TSV05 TSV05 CTRL LT4
CVTSDBO

AH-T100B-MC
FICHE 01 OF 02

JUL 1984
digital
Made In USA

TSV05

TSV05 CTRL LT4
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.REM

IDENTIFICATION

PRODUCT CODE: AC-T099B-MC

PRODUCT TITLE: CVTSDBO TSV05 CONTROLLER LOGIC TEST 4

AUTHOR: DICK MITCHELL

DEPARTMENT: COMPUTER SPECIAL SYSTEMS/PPG

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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 (MSAAA.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 TSO5 TRANSPORT IS A KNOWN GOOD REEL OF TAPE.
CVTSAA,CVTSBA AND CVTSCA HAVE SUCESSFULLY RUN.

2.0 OPERATING INSTRUCTIONS

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

2.1 COMMANDS

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

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

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

2.1.1 OPERATOR COMMANDS

THE TSV05 DIAGNOSTIC IS A PDP-11/23 DIAGNOSTIC SUPERVISOR COMPATIBLE PROGRAM. ALL LOADING AND RUNTIME INSTRUCTIONS CAN BE REFERENCED IN THE CHQUS XXDP+ USERS MANUAL,DOCUMENT NUMBER AC-F348E-MC. THE USER ENTRY IS IN QUOTES.

BOOT THE DIAGNOSTIC XXDP MEDIA

```
.R VTSD??
DIAG. RUN-TIME SERVICES REV D. APR 79
CVTSD-B-0
****TSV05 LOGIC DIAGNOSTIC****
UNIT IS TSV05
>DR
```

2.2 SWITCHES

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

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

EXAMPLE OF SWITCH USAGE:

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

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

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

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

2.3 FLAGS

FLAGS ARE USED TO SET UP CERTAIN OPERATIONAL PARAMETERS SUCH AS LOOPING ON ERROR. ALL FLAGS ARE CLEARED AT STARTUP AND REMAIN CLEARED UNTIL EXPLICITLY SET USING THE FLAGS SWITCH. FLAGS

ARE ALSO CLEARED AFTER A START COMMAND UNLESS SET USING THE FLAG SWITCH. THE ZFLAGS COMMAND MAY ALSO BE USED TO CLEAR ALL FLAGS. WITH THE EXCEPTION OF THE START AND ZFLAGS COMMANDS, NO COMMANDS AFFECT THE STATE OF THE FLAGS; THEY REMAIN SET OR CLEARED AS SPECIFIED BY THE LAST FLAG SWITCH.

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

*ERROR MESSAGES ARE DESCRIBED IN SECTION 3.1

SEE THE XXDP+ USER'S MANUAL FOR MORE DETAILS ON FLAGS. YOU MAY SPECIFY MORE THAN ONE FLAG WITH THE FLAG SWITCH. FOR EXAMPLE, 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) O ?  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) O ?  <CR>

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

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

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

UNIT 7
CSR ADDRESS (O) ?  160000<CR>
SUB-DEVICE # (O) ?  6<CR>
Q-FACTOR (O) O ?  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) O ?  1.0<CR>

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

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

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

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

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

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

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

2.7 QUICK START-UP PROCEDURE (XXDP+)

TO START-UP THIS PROGRAM:

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

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

3.0 ERROR INFORMATION

3.1 TYPES OF ERROR MESSAGES

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

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

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

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

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

3.2 SPECIFIC ERROR MESSAGES

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

ERROR MESSAGE EXAMPLE 1

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

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

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

ERROR MESSAGE EXAMPLE 2

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

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

ERROR MESSAGE EXAMPLE 3

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

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

4.0 PERFORMANCE AND PROGRESS REPORTS

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

SUCCESSFUL RUN EXAMPLE (PDP-11/23)

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

 UNITS (D) ?  1

 UNIT 0

 DEVICE ADDRESS  (O) 172520 ? <CR>

 VECTOR (O) 224 ? <CR>

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

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

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

0 ERRORS
```

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

PROGRAM RUN TIMES

THE AVERAGE RUN TIMES OF THE PROGRAM ARE LISTED BELOW.THESE FIGURES ARE
TO BE USED AS A GUIDE. THE TIMING WAS DONE ON A PDP-11/23
PROCESSOR WITH A LA34 CONSOLE.

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

TEST NUMBER	N/I SECS.	NUMBER ITER	DEF SECS.
1	1	2	1
2	1	1	0
3	1	1	0
4	1	1	0
5	1	1	0
6	1	1	0
7	1	1	0
8	1	1	0

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

Q.V.	15 SECONDS
DEFAULT	16 SECONDS

5.0 DEVICE INFORMATION TABLES

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

```
CHANGE HW (L) ?

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

UNIT 0

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

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

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

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

CHANGE SW (L) ?

INHIBIT ITERATIONS (L) N ?

6.0 TEST SUMMARIES

TEST 1: WRITE TAPE MARK RETRY

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

TEST 2: SKIP TAPE MARKS

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

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

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

TEST 4: ERASE AND OPERATION INCOMPLETE

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

TEST 5: DATA PARTTY TEST

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

TEST 6: OPERATIONS AT EOT

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

TEST 7: EXTENDED MODE FEATURES

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

REWIND WITH IMMEDIATE INTERRUPT

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

TEST 8: RECORD BUFFERING

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

TEST 9: FUNCTION TIMING

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

7.0 MAINTENANCE HISTORY

REVISION A - MARCH 1982

REVISION B - APRIL 1983

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

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

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

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

                        POINTER BGNSW,BGNSFT,BGNAU,BGNDU,BGNRPT
002000                  HEADER  CVTSD,B,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      102               .ASCII  /B/
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  105546                .WORD   L$HARD
002020                L$SPCP::                  ;POINTER TO S.W. QUES.
002020  105700                .WORD   L$SOFT
002022                L$HPTP::                  ;PTR. TO DEF. H.W. PTABLE
002022  002150                .WORD   L$HW
002024                L$SPTP::                  ;PTR. TO S.W. PTABLE
002024  002160                .WORD   L$SW
002026                L$LADP::                  ;DIAG. END ADDRESS
002026  106404                .WORD   L$LAST
002030                L$STA::                   ;RESERVED FOR APT STATS
002030  000000                .WORD   0
002032                L$CO::
002032  000000                .WORD   0
002034                L$DTYP::                  ;DIAGNOSTIC TYPE
002034  000000                .WORD   0
002036                L$APT::                   ;APT EXPANSION
002036  000000                .WORD   0
002040                L$DTP::                   ;PTR. TO DISPATCH TABLE
002040  002124                .WORD   L$DISPATCH
002042                L$PRIO::                  ;DIAGNOSTIC RUN PRIORITY
```

PROGRAM HEADER

```
002042  000000                  .WORD   0
002044                  L$ENVI::                ;FLAGS DESCRIBE HOW IT WAS SETUP
002044  000000                  .WORD   0
002046                  L$EXP1::                ;EXPANSION WORD
002046  000000                  .WORD   0
002050                  L$MREV::                ;SVC REV AND EDIT #
002050     003                  .BYTE   C$REVISION
002051     003                  .BYTE   C$EDIT
002052                  L$EF::                  ;DIAG. EVENT FLAGS
002052  000000                  .WORD   0
002054  000000                  .WORD   0
002056                  L$SPC::
002056  000000                  .WORD   0
002060                  L$DEVP::                ; POINTER TO DEVICE TYPE LIST
002060  003374                  .WORD   L$DVTYP
002062                  L$REPP::                ;PTR. TO REPORT CODE
002062  022744                  .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  022432                  .WORD   L$AU
002072                  L$DUT::                 ;PTR. TO DROP UNIT CODE
002072  022530                  .WORD   L$DU
002074                  L$LUN::                 ;LUN FOR EXERCISERS TO FILL
002074  000000                  .WORD   0
002076                  L$DESP::                ;POINTER TO DIAG. DESCRIPTION
002076  003402                  .WORD   L$DESC
002100                  L$LOAD::                ;GENERATE SPECIAL AUTOLOAD EMT
002100  104035                  EMT     E$LOAD
002102                  L$ETP::                 ;POINTER TO ERRTBL
002102  000000                  .WORD   0
002104                  L$ICP::                 ;PTR. TO INIT CODE
002104  021636                  .WORD   L$INIT
002106                  L$CCP::                 ;PTR. TO CLEAN-UP CODE
002106  022716                  .WORD   L$CLEAN
002110                  L$ACP::                 ;PTR. TO AUTO CODE
002110  022636                  .WORD   L$AUTO
002112                  L$PRT::                 ;PTR. TO PROTECT TABLE
002112  021626                  .WORD   L$PROT
002114                  L$TEST::                ;TEST NUMBER
002114  000000                  .WORD   0
002116                  L$DLY::                 ;DELAY COUNT
002116  000000                  .WORD   0
002120                  L$HIME::                ;PTR. TO HIGH MEM
002120  000000                  .WORD   0
```

```
                        .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  023526                  .WORD   T1
002126  032334                  .WORD   T2
002130  041432                  .WORD   T3
002132  046770                  .WORD   T4
002134  053046                  .WORD   T5
002136  056042                  .WORD   T6
002140  063414                  .WORD   T7
002142  073344                  .WORD   T8
002144  101120                  .WORD   T9
```

```
                                        .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:
```

```
TSV2 - PROGRAM HEADER   MACRO M1113  06-FEB-84 18:04                    SEQ 020
SOFTWARE P-TABLE

                                        .SBTTL  SOFTWARE P-TABLE

                                ;++
                                ; THE SOFTWARE P-TABLE CONTAINS THE VALUES OF THE PROGRAM
                                ; PARAMETERS THAT CAN BE CHANGED BY THE OPERATOR.
                                ;--
002156                                  BGNSW   SFPTBL
002156  000004                          .WORD   L10001-L$SW/2
002160                          L$SW::
002160                          SFPTBL::

002160  000000                  TRANSTST::      .WORD   0       ; ENABLE TEST OF TRANSPORT(S) IF =1
002162  000000                  NOITS::         .WORD   0       ; INHIBIT ITERATION OPTION.
                                                                ; ... 0 = ITERATE.
                                                                ; ...NZ = INHIBIT ITERATE.
002164  000017                  LERRMAX::       .WORD   15.     ; LOCAL (PER TEST) ERROR LIMIT
002166  000310                  GERRMAX::       .WORD   200.    ; GLOBAL (PER UNIT) ERROR LIMIT
002170                                  ENDSW
002170                          L10001:

                                        ENDMOD
```

```
                                .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
```

```
                        ;
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
33
34 002170                       KT11    ,,                      ;DEFINE MEMORY MANAGEMENT REGISTERS
                        .SBTTL  MEMORY MANAGEMENT DEFINITIONS
                        ;*KT11 VECTOR ADDRESS
000250                  MMVEC=  250
                        ;*KT11 STATUS REGISTER ADDRESSES
177572                  SR0=    177572
177574                  SR1=    177574
177576                  SR2=    177576
172516                  SR3=    172516
                        .IF NB
                        ;*USER "I" PAGE DESCRIPTOR REGISTERS
                        UIPDR0= 177600
                        UIPDR1= 177602
                        UIPDR2= 177604
                        UIPDR3= 177606
                        UIPDR4= 177610
                        UIPDR5= 177612
                        UIPDR6= 177614
                        UIPDR7= 177616
                        .IF NB
                        ;*USER "D" PAGE DESCRIPTOR REGISTORS
                        UDPDR0= 177620
                        UDPDR1= 177622
                        UDPDR2= 177624
                        UDPDR3= 177626
                        UDPDR4= 177630
                        UDPDR5= 177632
                        UDPDR6= 177634
                        UDPDR7= 177636
                        .ENDC
```

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

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

```
                        .SBTTL  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

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

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

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

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

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

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

                                TSREJ=  3.2              ;COMMAND REJECTED
                                UNREC=  6                ;UNRECOVERABLE ERROR

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

```
                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 HIG : BYTE

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

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

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

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

                                ;*
                                ; CONTROLLER RAM DEFINITIONS
                                ;-
                000167          RMCHBEG = 167           ;CHARACTERISTICS IO DATA BEGIN RAM ADDRESS
                000200          RMCHEND = 200           ;CHARACTERISTICS IO DATA END RAM ADDRESS
                000201          RMPKTBEG= 201           ;COMMAND PACKET BEGIN RAM ADDRESS
                000210          RMPKTEND= 210           ;COMMAND PACKET END RAM ADDRESS
                000215          RMMSGBEG= 215           ;MESSAGE BUFFER BEGIN RAM ADDRESS
                000234          RMMSGEND= 234           ;MESSAGE BUFFER END RAM ADDRESS
                                ;*
                                ;
                                ;REGISTER DEFINITIONS IN THE MESSAGE BUFFER
```

```
                        ;
                        ;-

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

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

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

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

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

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

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

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

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

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

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

```
                        SO.IRDY         = BIT6          ;               IRDY L
                        SO.IONL         = BIT5          ;               IONL L
                        SO.ILDP         = BIT4          ;               ILDP L
                        SO.IDBY         = BIT3          ;               IDBY L
                        SO.IRWD         = BIT2          ;               IRWD L
                        SO.IFBY         = BIT1          ;               IFBY L
                        SO.IFPT         = BIT0          ;               IFPT L
                                .SBTTL  SPECIAL MACROS AND OPDEFS.

