLY                  ;BUMP DELAY COUNTER
8391 064432  001361                            BNE     175$                    ;BR, IF MORE DELAY
8392 064434                                    ENDSUB
     064434                                                                  L10064:
     064434  104403                                                                    TRAP    C$ESUB
8393 064436  023727  002214  000017            CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
8394 064444  103402                            BLO     999$                            ;BR, IF LESS THAN 25
8395 064446  004737  017312                    JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
8396 064452                            999$:
8397                                   ;+
8398                                   ;
8399                                   ;TEST 7: SUBTEST 2
8400                                   ;
8401                                   ;       WITH THE INTERRUPT ENABLE (IE) BIT SET (1), CAUSES ALMOST
8402                                   ;       IMMEDIATE TERMINATION AND AN INTERRUPT.  STATUS IN THE MESSAGE
8403                                   ;       BUFFER IS CHECKED TO VERIFY THAT THE MOTION (MOT) AND OPERATION
8404                                   ;       IN PROGRESS (OPM) STATUS BITS ARE BOTH SET.
8405                                   ;
8406                                   ;
8407                                   ;
8408                                   ;
8409                                   ;
8410                                   ;
8411                                   ;
8412                                   ;-
8413 064452                                    BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     064452                                                                  T7.2:
     064452  104402                                                                    TRAP    C$BSUB
8414 064454                                    SETPRI  #PRI00          ;ENABLE INTERRUPTS.
     064454  012700  000000                                                            MOV     #PRI00,R0
     064460  104441                                                                    TRAP    C$SPRI
8415 064462  004737  073114                    JSR     PC,T35REST              ;SET COMMAND PACKET
8416 064466  005037  002216                    CLR     INTRECV                 ;CLEAR INTERRUPT RECEIVED FLAG
8417 064472  004737  073206                    JSR     PC,T35RT2               ;SET UP OTHER COMMAND PACKET
8418 064476  004737  073250                    JSR     PC,T35RT3               ;SET UP OTHER COMMAND PACKET
8419 064502  012737  176750  067472            MOV     #65000.,T35DLY          ;SET UP DELAY COUNTER
8420 064510  005037  067466                    CLR     T35CNT                  ;CLEAR COUNTER
8421 064514  004737  016104            10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
8422 064520  103426                            BCS     20$                     ;BR IF INIT WAS OK
8423 064522                                    DELAY   250                     ;DELAY ABOUT .25 SEC
```

TEST 7: EXTENDED MODE FEATURES

```
        064522  012727  000250                                                  MOV     #250,(PC)+
        064526  000000                                                          .WORD   0
        064530  013727  002116                                                  MOV     L$DLY,(PC)+
        064534  000000                                                          .WORD   0
        064536  005367  177772                                                  DEC     -6(PC)
        064542  001375                                                          BNE     .-4
        064544  005367  177756                                                  DEC     -22(PC)
        064550  001367                                                          BNE     .-20
  8424  064552  005337  067472          DEC     T35DLY          ;BUMP COUNTER
  8425  064556  001356                  BNE     10$             ;BR, IF COUNTER NOT DONE
  8426  064560  005237  002214          INC     FATFLG                  ;ERROR COUNT
  8430  064564  010001                  MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
  8431  064566                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
        064566  104455                                                          TRAP    C$ERDF
        064570  001310                                                          .WORD   712
        064572  003650                                                          .WORD   SFIERR
        064574  012144                                                          .WORD   SFIMSG
  8432  064576  013737  002174  067340  20$:     MOV     UNITN,T35DSW    ;SET UP DRIVE NUMBER
  8433  064604  012704  067320          MOV     #T35PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
  8434  064610  004737  010742          JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
  8435  064614  103407                  BCS     25$             ;BR, IF COMMAND ISSUED OK
  8436  064616  005237  002214          INC     FATFLG                  ;ERROR COUNT
  8440  064622  010001                  MOV     R0,R1           ;SAVE CONTENTS OF TSSR
  8441  064624                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        064624  104456                                                          TRAP    C$ERHRD
        064626  001311                                                          .WORD   713
        064630  005054                                                          .WORD   WRTMSG
        064632  012144                                                          .WORD   SFIMSG
  8442  064634                  25$:     CKLOOP                          ;LOOP IF SELECTED
        064634  104406                                                          TRAP    C$CLP1
  8443  064636  004737  011126          JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
  8444  064642  103411                  BCS     30$             ;BR, IF NO PROBLEM
  8445  064644  010004                  MOV     R0,R4           ;SET UP REWIND PACKET ADDRESS
  8446  064646  016501  000002          MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
  8447  064652  005237  002214          INC     FATFLG                  ;ERROR COUNT
  8451  064656                          ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
        064656  104456                                                          TRAP    C$ERHRD
        064660  001312                                                          .WORD   714
        064662  070574                                                          .WORD   T35RWN
        064664  012156                                                          .WORD   PKTSSR
  8452  064666                  30$:     CKLOOP                          ;LOOP IF SELECTED
        064666  104406                                                          TRAP    C$CLP1
  8453  064670  013701  067350          MOV     T35BFR+6,R1     ;PICK UP XSTO
  8454  064674  010102                  MOV     R1,R2           ;SET UP EXPECTED
  8455  064676  052702  000002          BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
  8456  064702  020102                  CMP     R1,R2           ;DOES EXP = REC'D
  8457  064704  001406                  BEQ     40$             ;BR, IF EQUAL (OK)
  8460  064706  005237  002214          INC     FATFLG                  ;ERROR COUNT
  8462  064712                          ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        064712  104456                                                          TRAP    C$ERHRD
        064714  001313                                                          .WORD   715
        064716  070270                                                          .WORD   T35BOT
        064720  015604                                                          .WORD   EXPREC
  8463  064722                  40$:     CKLOOP                          ;LOOP IF SELECTED
        064722  104406                                                          TRAP    C$CLP1
  8464  064724  012703  000024          MOV     #20.,R3         ;NUMBER OF RECORDS
  8465  064730  012737  000400  067446  MOV     #256.,T35SZ     ;SET UP RECORD SIZE
```

```
 8466 064736  013737  003120  067442          MOV     FREE,T35WB              ;ADDRESS OF WRITE BUFFER
 8467
 8468                                  ;****************************************
 8469                                  ;
 8470                                  ;WRITE DATA,ACK,CVC=1 COMMAND
 8471                                  ;
 8472                                  ;****************************************
 8473
 8474 064744  012737  140005  067440          MOV     #140005,T35PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
 8475 064752  012704  067440                  MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 8476 064756  010465  000000          50$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 8477 064762  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 8478 064766  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 8479 064772  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 8480 064776  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 8481 065000  001406                          BEQ     60$                     ;BR, IF OK
 8482 065002  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 8486 065006                                  ERRHRD  ERRNO,T35WDE,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      065006  104456                                                                  TRAP    C$ERHRD
      065010  001314                                                                  .WORD   716
      065012  070216                                                                  .WORD   T35WDE
      065014  012156                                                                  .WORD   PKTSSR
 8487 065016                          60$:    CKLOOP                          ;LOOP IF SELECTED
      065016  104406                                                                  TRAP    C$CLP1
 8488
 8489                                  ;****************************************
 8490                                  ;
 8491                                  ;WAIT FOR TAPE TO STOP ALL MOTION
 8492                                  ;
 8493                                  ;****************************************
 8494
 8495 065020  012737  000012  067472          MOV     #10.,T35DLY             ;SET UP DELAY COUNTER
 8496 065026                          70$:    DELAY   250                     ;WAIT ABOUT .25 SEC
      065026  012727  000250                                                          MOV     #250.,(PC)+
      065032  000000                                                                  .WORD   0
      065034  013727  002116                                                          MOV     L$DLY,(PC)+
      065040  000000                                                                  .WORD   0
      065042  005367  177772                                                          DEC     -6(PC)
      065046  001375                                                                  BNE     .-4
      065050  005367  177756                                                          DEC     -22(PC)
      065054  001367                                                                  BNE     .-20
 8497 065056  005337  067472                  DEC     T35DLY                  ;BUMP COUNTER DOWN
 8498 065062  001361                          BNE     70$                     ;BR, IF MORE TO DELAY
 8499 065064  005737  002220                  TST     EXTFEA                  ;CHECK FOR EXTENDED FEATURES SW SWITCH
 8500 065070  001042                          BNE     110$                    ;BR IF SWITCH IS ON
 8501 065072  112737  000200  067451          MOVB    #200,T35BS1             ;WRITE MISCELLANEOUS CONT/READ STATUS
 8502 065100  112737  000010  067450          MOVB    #10,T35BS0              ;FUNCTION SELECTION BIT (TURN ON EXTFEA HW SWITCH)
 8503 065106  012704  067430                  MOV     #T35PK2,R4              ;WRITE SUBSYS MEM PACKET
 8504 065112  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 8505 065116  004737  016446                  JSR     PC,CHKTSSR              ;WAIT FOR SSR
 8506 065122  103407                          BCS     90$                     ;BR, IF NO ERROR
 8507 065124  010001                          MOV     R0,R1                   ;ERROR, SAVE TSSR
 8508 065126  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 8512 065132                                  ERRHRD  ERRNO,T35SSR,PKTSSR     ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
      065132  104456                                                                  TRAP    C$ERHRD
      065134  001315                                                                  .WORD   717
      065136  072352                                                                  .WORD   T35SSR
```

TEST 7: EXTENDED MODE FEATURES

```
                065140  012156                                                          .WORD   PKTSSR
8513            065142                  90$:    CKLOOP                          ;LOOP IF SELECTED
                065142  104406                                                          TRAP    C$CLP1
8514            065144  012704  067320          MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
8515            065150  004737  010742          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
8516            065154  103407                  BCS     100$                    ;BR, IF COMMAND ISSUED OK
8517            065156  005237  002214          INC     FATFLG                          ;ERROR COUNT
8521            065162  010001                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
8522            065164                  ERRHRD  ERRNO,WRTMSG,SFIMSG             ;WRITE CHARACTERISTISC FAILED
                065164  104456                                                          TRAP    C$ERHRD
                065166  001316                                                          .WORD   718
                065170  005054                                                          .WORD   WRTMSG
                065172  012144                                                          .WORD   SFIMSG
8523            065174                  100$:   CKLOOP                          ;SCOPE LOOP
                065174  104406                                                          TRAP    C$CLP1
8524            065176  012737  176750  067472  110$:   MOV     #65000.,T35DLY          ;SET UP DELAY COUNTER
8525            065204  005037  067466          CLR     T35CNT                  ;DELAY COUNTER
8526
8527                                    ;****************************************
8528                                    ;
8529                                    ;REWIND IMMEDIATE,ACK,CVC=1,IE=1 COMMAND
8530                                    ;
8531                                    ;****************************************
8532
8533            065210  012737  142212  067440          MOV     #142212,T35PK3          ;REWIND IMMEDIATE,ACK,CVC=1,IE=1 COMMAND
8534            065216  012704  067440          MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
8535            065222  010465  000000          MOV     R4,TSDB(R5)             ;ISSUE COMMAND
8536            065226  016501  000002  120$:   MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
8537            065232  032701  000200          BIT     #SSR,R1                 ;CHECK FOR SSR SET
8538            065236  001021                  BNE     130$                    ;BR, WHEN SSR IS SET
8539            065240  005237  067466          INC     T35CNT                  ;BUMP THE CYCLE COUNTER
8540            065244                  DELAY   1                               ;DELAY TO KEEP COUNTER DOWN
                065244  012727  000001                                                  MOV     #1,(PC)+
                065250  000000                                                          .WORD   0
                065252  013727  002116                                                  MOV     L$DLY,(PC)+
                065256  000000                                                          .WORD   0
                065260  005367  177772                                                  DEC     -6(PC)
                065264  001375                                                          BNE     .-4
                065266  005367  177756                                                  DEC     -22(PC)
                065272  001367                                                          BNE     .-20
8541            065274  005337  067472          DEC     T35DLY                  ;DROP DEAD TIMER BUMP DOWN
8542            065300  001352                  BNE     120$                    ;BR, IF MORE TIME TO GO
8543            065302  012702  000200  130$:   MOV     #SSR,R2                 ;SET UP EXPECTED
8544            065306  020102                  CMP     R1,R2                   ;ARE THEY EQUAL
8545            065310  001406                  BEQ     140$                    ;BR, IF OK
8546            065312  005237  002214          INC     FATFLG                          ;ERROR COUNT
8550            065316                  ERRHRD  ERRNO,T35RWE,PKTSSR             ;TSSR INCORRECT AFTER WRITE DATA
                065316  104456                                                          TRAP    C$ERHRD
                065320  001317                                                          .WORD   719
                065322  072720                                                          .WORD   T35RWE
                065324  012156                                                          .WORD   PKTSSR
8551            065326  104406  140$:   CKLOOP                          ;LOOP IF SELECTED
                065326                                                          TRAP    C$CLP1
8552            065330  005737  002216          TST     INTRECV                 ;CHECK FOR INTERRUPTS
8553            065334  001010                  BNE     150$                    ;BR, IF INTERRUPTS DETECTED
8554            065336  016501  000002          MOV     TSSR(R5),R1             ;GET TSSR STATUS FOR PRINTOUT
8555            065342  005237  002214          INC     FATFLG                          ;ERROR COUNT
```

K15

TEST 7: EXTENDED MODE FEATURES

```
8559 065346                          ERRHRD  ERRNO,T35NIN,PKTSSR     ;INTERRUPT NOT RECEIVED (BAD)
     065346  104456                                                          TRAP    C$ERHRD
     065350  001320                                                          .WORD   720
     065352  073006                                                          .WORD   T35NIN
     065354  012156                                                          .WORD   PKTSSR
8560 065356                     150$:   CKLOOP                          ;LOOP IF SELECTED
     065356  104406                                                          TRAP    C$CLP1
8561
8562                            ;****************************************
8563                            ;
8564                            ;NOW CHECK FOR THE MOTION BITS SET
8565                            ;
8566                            ;****************************************
8567
8568 065360  013701  067350             MOV     T35BFR+6,R1             ;PICK UP XST0
8569 065364  010102                     MOV     R1,R2                   ;SET UP EXPECTED
8570 065366  052702  000200             BIS     #BIT7,R2                ;SET MOT BIT IN EXPECTED
8571 065372  020102                     CMP     R1,R2                   ;DOES EXP = REC'D
8572 065374  001406                     BEQ     160$                    ;BR. IF EQUAL (OK)
8573 065376  005237  002214                     INC     FATFLG                          ;ERROR COUNT
8577 065402                             ERRHRD  ERRNO,T35MOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     065402  104456                                                          TRAP    C$ERHRD
     065404  001321                                                          .WORD   721
     065406  072433                                                          .WORD   T35MOT
     065410  015604                                                          .WORD   EXPREC
8578 065412                     160$:   CKLOOP                          ;LOOP IF SELECTED
     065412  104406                                                          TRAP    C$CLP1
8579 065414  013701  067354             MOV     T35BFR+12,R1            ;PICK UP XST2
8580 065420  010102                     MOV     R1,R2                   ;SET UP EXPECTED
8581 065422  052702  100000             BIS     #BIT15,R2               ;SET OPM BIT IN EXPECTED
8582 065426  020102                     CMP     R1,R2                   ;DOES EXP = REC'D
8583 065430  001406                     BEQ     170$                    ;BR. IF EQUAL (OK)
8584 065432  005237  002214                     INC     FATFLG                          ;ERROR COUNT
8588 065436                             ERRHRD  ERRNO,T35OPM,EXPREC     ;OPM BIT NOT SET
     065436  104456                                                          TRAP    C$ERHRD
     065440  001322                                                          .WORD   722
     065442  072622                                                          .WORD   T35OPM
     065444  015604                                                          .WORD   EXPREC
8589 065446                     170$:   CKLOOP                          ;LOOP IF SELECTED
     065446  104406                                                          TRAP    C$CLP1
8590 065450  012737  000027  067472             MOV     #23.,T35DLY             ;SET UP DELAY COUNTER
8591 065456                     175$:   DELAY   250                     ;START DELAY
     065456  012727  000250                                                    MOV     #250.,(PC)+
     065462  000000                                                          .WORD   0
     065464  013727  002116                                                  MOV     L$DLY,(PC)+
     065470  000000                                                          .WORD   0
     065472  005367  177772                                                  DEC     -6(PC)
     065476  001375                                                          BNE     .-4
     065500  005367  177756                                                  DEC     -22(PC)
     065504  001367                                                          BNE     .-20
8592 065506  005337  067472             DEC     T35DLY                  ;BUMP DELAY COUNTER
8593 065512  001361                     BNE     175$                    ;BR. IF MORE DELAY
8594 065514                             ENDSUB
     065514                                                                         L10065:
     065514  104403                                                          TRAP    C$ESUB
8595 065516  023727  002214  000017             CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
8596 065524  103402                     BLO     9998$                           ;BR. IF LESS THAN 25
```

L15

TEST 7: EXTENDED MODE FEATURES

```
 8597 065526  004737  017312                    JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
 8598 065532                              9994$:
 8599                                     ;*
 8600                                     ;
 8601                                     ;TEST 7, SUBTEST 3
 8602                                     ;
 8603                                     ;       VERIFIES THAT THE NON-TAPE-MOTION COMMAND GET STATUS, ISSUED
 8604                                     ;       IMMEDIATATELY AFTER TERMINATION OF A REWIND WITH IMMEDIATE
 8605                                     ;       INTERRUPT COMMAND, TERMINATES PROPERLY AND PROVIDES PROPER
 8606                                     ;       STATUS.  FIRST, A NUMBER OF DATA RECORDS ARE WRITTEN FROM BOT.
 8607                                     ;       THEN THE REWIND WITH IMMEDIATE INTERRUPT COMMAND IS ISSUED AND
 8608                                     ;       TERMINATION VERIFIED.  THEN THE GET STATUS COMMAND IS ISSUED.
 8609                                     ;       THE GET STATUS SHOULD TERMINATE ALMOST IMMEDIATELY AND SHOW
 8610                                     ;       MOT-1 AND OPM-1 IN THE MESSAGE BUFFER.  AFTER A DELAY LONG
 8611                                     ;       ENOUGH TO ALLOW THE REWIND TO COMPLETE AND THE TAPE COME TO
 8612                                     ;       REST, GET STATUS IS AGAIN ISSUED AND THE STATUS CHECKED;  BOTH
 8613                                     ;       MOT AND OPM SHOULD BE CLEAR.
 8614                                     ;
 8615                                     ;
 8616                                     ;
 8617                                     ;
 8618                                     ;
 8619 065532                                     BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
      065532                                                                                     T7.3:
      065532  104402                                                                               TRAP    C$BSUB
 8620 065534  004737  073114                    JSR     PC,T35REST              ;SET COMMAND PACKET
 8621 065540  004737  073206                    JSR     PC,T35RT2               ;SET UP OTHER COMMAND PACKET
 8622 065544  004737  073250                    JSR     PC,T35RT3               ;SET UP OTHER COMMAND PACKET
 8623 065550  004737  016104                    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 8624 065554  103407                            BCS     20$                     ;BR IF INIT WAS OK
 8625 065556  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 8629 065562  010001                            MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 8630 065564                                    ERRDF   ERRNO.SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      065564  104455                                                                             TRAP    C$ERDF
      065566  001323                                                                             .WORD   723
      065570  003650                                                                             .WORD   SFIERR
      065572  012144                                                                             .WORD   SFIMSG
 8631 065574  013737  002174  067340  20$:       MOV     UNITN,T35DSW            ;SET UP UNIT NUMBER IN PACKET
 8632 065602  012704  067320                    MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 8633 065606  004737  010742                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 8634 065612  103407                            BCS     23$                     ;BR, IF COMMAND ISSUED OK
 8635 065614  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 8639 065620  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 8640 065622                                    ERRHRD  ERRNO.WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      065622  104456                                                                             TRAP    C$ERHRD
      065624  001324                                                                             .WORD   724
      065626  005054                                                                             .WORD   WRTMSG
      065630  012144                                                                             .WORD   SFIMSG
 8641 065632                              23$:       CKLOOP                          ;LOOP IF SELECTED
      065632  104406                                                                             TRAP    C$CLP1
 8642 065634  004737  011126                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 8643 065640  103411                            BCS     30$                     ;BR, IF NO PROBLEM
 8644 065642  010004                            MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
 8645 065644  016501  000002                    MOV     TSSR(R5),R1             ;GET CONTENTS FOR CALL
 8646 065650  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 8650 065654                                    ERRHRD  ERRNO,T35RUN,PKTSSR     ;REWIND NOT ACCEPTED
      065654  104456                                                                             TRAP    C$ERHRD
```

TEST 7: EXTENDED MODE FEATURES

```
                065656  001325                                                          .WORD   725
                065660  070574                                                          .WORD   T35RWN
                065662  012156                                                          .WORD   PKTSSR
  8651          065664                          30$:    CKLOOP                  ;LOOP IF SELECTED
                065664  104406                                                          TRAP    C$CLP1
  8652          065666  013701  067350                  MOV     T35BFR+6,R1     ;PICK UP XSTO
  8653          065672  010102                  MOV     R1,R2                   ;SET UP EXPECTED
  8654          065674  052702  000002          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
  8655          065700  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
  8656          065702  001406                  BEQ     40$                     ;BR. IF EQUAL (OK)
  8657          065704  005237  002214          INC     FATFLG                          ;ERROR COUNT
  8661          065710                          ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                065710  104456                                                          TRAP    C$ERHRD
                065712  001326                                                          .WORD   726
                065714  070270                                                          .WORD   T35BOT
                065716  015604                                                          .WORD   EXPREC
  8662          065720                          40$:    CKLOOP                  ;LOOP IF SELECTED
                065720  104406                                                          TRAP    C$CLP1
  8663          065722  012703  000024                  MOV     #20.,R3         ;STARTING RECORD SIZE
  8664          065726  013737  003120  067442          MOV     FREE,T35WB      ;STARTING WRITE BUFFER ADDRESS
  8665
  8666                                  ;*****************************************
  8667                                  ;
  8668                                  ;WRITE DATA,CVC=1,ACK COMMAND
  8669                                  ;
  8670                                  ;*****************************************
  8671
  8672          065734  012737  140005  067440  65$:    MOV     #140005,T35PK3  ;WRITE DATA,CVC=1,ACK COMMAND
  8673          065742  012704  067440          MOV     #T35PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
  8674          065746  010300                  MOV     R3,R0           ;SET PATTERN IN CORRECT REGISTER
  8675          065750  004737  017532          JSR     PC,FILLMEM      ;FILL MEMORY WITH RECORD SIZE
  8676          065754  010337  067446          MOV     R3,T35SZ        ;SET UP RECORD SIZE IN PACKET
  8677          065760  010465  000000          MOV     R4,TSDB(R5)     ;ISSUE COMMAND
  8678          065764  004737  016360          JSR     PC,WAITF        ;WAIT FOR SSR TO SET
  8679          065770  016501  000002          MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
  8680          065774  012702  000200          MOV     #SSR,R2         ;SET UP EXPECTED
  8681          066000  020102                  CMP     R1,R2           ;ARE THEY EQUAL
  8682          066002  001406                  BEQ     80$             ;BR. IF OK
  8683          066004  005237  002214          INC     FATFLG                  ;ERROR COUNT
  8687          066010                          ERRHRD  ERRNO,T35WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
                066010  104456                                                          TRAP    C$ERHRD
                066012  001327                                                          .WORD   727
                066014  071130                                                          .WORD   T35WDC
                066016  012156                                                          .WORD   PKTSSR
  8688          066020                  80$:    CKLOOP                  ;LOOP IF SELECTED
                066020  104406                                                          TRAP    C$CLP1
  8689
  8690                                  ;*****************************************
  8691                                  ;
  8692                                  ;WRITE DATA RETRY,CVC=1,ACK COMMAND
  8693                                  ;
  8694                                  ;*****************************************
  8695
  8696          066022  012737  141005  067440          MOV     #141005,T35PK3  ;WRITE DATA RETRY,CVC=1,ACK COMMAND
  8697          066030  010465  000000          MOV     R4,TSDB(R5)     ;ISSUE COMMAND
  8698          066034  004737  016360          JSR     PC,WAITF        ;WAIT FOR SSR TO SET
  8699          066040  016501  000002          MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
```

TEST 7: EXTENDED MODE FEATURES

```
 8700 066044  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 8701 066050  020102                         CMP     R1,R2                   ;ARE THEY EQUAL
 8702 066052  001406                         BEQ     90$                     ;BR, IF OK
 8703 066054  005237  002214                INC     FATFLG                          ;ERROR COUNT
 8707 066060                                 ERRHRD  ERRNO,T35WRF,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA RETRY
      066060  104456                                                                TRAP    C$ERHRD
      066062  001330                                                                .WORD   728
      066064  072175                                                                .WORD   T35WRF
      066066  012156                                                                .WORD   PKTSSR
 8708 066070                         90$:    CKLOOP                          ;LOOP IF SELECTED
      066070  104406                                                                TRAP    C$CLP1
 8709 066072  005723                         TST     (R3)+                   ;BUMP RECORD SIZE COUNTER
 8710 066074  020327  000052                CMP     R3,#42.                 ;AT 42 SIZE YET
 8711 066100  001315                         BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
 8712 066102  004737  011126                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 8713 066106  103411                         BCS     230$                    ;BR, IF NO PROBLEM
 8714 066110  010001                         MOV     R0,R1                   ;SAVE TSSR
 8715 066112  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 8716 066116  005237  002214                INC     FATFLG                          ;ERROR COUNT
 8720 066122                                 ERRHRD  ERRNO,T35RWN.EXPREC     ;REWIND NOT ACCEPTED
      066122  104456                                                                TRAP    C$ERHRD
      066124  001331                                                                .WORD   729
      066126  070574                                                                .WORD   T35RWN
      066130  015604                                                                .WORD   EXPREC
 8721 066132                         230$:   CKLOOP                          ;LOOP IF SELECTED
      066132  104406                                                                TRAP    C$CLP1
 8722 066134  013701  067350                MOV     T35BFR+6,R1             ;PICK UP XSTO
 8723 066140  010102                         MOV     R1,R2                   ;SET UP EXPECTED
 8724 066142  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 8725 066146  020102                         CMP     R1,R2                   ;DOES EXP = REC'D
 8726 066150  001406                         BEQ     240$                    ;BR, IF EQUAL (OK)
 8727 066152  005237  002214                INC     FATFLG                          ;ERROR COUNT
 8731 066156                                 ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      066156  104456                                                                TRAP    C$ERHRD
      066160  001332                                                                .WORD   730
      066162  070270                                                                .WORD   T35BOT
      066164  015604                                                                .WORD   EXPREC
 8732 066166                         240$:   CKLOOP                          ;LOOP IF SELECTED
      066166  104406                                                                TRAP    C$CLP1
 8733 066170  012703  000024                MOV     #20.,R3                 ;STARTING RECORD SIZE
 8734 066174  013737  003120  067442        MOV     FREE,T35RB              ;STARTING READ BUFFER ADDRESS
 8735
 8736                                ;*****************************************
 8737                                ;
 8738                                ;READ DATA,ACK COMMAND
 8739                                ;
 8740                                ;*****************************************
 8741
 8742 066202  012737  100001  067440  265$:   MOV     #100001,T35PK3          ;READ DATA,ACK COMMAND
 8743 066210  012704  067440                MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 8744 066214  012700  177777                MOV     #177777,R0              ;SET PATTERN IN CORRECT REGISTER
 8745 066220  004737  017532                JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
 8746 066224  010337  067446                MOV     R3,T35SZ                ;SET UP RECORD SIZE IN PACKET
 8747 066230  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 8748 066234  004737  016360                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 8749 066240  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 8750 066244  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
```

TEST 7: EXTENDED MODE FEATURES

```
8751 066250  020102                    CMP     R1,R2                   ;ARE THEY EQUAL
8752 066252  001406                    BEQ     280$                    ;BR, IF OK
8753 066254  005237  002214            INC     FATFLG                          ;ERROR COUNT
8757 066260                            ERRHRD  ERRNO,T35RDF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     066260  104456                                                            TRAP    C$ERHRD
     066262  001333                                                            .WORD   731
     066264  067562                                                            .WORD   T35RDF
     066266  012156                                                            .WORD   PKTSSR
8758 066270                    280$:   CKLOOP                          ;LOOP IF SELECTED
     066270  104406                                                            TRAP    C$CLP1
8759 066272  013702  003120            MOV     FREE,R2                 ;GET BUFFER ADDRESS
8760 066276  010304                    MOV     R3,R4                   ;GET RECORD SIZE
8761 066300  162704  000024            SUB     #20.,R4                 ;POINT BACK TO 1ST RECORD
8762 066304  060204            285$:   ADD     R2,R4                   ;POINT TO 1ST LOC IN BUFFER
8763 066306  021403                    CMP     (R4),R3                 ;DATA WRITTEN = READ
8764 066310  001410                    BEQ     290$                    ;BR, IF DATA OK (GOOD)
8765 066312  011401                    MOV     (R4),R1                 ;PICK UP BAD DATA
8766 066314  010302                    MOV     R3,R2                   ;SET UP EXPECTED
8767 066316  005237  002214            INC     FATFLG                          ;ERROR COUNT
8771 066322                            ERRHRD  ERRNO,T35DTA,EXPREC     ;DATA IN BUFFER NOT CORRECT
     066322  104456                                                            TRAP    C$ERHRD
     066324  001334                                                            .WORD   732
     066326  072255                                                            .WORD   T35DTA
     066330  015604                                                            .WORD   EXPREC
8772 066332                    290$:   CKLOOP                          ;LOOP IF SELECTED
     066332  104406                                                            TRAP    C$CLP1
8773 066334  005724                    TST     (R4)+                   ;BUMP TO NEXT ADDRESS
8774 066336  160204                    SUB     R2,R4                   ;BACK TO RECORD SIZE
8775 066340  020403                    CMP     R4,R3                   ;AT END OF RECORD YET
8776 066342  001360                    BNE     285$                    ;BR, IF MORE DATA TO CHECK
8777 066344  005723                    TST     (R3)+                   ;BUMP RECORD SIZE
8778 066346  020327  000050            CMP     R3,#40.                 ;DONE YET
8779 066352  001313                    BNE     265$                    ;BR, IF NOT DONE YET (MORE READS)
8780 066354                    300$:   CKLOOP                          ;LOOP IF SELECTED
     066354  104406                                                            TRAP    C$CLP1
8781 066356                    330$:
8782 066356                            ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     066356                                                                 L10066:
     066356  104403                                                            TRAP    C$ESUB
8783 066360  023727  002214  000017            CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
8784 066366  103402                            BLO     999$                    ;BR, IF LESS THAN 25
8785 066370  004737  017312                    JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
8786 066374                    999$:
8787                           ;*
8788                           ;
8789                           ;TEST 7, SUBTEST 4
8790                           ;
8791                           ;       VERIFIES THAT A TAPE-MOTION COMMAND (READ, WRITE, POSITION),
8792                           ;       ISSUED IMMEDIATATELY AFTER TERMINATION OF A REWIND WITH
8793                           ;       IMMEDIATE INTERRUPT COMMAND, IS "QUEUED" BY THE CONTROLLER AND
8794                           ;       THEN EXECUTES PROPERLY.
8795                           ;
8796                           ;
8797                           ;
8798                           ;-
8799 066374                            BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     066374                                                                 T7.4:
```

TEST 7: EXTENDED MODE FEATURES

```
                066374  104402                                                          TRAP    C$BSUB
8800            066376  004737  073114                  JSR     PC,T35REST              ;SET COMMAND PACKET
8801            066402  004737  073206                  JSR     PC,T35RT2               ;SET UP OTHER COMMAND PACKET
8802            066406  004737  073250                  JSR     PC,T35RT3               ;SET UP OTHER COMMAND PACKET
8803            066412  012737  176750  067472          MOV     #65000.,T35DLY          ;SET UP DELAY COUNTER
8804            066420  004737  016104          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
8805            066424  103426                          BCS     20$                     ;BR IF INIT WAS OK
8806            066426                                  DELAY   250                     ;DELAY ABOUT .25 SEC
                066426  012727  000250                                                  MOV     #250.,(PC)+
                066432  000000                                                          .WORD   0
                066434  013727  002116                                                  MOV     L$DLY,(PC)+
                066440  000000                                                          .WORD   0
                066442  005367  177772                                                  DEC      6(PC)
                066446  001375                                                          BNE     .-4
                066450  005367  177756                                                  DEC      22(PC)
                066454  001367                                                          BNE     .-20
8807            066456  005337  067472                  DEC     T35DLY                  ;BUMP COUNTER
8808            066462  001356                          BNE     10$                     ;BR, IF COUNTER NOT DONE
8809            066464  005237  002214                  INC     FATFLG                          ;ERROR COUNT
8813            066470  010001                          MOV     R0,R1                    CONTENTS OF TSSR REGISTER
8814            066472                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
                066472  104455                                                          TRAP    C$ERDF
                066474  001335                                                          .WORD   733
                066476  003650                                                          .WORD   SFIERR
                066500  012144                                                          .WORD   SFIMSG
8815            066502  013737  002174  067340  20$:    MOV     UNITN,T35DSW            ;SET UP UNIT (DRIVE) NUMBER
8816            066510  012704  067320                  MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
8817            066514  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
8818            066520  103407                          BCS     23$                     ;BR, IF COMMAND ISSUED OK
8819            066522  005237  002214                  INC     FATFLG                          ;ERROR COUNT
8823            066526  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
8824            066530                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
                066530  104456                                                          TRAP    C$ERHRD
                066532  001336                                                          .WORD   734
                066534  005054                                                          .WORD   WRTMSG
                066536  012144                                                          .WORD   SFIMSG
8825            066540                  23$:    CKLOOP                                  ;LOOP IF SELECTED
                066540  104406                                                          TRAP    C$CLP1
8826            066542  004737  011126                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
8827            066546  103411                          BCS     30$                     ;BR, IF NO PROBLEM
8828            066550  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
8829            066554  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
8830            066556  005237  002214                  INC     FATFLG                          ;ERROR COUNT
8834            066562                                  ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
                066562  104456                                                          TRAP    C$ERHRD
                066564  001337                                                          .WORD   735
                066566  070574                                                          .WORD   T35RWN
                066570  012156                                                          .WORD   PKTSSR
8835            066572                  30$:    CKLOOP                                  ;LOOP IF SELECTED
                066572  104406                                                          TRAP    C$CLP1
8836            066574  013701  067350                  MOV     T35BFR+6,R1             ;PICK UP XSTO
8837            066600  010102                          MOV     R1,R2                   ;SET UP EXPECTED
8838            066602  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
8839            066606  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
8840            066610  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
8841            066612  005237  002214                  INC     FATFLG                          ;ERROR COUNT
8845            066616                                  ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
```

```
        066616  104456                                                                  TRAP    C$ERHRD
        066620  001340                                                                  .WORD   736
        066622  070270                                                                  .WORD   T35BOT
        066624  015604                                                                  .WORD   EXPREC
  8846  066626                          40$:    CKLOOP                          ;LOOP IF SELECTED
        066626  104406                                                                  TRAP    C$CLP1
  8847  066630  012703  000024                  MOV     #20.,R3                 ;STARTING RECORD SIZE
  8848  066634  013737  003120  067442        MOV     FREE,T35WB              ;STARTING WRITE BUFFER ADDRESS
  8849
  8850                                  ;****************************************
  8851                                  ;
  8852                                  ;WRITE DATA,CVC=1,ACK COMMAND
  8853                                  ;
  8854                                  ;****************************************
  8855
  8856  066642  012737  140005  067440  65$:    MOV     #140005,T35PK3          ;WRITE DATA,CVC=1,ACK COMMAND
  8857  066650  012704  067440                  MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
  8858  066654  010300                          MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
  8859  066656  004737  017532                  JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
  8860  066662  010337  067446                  MOV     R3,T35SZ                ;SET UP RECORD SIZE IN PACKET
  8861  066666  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
  8862  066672  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
  8863  066676  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
  8864  066702  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
  8865  066706  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
  8866  066710  001406                          BEQ     80$                     ;BR, IF OK
  8867  066712  005237  002214                  INC     FATFLG                          ;ERROR COUNT
  8871  066716                                  ERRHRD  ERRNO,T35WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        066716  104456                                                                  TRAP    C$ERHRD
        066720  001341                                                                  .WORD   737
        066722  071130                                                                  .WORD   T35WDC
        066724  012156                                                                  .WORD   PKTSSR
  8872  066726                          80$:    CKLOOP                          ;LOOP IF SELECTED
        066726  104406                                                                  TRAP    C$CLP1
  8873
  8874                                  ;****************************************
  8875                                  ;
  8876                                  ;WRITE DATA RETRY,ACK,SWB=1 COMMAND
  8877                                  ;
  8878                                  ;****************************************
  8879
  8880  066730  012737  111005  067440          MOV     #111005,T35PK3          ;WRITE DATA RETRY,ACK,SWB=1 COMMAND
  8881  066736  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
  8882  066742  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
  8883  066746  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
  8884  066752  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
  8885  066756  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
  8886  066760  001406                          BEQ     90$                     ;BR, IF OK
  8887  066762  005237  002214                  INC     FATFLG                          ;ERROR COUNT
  8891  066766                                  ERRHRD  ERRNO,T35WRF,EXPREC     ;TSSR INCORRECT AFTER WRITE DATA RETRY
        066766  104456                                                                  TRAP    C$ERHRD
        066770  001342                                                                  .WORD   738
        066772  072175                                                                  .WORD   T35WRF
        066774  015604                                                                  .WORD   EXPREC
  8892  066776                          90$:    CKLOOP                          ;LOOP IF SELECTED
        066776  104406                                                                  TRAP    C$CLP1
  8893  067000  005723                          TST     (R3)+                   ;BUMP RECORD SIZE COUNTER
```