                        ;+
                        ;SAVE GENERAL REGS 1 TO 5
                        ;-

                                .MACRO  SAVREG
                                JSR     R5,REGSAV
                                .ENDM

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

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

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

                                ;+
                                ;MACRO TO PERFORM XOR
                                ;-

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

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

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

002170  000000                  FORCER::       0       ; FORCE TYPE ALL HARD ERRORS (THE ONES CALLED -
                                               ; - BY THE MACRO "IFERROR").  AN ERROR NEED NOT -
                                               ; - EXIST, JUST ASSUME AND TYPE THE MESSAGE.
                                        .SBTTL  GLOBAL DATA SECTION

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

                                ;
                                ;THE FOLLOWING DATA ARE SET FOR EACH UNIT AT INIT TIME.
                                ;SINGLE UNIT DEFAULTS (LISTED) ARE IN THE DEFAULT P-TABLE.
                                ;
002172  000000                  EPRTSW::       .WORD   0       ;PRINT SWITCH
002174  000000                  UNITN::        .WORD   0       ;UNIT # UNDER TEST.
002176  000000                  QVP::          .WORD   0       ;QUICK VERIFY FLAG.
002200  000000                  CSRADDR::      .WORD   0       ;ADDRESS OF CSR FOR CURRENT DEVICE
002202  000224                  IVEC::         .WORD   224     ;INTERRUPT VECTOR
002204  000200                  IPRI::         .WORD   PRI04   ;INTERRUPT PRIORITY.
002206  000000                  TSTCNT::       .WORD   0       ;NUMBER OF TESTS RUN IN THIS PASS
002210  000000                  LOOPCNT::      .WORD   0       ;REMAINING ITERATION COUNT FOR TEST
002212  000000                  DEVCNT::       .WORD   0       ;NUMBER OF DEVICE UNDER TEST
002214  000000                  FATFLG::       .WORD   0       ;SET IF FATAL ERROR IS DETECTED IN TEST
002216  000000                  INTRECV::      .WORD   0       ;SET IF TAPE INTERRUPT WAS RECEIVED
002220  000000                  EXTFEA::       .WORD   0       ;EXTENDED FEATURES SOFTWARE SW 0=OFF;1=ON
002222  000000                  BENBSW::       .WORD   0       ;BUFFER ENABLE SWITCH SW 0=OFF;1=ON
002224  000000                  EXPD::         .WORD   0       ;EXPECTED RAM DATA FOR PRAMPKT ROUTINE
002226  000000                  RECV::         .WORD   0       ;RECEIVED RAM DATA FOR PRAMPKT ROUTINE
002230  000000                  ERRHI::        .WORD   0       ;HIGH ADDRESS MEMORY ERROR
002232  000000                  ERRLO::        .WORD   0       ;LOW ADDRESS MEMORY ERROR
002234                          RAMDATA::      .BLKW   16.     ;DATA READ FROM RAM PACKET OR MESSAGE BUF AREA
002274  000000                  RAMSIZ::       .WORD   0       ;RAM DATA SIZE FOR PRAMPKT ROUTINE
```

```
                        RCVHIADD::      .WORD   0       ;RECEIVED BUFFER HIGH ADDRESS
                        RCVLOADD::      .WORD   0       ;RECEIVED BUFFER LOW ADDRESS
                        COUNT::         .WORD   0       ;TEST COUNT PATTERN
                        DATA::          .WORD   0       ;TEST DATA
                        TSTFLAG::       .WORD   0       ;TEST FLAG WORD
                        TSTPTR::        .WORD   0       ;TSTBLK POINTER
                        PRMNO::         .WORD   0       ;PRINT ROUTINE TEMP
                        EXPMSG::        .BLKB   100.    ;EXPECTED MESSAGE BUFFER DATA
                        RECMSG::        .BLKB   100.    ;RECEIVED MESSAGE BUFFER DATA
                        TMPBFR::        .BLKB   80.     ;TEMPORARY STORAGE FOR PRINT
                                .SBTTL  TSTBLK  - TEST DATA TABLE

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

                        TSTBLK::
                                .WORD   0               ;ALL ZEROS
                                .WORD   177777          ;ALL ONES
                                .WORD   BIT0            ;DATA FOR WALKING ONES
                                .WORD   BIT1
                                .WORD   BIT2
                                .WORD   BIT3
                                .WORD   BIT4
                                .WORD   BIT5
                                .WORD   BIT6
                                .WORD   BIT7
                                .WORD   BIT8
                                .WORD   BIT9
                                .WORD   BIT10
                                .WORD   BIT11
                                .WORD   BIT12
                                .WORD   BIT13
                                .WORD   BIT14
                                .WORD   BIT15
                                .WORD   ^CBIT0          ;DATA FOR WALKING ZEROS
                                .WORD   ^CBIT1
                                .WORD   ^CBIT2
                                .WORD   ^CBIT3
                                .WORD   ^CBIT4
                                .WORD   ^CBIT5
                                .WORD   ^CBIT6
                                .WORD   ^CBIT7
                                .WORD   ^CBIT8
                                .WORD   ^CBIT9
                                .WORD   ^CBIT10
                                .WORD   ^CBIT11
```

```
                        .WORD   ↑CBIT12
                        .WORD   ↑CBIT13
                        .WORD   ↑CBIT14
                        .WORD   ↑CBIT15
                        .WORD   125252          ;ALTERNATING ONES, ZEROS
                        .WORD   052525          ;ALTERNATING ONES, ZERO OPPOSITE FROM ABOVE
003054          TBLEND==.
                        .SBTTL  GLOBAL ENVIRONMENT STORAGE
                ;
                ;STORAGE FOR DEVICE REGISTERS
                ;
003054  000000  100000  000000  DUMMY:  0,100000,0,0    ;DUMMY DEVICE REGISTERS...
003064  000000  000000  000000          0,0,0,0,0,0,0,0
                                        ;...FOR MULTI-UNIT CHECKOUT.

003104  000000                  DUFLG::         .WORD   0               ;"DROPPED UNIT" FLAG.
                                                                        ;INHIBITS CODE IN "CLEAN-UP".
003106  000000                  NODEV::         .WORD   0               ;FLAG TO SAY NO DEVICE.

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

```
TSV3 - GLOBAL AREAS     MACRO M1113  06-FEB-84 18:04                    SEQ 034
GLOBAL ENVIRONMENT STORAGE

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

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

                                ;*
                                ;NAMES OF DEVICES SUPPORTED
                                ;-

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

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

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

003476  003536  003541  003545  TSSRBIT::       .WORD   1$,2$,3$,4$,5$,6$,7$,8$
003516  003577  003603  003607                  .WORD   9$,10$,11$,12$,13$,14$,15$,16$
003536  123  103  000  1$:      .ASCIZ  'SC'
003541  102  111  105  2$:      .ASCIZ  'BIE'
003545  123  103  105  3$:      .ASCIZ  'SCE'
003551  122  115  122  4$:      .ASCIZ  'RMR'
003555  116  130  115  5$:      .ASCIZ  'NXM'
003561  116  102  101  6$:      .ASCIZ  'NBA'
003565  102  111  124  7$:      .ASCIZ  'BIT9'
003572  102  111  124  8$:      .ASCIZ  'BIT8'
003577  123  123  122  9$:      .ASCIZ  'SSR'
003603  117  106  114  10$:     .ASCIZ  'OFL'
003607  102  111  124  11$:     .ASCIZ  'BIT5'
003614  102  111  124  12$:     .ASCIZ  'BIT4'
003621  102  111  124  13$:     .ASCIZ  'BIT3'
003626  102  111  124  14$:     .ASCIZ  'BIT2'
003633  102  111  124  15$:     .ASCIZ  'BIT1'
003640  102  111  124  16$:     .ASCIZ  'BIT0'
                                .EVEN
003646  124  123  123  SFIERR:  .ASCIZ  'TSSR ERROR AFTER SOFT INIT'
003701  124  123  123  SFHERR:  .ASCIZ  'TSSR ERROR AFTER BUS RESET'
003734  040  040  116  NXR:     .ASCIZ  /  NON-EXISTANT DEVICE REGISTER/
003773  045  101  040  NXRX:    .ASCIZ  /%A  ADDRESS: %O6/
004014  045  101  040  TSSX:    .ASCII  /%A  TSBA,TSSR EXP'D: %O6%A,%O6%N/
004054  045  101  040           .ASCIZ  /%A  TSBA,TSSR REC'D: %O6%A,%O6/
004113  045  116  045  FUSI:    .ASCII  /%N%A/
004117  040  040  125  USI:     .ASCIZ  /  UNEXPECTED INTERRUPT/
004146  040  040  111  NSI:     .ASCIZ  /  INTERRUPT EXPECTED, NOT RECEIVED/
004211  045  116  045  FNOINTR:         .ASCII  /%N%A/
```

```
 004215   040    040    116  NOINTR:  .ASCIZ   /  NO INTERRUPT WAS GENERATED/
 004252   040    040    111  IFAULT:  .ASCIZ   /  INTERRUPT FAULT/
 004274   045    101    040  INTX:    .ASCIZ   /%A  CPU PC: %06%A  TSBA: %06/
 004331   040    040    042  NOINIT:  .ASCIZ   /  "BUS-INIT" DIDN'T INITIALIZE CONTROLLER/
 004403   040    040    042  NSINIT:  .ASCIZ   /  "SOFT-INIT" DIDN'T INITIALIZE THE DPU/
 004453   040    040    042  BRINIT:  .ASCIZ   /  "BUS-RESET" DIDN'T INITIALIZE THE DPU/

 004523   000                NUL:     .ASCIZ   //
 004524   045    116    000  NULCR:   .ASCIZ   /%N/
 004527   045    101    040  EXPGOT:  .ASCIZ   /%A EXP'D: %06%A, REC'D: %06/
 004563   045    116    045  EXPGT2:  .ASCIZ   /%N%A EXP'D: %06%A, %06%N%A REC'D: %0%A, %06/
 004637   045    101    040  DUAD12:  .ASCIZ   /%A REG(W) WRITTEN TO: %06%A REG(R) READ; EXP'D: %06%A, REC'D: %06/
 004741   122    101    115  PKTRAM::          .ASCIZ  'RAM Contents Do Not Match Packet Sent'
 005007   040    040    103  SCME:    .ASCIZ   /  CONFIG DOESN'T MATCH MFG. MASTER/
 005052   127    122    111  WRTMSG:  .ASCIZ   'WRITE CHARACTERISTICS Failed'
 005107   124    123    123  WRTERR:  .ASCIZ   'TSSR Incorrect After WRITE Command, More Bits Set Than SSR'
 005202   124    123    123  RDERR:   .ASCIZ   'TSSR Incorrect After READ Command, More Bits Set Than SSR'
 005274   106    101    124  SCHERR:  .ASCIZ   'FATAL ERROR IN SUBTEST - CHECK TAPE,CABLES,TRANSPORT etc.'
 005366   105    122    122  RETERR:  .ASCIZ   'ERROR IN SUBTEST - WRITE DATA RETRY FIVE TIMES FAILED'
 005454   045    116    045  NOMEM:   .ASCIZ   '%N%A ***** NO NXM ADDRESS--CANNOT TEST NXM TIMEOUT. *****%N'
 005550   045    116    045  M8186:   .ASCIZ   '%N%A ***************** 11/23A SYSTEM *****************%N'
 005641   045    116    045  M8189:   .ASCIZ   '%N%A ***************** 11/23B SYSTEM *****************%N'
                                      .EVEN
                                      .SBTTL  GLOBAL ERROR REPORT SECTION

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

 005732                               BGNMSG  NXRERR            ;NON-EXISTANT DEVICE REGISTER.
 005732                      NXRERR::
 005732                               PRINTX  #NXRX,NODEV       ;NODEV = NEXM ADDRESS.
 005732  013746  003106               MOV     NODEV,-(SP)
 005736  012746  003773               MOV     #NXRX,-(SP)
 005742  012746  000002               MOV     #2,-(SP)
 005746  010600                       MOV     SP,R0
 005750  104415                       TRAP    C$PNTX
 005752  062706  000006               ADD     #6,SP
 005756  004737  005764               JSR     PC,EXTEND         ; PRINT EXTENSION IF REQUIRED.
 005762                               ENDMSG
 005762                      L10002:
 005762  104423                       TRAP    C$MSG


                             ;
                             ; THIS ROUTINE APPENDS A UNIQUE EXTENSION (IF REQUIRED)
                             ; TO ANY OF THE ABOVE ERROR SIGNATURES.
                             ;
 005764  005727              EXTEND:  TST     (PC)+
 005766  000000              EXTA:    0                         ; 0 = NO EXTENSION.
 005770  001402                       BEQ     1$
 005772  004777  177770               JSR     PC,@EXTA          ; APPEND EXTENSION TEXT.
 005776                      1$:      PRINTX  #NULCR            ; PRINT A BLANK LINE
 005776  012746  004524               MOV     #NULCR,-(SP)
 006002  012746  000001               MOV     #1,-(SP)
 006006  010600                       MOV     SP,R0
```

GLOBAL ERROR REPORT SECTION

```
        006010  104415                          TRAP    C$PNTX
        006012  062706  000004                  ADD     #4,SP
    673 006016  000207                          RTS     PC
```

```
                        .SBTTL  PRITSSR - PRINT TSSR CONTENTS

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

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