```
8894 067002  020327  000052                        CMP     R3,#42.          ;AT 42 SIZE YET
8895 067006  001315                        BNE     65$                      ;BR, IF MORE RECORDS TO WRITE
8896 067010  004737  011126                JSR     PC,REWIND                ;CALL TAPE REWIND COMMAND
8897 067014  103411                        BCS     230$                     ;BR, IF NO PROBLEM
8898 067016  016501  000002                MOV     TSSR(R5),R1              ;GET TSSR CONTENTS
8899 067022  010004                        MOV     R0,R4                    ;GET PACKET ADDRESS
8900 067024  005237  002214                INC     FATFLG                           ;ERROR COUNT
8904 067030                                ERRHRD  ERRNO,T35RWN,PKTSSR      ;REWIND NOT ACCEPTED
     067030  104456                                                             TRAP    C$ERHRD
     067032  001343                                                             .WORD   739
     067034  070574                                                             .WORD   T35RWN
     067036  012156                                                             .WORD   PKTSSR
8905 067040                        230$:   CKLOOP                           ;LOOP IF SELECTED
     067040  104406                                                             TRAP    C$CLP1
8906 067042  013701  067350                MOV     T35BFR+6,R1              ;PICK UP XSTO
8907 067046  010102                        MOV     R1,R2                    ;SET UP EXPECTED
8908 067050  052702  000002                BIS     #BIT1,R2                 ;SET BOT BIT IN EXPECTED
8909 067054  020102                        CMP     R1,R2                    ;DOES EXP = REC'D
8910 067056  001406                        BEQ     240$                     ;BR, IF EQUAL (OK)
8911 067060  005237  002214                INC     FATFLG                           ;ERROR COUNT
8915 067064                                ERRHRD  ERRNO,T35BOT,EXPREC      ;TAPE NOT AT BOT AFTER REWIND
     067064  104456                                                             TRAP    C$ERHRD
     067066  001344                                                             .WORD   740
     067070  070270                                                             .WORD   T35BOT
     067072  015604                                                             .WORD   EXPREC
8916 067074                        240$:   CKLOOP                           ;LOOP IF SELECTED
     067074  104406                                                             TRAP    C$CLP1
8917 067076  012703  000024                MOV     #20.,R3                  ;STARTING RECORD SIZE
8918 067102  013737  003120  067442        MOV     FREE,T35RB               ;STARTING READ BUFFER ADDRESS
8919
8920                               ;****************************************
8921                               ;
8922                               ;READ DATA,ACK COMMAND
8923                               ;
8924                               ;****************************************
8925
8926 067110  012737  100001  067440  265$:   MOV     #100001,T35PK3           ;READ DATA,ACK COMMAND
8927 067116  012704  067440                MOV     #T35PK3,R4               ;SET UP R4 WITH PACKET ADDRESS
8928 067122  010337  067446                MOV     R3,T35SZ                 ;SET UP RECORD SIZE IN PACKET
8929 067126  010465  000000                MOV     R4,TSDB(R5)              ;ISSUE COMMAND
8930 067132  004737  016360                JSR     PC,WAITF                 ;WAIT FOR SSR TO SET
8931 067136  016501  000002                MOV     TSSR(R5),R1              ;GET TSSR CONTENTS
8932 067142  012702  000200                MOV     #SSR,R2                  ;SET UP EXPECTED
8933 067146  020102                        CMP     R1,R2                    ;ARE THEY EQUAL
8934 067150  001406                        BEQ     280$                     ;BR, IF OK
8935 067152  005237  002214                INC     FATFLG                           ;ERROR COUNT
8939 067156                                ERRHRD  ERRNO,T35RDF,PKTSSR      ;TSSR INCORRECT AFTER READ DATA
     067156  104456                                                             TRAP    C$ERHRD
     067160  001345                                                             .WORD   741
     067162  067562                                                             .WORD   T35RDF
     067164  012156                                                             .WORD   PKTSSR
8940 067166                        280$:   CKLOOP                           ;LOOP IF SELECTED
     067166  104406                                                             TRAP    C$CLP1
8941 067170  013702  003120                MOV     FREE,R2                  ;GET BUFFER ADDRESS
8942 067174  010304                        MOV     R3,R4                    ;GET RECORD SIZE
8943 067176  162704  000024                SUB     #20.,R4                  ;POINT BACK TO 1ST RECORD
8944 067202  060204                285$:   ADD     R2,R4                    ;POINT TO 1ST LOC IN BUFFER
```

```
 8945 067204  000303                        SWAB    R3                      ;SWAP BYTES SWB=1 ETC.
 8946 067206  021403                        CMP     (R4),R3                 ;DATA WRITTEN = READ
 8947 067210  001410                        BEQ     290$                    ;BR, IF DATA OK (GOOD)
 8948 067212  011401                        MOV     (R4),R1                 ;PICK UP BAD DATA
 8949 067214  010302                        MOV     R3,R2                   ;SET UP EXPECTED
 8950 067216  005237  002214                INC     FATFLG                          ;ERROR COUNT
 8954 067222                                ERRHRD  ERRNO,T35DTA,EXPREC     ;DATA IN BUFFER NOT CORRECT
      067222  104456                                                                TRAP    C$ERHRD
      067224  001346                                                                .WORD   742
      067226  072255                                                                .WORD   T35DTA
      067230  015604                                                                .WORD   EXPREC
 8955 067232                        290$:   CKLOOP                          ;LOOP IF SELECTED
      067232  104406                                                                TRAP    C$CLP1
 8956 067234  005724                        TST     (R4)+                   ;BUMP TO NEXT ADDRESS
 8957 067236  160204                        SUB     R2,R4                   ;BACK TO RECORD SIZE
 8958 067240  000303                        SWAB    R3                      ;PUT R3 BACK INTO SHAPE
 8959 067242  020403                        CMP     R4,R3                   ;AT END OF RECORD YET
 8960 067244  001356                        BNE     285$                    ;BR, IF MORE DATA TO CHECK
 8961 067246  005723                        TST     (R3)+                   ;BUMP RECORD SIZE
 8962 067250  020327  000050                CMP     R3,#40.                 ;DONE YET
 8963 067254  001315                        BNE     265$                    ;BR, IF NOT DONE YET (MORE READS)
 8964 067256                        300$:   CKLOOP                          ;LOOP IF SELECTED
      067256  104406                                                                TRAP    C$CLP1
 8965 067260                                ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      067260                                                                    L10067:
      067260  104403                                                                TRAP    C$ESUB
 8966 067262  023727  002214  000017        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
 8967 067270  103402                        BLO     999$                            ;BR, IF LESS THAN 25
 8968 067272  004737  017312                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
 8969 067276                        999$:
 8970                                       ;
 8971                                       ;
 8972                                       ;
 8973 067276  004737  016566                JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
 8974 067302  103002                        BCC     163$                    ;BR, IF NO LOOP REQUIRED
 8975 067304  000137  063374                JMP     T35LOOP                 ;EXECUTE AGAIN
 8976 067310                        163$:   EXIT    TST                     ;ALL DONE THIS TEST
      067310  104432                                                                TRAP    C$EXIT
      067312  003760                                                                .WORD   L10063-.
 8977                                       ;+
 8978                                       ;LOCAL STORAGE FOR THIS TEST
 8979                                       ;-
 8981          067320                               .=<.+10>&177770
 8983 067320                        T35PACKET:                              ;COMMAND PACKET FOR TEST
 8984 067320  100004                               .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH . ACK
 8985 067322  067330                               .WORD   T35DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
 8986 067324  000000                               .WORD   0
 8987 067326  000012                               .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
 8988 067330                        T35DATA:                                ;CHARACTERISTICS DATA BLOCK
 8989 067330  067342                               .WORD   T35BFR          ;ADDRESS OF MESSAGE BUFFER
 8990 067332  000000                               .WORD   0
 8991 067334  000024                               .WORD   20.             ;LENGTH OF MESSAGE BUFFER
 8992 067336  000000                               .WORD   0
 8993 067340  000000                T35DSW: .WORD   0                       ;SELECT DRIVE 0
 8994 067342                        T35BFR: .BLKW   25.                     ;MESSAGE BUFFER
 8995                                       ;
 8996                                       ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
```

```
 8997
 8999                   067430                  ;
                                                        .=<.+10>&177770
 9001 067430                                    T35PK2:
 9002 067430  100006                                    .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
 9003 067432  067450                                    .WORD   T35BF2          ;ADDRESS OF SELECT BLOCK DATA
 9004 067434  000000                                    .WORD   0
 9005 067436  000006                                    .WORD   6.              ;SIZE OF DATA PACKET
 9006
 9010 067440                                    T35PK3:
 9011 067440  100005                                    .WORD   100005          ;REREAD COMMAND, AND ACK
 9012 067442                                    T35RB:
 9013 067442  003120                            T35WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
 9014 067444  000000                                    .WORD   0
 9015 067446  000000                            T35SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
 9016                                                   .EVEN
 9017                                           ;
 9018                                           ;
 9019                                           ;
 9020 067450                                    T35BF2:
 9021 067450     010                            T35BS0: .BYTE   10              ;BSEL0 AREA
 9022 067451     200                            T35BS1: .BYTE   200             ;BSEL1 AREA
 9023 067452  000000                            T35S2:  .WORD   0               ;SEL 2 AREA
 9024 067454  000000                            T35S3:  .WORD   0               ;DATA AREA
 9025                                           ;
 9026                                           ;
 9027                                                   .EVEN
 9028                                           ;TAPE MOTION PACKET COMMAND VALUES
 9029
 9030 067456  100205                            T35RN:  .WORD   100205          ;REREAD DATA (NEXT)
 9031 067460  100605                            T35WDR: .WORD   100605          ;REREAD DATA RETRY
 9032 067462  102205                            T35CON: .WORD   102205          ;WRITE CONTINOUS
 9033 067464  177777                                    .WORD   177777          ;END OF DATA
 9034
 9035                                           ;
 9036 067466  000000                            T35CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
 9037 067470  000000                            T35CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
 9038 067472  000000                            T35DLY: .WORD   0               ;DELAY COUNTER
 9039                                           ;-
 9040                                           ;LOCAL TEXT MESSAGES FOR TEST
 9041                                           ;-
 9042
 9043 067474     124     141     160   T35WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
 9044 067562     124     123     123   T35RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
 9045 067631     122     105     122   T35RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
 9046 067726     120     117     123   T35SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
 9047 070010     122     111     102   T35LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
 9048 070060     124     123     123   T35WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
 9049 070135     111     154     154   T35LOG: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
 9050 070216     124     123     123   T35WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA Command'
 9051 070270     124     141     160   T35BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XSTO)'
 9052 070363     127     122     111   T35TIM: .ASCIZ  'WRITE DATA RETRY''S Erase Tape Not Long Enough'
 9053 070440     122     105     122   T35EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
 9054 070517     124     123     123   T35TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
 9055 070574     122     145     167   T35RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
 9056 070643     122     101     115   T35RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
 9057 070716     124     123     123   T35AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
 9058 070765     104     162     151   T35OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
```

TEST 7: EXTENDED MODE FEATURES

```
 9059 071040      124      123      123  T35WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
 9060 071130      124      123      123  T35WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
 9061 071203      103      126      103  T35VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
 9062 071256      124      123      102  T35BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
 9063 071331      127      122      111  T35WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
 9064 071420      122      145      141  T35LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XST0'
 9065 071502      122      145      141  T35LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XST0'
 9066 071564      122      145      163  T35PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
 9067 071652      122      145      141  T35TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
 9068 071740      127      122      111  T35NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
 9069 072036      124      123      123  T35SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
 9070 072113      124      123      123  T35TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
 9071 072175      124      123      123  T35WRF: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command'
 9072 072255      104      141      164  T35DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
 9073 072352      124      123      123  T35SSR: .ASCIZ  'TSSR Incorrect After WRITE MISCELLANEOUS Command'
 9074 072433      115      117      124  T35MOT: .ASCIZ  'MOT Bit (XST0) Not Set During Rewind (Extended Features Mode)'
 9075 072531      111      156      164  T35INT: .ASCIZ  'Interrupt Received After REWIND Command (IE Bit Not Set)'
 9076 072622      117      120      115  T35OPM: .ASCIZ  'OPM Bit (XST2) Not Set During Rewind (Extended Features Mode)'
 9077 072720      124      123      123  T35RWE: .ASCIZ  'TSSR Incorrect After Extended Features REWIND Command'
 9078 073006      116      157      040  T35NIN: .ASCIZ  'No Interrupt Detected After REWIND IMMEDIATE'
 9079 073063      105      170      164  TST35ID:        .ASCIZ  'Extended Mode Functions'
 9080                                                     .EVEN
 9081                                     ;*
 9082                                     ;
 9083                                     ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
 9084                                     ;WRITE SUBSYSTEM MEMORY COMMAND
 9085                                     ;
 9086                                     ;-
 9087
 9088 073114                             T35REST:
 9089 073114                                     SAVREG                          ;SAVE THE REGISTERS
 9090 073120  012701  067320                        MOV     #T35PACKET,R1       ;START OF THE PACKET
 9091 073124  012721  100004                        MOV     #100004,(R1)+       ;WRITE SUBSYSTEM MEM. WITH ACK,
 9092 073130  012721  067330                        MOV     #T35DATA,(R1)+      ;ADDRESS OF CHARAISTICS DATA BLOCK
 9093 073134  005021                                CLR     (R1)+               ;EXTENDED ADDRESS
 9094 073136  012721  000012                        MOV     #10.,(R1)+          ;SIZE OF DATA BLOCK IN BYTES
 9095 073142  012721  067342                        MOV     #T35BFR,(R1)+       ;ADDRESS OF MESSAGE BUFFER
 9096 073146  005021                                CLR     (R1)+
 9097 073150  012721  000024                        MOV     #20.,(R1)+          ;LENGTH OF MESSAGE BUFFER
 9098 073154  005021                                CLR     (R1)+
 9099 073156  012711  000000                        MOV     #0,(R1)             ;SELECT DRIVE ZERO
 9100 073162  012702  000030                        MOV     #24.,R2             ;NUMBER OF LOCATIONS TO BE CLEARED
 9101 073166  012762  177777  067342  64$:         MOV     #177777,T35BFR(R2)  ;ALL ONES TO MESSAGE BUFFER
 9102 073174  005742                                TST      (R2)               ;NEXT LOCATION
 9103 073176  022702  000000                        CMP     #0,R2               ;AT END OF LOOP YET
 9104 073202  001371                                BNE     64$                 ;KEEP GOING UNTIL DONE
 9105 073204  000207                                RTS     PC                  ;RETURN
 9106
 9107 073206                             T35RT2:
 9108 073206                                     SAVREG                          ;SAVE THE REGISTERS
 9109 073212  012701  067430                        MOV     #T35PK2,R1          ;START OF THE PACKET
 9110 073216  012721  100006                        MOV     #100006,(R1)+       ;WRITE SUBSYSTEM MEM. WITH ACK,
 9111 073222  012721  067450                        MOV     #T35BF2,(R1)+       ;ADDRESS OF DATA BLOCK
 9112 073226  005021                                CLR     (R1)+               ;EXTENDED ADDRESS
 9113 073230  012721  000006                        MOV     #6.,(R1)+           ;SIZE OF DATA BLOCK IN BYTES
 9114 073234  005021                                CLR     (R1)+
 9115 073236  012701  067450                        MOV     #T35BF2,R1          ;POINT TO DATA SEL AREA
```

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 9116 073242  005021                        CLR     (R1)+
 9117 073244  005011                        CLR     (R1)
 9118 073246  000207                        RTS     PC                      ;RETURN
 9119 073250                        T35RT3:
 9120 073250                                SAVREG                          ;SAVE REGISTERS
 9121 073254  012701  067440                MOV     #T35PK3,R1              ;SET UP POINTER ADDRESS
 9122 073260  005021                        CLR     (R1)+                   ;COMMAND SPACE
 9123 073262  005021                        CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
 9124 073264  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
 9125 073266  005011                        CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
 9126 073270  000207                        RTS     PC                      ;RETURN
 9127 073272                                ENDTST
      073272                                                        L10063:
      073272  104401                                                   TRAP    C$ETST
 9128                                       .SBTTL  TEST  8: RECORD BUFFERING
 9129                               ;+
 9130                               ;
 9131                               ;
 9132                               ;       THIS TEST VERIFIES THAT RECORD BUFFERING, USED FOR WRITE DATA
 9133                               ;       AND READ NEXT COMMANDS, OPERATES PROPERLY AND IS PROPERLY
 9134                               ;       CONTROLLED BY THE EXTENDED CHARACTERISTICS DATA WORD.  IF THE
 9135                               ;       M7196 CONTROLLER MODULE IS NOT ALREADY IN EXTENDED FEATURES MODE
 9136                               ;       (AS CONTROLLED BY THE DIP SWITCH ON THE MODULE), IT IS PLACED
 9137                               ;       INTO THAT MODE BY INVERTING THE SENSE OF THE SWITCH USING THE
 9138                               ;       WRITE SUBSYSTEM MEMORY COMMAND.  NOTE THAT RECORD BUFFERING HAS
 9139                               ;       BEEN ENABLED IN PREVIOUS TESTS OF READ AND WRITE AND SO HAS BEEN
 9140                               ;       PARTIALLY TESTED ALREADY.  THIS TEST VERIFIES THAT BUFFERING IS
 9141                               ;       ACTUALLY OPERATING.  THE FOLLOWING SUBTESTS ARE PERFORMED:
 9142                               ;
 9143                               ;       VERIFIES THAT NORMAL BUFFERING ON WRITE DATA COMMANDS OPERATES
 9144                               ;       PROPERLY AT LOW TAPE SPEED.  THE FOLLOWING SEQUENCE IS
 9145                               ;       PERFORMED:
 9146                               ;
 9147                               ;            1.  THE TAPE IS REWOUND.
 9148                               ;
 9149                               ;            2.  BUFFERING IS DISABLED AND LOW TAPE SPEED IS SELECTED
 9150                               ;                (VIA WRITE CHARACTERISTICS COMMAND).
 9151                               ;
 9152                               ;            3.  AN INITIAL RECORD IS WRITTEN ONTO THE TAPE IN ORDER TO
 9153                               ;                MOVE THE TAPE OFF BOT.
 9154                               ;
 9155                               ;            4.  THE PROGRAM DELAYS FOR A TIME SUFFICIENT TO ALLOW THE
 9156                               ;                TAPE TO REPOSITION AND COME TO REST.
 9157                               ;
 9158                               ;            5.  A WRITE DATA COMMAND, WITH A BYTE COUNT LESS THAN 3.5K,
 9159                               ;                IS ISSUED, AND THE PROGRAM COUNTS, IN A WAIT LOOP, THE
 9160                               ;                TIME IT TAKES TO RECEIVE COMMAND TERMINATION.  THIS
 9161                               ;                SHOULD BE A RELATIVELY LONG TIME SINCE BUFFERING IS
 9162                               ;                DISABLED.
 9163                               ;
 9164                               ;            6.  BUFFERING IS ENABLED.
 9165                               ;
 9166                               ;            7.  THE WRITE DATA COMMAND IS AGAIN ISSUED, WITH THE SAME
 9167                               ;                BYTE COUNT AS THAT USED PREVIOUSLY.  THE TIME TO
 9168                               ;                COMPLETION IS AGAIN MEASURED.
 9169                               ;
 9170                               ;            8.  THE COMPLETION TIMES MEASURED FOR THE NON-BUFFERED AND
```

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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
                                ;
                                ;
                                ;
                                ;-
073274                                  BGNTST
073274                                                                          T8::
073274  012737  006356  002172          MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
073302  004737  017404                  JSR     PC,KTOFF                ;TURN OFF KT11
073306  012700  100677                  MOV     #TST36ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
073312  004737  016620                  JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
073316  012737  000005  002210          MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
073324  005037  075706                  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.
                                ;
                                ;
                                ;-
                                T36LOOP:
073330                                  BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
073330                                                                          T8.1:
073330  104402                                                                  TRAP    C$BSUB
073332  004737  100720                  JSR     PC,T36REST              ;SET COMMAND PACKET
073336  004737  101012                  JSR     PC,T36RT2               ;SET UP OTHER COMMAND PACKET
073342  004737  101054                  JSR     PC,T36RT3               ;SET UP OTHER COMMAND PACKET
073346  012737  176750  075712          MOV     #65000.,T36DLY          ;SET UP DELAY COUNTER
073354  005037  075706                  CLR     T36CNT                  ;CLEAR COUNTER
073360  004737  016104          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
073364  103426                  BCS     20$                             ;BR IF INIT WAS OK
073366                          DELAY   250                             ;DELAY ABOUT .25 SEC
073366  012727  000250                                                          MOV     #250.,(PC)+
073372  000000                                                                  .WORD   0
073374  013727  002116                                                          MOV     L$DLY,(PC)+
073400  000000                                                                  .WORD   0
073402  005367  177772                                                          DEC     -6(PC)
073406  001375                                                                  BNE     .-4
073410  005367  177756                                                          DEC     -22(PC)
073414  001367                                                                  BNE     .-20
073416  005337  075712                  DEC     T36DLY                  ;BUMP COUNTER
073422  001356                  BNE     10$                             ;BR, IF COUNTER NOT DONE
```

TEST 8: RECORD BUFFERING

```
 9221 073424  005237  002214                INC     FATFLG                          ;ERROR COUNT
 9225 073430  010001                        MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 9226 073432                                ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      073432  104455                                                                TRAP    C$ERDF
      073434  001441                                                                .WORD   801
      073436  003650                                                                .WORD   SFIERR
      073440  012144                                                                .WORD   SFIMSG
 9227 073442  013737  002174  075560  20$:    MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
 9228 073450  012704  075540                MOV     #T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 9229 073454  004737  010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 9230 073460  103407                        BCS     25$                     ;BR, IF COMMAND ISSUED OK
 9231 073462  005237  002214                INC     FATFLG                          ;ERROR COUNT
 9235 073466  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 9236 073470                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      073470  104456                                                                TRAP    C$ERHRD
      073472  001442                                                                .WORD   802
      073474  005054                                                                .WORD   WRTMSG
      073476  012144                                                                .WORD   SFIMSG
 9237 073500                        25$:    CKLOOP                          ;LOOP IF SELECTED
      073500  104406                                                                TRAP    C$CLP1
 9238 073502  004737  011126                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 9239 073506  103407                        BCS     30$                     ;BR, IF NO PROBLEM
 9240 073510  010004                        MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
 9241 073512  005237  002214                INC     FATFLG                          ;ERROR COUNT
 9245 073516                                ERRHRD  ERRNO,T36RWN,PKTSSR     ;REWIND NOT ACCEPTED
      073516  104456                                                                TRAP    C$ERHRD
      073520  001443                                                                .WORD   803
      073522  077121                                                                .WORD   T36RWN
      073524  012156                                                                .WORD   PKTSSR
 9246 073526                        30$:    CKLOOP                          ;LOOP IF SELECTED
      073526  104406                                                                TRAP    C$CLP1
 9247 073530  013701  075570                MOV     T36BFR+6,R1             ;PICK UP XSTO
 9248 073534  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 9249 073536  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 9250 073542  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 9251 073544  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
 9252 073546  005237  002214                INC     FATFLG                          ;ERROR COUNT
 9256 073552                                ERRHRD  ERRNO,T36BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWJ'D
      073552  104456                                                                TRAP    C$ERHRD
      073554  001444                                                                .WORD   804
      073556  076615                                                                .WORD   T36BOT
      073560  015604                                                                .WORD   EXPREC
 9257 073562                        40$:    CKLOOP                          ;LOOP IF SELECTED
      073562  104406                                                                TRAP    C$CLP1
 9258 073564  013737  002174  075560          MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
 9259 073572  052737  000030  075560          BIS     #BIT3!BIT4,T36DSW       ;25-APR-83 REV B - TURN ON THE BUFFERING
 9260 073600  012704  075540                MOV     #T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 9261 073604  004737  010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 9262 073610  103407                        BCS     50$                     ;BR, IF COMMAND ISSUED OK
 9263 073612  005237  002214                INC     FATFLG                          ;ERROR COUNT
 9267 073616  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 9268 073620                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      073620  104456                                                                TRAP    C$ERHRD
      073622  001445                                                                .WORD   805
      073624  005054                                                                .WORD   WRTMSG
      073626  012144                                                                .WORD   SFIMSG
 9269 073630                        50$:    CKLOOP                          ;LOOP IF SELECTED
```

TEST 8: RECORD BUFFERING

```
                073630  104406                                                          TRAP    C$CLP1
 9270           073632  012737  003720  075666          MOV     #2000.,T36SZ            ;SET UP RECORD SIZE
 9271           073640  013737  003120  075662          MOV     FREE,T36WB              ;ADDRESS OF WRITE BUFFER
 9272           073646  012737  140005  075660          MOV     #140005,T36PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
 9273           073654  012704  075660                  MOV     #T36PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 9274           073660  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 9275           073664  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 9276           073670  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9277           073674  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 9278           073700  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 9279           073702  001406                          BEQ     60$                     ;BR, IF OK
 9280           073704  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 9284           073710                                  ERRHRD  ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
                073710  104456                                                          TRAP    C$ERHRD
                073712  001446                                                          .WORD   806
                073714  005111                                                          .WORD   WRTERR
                073716  012156                                                          .WORD   PKTSSR
 9285           073720                          60$:    CKLOOP                          ;LOOP IF SELECTED
                073720  104406                                                          TRAP    C$CLP1
 9286           073722  012737  000005  075712          MOV     #05.,T36DLY             ;25-APR-83 REV B - DELAY FOR TAPE TO STOP
 9287           073730                          70$:    DELAY   1                       ;25 APR-83 REV B - DELAY ROUTINE CALL
                073730  012727  000001                                                  MOV     #1,(PC)+
                073734  000000                                                          .WORD   0
                073736  013727  002116                                                  MOV     L$DLY,(PC)+
                073742  000000                                                          .WORD   0
                073744  005367  177772                                                  DEC     -6(PC)
                073750  001375                                                          BNE     .-4
                073752  005367  177756                                                  DEC     -22(PC)
                073756  001367                                                          BNE     .-20
 9288           073760  005337  075712                  DEC     T36DLY                  ;BUMP COUNTER DOWN
 9289           073764  001361                          BNE     70$                     ;BR, IF MORE DELAY TO GO
 9290           073766  022737  000001  002222          CMP     #1,REV                  ;IS IT NEW MICROCODE?
 9291           073774  001402                          BEQ     75$                     ;NO BR
 9292           073776  000137  074402                  JMP     350$                    ;JUMP IF NEW MICROCODE
 9293           074002  012737  006642  075666  75$:    MOV     #3490.,T36SZ            ;SET SIZE OF TRANSFER
 9294           074010  012737  140005  075660          MOV     #140005,T36PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
 9295           074016  012704  075660                  MOV     #T36PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 9296           074022  005037  075706                  CLR     T36CNT                  ;CLEAR COUNTER
 9297           074026  012737  001750  075712          MOV     #1000.,T36DLY           ;SET DROP DEAD COUNTER VALUE
 9298           074034  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 9299           074040  016501  000002          80$:    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9300           074044  032701  000200                  BIT     #SSR,R1                 ;CHECK FOR SSR SET
 9301           074050  001021                          BNE     90$                     ;BR, IF SSR IS SET
 9302           074052  005237  075706                  INC     T36CNT                  ;BUMP CYCLE COUNTER
 9303           074056                                  DELAY   1                       ;CUT NUMBER OF LOOPS DOWN
                074056  012727  000001                                                  MOV     #1,(PC)+
                074062  000000                                                          .WORD   0
                074064  013727  002116                                                  MOV     L$DLY,(PC)+
                074070  000000                                                          .WORD   0
                074072  005367  177772                                                  DEC     -6(PC)
                074076  001375                                                          BNE     .-4
                074100  005367  177756                                                  DEC     -22(PC)
                074104  001367                                                          BNE     .-20
 9304           074106  005337  075712                  DEC     T36DLY                  ;BUMP DROP DEAD COUNTER
 9305           074112  001352                          BNE     80$                     ;BR, IF THERE IS STILL TIME
 9306           074114  012702  000200          90$:    MOV     #SSR,R2                 ;SET UP EXPECTED
 9307           074120  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
```

TEST 8: RECORD BUFFERING

```
9308 074122  001406                    BEQ     100$                    ;BR, IF OK
9309 074124  005237  002214                INC     FATFLG                          ;ERROR COUNT
9313 074130                             ERRHRD  ERRNO,T36WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     074130  104456                                                            TRAP    C$ERHRD
     074132  001447                                                            .WORD   807
     074134  076543                                                            .WORD   T36WDE
     074136  012156                                                            .WORD   PKTSSR
9314 074140                     100$:   CKLOOP                          ;LOOP IF SELECTED
     074140  104406                                                            TRAP    C$CLP1
9315 074142  013737  002174  075560        MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
9316 074150  052737  000010  075560        BIS     #BIT3,T36DSW            ;25-APR-83 REV B - TURN OFF BUFFERING
9317 074156  012704  075540                MOV     #T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
9318 074162  004737  010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
9319 074166  103407                        BCS     110$                    ;BR, IF COMMAND ISSUED OK
9320 074170  005237  002214                INC     FATFLG                          ;ERROR COUNT
9324 074174  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
9325 074176                             ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     074176  104456                                                            TRAP    C$ERHRD
     074200  001450                                                            .WORD   808
     074202  005054                                                            .WORD   WRTMSG
     074204  012144                                                            .WORD   SFIMSG
9326 074206                     110$:   CKLOOP                          ;LOOP IF SELECTED
     074206  104406                                                            TRAP    C$CLP1
9327 074210  012737  006642  075666        MOV     #3490.,T36SZ            ;SET SIZE OF TRANSFER
9328 074216  012737  140005  075660        MOV     #140005,T36PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
9329 074224  012704  075660                MOV     #T36PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
9330 074230  005037  075710                CLR     T36CNU                  ;CLEAR COUNTER
9331 074234  012737  001750  075712        MOV     #1000.,T36DLY           ;SET DROP DEAD COUNTER VALUE
9332 074242  010465  000000                MOV     R4,TSD8(R5)             ;ISSUE COMMAND
9333 074246  016501  000002        120$:   MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
9334 074252  032701  000200                BIT     #SSR,R1                 ;CHECK FOR SSR SET
9335 074256  001021                        BNE     130$                    ;BR, IF SSR IS SE.
9336 074260  005237  075710                INC     T36CNU                  ;BUMP CYCLE COUNTER
9337 074264                             DELAY   1                       ;CUT NUMBER OF LOOPS DOWN
     074264  012727  000001                                                    MOV     #1.,(PC)+
     074270  000000                                                            .WORD   0
     074272  013727  002116                                                    MOV     L$DLY,(PC)+
     074276  000000                                                            .WORD   0
     074300  005367  177772                                                    DEC     -6(PC)
     074304  001375                                                            BNE     .-4
     074306  005367  177756                                                    DEC     -22(PC)
     074312  001367                                                            BNE     .-20
9338 074314  005337  075712                DEC     T36DLY                  ;BUMP DROP DEAD COUNTER
9339 074320  001352                        BNE     120$                    ;BR, IF THERE IS STILL TIME
9340 074322  012702  000200        130$:   MOV     #SSR,R2                 ;SET UP EXPECTED
9341 074326  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
9342 074330  001406                        BEQ     140$                    ;BR, IF OK
9343 074332  005237  002214                INC     FATFLG                          ;ERROR COUNT
9347 074336                             ERRHRD  ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     074336  104456                                                            TRAP    C$ERHRD
     074340  001451                                                            .WORD   809
     074342  005111                                                            .WORD   WRTERR
     074344  012156                                                            .WORD   PKTSSR
9348 074346                     140$:   CKLOOP                          ;LOOP IF SELECTED
     074346  104406                                                            TRAP    C$CLP1
9349 074350  013701  075706                MOV     T36CNT,R1               ;GET FIRST COUNTER
9350 074354  013702  075710                MOV     T36CNU,R2               ;GET SECOND COUNTER
```

```
TEST  8: RECORD BUFFERING

   9351 074360  020102                          CMP     R1,R2                   ;25 APR 83 REV B - COMPARE LM
   9352 074362  003406                          BLE     300$                    ;BR, IF VALUES ARE CORRECT (OK)
   9353 074364  005237  002214                  INC     FATFLG                          ;ERROR COUNT
   9357 074370                                  ERRHRD  ERRNO,T36NAS,EXPREC     ;TAPE NOT AT CORRECT SPEED
        074370  104456                                                                  TRAP    C$ERHRD
        074372  001452                                                                  .WORD   810
        074374  075714                                                                  .WORD   T36NAS
        074376  015604                                                                  .WORD   EXPREC
   9358 074400                          300$:   CKLOOP                          ;LOOP IF SELECTED
        074400  104406                                                                  TRAP    C$CLP1
   9359 074402                          350$:
   9360 074402                                  ENDSUB
        074402                                                                  L10071:
        074402  104403                                                                  TRAP    C$ESUB
   9361 074404  023727  002214  000017          CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
   9362 074412  103402                          BLO     999$                            ;BR, IF LESS THAN 25
   9363 074414  004737  017312                  JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
   9364 074420                          999$:
   9365                                 ;*
   9366                                 ;
   9367                                 ;TEST 8, SUBTEST 2
   9368                                 ;
   9369                                 ;
   9370                                 ;       THIS TEST VERIFIES THAT RECORD BUFFERING, USED FOR WRITE DATA
   9371                                 ;       AND READ NEXT COMMANDS, OPERATES PROPERLY AND IS PROPERLY
   9372                                 ;       CONTROLLED BY THE EXTENDED CHARACTERISTICS DATA WORD.  IF THE
   9373                                 ;       M7196 CONTROLLER MODULE IS NOT ALREADY IN EXTENDED FEATURES MODE
   9374                                 ;       (AS CONTROLLED BY THE DIP SWITCH ON THE MODULE), IT IS PLACED
   9375                                 ;       INTO THAT MODE BY INVERTING THE SENSE OF THE SWITCH USING THE
   9376                                 ;       WRITE SUBSYSTEM MEMORY COMMAND.  NOTE THAT RECORD BUFFERING HAS
   9377                                 ;       BEEN ENABLED IN PREVIOUS TESTS OF READ AND WRITE AND SO HAS BEEN
   9378                                 ;       PARTIALLY TESTED ALREADY.  THIS TEST VERIFIES THAT BUFFERING IS
   9379                                 ;       ACTUALLY OPERATING.  THE FOLLOWING SUBTESTS ARE PERFORMED:
   9380                                 ;
   9381                                 ;       VERIFIES THAT NORMAL BUFFERING ON WRITE DATA COMMANDS OPERATES
   9382                                 ;       PROPERLY AT LOW TAPE SPEED.  THE FOLLOWING SEQUENCE IS
   9383                                 ;       PERFORMED:
   9384                                 ;
   9385                                 ;            1.  THE TAPE IS REWOUND.
   9386                                 ;
   9387                                 ;            2.  BUFFERING IS DISABLED AND LOW TAPE SPEED IS SELECTED
   9388                                 ;                (VIA WRITE CHARACTERISTICS COMMAND).
   9389                                 ;
   9390                                 ;            3.  AN INITIAL RECORD IS WRITTEN ONTO THE TAPE IN ORDER TO
   9391                                 ;                MOVE THE TAPE OFF BOT.
   9392                                 ;
   9393                                 ;            4.  THE PROGRAM DELAYS FOR A TIME SUFFICIENT TO ALLOW THE
   9394                                 ;                TAPE TO REPOSITION AND COME TO REST.
   9395                                 ;
   9396                                 ;            5.  A WRITE DATA COMMAND, WITH A BYTE COUNT LESS THAN 3.5K,
   9397                                 ;                IS ISSUED, AND THE PROGRAM COUNTS, IN A WAIT LOOP, THE
   9398                                 ;                TIME IT TAKES TO RECEIVE COMMAND TERMINATION.  THIS
   9399                                 ;                SHOULD BE A RELATIVELY LONG TIME SINCE BUFFERING IS
   9400                                 ;                DISABLED.
   9401                                 ;
   9402                                 ;            6.  BUFFERING IS ENABLED.
   9403                                 ;
```

TEST 8: RECORD BUFFERING

```
9404                                    ;             7.  THE WRITE DATA COMMAND IS AGAIN ISSUED, WITH THE SAME
9405                                    ;                 BYTE COUNT AS THAT USED PREVIOUSLY.  THE TIME TO
9406                                    ;                 COMPLETION IS AGAIN MEASURED.
9407                                    ;
9408                                    ;             8.  THE COMPLETION TIMES MEASURED FOR THE NON BUFFERED AND
9409                                    ;                 BUFFERED CASES ARE COMPARED.  IT IS VERIFIED THAT THE
9410                                    ;                 TIME MEASURED FOR THE NON BUFFERED CASE IS MUCH LARGER
9411                                    ;                 THAN THAT MEASURED FOR THE BUFFERED CASE.
9412                                    ;
9413                                    ;             9.  THE PREVIOUS STEPS, EXCEPT FOR REWINDING AND WRITING A
9414                                    ;                 RECORD OFF BOT, ARE REPEATED FOR VARIOUS BYTE COUNTS IN
9415                                    ;                 THE RANGE 20 THROUGH 3.5K.
9416                                    ;
9417                                    ;
9418                                    ;
9419                                    ;-
9420 074420                            BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      074420                                                                    T8.2:
      074420  104402                                                              TRAP    C$BSUB
9421 074422  004737  100720            JSR     PC,T36REST      ;SET COMMAND PACKET
9422 074426  004737  101012            JSR     PC,T36RT2       ;SET UP OTHER COMMAND PACKET
9423 074432  004737  101054            JSR     PC,T36RT3       ;SET UP OTHER COMMAND PACKET
9424 074436  012737  176750  075712    MOV     #65000.,T36DLY  ;SET UP DELAY COUNTER
9425 074444  005037  075706            CLR     T36CNT          ;CLEAR COUNTER
9426 074450  004737  016104    10$:    JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
9427 074454  103426                    BCS     20$             ;BR IF INIT WAS OK
9428 074456                            DELAY   250             ;DELAY ABOUT .25 SEC
      074456  012727  000250                                                      MOV     #250.,(PC)+
      074462  000000                                                            .WORD   0
      074464  013727  002116                                                      MOV     L$DLY,(PC)+
      074470  000000                                                            .WORD   0
      074472  005367  177772                                                    DEC     -6(PC)
      074476  001375                                                            BNE     .-4
      074500  005367  177756                                                    DEC     -22(PC)
      074504  001367                                                            BNE     .-20
9429 074506  005337  075712            DEC     T36DLY          ;BUMP COUNTER
9430 074512  001356                    BNE     10$             ;BR, IF COUNTER NOT DONE
9431 074514  005237  002214            INC     FATFLG                  ;ERROR COUNT
9435 074520  010001                    MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
9436 074522                            ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      074522  104455                                                              TRAP    C$ERDF
      074524  001453                                                            .WORD   811
      074526  003650                                                            .WORD   SFIERR
      074530  012144                                                            .WORD   SFIMSG
9437 074532  013737  002174  075560  20$:    MOV     UNITN,T36DSW    ;SET UP DRIVE NUMBER
9438 074540  052737  000040  075560        BIS     #BIT5,T36DSW    ;TURN ON HIGH SPEED
9439 074546  012704  075540            MOV     #T36PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
9440 074552  004737  010742            JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
9441 074556  103407                    BCS     25$             ;BR, IF COMMAND ISSUED OK
9442 074560  005237  002214            INC     FATFLG                  ;ERROR COUNT
9446 074564  010001                    MOV     R0,R1           ;SAVE CONTENTS OF TSSR
9447 074566                            ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      074566  104456                                                              TRAP    C$ERHRD
      074570  001454                                                            .WORD   812
      074572  005054                                                            .WORD   WRTMSG
      074574  012144                                                            .WORD   SFIMSG
9448 074576                    25$:    CKLOOP                  ;LOOP IF SELECTED
```

TEST 8: RECORD BUFFERING