```
        006164  012746  000002                  MOV     #2,-(SP)
        006170  010600                          MOV     SP,R0
        006172  104415                          TRAP    C$PNTX
        006174  062706  000006                  ADD     #6,SP
    719
    720 006200  010403                  20$:    MOV     R4,R3           ;GET THE TSSR CONTENTS
    721 006202  042703  177761                  BIC     #^CTERCLS,R3    ;CLEAR ALL BUT TERMINATION
    722 006206  016303  006754                  MOV     TCOCOD(R3),R3   ;GET THE TERMINATION CODE MEANING
    723 006212                                  PRINTX  #TCOASC,R3      ;PRINT THE TERMINATION CODE
        006212  010346                          MOV     R3,-(SP)
        006214  012746  006554                  MOV     #TCOASC,-(SP)
        006220  012746  000002                  MOV     #2,-(SP)
        006224  010600                          MOV     SP,R0
        006226  104415                          TRAP    C$PNTX
        006230  062706  000006                  ADD     #6,SP
    724 006234  010403                          MOV     R4,R3           ;TSSR CONTENTS AGAIN
    725 006236  042703  177717                  BIC     #^CFATERR,R3    ;CLEAR ALL BUT FATAL TERMINATION
    726 006242  001416                          BEQ     25$             ;DON'T PRINT IF ZERO
    727 006244  006203                          ASR     R3
    728 006246  006203                          ASR     R3
    729 006250  006203                          ASR     R3              ;ALINE TERMINATION CODE FOR INDEX
    730 006252  016303  007314                  MOV     TSFCOD(R3),R3   ;GET THE FATAL TERMINATION CODE
    731 006256                                  PRINTX  #TFCASC,R3      ;PRINT THE FATAL TERMINATION CODE
        006256  010346                          MOV     R3,-(SP)
        006260  012746  006615                  MOV     #TFCASC,-(SP)
        006264  012746  000002                  MOV     #2,-(SP)
        006270  010600                          MOV     SP,R0
        006272  104415                          TRAP    C$PNTX
        006274  062706  000006                  ADD     #6,SP
    732 006300  042704  176377          25$:    BIC     #^CHIADDR,R4    ;CLEAR ALL BUT EXTENDED ADDRESS
    733 006304  001411                          BEQ     30$             ;DON'T PRINT IF ZERO
    734 006306                                  PRINTX  #TEXASC,R4      ;PRINT THE EXTENDED ADDRESS BITS
        006306  010446                          MOV     R4,-(SP)
        006310  012746  006513                  MOV     #TEXASC,-(SP)
        006314  012746  000002                  MOV     #2,-(SP)
        006320  010600                          MOV     SP,R0
        006322  104415                          TRAP    C$PNTX
        006324  062706  000006                  ADD     #6,SP
    735 006330  013703  002172          30$:    MOV     EPRTSW,R3               ;PRINT MEAASGE BUFFER ADDRESS
    736 006334                                  PRINTX  R3                      ;PRINT PROPER MESSAGE
        006334  010346                          MOV     R3,-(SP)
        006336  012746  000001                  MOV     #1,-(SP)
        006342  010600                          MOV     SP,R0
        006344  104415                          TRAP    C$PNTX
        006346  062706  000004                  ADD     #4,SP
    737 006352  000207                          RTS     PC              ;RETURN TO CALLER
    738
    753 006354      045     116     045 EPRT1:  .ASCIZ  '<N><A *****CHECK TRANSPORT*****'
    754 006413      045     116     045 EPRT2:  .ASCIZ  '<N><A *****CHECK PARITY SWITCH IN TRANSPORT*****'
    756 006473      045     116     045 TSSRFOR:        .ASCIZ  '<N><A TSSR = <O6'
    757 006513      045     116     045 TEXASC:         .ASCIZ  '<N><A Extended Address Bits = <O6'
    758 006554      045     116     045 TCOASC:         .ASCIZ  '<N><A Termination Class Code = <T'
    759 006615      045     116     045 TFCASC:         .ASCIZ  '<N><A Fatal Termination Class Code = <T'
    760 006664      045     116     045 TSSDEF:         .ASCIZ  '<N><A TSSR Bits Set: <T'
    761 006713      045     116     045 AMBTSSR:        .ASCIZ  '<N><A TSSR Contents Are Ambiguous'
    762                                         .EVEN
    763 006754  006774  007017  007045 TCOCOD: .WORD   1$,2$,3$,4$,5$,6$,7$,8$
```

```
                        1$:     .ASCIZ  'Normal Termination'
                        2$:     .ASCIZ  'Termination Condition'
                        3$:     .ASCIZ  'Tape Status Alert'
                        4$:     .ASCIZ  'Function Reject'
                        5$:     .ASCIZ  'Recoverable Error - Tape Position One Record Down'
                        6$:     .ASCIZ  'Recoverable Error - Tape Was Not Moved'
                        7$:     .ASCIZ  'Unrecoverable Error'
                        8$:     .ASCIZ  'Fatal Controller Error'
                                .EVEN

                TSFCOD: .WORD   1$,2$,3$,4$
                        1$:     .ASCIZ  'Internal Diagnostic Failure'
                        2$:     .ASCIZ  'Reserved'
                        3$:     .ASCIZ  'Bus Interface or Sanity Check Error'
                        4$:     .ASCIZ  'Reserved'
                                .EVEN
                                .SBTTL  PRIPKT  - PRINT THE ADDRESS/CONTENTS OF COMMAND PACKET

                ;+
                ;THIS ROUTINE PRINTS THE ADDRESS AND CONTENTS OF A COMMAND PACKET.
                ;THIS ROUTINE IS NORMALLY ONLY CALLED FROM A PRINT ROUTINE.
                ;
                ;INPUT:
                ;
                ;       R0      NUMBER OF WORDS IN PACKET
                ;       R3      HIGH ORDER COMMAND PACKET ADDRESS
                ;       R4      ADDRESS OF COMMAND PACKET
                ;
                ;       NOTE:   R3 IS IGNORED IF THE KTENABLE FLAG IS CLEAR.
                ;-

                PRIPKT::
                        SAVREG                          ;SAVE THE REGISTERS
                        MOV     R0,R5                   ;SAVE NO. OF WORDS IN PACKET
                        TST     KTENABLE                ;ABOVE 28K UNDER TEST?
                        BNE     10$                     ;BR IF YES
                        CLR     R3                      ;SET HIGH ORDER ADDRESS TO 0
                10$:    MOV     R3,R1                   ;COPY HIGH ORDER ADDRESS
                        MOV     R4,R0                   ;GET LOWER ADDRESS
                        ROL     R0                      ;SHIFT BIT 15 INTO C BIT
                        ROL     R1                      ;AND INTO HIGH ORDER.
                        PRINTB  #PKTADD,R1,R4           ;PRINT PACKET ADDRESS
                        MOV     R4,-(SP)
                        MOV     R1,-(SP)
                        MOV     #PKTADD,-(SP)
                        MOV     #3,-(SP)
                        MOV     SP,R0
                        TRAP    C$PNTB
                        ADD     #10,SP
                15$:    MOV     R3,R0                   ;GET HIGH ORDER ADDRESS
                        BEQ     20$                     ;BR IF NOT ABOVE 28K.
                        MOV     R4,R1                   ;GET LOW ORDER ADDRESS
                        JSR     PC,SETMAP               ;SETUP PAR6 MAPPING FOR 18 BIT ADDRESS
                        MOV     R0,R4                   ;GET RETURNED PAR6 ADDRESS BIAS
                20$:    CLR     R1                      ;SAVE WORD NUMBER
                25$:    MOV     (R4)+,R2                ;GET PACKET CONTENTS
                        PRINTB  #PKTFRM,R1,R2           ;PRINT THE DATA
```

```
TSV3 - GLOBAL AREAS     MACRO M1113  06-FEB-84 18:04                    SEQ 041
PRIPKT  - PRINT THE ADDRESS/CONTENTS OF COMMAND PACKET

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

```
                        ;*
                        ;
                        ;PRINT EXPECTED DATA, RECEIVED DATA, AND XOR OF THE TWO
                        ;THIS ROUTINE IS NORMALLY CALLED ONLY FOR PRINT ROUTINES.
                        ;
                        ;INPUTS:
                        ;
                        ;       R1      RECEIVED DATA
                        ;       R2      EXPECTED DATA
                        ;
                        ;OUTPUT:
                        ;
                        ;       R0      XOR OF EXPECTED/RECEIVED DATA
                        ;
                        ;-

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

010070  045  116  045  XORFOR: .ASCIZ  '%N%A EXPD: %O6%A RECV: %O6%A XOR: %O6'
                             .EVEN
                             .SBTTL  PRIEQU  - PRINT BIT NUMBERS AS ASCII EQUIVALENT

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

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

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

```
                                ;
                                ;INPUTS:
                                ;
                                ;       R4      RAM ADDRESS
                                ;
                                ;-
010144                          PRIRAM:
010144                                  SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
010150                                  PRINTB  @RAMFOR,R4      ;PRINT RAM ADDRESS IN ERROR
010150  010446                          MOV     R4,-(SP)
010152  012746  010174                  MOV     @RAMFOR,-(SP)
010156  012746  000002                  MOV     #2,-(SP)
010162  010600                          MOV     SP,R0
010164  104414                          TRAP    C$PNTB
010166  062706  000006                  ADD     #6,SP
010172  000207                          RTS     PC              ;RETURN

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

                                        .SBTTL  PRIADD  - PRINT MEMORY ERROR ADDRESS
                                ;*
                                ;
                                ;PRINT MEMORY ADDRESS
                                ;THIS ROUTINE IS NORMALLY CALLED ONLY FROM PRINT ROUTINES.
                                ;
                                ; IMPLICIT INPUTS
                                ;
                                ;       ERRHI   - HIGH ORDER ADDRESS
                                ;       ERRLO   - LOW ORDER ADDRESS
                                ;
                                ;-
010236                          PRIADD:
010236                                  SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
010242  013700  002230                  MOV     ERRHI,R0        ;GET HIGH ADDRESSS
010246  013701  002232                  MOV     ERRLO,R1        ;GET LOW ADDRESS
010252  010102                          MOV     R1,R2           ;COPY LOW ADDRESS
010254  006101                          ROL     R1              ;SHIFT BIT 15 TO C BIT
010256  006100                          ROL     R0              ;SHIFT INTO HIGH ORDER
010260                                  PRINTB  @PRIAO,R0,R2    ;PRINT MEMORY ADDRESS IN ERROR
010260  010246                          MOV     R2,-(SP)
010262  010046                          MOV     R0,-(SP)
010264  012746  010306                  MOV     @PRIAO,-(SP)
010270  012746  000003                  MOV     #3,-(SP)
010274  010600                          MOV     SP,R0
010276  104414                          TRAP    C$PNTB
010300  062706  000010                  ADD     #10,SP
010304  000207                          RTS     PC              ;RETURN

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

                                        .SBTTL  PRITADD - PRINT MEMORY TEST ADDRESS
                                ;*
                                ;
                                ;PRINT MEMORY ADDRESS
                                ;THIS ROUTINE IS NORMALLY CALLED ONLY FROM PRINT ROUTINES.
```

```
                                        ;
                                        ; IMPLICIT INPUTS
                                        ;
                                        ;       ERRHI   - HIGH ORDER ADDRESS
                                        ;       ERRLO   - LOW ORDER ADDRESS
                                        ;
                                        ;-
010352                                  PRITADD:
010352                                          SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
010356  013702  002230                          MOV     ERRHI,R2        ;GET HIGH ADDRESSS
010362  013701  002232                          MOV     ERRLO,R1        ;GET LOW ADDRESS
                                                ;MOV    R1,R2           ;COPY LOW ADDRESS
                                                ;ROL    R1              ;SHIFT BIT 15 TO C BIT
                                                ;ROL    R0              ;SHIFT INTO HIGH ORDER
010366                                          PRINTB  @PRIT0,R1       ;PRINT MEMORY ADDRESS LOW IN ERROR
010366  010146                                  MOV     R1,-(SP)
010370  012746  010434                          MOV     @PRIT0,-(SP)
010374  012746  000002                          MOV     #2,-(SP)
010400  010600                                  MOV     SP,R0
010402  104414                                  TRAP    C$PNTB
010404  062706  000006                          ADD     #6,SP
010410                                          PRINTB  @PRIT1,R2       ;PRINT MEMORY ADDRESS HIGH IN ERROR
010410  010246                                  MOV     R2,-(SP)
010412  012746  010477                          MOV     @PRIT1,-(SP)
010416  012746  000002                          MOV     #2,-(SP)
010422  010600                                  MOV     SP,R0
010424  104414                                  TRAP    C$PNTB
010426  062706  000006                          ADD     #6,SP
010432  000207                                  RTS     PC              ;RETURN

010434  045  116  045  PRIT0:  .ASCIZ  '%N%A MEMORY TEST ADDRESS LOW = %06'
010477  045  116  045  PRIT1:  .ASCIZ  '%N%A MEMORY TEST ADDRESS HIGH = %06'
                                .EVEN
                                .SBTTL  SPACE   - SPACE RECORDS (FORWARD AND REVERSE) COMMAND

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

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

```
                                ;
                                ;
                                ;
                                ;PACKET FOR SPACE COMMAND
                                ;
                                        .=<.+10>&177770
                                ;
                                ;COMMAND WORD
                                80$:    .WORD
                                ;NUMBER OF RECORDS TO BE SPACED OVER WORD
                                90$:    .WORD
                                        .WORD
                                        .WORD
                                SDELAY: .WORD   0                       ;DELAY COUNTER
                                        .EVEN
                                        .SBTTL  WRTCHR  - WRITE CHARACTERISTICS COMMAND

                                ;+
                                ;
                                ;ROUTINE TO ISSUE A WRITE CHARACTERISTICS
                                ;COMMAND SO THAT OTHER COMMANDS WILL BE ACCEPTED
                                ;
                                ;INPUT:
                                ;
                                ;       R4      ADDRESS OF PACKET FROM TEST
                                ;       R5      FIRST DEVICE UNIBUS ADDRESS
                                ;       REQUIRES A CALL TO SOFINIT BE DONE PREVIOUSLY
                                ;
                                ;OUTPUT:
                                ;
                                ;       R0      TSSR CONTENTS
                                ;       CARRY   SET - WRITE CHARACTERISTICS COMMAND OK
                                ;               CLR - WRITE CHARACTERISTICS FAILED
                                ;
                                ;IMPLICIT OUTPUT:
                                ;
                                ;       MESSAGE BUFFER AND OTHER BUFFERS ALL SET UP
                                ;       SOFTWARE SWITCHES SET AS FOLLOWS:
                                ;               EXTFEA = EXTENDED FEATURES PRESENT
                                ;               BENBSW = BUFFER ENABLE SWITCH ON OR OFF
                                ;
                                ;
                                ;SIDE EFFECTS:
                                ;
                                ;
                                ;-
                                WRTCHR::
                                        SAVREG                          ;SAVE THE GENERAL REGISTERS
                                        CLR     BENBSW          ;CLEAR BUFFER ENABLE SWITCH
                                        CLR     EXTFEA                  ;CLEAR EXTENDED FEATURES SW SWITCH
                                10$:    MOV     R4,TSDB(R5)             ;SEND OUT COMMAND
                                        JSR     PC,CHKTSSR              ;WAIT FOR SSR
                                        BCS     20$                     ;BR, IF SSR IS SET AND OK
                                        BR      60$                     ;BR IF TROUBLE CARRY = CLEAR
                                20$:    MOV     TSSR(R5),R1             ;READ TSSR
                                        MOV     #SSR,R2                 ;SET UP EXPECTED
```

```
                                        BIT     #OFL,R1                 ;WAS OFF LINE SET IN TSSR
                                        BEQ     25$                     ;BR, IF NO OFL SET
                                        BIS     #OFL,R2                 ;MAKE THEM LOOK ALIKE
                                25$:    CMP     R2,R1                   ;ARE THEY OK
                                        BEQ     40$                     ;BR, IF EQUAL = OK
                                        BR      60$                     ;TROUBLE EXIT
                                40$:    ADD     #8.,R4                  ;POINT TO WRT CHARA DATA PACKET
                                        MOV     (R4),R3                 ;GET ADDRESS OF MESSAGE BUFFER
                                        BIT     #X2.EXTF,XST2(R3)       ;EXTENDED FEATURES BIT SET?
                                        BEQ     45$                     ;BR IF NO
                                        INC     EXTFEA                  ;SET EXTENDED FEATURES SW SWITCH
                                45$:
                                        BIT     #X2.BUFE,XST2(R3)                       ;BUFFER ENABLE SWITCH SET
                                        BEQ     50$                     ;BR, IF SWITCH NOT SET
                                        INC     BENBSW                  ;SET SOFTWARE SWITCH FOR ENABLED
                                50$:
                                        SEC                             ;SET CARRY NO TROUBLE
                                        BR      70$                     ;EXIT
                                60$:    CLC                             ;CARRY CLEAR = ERROR
                                70$:    MOV     TSSR(R5),R0             ;RETURN TSSR CONTENTS
                                        RTS     PC                      ;RETURN
                                        .SBTTL  REWIND  - POSITION TAPE (REWIND) COMMAND
                                ;*
                                ;
                                ;THIS ROUTINE WILL REWIND THE SELECTED TAPE.
                                ;
                                ;       CAUTION: THE ROUTINE DOES NOT WAIT FOR BOT
                                ;                TO ARRIVE. ALSO THE CALLER MUST CHECK FOR
                                ;                SSR TO SET IN THE TSSR
                                ;
                                ;CALLING SEQUENCE:
                                ;
                                ;       DO A SOFT INIT
                                ;       DO A WRITE CHARACTERISTICS
                                ;       JSR     PC,REWIND
                                ;
                                ;INPUT:
                                ;
                                ;       R5      FIRST DEVICE UNIBUS ADDRESS
                                ;
                                ;
                                ;OUTPUT
                                ;
                                ;       R0      THE CONTENTS OF R4 IS PASSED TO R0
                                ;
                                ;
                                ;-
011074                          REWIND::
011074                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
011100  012704  011170                  MOV     #RWPACK,R4              ;GET PACKET ADDRESS
011104  010465  000000                  MOV     R4,TSDB(R5)             ;SEND PACKET ADDRESS TO EXECUTE
011110  012703  000550                  MOV     #360.,R3                ;ENOUGH TIME FOR 2400' REEL TO REWIND
011114  004737  016330          10$:    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
011120  103417                          BCS     20$                     ;LEAVE WHEN SSR IS SET
011122                                  DELAY   250.                    ;WAIT FOR .25 SECONDS
```

REWIND - POSITION TAPE (REWIND) COMMAND

```
        011122  012727  000372                  MOV     #250.,(PC)+
        011126  000000                           .WORD   0
        011130  013727  002116                  MOV     L$DLY,(PC)+
        011134  000000                           .WORD   0
        011136  005367  177772                  DEC     -6(PC)
        011142  001375                          BNE     .-4
        011144  005367  177756                  DEC     -22(PC)
        011150  001367                          BNE     .-20
1152    011152  005303                          DEC     R3                      ;BUMP COUNTER DOWN
1153    011154  001357                          BNE     10$                     ;KEEP GOING
1154    011156  000241                          CLC                             ;CLEAR CARRY TO SET ERROR
1155    011160  010400                  20$:    MOV     R4,R0                   ;PASS THE PACKET ADDRESS
1156    011162  000207                          RTS     PC                      ;RETURN
1157
1159            011170                          .=<.+10>&177770
1161    011170                          RWPACK:
1162    011170  102010                          .WORD   102010                  ;POSTION COMMAND (REWIND)
1163    011172  000000                          .WORD   0                       ;NOT USED
1164                                            .SBTTL  CKRAM   - COMPARE RAM TO I/O PACKET
1165
1166                                    ;+
1167                                    ;
1168                                    ;ROUTINE TO READ THE FIRST 8 BYTES FROM RAM
1169                                    ;MEMORY AND COMPARE THIS DATA TO A COMMAND PACKET.
1170                                    ;
1171                                    ;INPUT:
1172                                    ;
1173                                    ;       R4      ADDRESS OF THE COMMAND PACKET
1174                                    ;       R5      FIRST DEVICE UNIBUS ADDRESS
1175                                    ;
1176                                    ;OUTPUT:
1177                                    ;
1178                                    ;       CARRY   SET - RAM MATCHES PACKET
1179                                    ;               CLR - RAM DOES NOT MATCH PACKET
1180                                    ;
1181                                    ;IMPLICIT OUTPUT:
1182                                    ;
1183                                    ;       THE TABLE RAMDATA IS FILLED WITH THE
1184                                    ;       DATA HELD IN RAM.
1185                                    ;       RAMSIZ IS SET TO 8. FOR PRAMPKT ROUTINE
1186                                    ;
1187                                    ;SIDE EFFECTS:
1188                                    ;
1189                                    ;       THE SUBSYSTEM IS LEFT IN MAINTENANCE MODE
1190                                    ;
1191                                    ;-
1192
1193    011174                          CKRAM::
1194    011174                                  SAVREG                          ;SAVE THE GENERAL REGISTERS
1195    011200  012701  002234                  MOV     @RAMDATA,R1             ;ADDRESS TO SAVE THE RAM DATA
1196    011204  012702  000201                  MOV     @RMPKTBEG,R2            ;BYTE ADDRESS OF FIRST RAM DATA
1197    011210  005003                          CLR     R3                      ;CLEAR THE ERROR FLAG
1198    011212  004737  016416                  JSR     PC,CHKTSSR              ;WAIT FOR SSR
1199    011216  112765  000000  000000          MOVB    #0,TSDB(R5)             ;SET MAINTENANCE MODE
1200    011224  004737  016416          10$:    JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
1201    011230  010265  000000                  MOV     R2,TSDB(R5)             ;SELECT NEXT RAM ADDRESS
1202    011234  004737  016416                  JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
```

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

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

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

```
1369 011644  005005                    CLR     R5                  ;CLEAR ERROR SEEN FLAG
1370 011646  111264  002314      15$:   MOVB    (R2),EXPMSG(R4)     ;SAVE EXPD FOR ERROR REPORT
1371 011652  111164  002460             MOVB    (R1),RECMSG(R4)     ;SAVE RECV FOR ERROR REPORT
1372 011656  122221                    CMPB    (R2)+,(R1)+         ;EXPD EQUAL RECV?
1373 011660  001401                    BEQ     25$                 ;BR IF YES
1374 011662  005205                    INC     R5                  ;SET ERROR SEEN FLAG
1375 011664  062704  000001      25$:   ADD     #1,R4               ;POINT TO NEXT BYTE
1376 011670  020403                    CMP     R4,R3               ;DONE ALL BYTES?
1377 011672  002001                    BGE     50$                 ;BR IF YES
1378 011674  000764                    BR      15$                 ;DO NEXT BYTE
1379 011676  005705              50$:  TST     R5                  ;ANY ERRORS SEEN?
1380 011700  001402                    BEQ     55$                 ;BR IF NO
1381 011702  000241                    CLC                         ;SET FAILURE
1382 011704  000401                    BR      60$                 ;
1383 011706  000261              55$:  SEC                         ;SET SUCCESS
1384 011710  000207              60$:  RTS     PC                  ;RETURN
1385
1386 011712     120     122     117  DEBUGMSG:       .ASCIZ  'PROGRAM INTERNAL ERROR -CKMSG2 MESSAGE BUFFER EXCEEDED-';@@D
1387 012002     045     116     045  FERCM:  .ASCII  /%N%A  %%%/
1388 012013     040     040     124  ERCM:   .ASCIZ  /  TSSR ERROR CODE REC'D = /
1389 012046     056     056     056  SIMSG:  .ASCIZ  /.... AFTER DOING SOFT INIT/
1390 012101     124     105     123  TINERR: .ASCIZ  /TEST: .../
1391                                  .EVEN
1392
1393                                  ;+
1394                                  ;
1395                                  ;PRINT ROUTINE TO FATAL SOFT INIT ERRORS
1396                                  ;
1397                                  ;INPUT:
1398                                  ;
1399                                  ;       R1      CONTENTS OF TSSR AT ERROR
1400                                  ;
1401                                  ;SIDE EFFECTS:
1402                                  ;
1403                                  ;       EXECUTES DROP UNIT TO CEASE TESTING
1404                                  ;
1405                                  ;-
1406
1407 012114                                   BGNMSG  SFIMSG
      012114                         SFIMSG::
1408 012114  004737  006020                   JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
1409 012120  004737  017262                   JSR     PC,CKDROP       ;DROP UNIT, IF ALLOWED
1410 012124                                   ENDMSG
      012124                         L10003:
      012124  104423                         TRAP    C$MSG
1411
1412                                  ;+
1413                                  ;PRINT ROUTINE TO PRINT THE CONTENTS OF
1414                                  ;TSSR AND A COMMAND PACKET OTHER THAN GET STATUS COMMAND PACKET.
1415                                  ;
1416                                  ;INPUTS:
1417                                  ;
1418                                  ;       R1      TSSR CONTENTS
1419                                  ;       R4      ADDRESS OF COMMAND PACKET
1420                                  ;
1421                                  ;-
1422
```

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

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

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

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

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

                        .SBTTL  MSGLOOP - PRINT LOOPBACK HEADER AND MESSAGE BUFFERS
                ;+
                ;
                ;PRINT ROUTINE TO PRINT MESSAGE BUFFER EXPD/RECV
                ;
                ;IMPLICIT INPUTS:
                ;
                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                ;-
                        BGNMSG  MSGLOOP
                MSGLOOP::
                        MOV     #LOOPCOD,R1     ;ASCII ADDRESS TABLE
                10$:    MOV     (R1)+,R0        ;DONE ALL MSG LINES?
                        BEQ     20$             ;BR IF YES
                        PRINTX  R0              ;PRINT STATUS BIT NAMES
                        MOV     R0,-(SP)
                        MOV     #1,-(SP)
                        MOV     SP,R0
                        TRAP    C$PNTX
                        ADD     #4,SP
                        BR      10$             ;DO ANOTHER MSG LINE
                20$:    MOV     #10.,R0         ;NUMBER OF WORDS IN A READ STATUS BUFFER
                        JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
                        ENDMSG
                L10014:
                        TRAP    C$MSG