```
        074576  104406                                                          TRAP    C$CLP1
 9449   074600  004737  011126                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 9450   074604  103407                          BCS     30$                     ;BR, IF NO PROBLEM
 9451   074606  010004                          MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
 9452   074610  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 9456   074614                                  ERRHRD  ERRNO,T36RWN,PKTSSR     ;REWIND NOT ACCEPTED
        074614  104456                                                          TRAP    C$ERHRD
        074616  001455                                                          .WORD   813
        074620  077121                                                          .WORD   T36RWN
        074622  012156                                                          .WORD   PKTSSR
 9457   074624                          30$:    CKLOOP                          ;LOOP IF SELECTED
        074624  104406                                                          TRAP    C$CLP1
 9458   074626  013701  075570                  MOV     T36BFR+6,R1             ;PICK UP XSTO
 9459   074632  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 9460   074634  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 9461   074640  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
 9462   074642  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
 9463   074644  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 9467   074650                                  ERRHRD  ERRNO,T36BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        074650  104456                                                          TRAP    C$ERHRD
        074652  001456                                                          .WORD   814
        074654  076615                                                          .WORD   T36BOT
        074656  015604                                                          .WORD   EXPREC
 9468   074660                          40$:    CKLOOP                          ;LOOP IF SELECTED
        074660  104406                                                          TRAP    C$CLP1
 9469   074662  013737  002174  075560          MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
 9470   074670  052737  000030  075560          BIS     #BIT3!BIT4,T36DSW       ;25-APR-83 REV B - TURN ON THE BUFFERING
 9471   074676  012704  075540                  MOV     #T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 9472   074702  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 9473   074706  103407                          BCS     50$                     ;BR, IF COMMAND ISSUED OK
 9474   074710  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 9478   074714  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 9479   074716                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        074716  104456                                                          TRAP    C$ERHRD
        074720  001457                                                          .WORD   815
        074722  005054                                                          .WORD   WRTMSG
        074724  012144                                                          .WORD   SFIMSG
 9480   074726                          50$:    CKLOOP                          ;LOOP IF SELECTED
        074726  104406                                                          TRAP    C$CLP1
 9481   074730  012737  003720  075666          MOV     #2000.,T36SZ            ;SET UP RECORD SIZE
 9482   074736  013737  003120  075662          MOV     FREE,T36WB              ;ADDRESS OF WRITE BUFFER
 9483   074744  012737  140005  075660          MOV     #140005,T36PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
 9484   074752  012704  075660                  MOV     #T36PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 9485   074756  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 9486   074762  004737  016360                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 9487   074766  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9488   074772  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 9489   074776  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 9490   075000  001406                          BEQ     60$                     ;BR, IF OK
 9491   075002  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 9495   075006                                  ERRHRD  ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
        075006  104456                                                          TRAP    C$ERHRD
        075010  001460                                                          .WORD   816
        075012  005111                                                          .WORD   WRTERR
        075014  012156                                                          .WORD   PKTSSR
 9496   075016                          60$:    CKLOOP                          ;LOOP IF SELECTED
        075016  104406                                                          TRAP    C$CLP1
```

TEST 8: RECORD BUFFERING

```
 9497 075020  012737  000005  075712          MOV     #05.,T36DLY             ;25-APR-83 REV B - DELAY FOR TAPE TO STOP
 9498 075026                          70$:     DELAY   1                       ;25-APR-83 REV B - DELAY ROUTINE CALL
      075026  012727  000001                                                            MOV     #1,(PC)+
      075032  000000                                                                    .WORD   0
      075034  013727  002116                                                            MOV     L$DLY,(PC)+
      075040  000000                                                                    .WORD   0
      075042  005367  177772                                                            DEC      6(PC)
      075046  001375                                                                    BNE     .-4
      075050  005367  177756                                                            DEC     -22(PC)
      075054  001367                                                                    BNE     .-20
 9499 075056  005337  075712                  DEC     T36DLY                  ;BUMP COUNTER DOWN
 9500 075062  001361                          BNE     70$                     ;BR, IF MORE DELAY TO GO
 9501 075064  022737  000001  002222          CMP     #1,REV                  ;IS IT A NEW MICROCODE?
 9502 075072  001402                          BEQ     75$                     ;NO BR
 9503 075074  000137  075500                  JMP     350$                    ;YES JUMP
 9504 075100  012737  006642  075666  75$:    MOV     #3490.,T36SZ            ;SET SIZE OF TRANSFER
 9505 075106  012737  140005  075660          MOV     #140005,T36PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
 9506 075114  012704  075660                  MOV     #T36PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 9507 075120  005037  075706                  CLR     T36CNT                  ;CLEAR COUNTER
 9508 075124  012737  001750  075712          MOV     #1000.,T36DLY           ;SET DROP DEAD COUNTER VALUE
 9509 075132  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 9510 075136  016501  000002          80$:    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9511 075142  032701  000200                  BIT     #SSR,R1                 ;CHECK FOR SSR SET
 9512 075146  001021                          BNE     90$                     ;BR, IF SSR IS SET
 9513 075150  005237  075706                  INC     T36CNT                  ;BUMP CYCLE COUNTER
 9514 075154                                  DELAY   1                       ;CUT NUMBER OF LOOPS DOWN
      075154  012727  000001                                                            MOV     #1,(PC)+
      075160  000000                                                                    .WORD   0
      075162  013727  002116                                                            MOV     L$DLY,(PC)+
      075166  000000                                                                    .WORD   0
      075170  005367  177772                                                            DEC     -6(PC)
      075174  001375                                                                    BNE     .-4
      075176  005367  177756                                                            DEC     -22(PC)
      075202  001367                                                                    BNE     .-20
 9515 075204  005337  075712                  DEC     T36DLY                  ;BUMP DROP DEAD COUNTER
 9516 075210  001352                          BNE     80$                     ;BR, IF THERE IS STILL TIME
 9517 075212  012702  000200          90$:    MOV     #SSR,R2                 ;SET UP EXPECTED
 9518 075216  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 9519 075220  001406                          BEQ     100$                    ;BR, IF OK
 9520 075222  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 9524 075226                                  ERRHRD  ERRNO,T36WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      075226  104456                                                                    TRAP    C$ERHRD
      075230  001461                                                                    .WORD   817
      075232  076543                                                                    .WORD   T36WDE
      075234  012156                                                                    .WORD   PKTSSR
 9525 075236                          100$:   CKLOOP                          ;LOOP IF SELECTED
      075236  104406                                                                    TRAP    C$CLP1
 9526 075240  013737  002174  075560          MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
 9527 075246  052737  000010  075560          BIS     #BIT3,T36DSW            ;25 APR 83 REV B - TURN OFF BUFFERING
 9528 075254  012704  075540                  MOV     #T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 9529 075260  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 9530 075264  103407                          BCS     110$                    ;BR, IF COMMAND ISSUED OK
 9531 075266  005237  002214                  INC     FATFLG                          ;ERPOR COUNT
 9535 075272  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 9536 075274                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      075274  104456                                                                    TRAP    C$ERHRD
      075276  001462                                                                    .WORD   818
```

TEST 8: RECORD BUFFERING

```
        075300  005054                                                          .WORD   WRTMSG
        075302  ( 2144                                                          .WORD   SFIMSG
 9537   075304                          110$:   CKLOOP                  ;LOOP IF SELECTED
        075304  104406                                                          TRAP    C$CLP1
 9538   075306  012737  006642  075666          MOV     #3490.,T36SZ    ;SET SIZE OF TRANSFER
 9539   075314  012737  140005  075660          MOV     #140005,T36PK3  ;WRITE DATA,ACK,CVC=1 COMMAND
 9540   075322  012704  075660                  MOV     #T36PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
 9541   075326  005037  075710                  CLR     T36CNU          ;CLEAR COUNTER
 9542   075332  012737  001750  075712          MOV     #1000.,T36DLY   ;SET DROP DEAD COUNTER VALUE
 9543   075340  010465  000000                  MOV     R4,TSDB(R5)     ;ISSUE COMMAND
 9544   075344  016501  000002          120$:   MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
 9545   075350  032701  000200                  BIT     #SSR,R1         ;CHECK FOR SSR SET
 9546   075354  001021                          BNE     130$            ;BR, IF SSR IS SET
 9547   075356  005237  075710                  INC     T36CNU          ;BUMP CYCLE COUNTER
 9548   075362                                  DELAY   1               ;CUT NUMBER OF LOOPS DOWN
        075362  012727  000001                                                  MOV     #1,(PC)+
        075366  000000                                                          .WORD   0
        075370  013727  002116                                                  MOV     L$DLY,(PC)+
        075374  000000                                                          .WORD   0
        075376  005367  177772                                                  DEC     -6(PC)
        075402  001375                                                          BNE     .-4
        075404  005367  177756                                                  DEC     -22(PC)
        075410  001367                                                          BNE     .-20
 9549   075412  005337  075712                  DEC     T36DLY          ;BUMP DROP DEAD COUNTER
 9550   075416  001352                          BNE     120$            ;BR, IF THERE IS STILL TIME
 9551   075420  012702  000200          130$:   MOV     #SSR,R2         ;SET UP EXPECTED
 9552   075424  020102                          CMP     R1,R2           ;ARE THEY EQUAL
 9553   075426  001406                          BEQ     140$            ;BR, IF OK
 9554   075430  005237  002214                  INC     FATFLG                  ;ERROR COUNT
 9555   075434                                  ERRHRD  ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        075434  104456                                                          TRAP    C$ERHRD
        075436  001463                                                          .WORD   819
        075440  005111                                                          .WORD   WRTERR
        075442  012156                                                          .WORD   PKTSSR
 9559   075444                          140$:   CKLOOP                  ;LOOP IF SELECTED
        075444  104406                                                          TRAP    C$CLP1
 9560   075446  013701  075706                  MOV     T36CNT,R1       ;GET FIRST COUNTER
 9561   075452  013702  075710                  MOV     T36CNU,R2       ;GET SECOND COUNTER
 9562   075456  020102                          CMP     R1,R2           ;25-APR-83 REV B - COMPARE EM
 9563   075460  003406                          BLE     300$            ;BR, IF VALUES ARE CORRECT (OK)
 9564   075462  005237  002214                  INC     FATFLG                  ;ERROR COUNT
 9568   075466                                  ERRHRD  ERRNO,T36NAS,EXPREC     ;TAPE NOT AT CORRECT SPEED
        075466  104456                                                          TRAP    C$ERHRD
        075470  001464                                                          .WORD   820
        075472  075714                                                          .WORD   T36NAS
        075474  015604                                                          .WORD   EXPREC
 9569   075476                          300$:   CKLOOP                  ;LOOP IF SELECTED
        075476  104406                                                          TRAP    C$CLP1
 9570   075500                          350$:   ENDSUB
        075500                                                          L10072:
        075500  104403                                                          TRAP    C$ESUB
 9571   075502  023727  002214  000017          CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
 9572   075510  103402                          BLO     999$                    ;BR, IF LESS THAN 25
 9573   075512  004737  017312                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
 9574   075516                          999$:
 9575                                   ;
 9576                                   ;
```

TEST 8: RECORD BUFFERING

```
                                        ;
075516  004737  016566                        JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
075522  103002                                BCC     163$                    ;BR, IF NO LOOP REQUIRED
075524  000137  073330                        JMP     T36LOOP                 ;EXECUTE AGAIN
075530                                  163$:
075530                                        EXIT    TST                     ;ALL DONE THIS TEST
075530  104432                                                                        TRAP    C$EXIT
075532  003344                                                                        .WORD   L10070-.
                                        ;*
                                        ;LOCAL STORAGE FOR THIS TEST
                                        ;
                 075540                         .=<.+10>&177770
075540                                  T36PACKET:                              ;COMMAND PACKET FOR TEST
075540  100004                                .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
075542  075550                                .WORD   T36DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
075544  000000                                .WORD   0
075546  000012                                .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
075550                                  T36DATA:                                ;CHARACTERISTICS DATA BLOCK
075550  075562                                .WORD   T36BFR                  ;ADDRESS OF MESSAGE BUFFER
075552  000000                                .WORD   0
075554  000024                                .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
075556  000000                                .WORD   0
075560  000000                          T36DSW: .WORD   0                       ;SELECT DRIVE 0
075562                                  T36BFR: .BLKW   25.                     ;MESSAGE BUFFER
                                        ;
                                        ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                        ;
                 075650                         .=<.+10>&177770
075650                                  T36PK2:
075650  100006                                .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
075652  075670                                .WORD   T36BF2                  ;ADDRESS OF SELECT BLOCK DATA
075654  000000                                .WORD   0
075656  000006                                .WORD   6.                      ;SIZE OF DATA PACKET
                                        T36PK3:
075660  100005                                .WORD   100005                  ;REREAD COMMAND, AND ACK
075662                                  T36RB:
075662  003120                          T36WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
075664  000000                                .WORD   0
075666  000000                          T36SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
                                              .EVEN
                                        ;
                                        ;
                                        ;
075670                                  T36BF2:
075670     010                          T36BS0: .BYTE   10                      ;BSEL0 AREA
075671     200                          T36BS1: .BYTE   200                     ;BSEL1 AREA
075672  000000                          T36S2:  .WORD   0                       ;SEL 2 AREA
075674  000000                          T36S3:  .WORD   0                       ;DATA AREA
                                        ;
                                        ;
                                              .EVEN
                                        ;TAPE MOTION PACKET COMMAND VALUES
075676  100205                          T36RN:  .WORD   100205                  ;REREAD DATA (NEXT)
075700  100605                          T36WDR: .WORD   100605                  ;REREAD DATA RETRY
075702  102205                          T36CON: .WORD   102205                  ;WRITE CONTINOUS
```

```
 9639 075704  177777                          .WORD   177777                  ;END OF DATA
 9640
 9641                                         ;
 9642 075706  000000                  T36CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
 9643 075710  000000                  T36CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
 9644 075712  000000                  T36DLY: .WORD   0                       ;DELAY COUNTER
 9645                                         ;+
 9646                                         ;LOCAL TEXT MESSAGES FOR TEST
 9647                                         ;-
 9648
 9649 075714      111     155     160 T36NAS: .ASCIZ  'Improper Tape Controller Buffering Speed'
 9650 075765      124     141     160 T36WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
 9651 076053      124     123     123 T36RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
 9652 076122      122     105     122 T36RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
 9653 076217      120     117     123 T36SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
 9654 076301      122     111     102 T36LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
 9655 076351      124     123     123 T36WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
 9656 076426      111     154     154 T36LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
 9657 076507      122     105     122 T36SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
 9658 076543      124     123     123 T36WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA Command'
 9659 076615      124     141     160 T36BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XSTO)'
 9660 076710      127     122     111 T36TIM: .ASCIZ  'WRITE DATA RETRY''S Erase Tape Not Long Enough'
 9661 076765      122     105     122 T36EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
 9662 077044      124     123     123 T36TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
 9663 077121      122     145     167 T36RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
 9664 077170      122     101     115 T36RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
 9665 077243      124     123     123 T36AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
 9666 077312      104     162     151 T36OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
 9667 077365      124     123     123 T36WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
 9668 077455      124     123     123 T36WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
 9669 077530      103     126     103 T36VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
 9670 077603      124     123     102 T36BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
 9671 077656      127     122     111 T36WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
 9672 077745      122     145     141 T36LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XSTO'
 9673 100027      122     145     141 T36LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
 9674 100111      122     145     163 T36PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
 9675 100177      122     145     141 T36TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
 9676 100265      127     122     111 T36NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
 9677 100363      124     123     123 T36SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
 9678 100440      124     123     123 T36TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
 9679 100522      124     123     123 T36WRF: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command'
 9680 100602      104     141     164 T36DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
 9681 100677      122     145     143 TST36ID:        .ASCIZ  'Record Buffering'
 9682                                         .EVEN
 9683                                         ;+
 9684                                         ;
 9685                                         ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
 9686                                         ;WRITE SUBSYSTEM MEMORY COMMAND
 9687                                         ;
 9688                                         ;-
 9689
 9690 100720                          T36REST:
 9691 100720                                 SAVREG                          ;SAVE THE REGISTERS
 9692 100724  012701  075540                MOV     @T36PACKET,R1           ;START OF THE PACKET
 9693 100730  012721  100004                MOV     @100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
 9694 100734  012721  075550                MOV     @T36DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
 9695 100740  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
```

TEST 8: RECORD BUFFERING

```
 9696 100742  012721  000012                  MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
 9697 100746  012721  075562                  MOV     #T36BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
 9698 100752  005021                          CLR     (R1)+
 9699 100754  012721  000024                  MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
 9700 100760  005021                          CLR     (R1)+
 9701 100762  012711  000000                  MOV     #0,(R1)                 ;SELECT DRIVE ZERO
 9702 100766  012702  000030                  MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
 9703 100772  012762  177777  075562  64$:    MOV     #177777,T36BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
 9704 101000  005742                          TST     -(R2)                   ;NEXT LOCATION
 9705 101002  022702  000000                  CMP     #0,R2                   ;AT END OF LOOP YET
 9706 101006  001371                          BNE     64$                     ;KEEP GOING UNTIL DONE
 9707 101010  000207                          RTS     PC                      ;RETURN
 9708
 9709 101012                          T36RT2:
 9710 101012                                  SAVREG                          ;SAVE THE REGISTERS
 9711 101016  012701  075650                  MOV     #T36PK2,R1              ;START OF THE PACKET
 9712 101022  012721  100006                  MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
 9713 101026  012721  075670                  MOV     #T36BF2,(R1)+           ;ADDRESS OF DATA BLOCK
 9714 101032  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
 9715 101034  012721  000006                  MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
 9716 101040  005021                          CLR     (R1)+
 9717 101042  012701  075670                  MOV     #T36BF2,R1              ;POINT TO DATA SEL AREA
 9718 101046  005021                          CLR     (R1)+
 9719 101050  005011                          CLR     (R1)
 9720 101052  000207                          RTS     PC                      ;RETURN
 9721 101054                          T36RT3:
 9722 101054                                  SAVREG                          ;SAVE REGISTERS
 9723 101060  012701  075660                  MOV     #T36PK3,R1              ;SET UP POINTER ADDRESS
 9724 101064  005021                          CLR     (R1)+                   ;COMMAND SPACE
 9725 101066  005021                          CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
 9726 101070  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
 9727 101072  005011                          CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
 9728 101074  000207                          RTS     PC                      ;RETURN
 9729 101076                                  ENDTST
      101076                                                          L10070:
      101076  104401                                                          TRAP    C$ETST
 9730                                         .SBTTL  TEST  9: FUNCTION TIMING
 9731                                 ;+
 9732                                 ;
 9733                                 ;THIS TEST VERIFIES THAT THE TAPE TRANSPORT SEEMS TO BE WRITING
 9734                                 ;RECORDS, GAPS, AND EXTENDED GAPS OF THE PROPER LENGTH. BOTH LOW
 9735                                 ;AND HIGH SPEED MODES ARE TESTED. IT IS ALSO VERIFIED THAT A
 9736                                 ;SPACE RECORDS COMMAND WITH A RECORD COUNT OF 80 OR MORE, AND A
 9737                                 ;SKIP TAPE MARKS COMMAND WITH A COUNT OF 2 OF MORE, OPERATE THE
 9738                                 ;TAPE IN HIGH-SPEED MODE. THIS TEST CAN ONLY BE RUN IF A
 9739                                 ;REAL-TIME CLOCK IS AVAILIABLE ON THE SYSTEM. THE TEST OPERATES BY
 9740                                 ;TIMING VARIOUS TAPE-MOTION OPERATIONS, USING A NUMBER OF
 9741                                 ;DIFFERENT TEST RECORD LENGTHS.
 9742                                 ;
 9743                                 ;
 9744                                 ;-
 9745 101100                                  BGNTST
      101100                                                              T9::
 9746 101100  012737  006356  002172          MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
 9747 101106  004737  017404                  JSR     PC,KTOFF                        ;TURN KT OFF
 9752 101112  012700  105323                  MOV     #TST37ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
 9753 101116  004737  016620                  JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
```

TEST 9: FUNCTION TIMING

```
 9754 101122  012737  000005  002210          MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
 9755 101130  005037  102366                  CLR     T37CNT                  ;CLEAR TAPE RECORD COUNTER
 9756                                 ;+
 9757                                 ;
 9758                                 ;TEST 9, SUBTEST 1
 9759                                 ;
 9760                                 ;
 9761                                 ;
 9762                                 ;
 9763                                 ;-
 9764
 9765 101134                          T37LOOP:
 9766 101134                          BGNSUB                                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      101134                                                                                  T9.1:
      101134  104402                                                                              TRAP    C$BSUB
 9767 101136  005037  002216                  CLR     INTRECV                 ;INTERRUPT INDICATOR
 9768 101142  005037  102366                  CLR     T37CNT                  ;TIMER FOR WRITE DATA SPACING
 9769 101146  005037  102370                  CLR     T37CNU                  ;TIMER FOR WRITE DATA RETRY SPACING
 9770 101152  004737  105344                  JSR     PC,T37REST              ;SET COMMAND PACKET
 9771 101156  004737  105436                  JSR     PC,T37RT2               ;SET UP OTHER COMMAND PACKET
 9772 101162  004737  105500                  JSR     PC,T37RT3               ;SET UP OTHER COMMAND PACKET
 9773 101166  012737  176750  102372          MOV     #65000.,T37DLY          ;SET UP DELAY COUNTER
 9774 101174  004737  016104          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 9775 101200  103426                  BCS     20$                             ;BR IF INIT WAS OK
 9776 101202                          DELAY   250                             ;DELAY ABOUT .25 SEC
      101202  012727  000250                                                                  MOV     #250,(PC)+
      101206  000000                                                                          .WORD   0
      101210  013727  002116                                                                  MOV     L$DLY,(PC)+
      101214  000000                                                                          .WORD   0
      101216  005367  177772                                                                  DEC     -6(PC)
      101222  001375                                                                          BNE     . 4
      101224  005367  177756                                                                  DEC     -22(PC)
      101230  001367                                                                          BNE     . 20
 9777 101232  005337  102372                  DEC     T37DLY                  ;BUMP COUNTER
 9778 101236  001356                  BNE     10$                             ;BR, IF COUNTER NOT DONE
 9779 101240  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 9783 101244  010001                  MOV     R0,R1                           ;CONTENTS OF TSSR REGISTER
 9784 101246                          ERRDF   ERRNO,SFIERR,SFIMSG             ;FATAL ERROR TSSR WAS NOT OK
      101246  104455                                                                          TRAP    C$ERDF
      101250  001605                                                                          .WORD   901
      101252  003650                                                                          .WORD   SFIERR
      101254  012144                                                                          .WORD   SFIMSG
 9785 101256  013737  002174  102240  20$:    MOV     UNITN,T37DSW            ;SET UP UNIT NUMBER
 9786
 9787 101264  012704  102220                  MOV     #T37PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 9788 101270  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 9789 101274  103407                  BCS     23$                             ;BR, IF COMMAND ISSUED OK
 9790 101276  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 9794 101302  010001                  MOV     R0,R1                           ;SAVE CONTENTS OF TSSR
 9795 101304                          ERRHRD  ERRNO,WRTMSG,SFIMSG             ;WRITE CHARACTERISTISC FAILED
      101304  104456                                                                          TRAP    C$ERHRD
      101306  001606                                                                          .WORD   902
      101310  005054                                                                          .WORD   WRTMSG
      101312  012144                                                                          .WORD   SFIMSG
 9796 101314                          23$:    CKLOOP                          ;LOOP IF SELECTED
      101314  104406                                                                          TRAP    C$CLP1
 9797 101316  004737  011126                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
```

TEST 9: FUNCTION TIMING

```
 9798 101322  103411                        BCS     30$                     ;BR, IF NO PROBLEM
 9799 101324  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9800 101330  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
 9801 101332  005237  002214                INC     FATFLG                          ;ERROR COUNT
 9805 101336                                ERRHRD  ERRNO,T37RWN,PKTSSR     ;REWIND NOT ACCEPTED
      101336  104456                                                              TRAP    C$ERHRD
      101340  001607                                                              .WORD   903
      101342  103545                                                              .WORD   T37RWN
      101344  012156                                                              .WORD   PKTSSR
 9806 101346                        30$:    CKLOOP                          ;LOOP IF SELECTED
      101346  104406                                                              TRAP    C$CLP1
 9807 101350  013701  102250                MOV     T37BFR+6,R1             ;PICK UP XSTO
 9808 101354  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 9809 101356  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 9810 101362  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 9811 101364  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
 9812 101366  005237  002214                INC     FATFLG                          ;ERROR COUNT
 9816 101372                                ERRHRD  ERRNO,T37BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      101372  104456                                                              TRAP    C$ERHRD
      101374  001610                                                              .WORD   904
      101376  103241                                                              .WORD   T37BOT
      101400  015604                                                              .WORD   EXPREC
 9817 101402                        40$:    CKLOOP                          ;LOOP IF SELECTED
      101402  104406                                                              TRAP    C$CLP1
 9818 101404  012703  000144                MOV     #100.,R3                ;NUMBER OF RECORDS TO BE WRITTEN
 9819 101410  013737  003120  102342        MOV     FREE,T37WB              ;STARTING WRITE BUFFER ADDRESS
 9820 101416  012737  140005  102340  65$:  MOV     #140005,T37PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
 9821 101424  012704  102340                MOV     #T37PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 9822 101430  012737  001130  102346        MOV     #600.,T37SZ             ;SET UP RECORD SIZE IN PACKET
 9823 101436  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 9824 101442  004737  016360                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 9825 101446  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9826 101452  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 9827 101456  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 9828 101460  001406                        BEQ     70$                     ;BR, IF OK
 9829 101462  005237  002214                INC     FATFLG                          ;ERROR COUNT
 9833 101466                                ERRHRD  ERRNO,T37WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      101466  104456                                                              TRAP    C$ERHRD
      101470  001611                                                              .WORD   905
      101472  104101                                                              .WORD   T37WDC
      101474  012156                                                              .WORD   PKTSSR
 9834 101476                        70$:    CKLOOP                          ;LOOP IF SELECTED
      101476  104406                                                              TRAP    C$CLP1
 9835 101500  005303                        DEC     R3                      ;DEC RECORD COUNTER
 9836 101502  001345                        BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
 9837 101504  004737  011126                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 9838 101510  103411                        BCS     130$                    ;BR, IF NO PROBLEM
 9839 101512  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 9840 101516  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
 9841 101520  005237  002214                INC     FATFLG                          ;ERROR COUNT
 9845 101524                                ERRHRD  ERRNO,T37RWN,PKTSSR     ;REWIND NOT ACCEPTED
      101524  104456                                                              TRAP    C$ERHRD
      101526  001612                                                              .WORD   906
      101530  103545                                                              .WORD   T37RWN
      101532  012156                                                              .WORD   PKTSSR
 9846 101534                        130$:   CKLOOP                          ;LOOP IF SELECTED
      101534  104406                                                              TRAP    C$CLP1
```

TEST 9: FUNCTION TIMING

```
 9847 101536  013701  102250                MOV     T37BFR+6,R1             ;PICK UP XSTO
 9848 101542  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 9849 101544  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 9850 101550  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 9851 101552  001406                        BEQ     140$                    ;BR, IF EQUAL (OK)
 9852 101554  005237  002214                INC     FATFLG                          ;ERROR COUNT
 9856 101560                                ERRHRD  ERRNO,T37BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      101560  104456                                                            TRAP    C$ERHRD
      101562  001613                                                            .WORD   907
      101564  103241                                                            .WORD   T37BOT
      101566  015604                                                            .WORD   EXPREC
 9857 101570                        140$:   CKLOOP                          ;LOOP IF SELECTED
      101570  104406                                                            TRAP    C$CLP1
 9858 101572  012704  102340                MOV     #T37PK3,R4              ;SET UP PACKET ADDRESS
 9859 101576  012737  000037  102342        MOV     #31.,T37RB              ;SET UP RECORDS TO SPACE OVER
 9860 101604  012737  140010  102340        MOV     #140010,T37PK3          ;ACK,CVC=1,SPACE FORWARD COMMAND
 9861 101612  010465  000000        150$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 9862 101616  005237  102366        152$:   INC     T37CNT                  ;BUMP TIMER
 9863 101622                                DELAY   1                       ;DELAY ABOUT 100US
      101622  012727  000001                                                    MOV     #1,(PC)+
      101626  000000                                                            .WORD   0
      101630  013727  002116                                                    MOV     L$DLY,(PC)+
      101634  000000                                                            .WORD   0
      101636  005367  177772                                                    DEC     -6(PC)
      101642  001375                                                            BNE     .-4
      101644  005367  177756                                                    DEC     -22(PC)
      101650  001367                                                            BNE     .-20
 9864 101652  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR
 9865 101656  032701  000200                BIT     #SSR,R1                 ;CHECK FOR TSSR'S SSR SET
 9866 101662  001755                        BEQ     152$                    ;KEEP COUNTING UNTIL SET
 9867 101664  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 9868 101670  020201                        CMP     R2,R1                   ;WAS EVERYTHING OK
 9869 101672  001406                        BEQ     160$                    ;BR, IF ALL IS WELL
 9870 101674  005237  002214                INC     FATFLG                          ;ERROR COUNT
 9874 101700                                ERRHRD  ERRNO,T37SCF,PKTSSR     ;SPACE FORWARD DIDN'T WORK OUT
      101700  104456                                                            TRAP    C$ERHRD
      101702  001614                                                            .WORD   908
      101704  105007                                                            .WORD   T37SCF
      101706  012156                                                            .WORD   PKTSSR
 9875 101710                        160$:   CKLOOP                          ;LOOP IF SELECTED
      101710  104406                                                            TRAP    C$CLP1
 9876 101712  004737  011126                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 9877 101716  103411                        BCS     170$                    ;BR, IF NO PROBLEM
 9878 101720  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
 9879 101722  016501  000002                MOV     TSSR(R5),R1             ;GET STATUS FROM TSSR
 9880 101726  005237  002214                INC     FATFLG                          ;ERROR COUNT
 9884 101732                                ERRHRD  ERRNO,T37RWN,PKTSSR     ;REWIND NOT ACCEPTED
      101732  104456                                                            TRAP    C$ERHRD
      101734  001615                                                            .WORD   909
      101736  103545                                                            .WORD   T37RWN
      101740  012156                                                            .WORD   PKTSSR
 9885 101742                        170$:   CKLOOP                          ;LOOP IF SELECTED
      101742  104406                                                            TRAP    C$CLP1
 9886 101744  013701  102250                MOV     T37BFR+6,R1             ;PICK UP XSTO
 9887 101750  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 9888 101752  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 9889 101756  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
```

TEST 9: FUNCTION TIMING

```
 9890 101760  001406                        BEQ     175$                    ;BR, IF EQUAL (OK)
 9891 101762  005237  002214                INC     FATFLG                          ;ERROR COUNT
 9895 101766                                ERRHRD  ERRNO,T37BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      101766  104456                                                               TRAP    C$ERHRD
      101770  001616                                                               .WORD   910
      101772  103241                                                               .WORD   T37BOT
      101774  015604                                                               .WORD   EXPREC
 9896 101776                        175$:   CKLOOP                          ;LOOP IF SELECTED
      101776  104406                                                               TRAP    C$CLP1
 9897 102000  012704  102340                MOV     #T37PK3,R4              ;SET UP PACKET ADDRESS
 9898 102004  012737  000121  102342        MOV     #81.,T37RB              ;SET UP RECORDS TO SPACE OVER
 9899 102012  012737  140010  102340        MOV     #140010,T37PK3          ;ACK,CVC=1,SPACE FORWARD COMMAND
 9900 102020  010465  000000        250$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 9901 102024  005237  102370        252$:   INC     T37CNU                  ;BUMP TIMER
 9902 102030                                DELAY   1                       ;DELAY ABOUT 100US
      102030  012727  000001                                                       MOV     #1,(PC)+
      102034  000000                                                               .WORD   0
      102036  013727  002116                                                       MOV     L$DLY,(PC)+
      102042  000000                                                               .WORD   0
      102044  005367  177772                                                       DEC     -6(PC)
      102050  001375                                                               BNE     .-4
      102052  005367  177756                                                       DEC     -22(PC)
      102056  001367                                                               BNE     .-20
 9903 102060  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR
 9904 102064  032701  000200                BIT     #SSR,R1                 ;CHECK FOR TSSR'S SSR SET
 9905 102070  001755                        BEQ     252$                    ;KEEP COUNTING UNTIL SET
 9906 102072  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 9907 102076  020201                        CMP     R2,R1                   ;WAS EVERYTHING OK
 9908 102100  001406                        BEQ     260$                    ;BR, IF ALL IS WELL
 9909 102102  005237  002214                INC     FATFLG                          ;ERROR COUNT
 9913 102106                                ERRHRD  ERRNO,T37SCF,PKTSSR     ;SPACE FORWARD DIDN'T WORK OUT
      102106  104456                                                               TRAP    C$ERHRD
      102110  001617                                                               .WORD   911
      102112  105007                                                               .WORD   T37SCF
      102114  012156                                                               .WORD   PKTSSR
 9914 102116                        260$:   CKLOOP                          ;LOOP IF SELECTED
      102116  104406                                                               TRAP    C$CLP1
 9915 102120  013701  102366                MOV     T37CNT,R1               ;TIME FOR WRITE SPACING
 9916 102124  013702  102370                MOV     T37CNU,R2               ;TIME FOR WRITE RETRY SPACING
 9917 102130  042701  000077                BIC     #000077,R1              ;SETTING UP CONSTANTS
 9918 102134  042702  000077                BIC     #000077,R2              ;SETTING UP CONSTANTS
 9919 102140  020102                        CMP     R1,R2                   ;CHECK FOR DIFFERENCE
 9920 102142  003406                        BLE     300$                    ;BR, IF GOOD aaaa CHECK aaaa
 9921 102144  005237  002214                INC     FATFLG                          ;ERROR COUNT
 9925 102150                                ERRHRD  ERRNO,T37TIM,EXPREC     ;TIME WAS NOT DIFFERENT ENOUGH
      102150  104456                                                               TRAP    C$ERHRD
      102152  001620                                                               .WORD   912
      102154  103334                                                               .WORD   T37TIM
      102156  015604                                                               .WORD   EXPREC
 9926 102160                        300$:   CKLOOP                          ;LOOP IF SELECTED
      102160  104406                                                               TRAP    C$CLP1
 9927 102162                                ENDSUB                          ;<<<<<<<<<<<<< END SUBTEST >>>>>>>>>>>>
      102162                                                                  L10074:
      102162  104403                                                               TRAP    C$ESUB
 9928 102164  023727  002214  000017        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
 9929 102172  103402                        BLO     999$                            ;BR, IF LESS THAN 25
 9930 102174  004737  017312                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
```

TEST 9: FUNCTION TIMING