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

```
                                ;
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                ;-
014022                                  BGNMSG  MSGSUB
014022                          MSGSUB::
014022  012700  000012                  MOV     #10.,R0         ;SIZE OF WRITE SUBSYSTEM BUFFER
014026  004737  014632                  JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
014032                                  ENDMSG
014032                          L10015:
014032  104423                          TRAP    C$MSG
                                        .SBTTL  MEMADD - PRINT MEMORY ADDRESS DATA ERROR
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT MEMORY ADDRESS DATA COMPARE ERROR
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       ERRHI   - MEMORY ERROR HIGH ORDER ADDRESS
                                ;       ERRLO   - MEMORY ERROR LOW ORDER ADDRESS
                                ;       EXP     - EXPECTED DATA
                                ;       RECV    - RECEIVED DATA
                                ;-
014034                                  BGNMSG  MEMADD
014034                          MEMADD::
014034  004737  010236                  JSR     PC,PRIADD       ;PRINT MEMORY ADDRESS IN ERROR
014040  013701  002224                  MOV     EXPD,R1         ;GET EXPD DATA
014044  013702  002226                  MOV     RECV,R2         ;GET RECEIVED DATA
014050  004737  010020                  JSR     PC,PRIXOR       ;PRINT EXPD/RECV
014054                                  ENDMSG
014054                          L10016:
014054  104423                          TRAP    C$MSG
                                        .SBTTL  PRAMPKT - PRINT RAM AND PACKET DATA
                                ;+
                                ;
                                ;PRINT ROUTINE TO DISPLAY RAM/PACKET DATA
                                ;WHEN THE RAM DATA DOES NOT MATCH.
                                ;
                                ;INPUTS:
                                ;
                                ;       R4      POINTER TO COMMAND PACKET
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       RAMDATA         DATA AS READ FROM THE RAM
                                ;       RAMSIZ          NUMBER OF BYTES IN PACKET
                                ;                       IF RAMSIZ=0 THEN DEFAULT TO 8.
                                ;
                                ;IMPLICIT OUTPUTS:
                                ;
                                ;       RAMSIZ  SET TO 0
```

```
                                        ;-
                                        ;
014056                                  PRAMPKT:
014056                                          SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
014062  012701  002234                          MOV     @RAMDATA,R1             ;DATA FROM THE RAM
014066  005002                                  CLR     R2                      ;INIT BYTE NUMBER
014070  122124                          5$:     CMPB    (R1)+,(R4)+             ;COMPARE EXPECTED, RECEIVED
014072  001005                                  BNE     7$                      ;BR IF NO MATCH
014074                                          FORCERROR       7$,NOTSSR
014104  000436                                  BR      10$                     ;@@D
014106  116105  177777                  7$:     MOVB    -1(R1),R5               ;GET RECV RAM DATA
014112  116403  177777                          MOVB    -1(R4),R3               ;GET EXPD PACKET DATA
014116                                          XOR     R5,R3                   ;XOR EXPD/RECV
014126  042703  177400                          BIC     @177400,R3              ;LOW BYTE ONLY
014132  116137  177777  002226                  MOVB    -1(R1),RECV             ;GET RECEIVED RAM DATA
014140  116437  177777  002224                  MOVB    -1(R4),EXPD             ;GET EXPECTED RAM DATA
014146                                          PRINTB  @RAMASC,R2,RECV,EXPD,R3
014146  010346                                  MOV     R3,-(SP)
014150  013746  002224                          MOV     EXPD,-(SP)
014154  013746  002226                          MOV     RECV,-(SP)
014160  010246                                  MOV     R2,-(SP)
014162  012746  014236                          MOV     @RAMASC,-(SP)
014166  012746  000005                          MOV     @5,-(SP)
014172  010600                                  MOV     SP,R0
014174  104414                                  TRAP    C$PNTB
014176  062706  000014                          ADD     @14,SP
014202  005202                          10$:    INC     R2                      ;UPDATE BYTE COUNT
014204  005737  002274                          TST     RAMSIZ                  ;DEFAULT TO 8.?
014210  001404                                  BEQ     15$                     ;BR IF YES
014212  020237  002274                          CMP     R2,RAMSIZ               ;DONE ALL BYTES?
014216  003724                                  BLE     5$                      ;BR IF NO
014220  000403                                  BR      25$                     ;
014222  020227  000010                  15$:    CMP     R2,@8.                  ;DONE DEFAULT NUMBER OF BYTES?
014226  002720                          20$:    BLT     5$                      ;BR IF NO
014230  005037  002274                  25$:    CLR     RAMSIZ                  ;SET DEFAULT RAMSIZ
014234  000207                                  RTS     PC                      ;RETURN
                                        ;
014236      045     116     045 RAMASC: .ASCIZ  '<N><A>  BYTE: <D2><A> RAM: <03><A> Packet: <03><A> XOR:<03>'
                                        .EVEN
                                        .SBTTL  PRMESS  - PRINT CONTENTS OF MESSAGE BUFFER
                                        ;+
                                        ;
                                        ;THIS ROUTINE PRINTS THE CONTENTS OF
                                        ;THE 7 OR 8 WORD MESSAGE BUFFER RETURNED BY THE
                                        ;TSV-05.
                                        ;
                                        ;INPUT:
                                        ;
                                        ;       R0      LOW ORDER ADDRESS OF MESSAGE BUFFER
                                        ;       R1      HIGH ORDER ADDRESS OF MESSAGE BUFFER
                                        ;       NOTE: R1 IS IGNORED IF KTENABLE FLAG IS CLEAR
                                        ;
                                        ;THIS ROUTINE IS NORMALLY CALLED FROM A PRINT ROUTINE
                                        ;
                                        ;-
                                        ;
014322                                  PRMESS:
```

```
                                        SAVREG                  ;SAVE THE REGISTERS
                                        MOV     R0,R5           ;SAVE LOW ORDER ADDRESS
                                        TST     KTENABLE        ;ADDRESS ABOVE 28K?
                                        BNE     10$             ;BR IF YES
                                        CLR     R1              ;SET HIGH ORDER ADDRESS TO 0
                                10$:    MOV     R1,R3           ;SAVE HIGH ORDER ADDRESS
                                        ROL     R0              ;SHIFT BIT15 TO C BIT
                                        ROL     R1              ;SHIFT TO HIGH ORDER FOR PRINTOUT
                                        PRINTX  #PROASC,R1,R5   ;PRINT MESSAGE BUFFER ADDRESS
                                        MOV     R5,-(SP)
                                        MOV     R1,-(SP)
                                        MOV     #PROASC,-(SP)
                                        MOV     #3,-(SP)
                                        MOV     SP,R0
                                        TRAP    C$PNTX
                                        ADD     #10,SP
                                        PRINTX  #PR1ASC         ;PRINT HEADER FOR CONTENTS
                                        MOV     #PR1ASC,-(SP)
                                        MOV     #1,-(SP)
                                        MOV     SP,R0
                                        TRAP    C$PNTX
                                        ADD     #4,SP
                                        CLR     R4              ;NUMBER OF THE NEXT WORD
                                        MOV     R5,R1           ;COPY LOW ORDER ADDRESS
                                        MOV     R3,R0           ;COPY HIGH ORDER ADDRESS
                                        BEQ     20$             ;BR IF NOT ABOVE 28K
                                        JSR     PC,SETMAP       ;SETUP PAR ADDRESS IN R0
                                        MOV     R0,R5           ;GET PAR FORMAT ADDRESS ABOVE 28K
                                20$:    PRINTX  #PRASC,R4,(R5)+ ;PRINT THE CONTENTS OF MEMORY BUFFER
                                        MOV     (R5)+,-(SP)
                                        MOV     R4,-(SP)
                                        MOV     #PRASC,-(SP)
                                        MOV     #3,-(SP)
                                        MOV     SP,R0
                                        TRAP    C$PNTX
                                        ADD     #10,SP
                                        INC     R4              ;NUMBER OF THE NEXT
                                        CMP     R4,#7           ;DONE ALL YET ?
                                        BGT     50$             ;BRANCH IF ALL DONE
                                        BLT     20$             ;PRINT FIRST 7 WORDS
                                        BIT     #X2.EXTF,XST2(R3);EXTENDED FEATUTES ON ?
                                        BNE     20$             ;PRINT EXTENDED STATUS WORD
                                50$:    RTS     PC              ;RETURN

                        045     116     045     PROASC: .ASCIZ  '%N%A Message Buffer Address = %01%05'
                        045     116     045     PR1ASC: .ASCIZ  '%N%A Message Buffer Contents:'
                        045     116     045     PRASC:  .ASCIZ  '%N%A    Word%D1%A: %O'
                                                        .EVEN
                                                        .SBTTL  PRMSGEXP - PRINT EXPD/RECV MESSAGE BUFFERS
                                                ;*
                                                ;
                                                ;ROUTINE TO PRINT EXPECTED AND RECEIVED MESSAGE BUFFERS
                                                ;
                                                ;       R0      - NUMBER OF WORDS IN BUFFER
                                                ;
                                                ;IMPLICIT INPUTS:
                                                ;
```

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

```
                                ;       ONLY THE FIRST 8 ERRORS ENCOUNTERED ARE PRINTED DUE TO SCREEN SPACE
                                ;
                                ;       R0      - NUMBER OF BYTES IN BUFFER
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;-
015202                          PRBYTEXP::
015202                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
015206  010005                          MOV     R0,R5                   ;SAVE NUMBER OF BYTES
015210  005037  002312                  CLR     PRMNO                   ;INIT ERROR COUNT
015214  005004                          CLR     R4                      ;NUMBER OF THE CURRENT BYTE
015216  012701  002314                  MOV     @EXPMSG,R1              ;GET EXPD BUFFER ADDRESS
015222  012702  002460                  MOV     @RECMSG,R2              ;GET RECV BUFFER ADDRESS
015226  111100                  20$:    MOVB    (R1),R0                 ;GET EXPD BYTE
015230  042700  177400                  BIC     @^C<377>,R0             ;CLEAR UPPER BYTE
015234  110037  015550                  MOVB    R0,PRBEXP               ;SAVE FOR ERROR REPORT
015240  111203                          MOVB    (R2),R3                 ;GET RECV BYTE
015242  042703  177400                  BIC     @^C<377>,R3             ;CLEAR UPPER BYTE
015246  110337  015552                  MOVB    R3,PRBREC               ;FOR ERROR REPORT
015252                                  XOR     R0,R3                   ;XOR EXPD/RECV
015262  122122                          CMPB    (R1)+,(R2)+             ;EXPD = RECV?
015264  001431                          BEQ     30$                     ;BR IF YES
015266  005237  002312                  INC     PRMNO                   ;UPDATE ERROR COUNT
015272  023727  002312  000010          CMP     PRMNO,@8.               ;PRINTED 8?
015300  101023                          BHI     30$                     ;BR IF YES
015302                          27$:    PRINTX  @PRBMSG,R4,PRBEXP,PRBREC,R3
015302  010346                          MOV     R3,-(SP)
015304  013746  015552                  MOV     PRBREC,-(SP)
015310  013746  015550                  MOV     PRBEXP,-(SP)
015314  010446                          MOV     R4,-(SP)
015316  012746  015416                  MOV     @PRBMSG,-(SP)
015322  012746  000005                  MOV     @5,-(SP)
015326  010600                          MOV     SP,R0
015330  104415                          TRAP    C$PNTX
015332  062706  000014                  ADD     @14,SP
015336                                  FORCEXIT        50$             ;@@D
015346  000404                          BR      35$                     ;@@D
015350                          30$:
015350                                  FORCERROR  27$,NOTSSR           ;@@D
015360                          35$:                                    ;@@D
015360  005204                          INC     R4                      ;NUMBER OF THE NEXT
015362  020405                          CMP     R4,R5                   ;DONE ALL YET?
015364  002001                          BGE     50$                     ;BR IF YES
015366  000717                          BR      20$                     ;DO ANOTHER
015370                          50$:    PRINTX  @PRBTOT,PRMNO           ;PRINT TOTAL ERROR COUNT
015370  013746  002312                  MOV     PRMNO,-(SP)
015374  012746  015503                  MOV     @PRBTOT,-(SP)
015400  012746  000002                  MOV     @2,-(SP)
015404  010600                          MOV     SP,R0
015406  104415                          TRAP    C$PNTX
015410  062706  000006                  ADD     @6,SP
015414  000207                          RTS     PC                      ;RETURN

015416      045     116     045 PRBMSG: .ASCIZ  '%N%A   BYTE #%D2%A  EXPD: %03%A  RECV: %03%A  XOR: %03'
```

```
                                PRBTOT: .ASCIZ  '%N%A NUMBER OF BYTES IN ERROR = %D2'
                                        .EVEN
                                PRBEXP: .WORD   0               ;EXPD
                                PRBREC: .WORD   0               ;RECV
                                        .SBTTL  EXPREC  - PRINT EXPD/RECV WORD DATA
                                ;+
                                ;
                                ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
                                ;
                                ;INPUTS:
                                ;
                                ;       R1      RECEIVED DATA
                                ;       R2      EXPECTED DATA
                                ;
                                ;-

                                        BGNMSG  EXPREC
                                EXPREC::
                                        JSR     PC,PRIXOR               ;PRINT THE DATA
                                        ENDMSG
                                L10017:
                                        TRAP    C$MSG
                                        .SBTTL  EXPBREC - PRINT EXPD/RECV BYTE DATA
                                ;+
                                ;
                                ;PRINT ROUTINE TO DISPLAY BYTE EXPD/RECV DATA
                                ;
                                ;INPUTS:
                                ;
                                ;       R1      RECEIVED DATA BYTE
                                ;       R2      EXPECTED DATA BYTE
                                ;
                                ;-

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


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

```
1869                                    ;
1870                                    ;IMPLICIT OUTPUTS:
1871                                    ;
1872                                    ;       RAMSIZ  SET TO 0
1873                                    ;-
1874
1875 015570                             BGNMSG  RAMERR
     015570                         RAMERR::
1876 015570  004737  014056             JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
1877 015574                             ENDMSG
     015574                         L10021:
     015574  104423                     TRAP    C$MSG
1878
1879                                    .SBTTL  RAMTADD - PRINT TEST ADDRESS, RAM AND PACKET DATA
1880                                    ;+
1881                                    ;
1882                                    ;PRINT ROUTINE TO DISPLAY RAM/PACKET DATA
1883                                    ;
1884                                    ;INPUTS:
1885                                    ;
1886                                    ;       R4      POINTER TO COMMAND PACKET
1887                                    ;
1888                                    ;IMPLICIT INPUTS:
1889                                    ;
1890                                    ;       RAMDATA         DATA AS READ FROM THE RAM
1891                                    ;       RAMSIZ          NUMBER OF BYTES IN PACKET
1892                                    ;                       IF RAMSIZ=0 THEN DEFAULT TO 8.
1893                                    ;       ERRHI           HIGH ORDER TEST ADDRESS
1894                                    ;       ERRLO           LOW ORDER TEST ADDRESS
1895                                    ;
1896                                    ;IMPLICIT OUTPUTS:
1897                                    ;
1898                                    ;       RAMSIZ  SET TO 0
1899                                    ;-
1900
1901 015576                             BGNMSG  RAMTADD
     015576                         RAMTADD::
1902 015576  004737  010352             JSR     PC,PRITADD      ;PRINT TEST ADDRESS
1903 015602  004737  014056             JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
1904 015606                             ENDMSG
     015606                         L10022:
     015606  104423                     TRAP    C$MSG
1905
1906                                    .SBTTL  RAMEXP  - PRINT RAM EXPD/RECV DATA
1907                                    ;+
1908                                    ;
1909                                    ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
1910                                    ;
1911                                    ;INPUTS:
1912                                    ;
1913                                    ;       R1      RECEIVED DATA
1914                                    ;       R2      EXPECTED DATA
1915                                    ;       R4      CONTROLLER RAM ADDRESS
1916                                    ;-
1917
1918 015610                             BGNMSG  RAMEXP
     015610                         RAMEXP::
```

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

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

                        BGNMSG  TIMEXP
                TIMEXP::
                        PRINTX  #TIMSGO                 ;PRINT HEADER
                        MOV     #TIMSGO,-(SP)
                        MOV     #1,-(SP)
                        MOV     SP,R0
                        TRAP    C$PNTX
                        ADD     #4,SP
                        JSR     PC,PRIXOR               ;PRINT THE DATA
                        ENDMSG
                L10024:
                        TRAP    C$MSG

  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::
                        MOV     R2,-(SP)                ;SAVE DATA TRANSFERRED
                        BIC     #177400,R2              ;GET JUST ONE BYTE
                        PRINTB  #XFERASC,R2
                        MOV     R2,-(SP)
                        MOV     #XFERASC,-(SP)
                        MOV     #2,-(SP)
                        MOV     SP,R0
```

```
                016002  104414                          TRAP    C$PNTB
                016004  062706  000006                  ADD     #6,SP
     1961       016010  012602                          MOV     (SP)+,R2                ;RESTORE R2
     1962       016012  004737  006020                  JSR     PC,PRITSSR              ;DECODE TSSR CONTENTS
     1963       016016                                  ENDMSG
                016016                          L10025:
                016016  104423                          TRAP    C$MSG
     1964       016020     045     116     045  XFERASC:        .ASCIZ  '#N#A Data Transferred = #03'
     1965                                               .SBTTL  GLOBAL SUBROUTINES SECTION
     1966
     1967                                       ;++
     1968                                       ; THE GLOBAL SUBROUTINES SECTION CONTAINS THE SUBROUTINES
     1969                                       ; THAT ARE USED IN MORE THAN ONE TEST.
     1970                                       ;--
     1971                                               .SBTTL  SOFINIT - SOFT INITIALIZE OF CONTROLLER
     1972
     1973                                       ;+
     1974                                       ;
     1975                                       ;ROUTINE TO DO A SOFT INITIALIZE OF THE CONTROLLER
     1976                                       ;BY WRITING INTO THE TSSR REGISTER. AFTER THE INIT,
     1977                                       ;THE TSSR REGISTER IS TESTED FOR ERRORS. ANY ERRORS
     1978                                       ;DETECTED SHOULD BE TREATED AS DEVICE FATAL ERRORS.
     1979                                       ;
     1980                                       ;INPUTS:
     1981                                       ;
     1982                                       ;       R5      ADDRESS OF FIRST REGISTER
     1983                                       ;
     1984                                       ;OUTPUTS:
     1985                                       ;
     1986                                       ;       R0      CONTENTS OF TSSR, IF ERROR
     1987                                       ;       CARRY   SET IF INIT WAS OKAY
     1988                                       ;               CLEAR IF FATAL ERROR
     1989                                       ;
     1990                                       ;CALLING SEQUENCE:
     1991                                       ;
     1992                                       ;       MOV     #ADDRESS,R5
     1993                                       ;       JSR     PC,SOFINIT
     1994                                       ;       BCS     CONTINUE
     1995                                       ;       ERRDF                           ;REPORT FATAL ERROR
     1996                                       ;
     1997                                       ;-
     1998
     1999       016054                          SOFINIT::
     2000       016054                                  SAVREG                          ; SAVE THE REGISTERS
     2001       016060  012765  000000  000002          MOV     #0,TSSR(R5)             ; DO THE INIT.
     2002       016066  004737  016330                  JSR     PC,WAITF                ; WAIT FOR SSR
     2003       016072  016500  000002                  MOV     TSSR(R5),R0             ;GET THE TSSR REGISTER
     2004       016076  010004                          MOV     R0,R4                   ;TSSR CONTENTS
     2005       016100  042704  176277                  BIC     #^C<HIADDR!OFL>,R4
     2006       016104  052704  002200                  BIS     #SSR!NBA,R4             ;R4 HAS EXPECTED CONTENTS
     2007       016110  020400                          CMP     R4,R0                   ;ONLY EXPECTED BITS SET ?
     2008       016112  001402                          BEQ     5$                      ;BRANCH IF OKAY
     2009       016114  000241                          CLC                             ;CLEAR THE CARRY FOR ERROR
     2010       016116  000401                          BR      10$                     ;GO TO EXIT
     2011       016120  000261                  5$:     SEC                             ;SET THE CARRY BIT
     2012       016122  000207                  10$:    RTS     PC                      ;RETURN TO CALLER
     2013                                               .SBTTL  CHKAMB  - CHECK TSSR FOR AMBIGUITY
```

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

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

```
                                        ;INTERRUPT FLAG -- SAYS WE GOT ONE (IF POSITIVE)
016225      000                         INTFLAG:        .BYTE   0

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

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

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

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

                                        ;SAVE REGISTERS, MSG BUFFER, ETC.
016326                                  1$:
016326                                          ENDSRV
016326                                  L10026:
016326  000002                                  RTI
                                                .SBTTL  WAITF   - WAIT FOR SUBSYSTEM READY
                                        ;
                                        ; SUBROUTINE TO WAIT FOR THE SUBSYSTEM READY FLAG
                                        ;
                                        ;INPUTS:
                                        ;
                                        ;       R5      ADDRESS OF FIRST DEVICE REGISTER
                                        ;
                                        ;OUTPUTS:
                                        ;
                                        ;       R0      CONTENTS OF LAST TSSR READ
                                        ;       CARRY   SET - READY BIT SET
                                        ;               CLR - TIMEOUT WAITING FOR READY
                                        ;
016330  000401                          WAITF:: BR      1$              ;NOP WHEN SUPER FIXED
016332                                          BREAK                   ; DO A SUPVSR BREAK FIRST.
016332  104422                                  TRAP    C$BRK
016334  012746  011000                  1$:     MOV     #11000,-(SP)    ;25-APRIL-83 REV B  - 1100 MSEC TIMER
016340  016500  000002                  2$:     MOV     TSSR(R5),R0     ;READ THE TSSR REGISTER
016344  105700                                  TSTB    R0              ;TEST FOR READY BIT SET
```

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

```
2173                                    ;       MOV ADR2,R2
2174                                    ;       JSR PC,NXM
2175                                    ;       RETURN          ;TEST "C" AND PROCEED.
2176                                    ;
2177 016456  012737  016510  000004    XNXM:   MOV     @2$,@#4         ; SET BUSERR VECTOR.
2178 016464  012737  000200  000006            MOV     @#PRI04,@#6
2179 016472  005003                            CLR     R3              ;FLAG.
2180 016474  005711                    1$:     TST     (R1)            ;TEST THE ADDRESS(ES).
2181                                                                    ;IF ANY TRAP, CONTINUE AT 2$.
2182 016476  020102                            CMP     R1,R2           ;OTHERWISE, CONTINUE HERE.
2183 016500  001407                            BEQ     3$              ;BR IF FINISHED (NO NEXM'S).
2184 016502  062701  000002                    ADD     #2,R1           ;SET NEXT ADDRESS...
2185 016506  000772                            BR      1$              ;...AND CONTINUE.
2186
2187 016510  005103                    2$:     COM     R3              ;GOT ONE, SET FLAG...
2188 016512  012716  016520                    MOV     #3$,(SP)
2189 016516  000002                            RTI                     ;...AND DISMISS INTERRUPT...
2190 016520                            3$:     CLRVEC  #4              ;...AND GIVE BACK THE VECTOR.
     016520  012700  000004                    MOV     #4,R0
     016524  104436                            TRAP    C$CVEC
2191 016526  005703                            TST     R3              ;DID WE CATCH ONE ??
2192 016530  001401                            BEQ     .+4             ;NO, "C" = 0, SKIP NEXT.
2193 016532  000261                            SEC                     ;YES, "C" = 1, (R1) = NEXM ADDR.
2194 016534  000207                            RTS     PC
2195
2196
2197                                            .SBTTL  TSTLOOP - CHECK ITERATION COUNT
2198                                    ;+
2199                                    ; SUBROUTINE TO EXECUTE TEST ITERATIONS.
2200                                    ; EXIT WITH "C" SET IF LOOPS ALLOWED AND LOOP COUNT NON-ZERO.
2201                                    ; LOOP COUNTER IS SET BY "BEGIN.TEST" MACRO.
2202                                    ;
2203                                    ; CALL: LOOPTO  ARG
2204                                    ;
2205 016536                            TSTLOOP::
2206 016536  005737  002162                    TST     NOITS           ; ITERATIONS INHIBITED?
2207 016542  001006                            BNE     1$              ; YES.
2208 016544  005737  002176                    TST     QVP             ; NO.
2209 016550  100403                            BMI     1$              ;LOOPS DISALLOWED IN QUICK PASS.
2210 016552  005337  002210                    DEC     LOOPCNT         ; BUMP LOOP COUNTER.
2211 016556  001002                            BNE     2$
2212 016560  000241                    1$:     CLC                     ;LOOP DISALLOWED, OR DONE.
2213 016562  000401                            BR      3$
2214 016564  000261                    2$:     SEC                     ;LOOP ENABLED.
2215 016566  000207                    3$:     RTS     PC
2216
2217                                            .SBTTL  TSTSETUP - PRINT TEST NAME AND INIT ERROR COUNTS
2218                                    ;+
2219                                    ; PRINT THE NUMBER AND NAME OF EACH TEST AS WE GO ALONG.
2220                                    ; INCREMENT "TESTK" TO INDICATE THE NUMBER OF TESTS
2221                                    ; IN THE CURRENT RUN SEQUENCE.
2222                                    ; CLEAR THE ERROR COUNTER AND SIGNATURE EXTENSION FLAGS.
2223                                    ;
2224                                    ;INPUT:
2225                                    ;
2226                                    ;       R0      POINTER TO TEST ID ASCIZ STRING
2227                                    ;
```

```
                                ;OUTPUT:
                                ;
                                ;       R5      ADDRESS OF FIRST DEVICE REGISTER
                                ;
                                ;IMPLICIT OUTPUTS:
                                ;
                                ;       TSTCNT  UPDATED TO COUNT TESTS PERFORMED SINCE START OR RESTART
                                ;
                                ;SIDE EFFECTS:
                                ;
                                ;       INTERRUPT LEVEL IS RASIED TO LEVEL OF
                                ;       THE DEVICE UNDER TEST
                                ;
                                ;-

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

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

```
                016734  104417                          TRAP    C$PNTF
                016736  062706  000006                  ADD     #6,SP
     2269       016742  005237  002206          1$:     INC     TSTCNT          ; BUMP TEST COUNTER.
     2270       016746                          1$:     SETPRI  IPRI            ;PRIORITY THAT OF DEVICE
                016746  013700  002204                  MOV     IPRI,R0
                016752  104441                          TRAP    C$SPRI
     2271       016754  005726                  5$:     TST     (SP)+           ;FIX UP THE STACK
     2272       016756  013705  002200                  MOV     CSRADDR,R5      ; ADDRESS OF TSV REGISTERS ON UNIBUS
     2273       016762  000207                          RTS     PC
     2274       016764     045     123     045  TNAM:   .ASCIZ  '%S%T%A Test'
     2275                                               .EVEN
     2276                                               .SBTTL  TSTEND  - PRINT ERRORS RECEIVED
     2277                                       ;
     2278                                       ; AT END OF EACH TEST, PRINT THE NUMBER OF ERRORS RECEIVED
     2279                                       ; IF NORMAL ERROR REPORTING IS DISABLED (FLA:IER).
     2280                                       ;
     2281       017000                          TSTEND: RFLAGS  R0
                017000  104421                          TRAP    C$RFLA
     2282       017002  030027  020000                  BIT     R0,#IER
     2283       017006  001412                          BEQ     1$              ; BR IF "IER" NOT SET.
     2284       017010                                   PRINTF  #ESUM,ERRK      ; PRINT ERROR COUNT.
                017010  013746  017036                  MOV     ERRK,-(SP)
                017014  012746  017040                  MOV     #ESUM,-(SP)
                017020  012746  000002                  MOV     #2,-(SP)
                017024  010600                          MOV     SP,R0
                017026  104417                          TRAP    C$PNTF
                017030  062706  000006                  ADD     #6,SP
     2285       017034  000207                  1$:     RTS     PC
     2286
     2287       017036  000000                  ERRK:   0                       ; LOCAL ERROR COUNT.
     2288       017040     045     101     040  ESUM:   .ASCIZ  /%A %D%A ERRORS/
     2289       017057     105     122     122  EMAXDU: .ASCIZ  /ERROR LIMIT REACHED -- DROPPING UNIT/
     2290                                               .EVEN
     2291
     2292                                               .SBTTL  INCERK  - INCREMENT LOCAL ERROR COUNT
     2293                                       ;+
     2294                                       ; ROUTINES TO INCREMENT LOCAL ERROR COUNT AND CHECK FOR LIMIT:
     2295                                       ;-
     2296       017124  005237  017036          INCERK: INC     ERRK            ; INCREMENT LOCAL ERROR COUNT
     2297       017130  010046                          MOV     R0,-(SP)        ; SAVE R0
     2298       017132  013700  002174                  MOV     UNITN,R0        ; GET UNIT NUMBER,
     2299       017136  006300                          ASL     R0              ; ... AND MAKE IT A WORD OFFSET.
     2300       017140  062700  003170                  ADD     #ERTABL,R0      ; R0 GETS ADDRESS OF ERROR TABLE ENTRY.
     2301       017144  005210                          INC     (R0)            ; INCREMENT THE DEVICE ERROR COUNT
     2302       017146  032710  007777                  BIT     #7777,(R0)      ; DID WE OVERFLOW THE FIELD?
     2303       017152  001001                          BNE     1$              ; BR IF NO.
     2304       017154  005310                          DEC     (R0)            ; YES -- BACK IT UP TO 7777.
     2305       017156  012600                  1$:     MOV     (SP)+,R0        ; RESTORE R0
     2306       017160  000207                          RTS     PC              ; RETURN TO CALLER.
     2307
     2308       017162  010046                  CKEMAX: MOV     R0,-(SP)        ; SAVE R0
     2309       017164  013700  002174                  MOV     UNITN,R0        ; GET UNIT NUMBER
     2310       017170  006300                          ASL     R0              ; ... AND MAKE IT A WORD OFFSET
     2311       017172  016000  003170                  MOV     ERTABL(R0),R0   ; GET ERROR TABLE ENTRY
     2312       017176  042700  170000                  BIC     #170000,R0      ; EXTRACT ERROR COUNT FIELD
     2313       017202  020037  002166                  CMP     R0,GERRMAX      ; IS GLOBAL LIMIT EXCEEDED FOR THIS UNIT?
     2314       017206  103004                          BHIS    1$              ; BR IF YES
```

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

```
                                ; SUBROUTINE - DISABLE MEM MGT.
                                ;
017354  005737  003124        KTOFF:  TST     KTFLG           ; GOT KT11?
017360  001405                  BEQ     1$              ; NO.
017362  000240                  NOP
017364  000240                  NOP
017366  012737  000000  177572      MOV     #0,SR0          ; DISABLE KT.
017374  000207              1$:     RTS     PC
                                .SBTTL  SETMAP  - SETUP PAR6 MAPPING
                                ;*
                                ;
                                ;THIS ROUTINE SETS UP KERNEL PAR6 TP HANDLE
                                ;AN 18 BIT ADDRESS. THE OFFSET INTO THE PAGE
                                ;IS RETURNED BIASED TO PAR6.
                                ;
                                ;INPUTS:
                                ;
                                ;       R0      HIGH ORDER ADDRESS BITS
                                ;       R1      LOW ORDER ADDRESS BITS
                                ;
                                ;OUTPUTS:
                                ;
                                ;       R0      OFFSET INTO BLOCK WITH PAR6 BIAS (I.E. THE ADDRESS)
                                ;       CARRY   SET IF SUCCESS
                                ;               CLR IF ERROR
                                ;-
017376                          SETMAP:
                                SAVREG                          ;SAVE R1-R4 UNTIL NEXT RETURN
017402  005737  003124          TST     KTFLG                   ;SYSTEM HAVE ABOVE 28K?
017406  001433                  BEQ     10$                     ;BR IF NO
017410  010102                  MOV     R1,R2                   ;SAVE LOW ORDER BITS
        000006                  .REPT   6
                                ASR     R0                      ;CONVERT WORD ADDRESS TO 32W BLOCKS
                                ROR     R1                      ;MAKE IT DOUBLE PRECISION
                                .ENDR
017442  042701  000177          BIC     #177,R1                 ;ALINE FOR LOWER 4K BOUNDARY
017446  020137  003124          CMP     R1,KTFLG                ;HIGHER THAN EXISTING MEMORY?
017452  103011                  BHIS    10$                     ;BR IF YES
017454  010137  172354          MOV     R1,@#KIPAR6             ;SETUP MAPPING REGISTER PAR6
017460  042702  160000          BIC     #160000,R2              ;SETUP DISPLACEMENT IN PAGE
017464  062702  140000          ADD     #140000,R2              ;ADD IN PAR6 BIAS
017470  010200                  MOV     R2,R0                   ;RETURN IN R0
017472  000261                  SEC                             ;SET SUCCESS
017474  000401                  BR      15$                     ;
017476  000241          10$:    CLC                             ;SET FAILURE
017500  000207          15$:    RTS     PC                      ;RETURN
                                .SBTTL  FILLMEM - FILL MEMORY WITH BACKGROUND PATTERN
                                ;*
                                ;  FILL MEMORY WITH A BACKGROUND PATTERN
                                ;
                                ; INPUTS:
                                ;
                                ;       R0 = BACKGROUND PATTERN
                                ;       FREE    = FIRST LOCATION AVAILABLE TO DIAGNOSTIC
                                ;       KTFLG   = SET TO HIGHEST MEMORY LOCATION IF > 28K.
                                ;
```

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