```
9931 102200                          999$:
9932                                 ;
9933                                 ;
9934                                 ;
9935 102200  004737  016566                 JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
9936 102204  103002                         BCC     163$                    ;BR, IF NO LOOP REQUIRED
9937 102206  000137  101134                 JMP     T37LOOP                 ;EXECUTE AGAIN
9938 102212                          163$:
9939 102212                                 EXIT    TST                     ;ALL DONE THIS TEST
     102212  104432                                                                 TRAP    C$EXIT
     102214  003306                                                                 .WORD   L10073-.
9940                                 ;+
9941                                 ;LOCAL STORAGE FOR THIS TEST
9942                                 ;-
9944          102220                         .=<.+10>&177770
9946 102220                          T37PACKET:                              ;COMMAND PACKET FOR TEST
9947 102220  100004                         .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
9948 102222  102230                         .WORD   T37DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
9949 102224  000000                         .WORD   0
9950 102226  000012                         .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
9951 102230                          T37DATA:                                ;CHARACTERISTICS DATA BLOCK
9952 102230  102242                         .WORD   T37BFR                  ;ADDRESS OF MESSAGE BUFFER
9953 102232  000000                         .WORD   0
9954 102234  000024                         .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
9955 102236  000000                         .WORD   0
9956 102240  000000                  T37DSW: .WORD   0                       ;SELECT DRIVE 0
9957 102242                           T37BFR: .BLKW   25.                    ;MESSAGE BUFFER
9958                                 ;
9959                                 ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
9960                                 ;
9962          102330                         .=<.+10>&177770
9964 102330                          T37PK2:
9965 102330  100006                         .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
9966 102332  102350                         .WORD   T37BF2                  ;ADDRESS OF SELECT BLOCK DATA
9967 102334  000000                         .WORD   0
9968 102336  000006                         .WORD   6.                      ;SIZE OF DATA PACKET
9969
9973 102340                          T37PK3:
9974 102340  100005                         .WORD   100005                  ;REREAD COMMAND, AND ACK
9975 102342                          T37RB:
9976 102342  003120                  T37WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
9977 102344  000000                         .WORD   0
9978 102346  000000                  T37SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
9979                                         .EVEN
9980                                 ;
9981                                 ;
9982                                 ;
9983 102350                          T37BF2:
9984 102350     010                  T37BS0: .BYTE   10                      ;BSEL0 AREA
9985 102351     200                  T37BS1: .BYTE   200                     ;BSEL1 AREA
9986 102352  000000                  T37S2:  .WORD   0                       ;SEL 2 AREA
9987 102354  000000                  T37S3:  .WORD   0                       ;DATA AREA
9988                                 ;
9989                                 ;
9990                                         .EVEN
9991                                 ;TAPE MOTION PACKET COMMAND VALUES
9992
```

TEST 9: FUNCTION TIMING

```
 9993 102356  100205                T37RN:  .WORD   100205                  ;REREAD DATA (NEXT)
 9994 102360  100605                T37WDR: .WORD   100605                  ;REREAD DATA RETRY
 9995 102362  102205                T37CON: .WORD   102205                  ;WRITE CONTINOUS
 9996 102364  177777                        .WORD   177777                  ;END OF DATA
 9997
 9998                               ;
 9999 102366  000000                T37CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
10000 102370  000000                T37CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
10001 102372  000000                T37DLY: .WORD   0                       ;DELAY COUNTER
10002                               ;•
10003                               ;LOCAL TEXT MESSAGES FOR TEST
10004                               ;-
10005
10006 102374     124     141     160  T37WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
10007 102462     124     123     123  T37RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
10008 102531     122     105     122  T37RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
10009 102626     120     117     123  T37SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
10010 102710     122     111     102  T37LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
10011 102760     124     123     123  T37WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
10012 103035     111     154     154  T37LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
10013 103116     122     105     122  T37SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
10014 103152     124     123     123  T37WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command,At BOT'
10015 103241     124     141     160  T37BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
10016 103334     127     122     111  T37TIM: .ASCIZ  'WRITE DATA RETRY''S Erase Tape Not Long Enough'
10017 103411     122     105     122  T37EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
10018 103470     124     123     123  T37TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
10019 103545     122     145     167  T37RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
10020 103614     122     101     115  T37RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
10021 103667     124     123     123  T37AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
10022 103736     104     162     151  T37OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
10023 104011     124     123     123  T37WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
10024 104101     124     123     123  T37WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
10025 104154     103     126     103  T37VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
10026 104227     124     123     102  T37BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
10027 104302     127     122     111  T37WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
10028 104371     122     145     141  T37LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XST0'
10029 104453     122     145     141  T37LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XST0'
10030 104535     122     145     163  T37PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
10031 104623     122     145     141  T37TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
10032 104711     127     122     111  T37NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
10033 105007     124     123     123  T37SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
10034 105064     124     123     123  T37TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
10035 105146     124     123     123  T37WRF: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command'
10036 105226     104     141     164  T37DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
10037 105323     106     165     156  TST37ID:        .ASCIZ  'Function Timing'
10038                               .EVEN
10039                              ;•
10040                              ;
10041                              ;ROUTINE TO RESTORE COMMAND PACKET TO START UP (DEFAULT) VALUES
10042                              ;WRITE SUBSYSTEM MEMORY COMMAND
10043                              ;
10044                              ;-
10045
10046 105344                       T37REST:
10047 105344                               SAVREG                          ;SAVE THE REGISTERS
10048 105350  012701  102220                MOV     #T37PACKET,R1           ;START OF THE PACKET
10049 105354  012721  100004                MOV     #100004,(R1)•           ;WRITE SUBSYSTEM MEM. WITH ACK.
```

TEST 9: FUNCTION TIMING

```
 10050 105360  012721  102230                MOV     @T37DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
 10051 105364  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
 10052 105366  012721  000012                MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
 10053 105372  012721  102242                MOV     @T37BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
 10054 105376  005021                        CLR     (R1)+
 10055 105400  012721  000024                MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
 10056 105404  005021                        CLR     (R1)+
 10057 105406  012711  000000                MOV     #0,(R1)                 ;SELECT DRIVE ZERO
 10058 105412  012702  000030                MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
 10059 105416  012762  177777  102242  64$:  MOV     #177777,T37BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
 10060 105424  005742                        TST     -(R2)                   ;NEXT LOCATION
 10061 105426  022702  000000                CMP     #0,R2                   ;AT END OF LOOP YET
 10062 105432  001371                        BNE     64$                     ;KEEP GOING UNTIL DONE
 10063 105434  000207                        RTS     PC                      ;RETURN
 10064
 10065 105436                        T37RT2:
 10066 105436                                SAVREG                          ;SAVE THE REGISTERS
 10067 105442  012701  102330                MOV     @T37PK2,R1              ;START OF THE PACKET
 10068 105446  012721  100006                MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
 10069 105452  012721  102350                MOV     @T37BF2,(R1)+           ;ADDRESS OF DATA BLOCK
 10070 105456  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
 10071 105460  012721  000006                MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
 10072 105464  005021                        CLR     (R1)+
 10073 105466  012701  102350                MOV     @T37BF2,R1              ;POINT TO DATA SEL AREA
 10074 105472  005021                        CLR     (R1)+
 10075 105474  005011                        CLR     (R1)
 10076 105476  000207                        RTS     PC                      ;RETURN
 10077 105500                        T37RT3:
 10078 105500                                SAVREG                          ;SAVE REGISTERS
 10079 105504  012701  102340                MOV     @T37PK3,R1              ;SET UP POINTER ADDRESS
 10080 105510  005021                        CLR     (R1)+                   ;COMMAND SPACE
 10081 105512  005021                        CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
 10082 105514  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
 10083 105516  005011                        CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
 10084 105520  000207                        RTS     PC                      ;RETURN
 10085 105522                                ENDTST
       105522                                                        L10073:
       105522  104401                                                  TRAP    C$ETST
 10086 105524                                ENDMOD
 10087                                       .TITLE  TSV6 - PARAMETER CODING
 10093
 10098
 10104
 10105 105524                                BGNMOD  TSV6
       105524                        TSV6::
 10106
 10107                                       .SBTTL  HARDWARE PARAMETER CODING SECTION
 10108
 10109                                ;++
 10110                                ; THE HARDWARE PARAMETER CODING SECTION CONTAINS MACROS
 10111                                ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
 10112                                ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
 10113                                ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
 10114                                ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
 10115                                ; WITH THE OPERATOR.
 10116                                ;--
 10117 105524                                BGNHRD
```

D2

HARDWARE PARAMETER CODING SECTION

```
        105524  000010                          .WORD L10075-L$HARD/2
        105526                          L$HARD::
 10118
 10119 105526                                   GPRMA   HPM1,0,0,160010,177776,YES      ;GET TSBA/TSDB REGISTER ADDRESS.
        105526  000031                          .WORD   T$CODE
        105530  105546                          .WORD   HPM1
        105532  160010                          .WORD   T$LOLIM
        105534  177776                          .WORD   T$HILIM
 10120 105536                                   GPRMA   HPM2,2,0,0,776,YES              ;GET VECTOR ADDRESS.
        105536  001031                          .WORD   T$CODE
        105540  105602                          .WORD   HPM2
        105542  000000                          .WORD   T$LOLIM
        105544  000776                          .WORD   T$HILIM
 10121                                          ;GPRMD  HPM3,4,0,340,0,7,YES            ;GET INTERRUPT PRIORITY.
 10122 105546                                   ENDHRD
                                                .EVEN
        105546                          L10075:
 10123 105546     104     105     126  HPM1:   .ASCIZ  'DEVICE ADDRESS (TSBA/TSDB) '
 10124 105602     111     116     124  HPM2:   .ASCIZ  'INTERRUPT VECTOR    '
 10125 105626     111     116     124  HPM3:   .ASCIZ  'INTERRUPT PRIORITY      '
 10126                                          .EVEN
```

E2

SOFTWARE PARAMETER CODING SECTION

```
                                        .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.
                                ; -
105656                                  BGNSFT
105656  000003                          .WORD L10076 L$SOFT/2
105660                          L$SOFT::
                                ;       GPRML   SPM1,0, 1,YES                   ; GET TRANSPORT TEST FLAG.
105660                                  GPRML   SPM4,2, 1,YES                   ; GET ITERATION CONTROL.
105660  001130                          .WORD   T$CODE
105662  105716                          .WORD   SPM4
105664  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
105666                                  ENDSFT
                                        .EVEN
105666                          L10076:

105666  105  116  101  SPM1:    .ASCIZ  'ENABLE TRANSPORT TESTS '
105716  111  116  110  SPM4:    .ASCIZ  'INHIBIT ITERATIONS     '
105746  120  105  122  SPM6:    .ASCIZ  'PER TEST ERROR LIMIT   '
105776  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).
                                ;
106026                          PATCH::

                                        .BLKW   32.

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

F2

Symbol table

```
ADDSSR  012236 G        C$AU  = 000052        DEVDRO  023412        FRESIZ  003122 G        INTFLA  016255
ADR   = 000020 G        C$AUTO= 000061        DEVNRD  023331        FUSI    004115          INTMAS  016254
AMBTSS  006715          C$BRK = 000022        DEVNXR  023247        F$AU  = 000015          INTR    016326 G
ASSEMB= 000010          C$BSEG= 000004        DEVONL  023177        F$AUTO= 000020          INTREC  002216 G
A1716 = 000003          C$BSUB= 000002        DEVSUM  023142        F$BGN = 000040          INTVEC  016256
BADDAT  003152 G        C$CEFG= 000045        DFPTBL  002150 G      F$CLEA= 000007          INTX    004276
BADSSR  016010 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  002224 G        C$CLOS= 000035        DSBINT  016314        F$HARD= 000004          IPRI    002204 G
BIE   = 040000          C$CLP1= 000006        DUAD12  004641        F$HW  = 000013          ISR   = 000100 G
BIT0  = 000001 G        C$CVEC= 000036        DUFLG   003106 G      F$INIT= 000006          IVEC    002202 G
BIT00 = 000001 G        C$DCLN= 000044        DUMMY   003056        F$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  017107        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  016262        F$SRV = 000010          I$MSG = 000041
BIT09 = 001000 G        C$ERSO= 000057        ENVIRN  020740        F$SUB = 000002          I$PROT= 000040
BIT1  = 000002 G        C$ESCA= 000010        EPRTSW  002172 G      F$SW  = 000014          I$PTAB= 000041
BIT10 = 002000 G        C$ESEG= 000005        EPRT1   006356        F$TEST= 000001          I$PWR = 000041
BIT11 = 004000 G        C$ESUB= 000003        EPRT2   006415        GDDAT   003154 G        I$RPT = 000041
BIT12 = 010000 G        C$ETST= 000001        ERCM    012043        GERRMA  002166 G        I$SEG = 000041
BIT13 = 020000 G        C$EXIT= 000032        ERRHI   002232 G      GETPAT  020304 G        I$SETU= 000041
BIT14 = 040000 G        C$GETB= 000026        ERRK    017066        GETSEL  020366 G        I$SFT = 000041
BIT15 = 100000 G        C$GETW= 000027        ERRLO   002234 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$GPLO= 000030        ERTABE  003372        G$EXCP= 000400          J$JMP = 000167
BIT5  = 000040 G        C$GPRI= 000040        ERTABL  003172        G$HILI= 000002          KIPAR0= 172340
BIT6  = 000100 G        C$INIT= 000011        ESUM    017070        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  015612 G      G$OFSI= 000376          KIPAR4= 172350
BOE   = 000400 G        C$MSG = 000023        EXPD    002226 G      G$PRMA= 000001          KIPAR5= 172352
BRINIT  004455          C$OPEN= 000034        EXPGOT  004531        G$PRMD= 000002          KIPAR6= 172354
BSEL0 = 000000          C$PNTB= 000014        EXPGT2  004565        G$PRML= 000000          KIPAR7= 172356
BSEL1 = 000001          C$PNTF= 000017        EXPMSG  002316 G      G$RADA= 000140          KIPDR0= 172300
CHKAMB  016154          C$PNTS= 000016        EXPREC  015604 G      G$RADB= 000000          KIPDR1= 172302
CHKMAN  020610 G        C$PNTX= 000015        EXTA    005770        G$RADD= 000040          KIPDR2= 172304
CHKTSS  016446          C$QIO = 000377        EXTEND  005766        G$RADL= 000120          KIPDR3= 172306
CKDROP  017312          C$RDBU= 000007        EXTFEA  002220 G      G$RADO= 000020          KIPDR4= 172310
CKEMAX  017212          C$REFG= 000047        E$END = 002100        G$XFER= 000004          KIPDR5= 172312
CKMSG   011470 G        C$RESE= 000033        E$LOAD= 000035        G$YES = 000010          KIPDR6= 172314
CKMSG2  011610 G        C$REVI= 000003        FATERR= 000060        HIADDR= 001400          KIPDR7= 172316
CKRAM   011224 G        C$RFLA= 000021        FATFLG  002214 G      HOE   = 100000 G        KTENAB  003130 G
CKRAM2  011334 G        C$RPT = 000025        FERCM   012032        HPM1    105546          KTFLG   003126 G
CMDPKT  021274 G        C$SEFG= 000046        FIFEXP  012300 G      HPM2    105602          KTINIT  021120
CMPMEM  017770          C$SPRI= 000041        FIF1MS  012352        HPM3    105626          KTOFF   017404
CONFIG  017360          C$SVEC= 000037        FIF2MS  012421        IBE   = 010000 G        KTON    017366
COUNT   002304 G        C$TPRI= 000013        FILLME  017532        IDU   = 000040 G        LERRMA  002164 G
CSRADD  002200 G        DATA    002306 G      FNOINT  004213        IER   = 020000 G        LISTAL= 000001
CTAB    003160 G        DATASC  020342        FORCER  002170 G      IFAULT  004254          LOE   = 040000 G
CTABE   003172 G        DEBUGM  011742        FREE    003120 G      INCERK  017154          LOOPCN  002210 G
CTABM   003160 G        DEVCNT  002212 G      FREEHI  003124        INTCPC  016260          LOOPCO  013236
```

Symbol table

```
LOOPFL  003156 G        L10002  005764        L10074  102162        O$GNSW= 000001        PUNIT   022320
LOT   = 000010 G        L10003  012154        L10075  105546        O$POIN= 000001        PW.D11= 000021
L$ACP   002110 G        L10004  012172        L10076  105666        O$SETU= 000000        PW.D13= 000022
L$APT   002036 G        L10005  012210        MEMADD  014064 G      PASRPT  022070        PW.D22= 000020
L$AU    022366 G        L10006  012216        MEMCK   021312 G      PATCH   106026 G      PW.NOP= 000000
L$AUT   002070 G        L10007  012234        MENASC  020557        PATDAT  020340        PW.NO1= 000023
L$AUTO  022572 G        L10010  012252        MENERR  020504        PC.ERA= 002400        PW.RDE= 000024
L$CCP   002106 G        L10011  012276        MENRES  020606        PC.IER= 002000        PW.RDR= 000001
L$CLEA  022652 G        L10012  012350        MMVEC = 000250        PC.NOO= 001000        PW.RDS= 000005
L$CO    002032 G        L10013  012520        MSA.FR= 000006        PC.REL= 000000        PW.RFI= 000003
L$DEPO  002011 G        L10014  013234        MSA.NO= 000000        PC.REW= 000400        PW.WCT= 000006
L$DESC  003404 G        L10015  014062        MSA.NR= 000004        PKBCNT= 000006        PW.WFI= 000004
L$DESP  002076 G        L10016  014104        MSA.VO= 000002        PKHI  = 000004        PW.WFM= 000007
L$DEVP  002060 G        L10017  015610        MSGEXP  012254 G      PKLOW = 000002        PW.WMI= 000010
L$DISP  002124 G        L10020  015616        MSGLOO  013174 G      PKTADD  007634        PW.WNP= 000011
L$DLY   002116 G        L10021  015624        MSGSTA  012460 G      PKTFRM  007576        PW.WTR= 000002
L$DTP   002040 G        L10022  015636        MSGSUB  014052 G      PKTGET  012174 G      P.ACK = 100000
L$DTYP  002034 G        L10023  015660        MS.ATT= 000006        PKTMES  012220 G      P.CMD = 000037
L$DU    022464 G        L10024  015706        MS.EXT= 000200        PKTRAM  004743 G      P.CONT= 000012
L$DUT   002072 G        L10C25  016046        MS.RSD= 000001        PKTSSR  012156 G      P.CVC = 040000
L$DVTY  003376 G        L10026  016356        MS.RSF= 000020        PNT   = 001000 G      P.FMT = 000140
L$EF    002052 G        L10030  022316        MS.RST= 000010        PRAMPK  014106        P.FORM= 000011
L$ENVI  002044 G        L10031  022462        M8186   005552        PRASC   014633        P.GETS= 000017
L$ETP   002102 G        L10032  022570        M8189   005643        PRBEXP  015600        P.IE  = 000200
L$EXP1  002046 G        L10033  022650        NBA   = 002000        PRBMSG  015446        P.INIT= 000013
L$EXP4  002064 G        L10034  022676        NEWPAS  022024        PRBREC  015602        P.MODE= 007400
L$EXP5  002066 G        L10035  023140        NODEV   003110 G      PRBTOT  015533        P.OPP = 020000
L$HARD  105526 G        L10036  032262        NOINIT  004333        PRBYTE  015232 G      P.POSI= 000010
L$HIME  002120 G        L10037  024124        NOINTR  004217        PRI   = 002000 G      P.READ= 000001
L$HPCP  002016 G        L10040  024646        NOITS   002162 G      PRIADD  010240        P.SWB = 010000
L$HPTP  002022 G        L10041  025372        NOMAN   020644        PRIAO   010310        P.WRIT= 000005
L$HW    002150 G        L10042  026214        NOMEM   005456        PRIBXO  007672 G      P.WRTC= 000004
L$ICP   002104 G        L10043  041360        NP.IR = 000200        PRIEQU  010140        P.WRTS= 000006
L$INIT  021572 G        L10044  033664        NP.LOO= 000040        PRIPKT  007450 G      QVP     002176 G
L$LADP  002026 G        L10045  035310        NP.OUT= 000100        PRIRAM  010146        RAMASC  014266
L$LAST  106404 G        L10046  035704        NP.WRP= 000020        PRITAD  010354        RAMDAT  002236 G
L$LOAD  002100 G        L10047  036370        NSI     004150        PRITSS  006022        RAMERR  015620 G
L$LUN   002074 G        L10050  046716        NSINIT  004405        PRITO   010436        RAMEXP  015640 G
L$MREV  002050 G        L10051  042252        NUL     004525        PRIT1   010501        RAMFOR  010176
L$NAME  002000 G        L10052  043064        NULCR   004526        PRIXOR  010022 G      RAMSIZ  002276 G
L$PRIO  002042 G        L10053  052774        NXM   = 004000        PRIO0 = 000000 G      RAMTAD  015626 G
L$PROT  021562 G        L10054  047572        NXMFLG  003132 G      PRIO1 = 000040 G      RCVHIA  002300 G
L$PRT   002112 G        L10055  050402        NXMHI   003136 G      PRIO2 = 000100 G      RCVLOA  002302 G
L$REPP  002062 G        L10056  051216        NXMLO   003134 G      PRIO3 = 000140 G      RDERR   005204
L$REV   002010 G        L10057  055770        NXMTST  021466        PRIO4 = 000200 G      RECMSG  002462 G
L$RPT   022700 G        L10060  054436        NXR     003736        PRIO5 = 000240 G      RECV    002230 G
L$SOFT  105660 G        L10061  063342        NXRERR  005734 G      PRIO6 = 000300 G      REGSAV  020250
L$SPC   002056 G        L10062  060426        NXRX    003775        PRIO7 = 000340 G      RETERR  005370
L$SPCP  002020 G        L10063  073272        NXTU    022036        PRMESS  014352        REV     002222 G
L$SPTP  002024 G        L10064  064434        OFL   = 000100        PRMNO   002314 G      REWIND  011126 G
L$STA   002030 G        L10065  065514        ONEFIL= 000000        PRMSGE  014662 G      RMCHBE= 000167
L$SW    002160 G        L10066  066356        O$APTS= 000000        PRMSGO  015042        RMCHEN= 000200
L$TEST  002114 G        L10067  067260        O$AU  = 000001        PRMSG1  015107        RMMSGB= 000215
L$TIML  002014 G        L10070  101076        O$BGNR= 000001        PRMSG2  015145        RMMSGE= 000234
L$UNIT  002012 G        L10071  074402        O$BGNS= 000001        PROASC  014530        RMPKTB= 000201
L10000  002156          L10072  075500        O$DU  = 000001        PR1ASC  014575        RMPKTE= 000210
L10001  002170          L10073  105522        O$ERRT= 000000        PST32W  003146 G      RMR   = 010000
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Symbol table

```
RWPACK  011220          S2.INR= 000020          T$EXCP= 000000          T29CON  026412          T30BOT  037771
SC    = 100000          S2.OUT= 000040          T$FLAG= 000040          T29DAT  026260          T30BS0  036560
SCE   = 020000          S2.UND= 000003          T$GMAN= 000000          T29DLY  026430          T30BS1  036561
SCHERR  005276          TBLEND= 003056 G        T$HILI= 000776          T29DSW  026270          T30CNT  036600
SCME    005011          TCOASC  006556          T$LAST= 000001          T29DTA  027773          T30CNU  036602
SDELAY  010740          TCOCOD  006756          T$LOLI= 000000          T29EOT  030061          T30DAT  036440
SELASC  020552          TEMP1   003112 G        T$LSYM= 010000          T29LON  031155          T30DLY  036606
SELDAT= 000004          TEMP2   003114 G        T$LTNO= 000011          T29LOO  023512          T30DSW  036450
SEL2  = 000002          TERCLS= 000016          T$NEST= 177777          T29LOP  031237          T30DTA  041064
SETMAP  017426          TESTNO= 000011          T$NS0 = 000000          T29LOQ  027356          T30DTR  041020
SETU    022122          TEXASC  006515          T$NS1 = 000005          T29LOR  027231          T30ETM  036446
SFFMSG  012212 G        TFCASC  006617          T$NS2 = 000002          T29NEF  026560          T30FCN  036604
SFHERR  003703          TIMEXP  015662 G        T$PTNU= 000000          T29NEQ  031475          T30IBT  036761
SFIERR  003650          TIMSGO  015710          T$SAVL= 177777          T29OFL  026432          T30IBU  036610
SFIMSG  012144 G        TINERR  012131          T$SEGL= 177777          T29OF7  030445          T30IMV  036566
SFPTBL  002160 G        TMPBFR  002626 G        T$SUBN= 000001          T29PAC  026250          T30LOO  032310
SIFLAG  003150 G        TNAM    017014          T$TAGL= 177777          T29PBP  031321          T30LOQ  037560
SIMSG   012076          TRANST  002160 G        T$TAGN= 010077          T29PK2  026360          T30NEF  040526
SKIPT   003374          TSBA  = 000000 G        T$TEMP= 000000          T29PK3  026370          T30OFL  040237
SOFINI  016104 G        TSBAH = 000001 G        T$TEST= 000011          T29RB   026372          T30PAC  036430
SPACE   010546 G        TSDB  = 000000 G        T$TSTM= 177777          T29RDF  026650          T30PK2  036540
SPM1    105666          TSDBH = 000001 G        T$TSTS= 000001          T29RDG  031573          T30PK3  036550
SPM4    105716          TSFCOD  007316          T$$AU = 010031          T29RES  032076          T30PTB  037172
SPM6    105746          TSREJ = 000006          T$$AUT= 010033          T29RIB  031654          T30RB   036552
SPM7    105776          TSSDEF  006666          T$$CLE= 010034          T29RN   026406          T30RDF  037343
SR0   = 177572          TSSR  = 000002 G        T$$DU = 010032          T29RNC  030304          T30RDG  037421
SR1   = 177574          TSSRBI  003500 G        T$$HAR= 010075          T29RRF  026717          T30RES  041202
SR2   = 177576          TSSRFO  006475          T$$HW = 010000          T29RRG  027033          T30RIB  036675
SR3   = 172516          TSSRH = 000003 G        T$$INI= 010030          T29RRN  031754          T30RN   036566
SSR   = 000200          TSSX    004016          T$$MSG= 010025          T29RSZ  026426          T30RRM  040605
STATCO  012522          TSTBLK  002746 G        T$$PRO= 010027          T29RT2  032170          T30RRN  040663
SVCGBL= 000000          TSTCNT  002206 G        T$$RPT= 010035          T29RT3  032232          T30RRP  040742
SVCINS= 000000          TSTEND  017030          T$$SOF= 010076          T29RWN  030235          T30RT2  041274
SVCSUB= 000001          TSTFLA  002310 G        T$$SRV= 010026          T29SC   027147          T30RT3  041336
SVCTAG= 000000          TSTLOO  016566 G        T$$SUB= 010074          T29SSR  027437          T30RWN  040170
SVCTST= 000001          TSTPTR  002312 G        T$$SW = 010001          T29SZ   026376          T30SKM  037044
S$LSYM= 010000          TSTSET  016620 G        T$$TES= 010073          T29S2   026402          T30SSR  037641
S0.IDB= 000010          TST29I  032047          T1      023462 G        T29S3   026404          T30SZ   036556
S0.IFB= 000002          TST30I  041161          T1.1    023512          T29TM   030157          T30S2   036562
S0.IFP= 000001          TST31I  046473          T1.2    024142          T29TRL  031407          T30S3   036564
S0.ILD= 000020          TST32I  052570          T1.3    024664          T29VCK  030721          T30TM   040036
S0.ION= 000040          TST33I  055575          T1.4    025410          T29WB   026372          T30TMK  040444
S0.IRD= 000100          TST34I  063137          T2      032264 G        T29WDC  030627          T30TM2  040113
S0.IRW= 000004          TST35I  073063          T2.1    032310          T29WDD  030520          T30TPB  037263
S0.ISP= 000200          TST36I  100677          T2.2    033702          T29WDE  027512          T30VCK  040371
S1.ICE= 002000          TST37I  105323          T2.3    035326          T29WDF  027301          T30WB   036552
S1.IEO= 010000          TSV2    002000 G        T2.4    035722          T29WDR  026410          T30WDC  040312
S1.IFM= 001000          TSV3    002170 G        T23A    003140 G        T29WLK  027574          T30WDD  037120
S1.IHE= 000400          TSV4    021562 G        T238    003142 G        T29WNG  026453          T30WDE  037712
S1.IID= 004000          TSV6    105524 G        T29AM3  030357          T29WRT  027661          T30WDF  037503
S1.I1R= 020000          TSV7B   023462 G        T298A   030774          T29WSS  031066          T31AM3  044746
S1.I2R= 040000          TTIBFR= 177562 G        T298FR  026272          T3      041362 G        T31BA   045306
S1.PAR= 100000          TTICSR= 177560 G        T298F2  026400          T38FLG  003144 G        T31BFR  043142
S2.ATI= 000010          TTIVEC= 000060 G        T298OT  027726          T3.1    041412          T31BF2  043250
S2.BTI= 000004          T$ARGC= 000003          T298S0  026400          T3.2    042270          T31BOT  044275
S2.DIM= 000200          T$CODE= 001130          T298S1  026401          T308FR  036452          T31BS0  043250
S2.ILW= 000100          T$ERRN= 001620          T29CNT  026424          T308F2  036560          T31BS1  043251
```

Symbol table

T31CNT	043266	T32CNU	051442	T34BA	062776	T35CON	067462	T36BS1	075671
T31CNU	043270	T32DAT	051270	T34BFR	060512	T35DAT	067330	T36CNT	075706
T31CON	043262	T32DLY	051444	T34BF2	060626	T35DLY	067472	T36CNU	075710
T31DAT	043130	T32DSW	051300	T34BOT	061164	T35DSW	067340	T36CON	075702
T31DLY	043272	T32ECF	052405	T34BSO	060626	T35DTA	072255	T36DAT	075550
T31DSW	043140	T32EOT	051541	T34BS1	060627	T35EOT	070440	T36DLY	075712
T31DTA	046376	T32ERA	051746	T34CNT	060622	T35INT	072531	T36DSW	075560
T31EOT	044470	T32LOO	046750	T34CON	060640	T35LON	071420	T36DTA	100602
T31LON	045450	T32OPI	052533	T34DAT	060500	T35LOO	063374	T36EOT	076765
T31LOO	041412	T32PAC	051260	T34DLY	060624	T35LOP	071502	T36LON	077745
T31LOP	045532	T32PK2	051370	T34DSW	060510	T35LOQ	070135	T36LOO	073330
T31LOQ	044046	T32PK3	051400	T34EOT	062135	T35LOR	070010	T36LOP	100027
T31LOR	043721	T32RB	051402	T34ET	062046	T35MOT	072433	T36LOQ	076426
T31NEF	045770	T32RES	052630	T34ETC	061107	T35NEF	071740	T36LOR	076301
T31OFL	045015	T32RIB	052066	T34ETN	061401	T35NIN	073006	T36NAS	075714
T31PAC	043120	T32RT2	052722	T34ETO	060732	T35OFL	070765	T36NEF	100265
T31PBP	045614	T32RT3	052752	T34ETS	061460	T35OPM	072622	T36OFL	077312
T31PK2	043230	T32RWN	051630	T34ETZ	061552	T35PAC	067320	T36PAC	075540
T31PK3	043240	T32SCF	052164	T34ET2	061317	T35PBP	071564	T36PBP	100111
T31RB	043242	T32SZ	051406	T34LOO	056022	T35PK2	067430	T36PK2	075650
T31RDE	043274	T32TSA	052241	T34OFL	062457	T35PK3	067440	T36PK3	075660
T31RDF	043473	T32WB	051402	T34PAC	060470	T35RB	067442	T36RB	075662
T31RES	046540	T32WDC	052466	T34PK2	060600	T35RDF	067562	T36RDF	076053
T31RN	043256	T338FR	054522	T34PK3	060610	T35RES	073114	T36RES	100720
T31RNC	044673	T338F2	054630	T34POS	060644	T35RN	067456	T36RN	075676
T31RRF	043542	T338OT	055255	T34RB	060612	T35RNC	070643	T36RNC	077170
T31RT2	046632	T338SO	054630	T34RES	063162	T35RRF	067631	T36RRF	076122
T31RT3	046674	T338S1	054631	T34RNC	062336	T35RT2	073206	T36RT2	101012
T31RWN	044624	T33CNT	054646	T34RRE	061016	T35RT3	073250	T36RT3	101054
T31SC	043637	T33CNU	054650	T34RSZ	060620	T35RWE	072720	T36RWN	077121
T31SCF	046111	T33CON	054642	T34RT2	063254	T35RWN	070574	T36SC	076217
T31SSR	044127	T33DAT	054510	T34RT3	063316	T35SC	067726	T36SCF	100363
T31SZ	043246	T33DLY	054652	T34RWN	062267	T35SCF	072036	T36SSR	076507
T31S2	043252	T33DSW	054520	T34SSR	062013	T35SSR	072352	T36SZ	075666
T31S3	043254	T33DTA	055500	T34STM	061630	T35SZ	067446	T36S2	075672
T31TIM	044370	T33LOO	053026	T34SZ	060616	T35S2	067452	T36S3	075674
T31TM	044547	T33PAC	054500	T34S2	060630	T35S3	067454	T36TIM	076710
T31TRL	045702	T33PK2	054610	T34S3	060632	T35TIM	070363	T36TM	077044
T31TSA	046166	T33PK3	054620	T34TM	062213	T35TM	070517	T36TRL	100177
T31VCK	045233	T33RB	054622	T34TMK	061713	T35TRL	071652	T36TSA	100440
T31WB	043242	T33RBP	054654	T34VCK	062723	T35TSA	072113	T36VCK	077530
T31WDC	045160	T33RES	055612	T34WB	060612	T35VCK	071203	T36WB	075662
T31WDD	045070	T33RN	054636	T34WD	060634	T35WB	067442	T36WDC	077455
T31WDE	044163	T33RT2	055704	T34WDC	062621	T35WDC	071130	T36WDD	077365
T31WDF	043771	T33RT3	055746	T34WDD	062532	T35WDD	071040	T36WDE	076543
T31WDR	043260	T33RWN	055350	T34WDR	060636	T35WDE	070216	T36WDF	076351
T31WNG	043421	T33SSR	055171	T34WSS	063050	T35WDF	070060	T36WDR	075700
T31WNH	043340	T33SZ	054626	T34WTM	061230	T35WDR	067460	T36WNG	075765
T31WRF	046273	T33S2	054632	T35AM3	070716	T35WNG	067474	T36WRF	100522
T31WSS	045361	T33S3	054634	T358A	071256	T35WRF	072175	T36WSS	077656
T32AM3	051677	T33UNC	055012	T358FR	067342	T35WSS	071331	T37AM3	103667
T328A	052013	T33UND	055102	T358F2	067450	T36AM3	077243	T37BA	104227
T328FR	051302	T33WB	054622	T358OT	070270	T36BA	077603	T37BFR	102242
T328OE	052316	T33WDC	055417	T358SO	067450	T36BFR	075562	T37BF2	102350
T328OT	051446	T33WDR	054640	T358S1	067451	T36BF2	075670	T37BOT	103241
T32CMD	051410	T33WPW	054732	T35CNT	067466	T36BOT	076615	T37BSO	102350
T32CNT	051440	T34AM3	062411	T35CNU	067470	T36BSO	075670	T37BS1	102351

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Symbol table

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T37CNT  102366          T37SSR  103116          T7.4    066374          WSMBK   021304 G        X$OFFS= 000400
T37CNU  102370          T37SZ   102346          T8      073274 G        XFERAS  016050          X$TRUE= 000020
T37CON  102362          T37S2   102352          T8.1    073330          XNXM    016506          X1.COR= 020000
T37DAT  102230          T37S3   102354          T8.2    074420          XORBFO  007754          X1.DLT= 100000
T37DLY  102372          T37TIM  103334          T9      101100 G        XORFOR  010072          X1.MBZ= 017375
T37DSW  102240          T37TM   103470          T9.1    101134          XSTO  = 000006 G        X1.RBP= 000400
T37DTA  105226          T37TRL  104623          UAM   = 000200 G        XST1  = 000010 G        X1.SPA= 040000
T37EOT  103411          T37TSA  105064          UNITN   002174 G        XST2  = 000012 G        X1.UNC= 000002
T37LON  104371          T37VCK  104154          UNREC = 000006          XST3  = 000014 G        X2.BUF= 000100
T37LOO  101134          T37WB   102342          USI     004121          XST4  = 000016 G        X2.EXT= 000200
T37LOP  104453          T37WDC  104101          WAITF   016360 G        XSOBOT= 000002          X2.OPM= 100000
T37LOQ  103035          T37WDD  104011          WC.IFA= 000200          XSOEOT= 000001          X2.RCE= 040000
T37LOR  102710          T37WDE  103152          WC.IFE= 000002          XSOIE = 000040          X2.REV= 000077
T37NEF  104711          T37WDF  102760          WC.IGO= 000001          XSOILA= 000400          X2.SPA= 035400
T37OFL  103736          T37WDR  102360          WC.IRE= 000010          XSOILC= 001000          X2.UNI= 000007
T37PAC  102220          T37WNG  102374          WC.IRW= 000004          XSOLET= 020000          X2.WCF= 002000
T37PBP  104535          T37WRF  105146          WC.IOT= 000100          XSOMOT= 000200          X3.DCK= 000010
T37PK2  102330          T37WSS  104302          WC.I1T= 000040          XSONEF= 002000          X3.MBZ= 000006
T37PK3  102340          T4      046720 G        WC.ISR= 000020          XSOONL= 000100          X3.MDE= 177400
T37RB   102342          T4.1    046750          WF.IED= 000010          XSOPED= 000010          X3.OPI= 000100
T37RDF  102462          T4.2    047610          WF.IER= 000004          XSORLL= 010000          X3.REV= 000040
T37RES  105344          T4.3    050420          WF.IHI= 000200          XSORLS= 040000          X3.RIB= 000001
T37RN   102356          T5      052776 G        WF.IRE= 000040          XSOTMK= 100000          X3.SPA= 000200
T37RNC  103614          T5.1    053026          WF.IWF= 000020          XSOVCK= 000020          X3.TRF= 000020
T37RRF  102531          T6      055772 G        WF.IWR= 000100          XSOWLE= 004000          X4.HSP= 100000
T37RT2  105436          T6.1    056022          WF.I3R= 000002          XSOWLK= 000004          X4.MBZ= 017400
T37RT3  105500          T7      063344 G        WF.I4R= 000001          XXCOMM  003116 G        X4.RCE= 040000
T37RWN  103545          T7.1    063374          WRTCHR  010742 G        X$ALWA= 000000          X4.TSM= 020000
T37SC   102626          T7.2    064452          WRTERR  005111          X$FALS= 000040          X4.WRC= 000377
T37SCF  105007          T7.3    065532          WRTMSG  005054

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

*** Assembler statistics


Work  file  reads: 308
Work  file writes: 296
Size of work file: 31544 Words  ( 124 Pages)
Size of core pool: 19684 Words  ( 75 Pages)
Operating  system: RSX-11M/PLUS (Under VAX/VMS)

Elapsed time: 00:07:32.75
CVTSDE,CVTSDE/-SP=SVC/ML,CVTSDE
```