```
                                ; OUTPUTS:
                                ;
                                ;       CARRY   - SET IF NO ERROR
                                ;       CARRY   - CLR IF ERROR
                                ;
                                ; IMPLICIT OUTPUTS:
                                ;
                                ;       ERRHI   - ERROR HIGH ADDRESS
                                ;       ERRLO   - ERROR LOW ADDRESS
                                ;       EXPD    - EXPECTED DATA
                                ;       RECV    - RECEIVED DATA
                                ;-
                                CMPMEM:
                                        SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
                                        MOV     R0,R3           ;COPY TEST PATTERN
                                        JSR     PC,KTOFF        ;DISABLE KT.
                                        MOV     FREE,R1         ;GET FIRST FREE LOCATION
                                        MOV     FRESIZ,R2       ;SIZE OF FREE SPACE BELOW 28K.
                                10$:    CMP     R3,(R1)         ;FREE SPACE LOCATION EQUAL TO EXPD?
                                        BEQ     15$             ;BR IF YES
                                        MOV     R1,ERRLO        ;SAVE ADDRESS IN ERROR
                                        CLR     ERRHI           ;NO HIGH ADDRESS
                                        MOV     R3,EXPD         ;SAVE EXPD FOR ERROR REPORT
                                        MOV     (R1),RECV       ;SAVE RECV FOR ERROR REPORT
                                        BR      50$             ;
                                15$:    TST     (R1)+           ;POINT TO NEXT ADDRESS
                                        DEC     R2              ;DONE ALL MEMORY IN FREE SPACE?
                                        BGT     10$             ;BR IF NO
                                        TST     KTFLG           ; GOT KT?
                                        BEQ     55$             ; NO. GET OUT.
                                        JSR     PC,KTON         ; YES. ENABLE KT.
                                        CLR     R0              ;HIGH ORDER ADDRESS START
                                        MOV     PST32W,R1       ;GET >28K START ADDRESS (IN 32W BLOCKS)
                                        .REPT   6
                                        ROL     R1              ;CONVERT BLOCKS TO WORDS
                                        ROL     R0              ;MAKE IT DOUBLE PRECISION
                                        .ENDR
                                        BIC     #177,R1         ;ALINE 4K BOUNDARY
                                        MOV     R0,-(SP)        ;SAVE HIGH ORDER
                                        MOV     R1,-(SP)        ;SAVE LOW ORDER
                                        JSR     PC,SETMAP       ;SETUP PAR6 MAPPING REGISTER
                                        MOV     R0,R4           ;COPY ADDRESS BIASED TO PAR6
                                        MOV     (SP)+,R1        ;RESTORE LOW ORDER IN NON PAR6 FORMAT
                                        MOV     (SP)+,R0        ;RESTORE HIGH ORDER IN NON PAR6 FORMAT
                                30$:    CMP     R3,(R4)         ;ABOVE 28K LOCATION EQUAL EXPD?
                                        BEQ     32$             ;BR IF YES
                                        MOV     R0,ERRHI        ;SAVE HIGH ORDER IN ERROR
                                        MOV     R1,ERRLO        ;SAVE LOW ORDER IN ERROR
                                        MOV     R3,EXPD         ;SAVE EXPD FOR ERROR REPORT
                                        MOV     (R4),RECV       ;SAVE RECV FOR ERROR REPORT
                                        BR      50$             ;
                                32$:    ADD     #2,R1           ;UPDATE NON PAR6 ADDRESS
                                        ADC     R0              ;MAKE IT DOUBLE PRECISION ADD
                                        ADD     #2,R4           ;UPDATE PAR FORMAT ADDRESS
                                        CMP     R4,#160000      ;END OF PAR6 MAPPING AREA?
                                        BLO     30$             ;BR IF NO
                                        SUB     #20000,R4       ;BACKUP INTO PAR6 MAPPING BEGIN
```

```
2531 020162  062737  000200  172354          ADD     #200,@#KIPAR6   ;POINT TO NEXT 4K BLOCK >28K.
2532 020170  023737  172354  003124          CMP     @#KIPAR6,KTFLG  ;END OF MEMORY?
2533 020176  101744                          BLOS    30$             ;BR IF NO
2534 020200  004737  017354          50$:    JSR     PC,KTOFF        ;TURN OFF MEMORY MAPPING
2535 020204  000241                          CLC                     ;SET FAILURE
2536 020206  000403                          BR      60$             ;
2537 020210  004737  017354          55$:    JSR     PC,KTOFF        ;TURN OFF MEMORY MAPPING
2538 020214  000261                          SEC                     ;SET SUCCESS
2539 020216  000207                  60$:    RTS     PC
2540                                          .SBTTL  REGSAV  - SAVE R1-R5 ON STACK
2541                                  ;+
2542                                  ;
2543                                  ;ROUTINE TO
2544                                  ;SAVE R1 THROUGH R5 ON THE STACK
2545                                  ;
2546                                  ;CALLING SEQUENCE:
2547                                  ;
2548                                  ;       JSR     R5,REGSAV
2549                                  ;
2550                                  ;THIS IS A COOROUTINE WHICH TRANSFER CONTROL BACK TO
2551                                  ;THE CALLING ROUTINE. AT THE END OF THE CALLING ROUTINE,
2552                                  ;THE RTS PC RETURNS CONTROL TO THIS ROUTINE TO RESTORE
2553                                  ;REGISTERS.
2554                                  ;
2555                                  ;THIS ROUTINE SHOULD ONLY BE CALLED FROM ROUTINES WHICH ARE
2556                                  ;CALLED VIA A JSR PC INSTRUCTION
2557                                  ;
2558                                  ;-
2559
2560 020220                          REGSAV:
2561 020220  010446                          MOV     R4,-(SP)
2562 020222  010346                          MOV     R3,-(SP)
2563 020224  010246                          MOV     R2,-(SP)
2564 020226  010146                          MOV     R1,-(SP)
2565 020230  010546                          MOV     R5,-(SP)
2566 020232  016605  000012                  MOV     10.(SP),R5
2567 020236  004736                          JSR     PC,@(SP)+
2568 020240  012601                          MOV     (SP)+,R1
2569 020242  012602                          MOV     (SP)+,R2
2570 020244  012603                          MOV     (SP)+,R3
2571 020246  012604                          MOV     (SP)+,R4
2572 020250  012605                          MOV     (SP)+,R5
2573 020252  000207                          RTS     PC
2574                                          .SBTTL  GETPAT  - GET 8 BIT PATTERN FROM OPERATOR
2575                                  ;+
2576                                  ;
2577                                  ;ROUTINE TO REQUEST AN 8 BIT DATA PATTERN FROM THE OPERATOR
2578                                  ;
2579                                  ;INPUTS:
2580                                  ;
2581                                  ;       NONE.
2582                                  ;
2583                                  ;OUTPUTS:
2584                                  ;
2585                                  ;       R0      OCTAL NUMBER FROM THE OPERATOR
2586                                  ;
2587                                  ;CALLING SEQUENCE:
```

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

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

                                        ;+
                                        ;LOCAL DATA AREA
                                        ;-

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

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

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

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

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

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

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

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

```
TSV4 - MISCELLANEOUS SECTIONS   MACRO M1113  06-FEB-84 18:04                 SEQ 083
KTINIT  - SETUP KT11 MEMORY MANAGEMENT REGISTERS

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

```
TSV4 - MISCELLANEOUS SECTIONS   MACRO M1113  06-FEB-84 18:04                 SEQ 084
PROTECTION TABLE

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

```
                        .SBTTL  INITIALIZE SECTION

                ;++
                ;THE INITIALIZE SECTION CONTAINS THE CODING THAT IS PERFORMED
                ;AT THE BEGINNING OF EACH PASS.
                ;
                ;IF "START" OR "RESTART", SET QUICK-PASS FLAG AND BUS-INIT.
                ;IF "CONTINUE", NOTHING IS REQUIRED.
                ;
                ;--
                ;+
                ;INSERT TEMPORARY JUMP TO ODT
                ;-
021636                  BGNINIT
021636                  L$INIT::
021636  005037  002220  40$:    CLR     EXTFEA
021642  005037  003130          CLR     NXMFLG
021646  012737  006354  002172  MOV     @EPRT1,EPRTSW           ;SET UP PRIMARY MESSAGE FOR REPLACEMENT
021654  005037  003146          CLR     SIFLAG                  ;CLEAR "SOFT INIT" FLAG
021660  005037  003126          CLR     KTENABLE                ;CLEAR TEST ABOVE 28K FLAG
021664  005037  002274          CLR     RAMSIZ                  ;CLEAR RAM SIZE FOR RAMERR ROUTINE
021670                          READEF  @EF.CONTINUE
021670  012700  000036          MOV     @EF.CONTINUE,R0
021674  104447                  TRAP    C$REFG
021676                          BNCOMPLETE 1$
021676  103023                  BCC     1$
021700  023737  002174  002012  CMP     UNITN,L$UNIT            ;UNIT IN RANGE?
021706  103070                  BHIS    4$                      ;BR IF NO.
021710  005737  003104          TST     DUFLG                   ;DROPPED UNIT?
021714  100472                  BMI     NXTU                    ;BR IF YES
021716  013701  002174          MOV     UNITN,R1
021722  006301                  ASL     R1
021724  005761  003170          TST     ERTABL(R1)
021730  001516                  BEQ     SETU
021732  032761  040000  003170  BIT     @BIT14,ERTABL(R1)       ;DROPPED?
021740  001060                  BNE     NXTU
021742                          EXIT    INIT                    ;DO NOTHING IF "CONTINUE".
021742  104432                  TRAP    C$EXIT
021744  000416                  .WORD   L10030-.
021746                  1$:     READEF  @EF.NEW
021746  012700  000035          MOV     @EF.NEW,R0
021752  104447                  TRAP    C$REFG
021754                          BNCOMPLETE NXTU                 ;TAKE NEXT UNIT IF NOT NEW PASS.
021754  103052                  BCC     NXTU
021756                          READEF  @EF.START
021756  012700  000040          MOV     @EF.START,R0
021762  104447                  TRAP    C$REFG
021764                          BCOMPLETE 2$
021764  103404                  BCS     2$
021766                          READEF  @EF.RESTART
021766  012700  000037          MOV     @EF.RESTART,R0
021772  104447                  TRAP    C$REFG
021774                          BNCOMPLETE 31$
021774  103031                  BCC     31$
021776                  2$:                                     ;1ST PASS, BUS-INIT...
021776                          BRESET                          ;BUS RESET.
021776  104433                  TRAP    C$RESET
```

```
022000  005037  002206                          CLR     TSTCNT              ;NUMBER OF TESTS RUN IN PASS
022004  005037  002214                          CLR     FATFLG              ;CLEAR FATAL ERROR COUNT
022010  005037  003136                          CLR     T23A                ;CLEAR 11/23A FLAG
022014  005037  003140                          CLR     T23B                ;CLEAR 11/23B FLAG
                                        ;       MOV     #340,-(SP)
                                        ;       MOV     #20$,-(SP)          ;RETURN TO DEBUGGER
                                        ;       JMP     0.ODT           ;;@@ENTER THE DEBUGGER
022020  005037  003372                          CLR     SKIPT           ;CLEAR THE SUBTEST "SKIPPER"
022024                                  20$:
022024  012737  177777  002176                  MOV     #-1,QVP             ;...QUICK VERIFY...
022032  004737  020710                          JSR     PC,ENVIRN           ;SET ENVIRONMENT.
022036  004737  021134                          JSR     PC,KTINIT           ;INITIALIZE KT MEMORY MANAGEMENT
022042  012700  003170                          MOV     #ERTABL,R0
022046  005020                          30$:    CLR     (R0)+               ;CLEAR THE ERROR TABLE
022050  020027  003370                          CMP     R0,#ERTABE
022054  103774                                  BLO     30$
022056  000404                                  BR      4$
022060  005037  002176                  31$:    CLR     QVP
022064  000137  022134                          JMP     PASRPT              ;GO REPORT THE STATUS

022070                                  4$:
022070  012737  177777  002174          NEWPAS: MOV     #-1,UNITN,          ;INIT UNIT NUMBER...
022076  005037  002212                          CLR     DEVCNT              ;CLEAR COUNT OF DEVICES RUNNING
022102                                  NXTU:   BREAK
022102  104422                                  TRAP    C$BRK
022104  005237  002174                          INC     UNITN               ;...AND SET NEXT UNIT NUMBER.
022110  023737  002174  002012                  CMP     UNITN,L$UNIT
022116  103423                                  BLO     SETU
022120  012737  177777  003104                  MOV     #-1,DUFLG
022126  000401                                  BR      11$
022130                                          DOCLN                       ;ABORT, NO MORE UNITS.
022130  104444                                  TRAP    C$DCLN
022132  000240                          11$:    NOP
022134                                  PASRPT:
022134  023727  002012  000001                  CMP     L$UNIT,#1           ;HOW MANY UNITS SELECTED?
022142  101752                                  BLOS    NEWPAS              ;BR IF ONLY 1
022144  005737  002212                          TST     DEVCNT              ;ARE ANY STILL RUNNING?
022150  001747                                  BEQ     NEWPAS              ;BR IF NO
022152                                          RFLAGS  R0
022152  104421                                  TRAP    C$RFLA
022154  032700  000100                          BIT     #ISR,R0             ;SHOULD WE PRINT STATISTICS
022160  001343                                  BNE     NEWPAS              ;BR IF NO

022162                                          DORPT
022162  104424                                  TRAP    C$DRPT
022164  000741                                  BR      NEWPAS
022166                                  10$:

022166                                  SETU:   GPHARD  UNITN,R0            ;GET UNIT N P-TABLE POINTER.
022166  013700  002174                          MOV     UNITN,R0
022172  104442                                  TRAP    C$GPHRD
022174                                          BNCOMPLETE NXTU             ;BR IF UNIT NOT AVAILABLE.
022174  103342                                  BCC     NXTU
022176  005037  003104                          CLR     DUFLG               ;CLEAR "DROPPED" FLAG.
022202  005237  002212                          INC     DEVCNT
022206  012001                                  MOV     (R0)+,R1            ;GET 1ST REGISTER ADDRESS.
022210  010137  002200                          MOV     R1,CSRADDR          ;ADDRESS OF REGISTERS OF UNIT UNDER TEST
```

INITIALIZE SECTION

```
                                                MOV     (R0)+,R1                ;GET VECTOR ADDRESS.
                                                ;MOV    (R0),R2                 ;GET INTERRUPT PRIORITY
                                                ;MOV    R2,IPRI                 ;SET INTERRUPT PRIORITY.
022216  010137  002202                          MOV     R1,IVEC                 ;SET INTERRUPT VECTOR POINTER...
022222  012721  016276                          MOV     #INTR,(R1)+             ;...VECTOR...
022226  013721  002204                          MOV     IPRI,(R1)+              ;...AND PRIORITY.

022232                                  1$:
                                        ;       TST     QVP             ;1ST PASS ??
                                        ;       BEQ     5$              ;NO, SKIP THE PASS 1 STUFF.

                                        ;
                                        ;1ST PASS, CHECK THAT DEVICE ADDRESSES ARE VALID, AND
                                        ;THAT THE DISPLAY STATUS IS PROPERLY INITIALIZED.
                                        ;
022232  013701  002174                          MOV     UNITN,R1
022236  006301                                  ASL     R1
022240  052761  100000  003170                  BIS     #BIT15,ERTABL(R1)       ;SAY DEVICE RUNNING
022246  005037  005766                          CLR     EXTA                    ;CLEAR ERROR EXTENSION FLAG.
022252  023727  002012  000001                  CMP     L$UNIT,#1               ;ARE WE TESTING MULTIPLE UNITS?
022260  101416                                  BLOS    10$                     ;BR IF NO.
022262                                          RFLAGS  R0                      ;YES -- GET OPERATOR FLAGS.
022262  104421                                  TRAP    C$RFLA
022264  032700  001000                          BIT     #PNT,R0                 ;SHOULD WE PRINT UNIT #?
022270  001412                                  BEQ     10$                     ;BR IF NOT.
022272                                          PRINTF  #PUNIT,UNITN            ;PRINT THE UNIT #
022272  013746  002174                          MOV     UNITN,-(SP)
022276  012746  022364                          MOV     #PUNIT,-(SP)
022302  012746  000002                          MOV     #2,-(SP)
022306  010600                                  MOV     SP,R0
022310  104417                                  TRAP    C$PNTF
022312  062706  000006                          ADD     #6,SP
022316                                  10$:
022316  005037  003106                          CLR     NODEV
022322  013701  002200                          MOV     CSRADDR,R1              ;ADDRESS OF FIRST REGISTER
022326  010102                                  MOV     R1,R2                   ;START OF REGISTERS
022330  062702  000002                          ADD     #TSSR,R2                ;ADDRESS OF TSSR REGISTER
022334  004737  016456                          JSR     PC,XNXM                 ;TEST BOTH CONTROLLER REGISTERS...
022340  103005                                  BCC     2$                      ;...AND BR IF ALL OK.
022342  010137  003106                          MOV     R1,NODEV                ;FLAG DEVICE AS NON-EXISTENT
022346  012737  177777  003104                  MOV     #-1,DUFLG               ;DROP THIS UNIT.
022354                                  2$:
                                        ;
                                        ;FINALLY, SET CPU PRIORITY AND WE'RE DONE.
                                        ;
022354                                  5$:     SETPRI  #PRI00          ;ENABLE INTERRUPTS.
022354  012700  000000                          MOV     #PRI00,R0
022360  104441                                  TRAP    C$SPRI
022362                                          ENDINIT
022362                                  L10030:
022362  104411                                  TRAP    C$INIT

022364      045     116     045         PUNIT:  .ASCIZ  /%N%N%A***** TESTING UNIT %D2%A *****/
                                                .EVEN
```

```
                                        .SBTTL  ADD AND DROP UNITS SECTIONS

                                ;++
                                ; THE ADD-UNIT SECTION CONTAINS THE CODING THAT CAUSES A DEVICE
                                ; TO BE (A) ADDED TO THE TEST LIST FOR THE FIRST TIME,
                                ;    OR (B) RE-INSERTED IF IT HAD BEEN PREVIOUSLY DROPPED.
                                ;--
022432                                  BGNAU
022432                          L$AU::
022432  010001                          MOV     R0,R1                   ; GET UNIT TO BE ADDED (R0)
022434  006301                          ASL     R1                      ; MAKE IT A WORD INDEX
022436  052761  100000  003170          BIS     #100000,ERTABL(R1)      ; SET THE "ACTIVE" BIT
022444  042761  040000  003170          BIC     #40000,ERTABL(R1)       ; CLEAR THE "DROPPED" BIT
022452                                  PRINTF  #1$,R0
022452  010046                          MOV     R0,-(SP)
022454  012746  022500                  MOV     #1$,-(SP)
022460  012746  000002                  MOV     #2,-(SP)
022464  010600                          MOV     SP,R0
022466  104417                          TRAP    C$PNTF
022470  062706  000006                  ADD     #6,SP
022474                                  EXIT    AU
022474  000167                          .WORD   J$JMP
022476  000026                          .WORD   L10031-2-.
022500     045     116     045  1$:     .ASCIZ  /%N%A  UNIT %D%A ADDED/
                                        .EVEN

                                        ENDAU           ; UNUSED.
022526                          L10031:
022526  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.

022530                                  BGNDU
022530                          L$DU::
022530  012737  177777  003104          MOV     #-1,DUFLG
022536  010001                          MOV     R0,R1
022540  006301                          ASL     R1
022542  052761  140000  003170          BIS     #140000,ERTABL(R1)      ; SAY DROPPED
022550  000240  000240  000240          240,240,240                     ; ?????????
022556                                  PRINTF  #1$,R0
022556  010046                          MOV     R0,-(SP)
022560  012746  022604                  MOV     #1$,-(SP)
022564  012746  000002                  MOV     #2,-(SP)
022570  010600                          MOV     SP,R0
022572  104417                          TRAP    C$PNTF
022574  062706  000006                  ADD     #6,SP
022600                                  EXIT    DU
022600  000167                          .WORD   J$JMP
022602  000030                          .WORD   L10032-2-.
```

```
    195 022604     045     116     045  1$:     .ASCIZ  /%N%A  UNIT %D%A DROPPED/
    196                                         .EVEN
    197 022634                                  ENDDU
        022634                          L10032:
        022634  104453                          TRAP    C$DU
    198                                 ;++
    199                                 ; AUTO-DROP CODE SECTION.
    200                                 ;--
    201 022636                                  BGNAUTO
        022636                          L$AUTO::
    202 022636  013705  002200                  MOV     CSRADDR,R5              ;POINT TO DEVICE REGISTER
    203 022642  012703  000550                  MOV     #360.,R3                ;ENOUGH TIME FOR 2400' REEL TO REWIND
    204 022646  004737  016330          10$:    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    205 022652  103420                          BCS     20$                     ;LEAVE WHEN SSR IS SET
    206 022654                                  DELAY   250.                    ;WAIT FOR .25 SECONDS
        022654  012727  000372                  MOV     #250.,(PC)+
        022660  000000                          .WORD   0
        022662  013727  002116                  MOV     L$DLY,(PC)+
        022666  000000                          .WORD   0
        022670  005367  177772                  DEC     -6(PC)
        022674  001375                          BNE     .-4
        022676  005367  177756                  DEC     -22(PC)
        022702  001367                          BNE     .-20
    207 022704  005303                          DEC     R3                      ;BUMP COUNTER DOWN
    208 022706  001357                          BNE     10$                     ;KEEP GOING
    209 022710  004737  017262                  JSR     PC,CKDROP               ;TRY AND DROP UNIT
    210 022714                          20$:
    211 022714                                  ENDAUTO                 ; UNUSED.
        022714                          L10033:
        022714  104461                          TRAP    C$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.
                ;--
022716                  BGNCLN
022716          L$CLEAN::
022716 013705 002200            MOV     CSRADDR,R5              ;POINT TO DEVICE REGISTER
022722 005737 003104            TST     DUFLG           ;"DROPPED" FLAG IS SET ON...
022726 100405                   BMI     1$              ;...AND GROSS CONTROLLER FAULT...
                                                        ;...DON'T TRY TO XCT CLEANUP CODE.

022730 012765 000000 000002     MOV     #0,TSSR(R5)     ;DO SOFT INIT
022736 004737 016330            JSR     PC,WAITF
022742          1$:
022742          2$:     ENDCLN
022742          L10034:
022742 104412                   TRAP    C$CLEAN
                ;++
                ; THE REPORT CODING SECTION CONTAINS THE
                ; "PRINTS" CALLS THAT GENERATE STATISTICAL REPORTS.
                ;--
022744                  BGNRPT
022744          L$RPT::
022744                  PRINTS  #DEVSUM
022744 012746 023206            MOV     #DEVSUM,-(SP)
022750 012746 000001            MOV     #1,-(SP)
022754 010600                   MOV     SP,R0
022756 104416                   TRAP    C$PNTS
022760 062706 000004            ADD     #4,SP
022764 010246                   MOV     R2,-(SP)
022766 010346                   MOV     R3,-(SP)
022770 010446                   MOV     R4,-(SP)
022772 012704 003170            MOV     #ERTABL,R4      ; GET START OF ERROR TABLE.
022776 005003                   CLR     R3              ; CLEAR UNIT NUMBER
023000 011402           1$:     MOV     (R4),R2         ; GET ERROR TABLE ENTRY & TEST IT.
023002 001467                   BEQ     4$              ; ZERO IF UNIT NOT RUN
023004 100066                   BPL     4$
023006 032702 040000            BIT     #BIT14,R2       ; WAS UNIT DROPPED?
023012 001015                   BNE     2$              ; BR IF YES
023014 042702 170000            BIC     #^C7777,R2      ; GET ERROR COUNT FIELD
023020                  PRINTS  #DEVONL,R3,R2   ; PRINT
023020 010246                   MOV     R2,-(SP)
023022 010346                   MOV     R3,-(SP)
023024 012746 023243            MOV     #DEVONL,-(SP)
023030 012746 000003            MOV     #3,-(SP)
023034 010600                   MOV     SP,R0
023036 104416                   TRAP    C$PNTS
023040 062706 000010            ADD     #10,SP
023044 000446                   BR      4$
023046 020227 160000    2$:     CMP     R2,#160000      ; WAS UNIT NON-EXISTENT?
023052 001012                   BNE     3$              ; BR IF NO
023054                  PRINTS  #DEVNXR,R3
023054 010346                   MOV     R3,-(SP)
023056 012746 023313            MOV     #DEVNXR,-(SP)
```

```
        023062  012746  000002                  MOV     #2,-(SP)
        023066  010600                          MOV     SP,R0
        023070  104416                          TRAP    C$PNTS
        023072  062706  000006                  ADD     #6,SP
252     023076  000431                          BR      4$
253     023100  020227  160001          3$:     CMP     R2,#160001      ; WAS UNIT NOT READY AT STARTUP?
254     023104  001012                          BNE     30$             ; BR IF NO.
255     023106                                  PRINTS  #DEVNRD,R3
        023106  010346                          MOV     R3,-(SP)
        023110  012746  023375                  MOV     #DEVNRD,-(SP)
        023114  012746  000002                  MOV     #2,-(SP)
        023120  010600                          MOV     SP,R0
        023122  104416                          TRAP    C$PNTS
        023124  062706  000006                  ADD     #6,SP
256     023130  000414                          BR      4$
257     023132  042702  170000          30$:    BIC     #^C7777,R2
258     023136                                  PRINTS  #DEVDRO,R3,R2
        023136  010246                          MOV     R2,-(SP)
        023140  010346                          MOV     R3,-(SP)
        023142  012746  023456                  MOV     #DEVDRO,-(SP)
        023146  012746  000003                  MOV     #3,-(SP)
        023152  010600                          MOV     SP,R0
        023154  104416                          TRAP    C$PNTS
        023156  062706  000010                  ADD     #10,SP
259     023162  062704  000002          4$:     ADD     #2,R4
260     023166  005203                          INC     R3
261     023170  020427  003370                  CMP     R4,#ERTABE
262     023174  103701                          BLO     1$
263     023176  012604                          MOV     (SP)+,R4
264     023200  012603                          MOV     (SP)+,R3
265     023202  012602                          MOV     (SP)+,R2
266     023204                                  ENDRPT          ; UNUSED.
        023204                          L10035:
        023204  104425                          TRAP    C$RPT
267
268     023206     045     116     045  DEVSUM: .ASCIZ  /%N%ADEVICE STATUS SUMMARY:%N/
269     023243     045     101     040  DEVONL: .ASCIZ  /%A  UNIT %D3%A    ONLINE,  ERRORS = %D%N/
270     023313     045     101     040  DEVNXR: .ASCIZ  /%A  UNIT %D3%A    DROPPED, NON-EXISTENT REGISTER%N/
271     023375     045     101     040  DEVNRD: .ASCIZ  /%A  UNIT %D3%A    DROPPED, NOT READY AT STARTUP%N/
272     023456     045     101     040  DEVDRO: .ASCIZ  /%A  UNIT %D3%A    DROPPED, ERRORS = %D%N/
273                                             .EVEN
274
275     023526                                  ENDMOD
276
```

```
TSV4 - MISCELLANEOUS SECTIONS   MACRO M1113  06-FEB-84 18:04                 SEQ 092
CLEAN-UP AND REPORT CODING SECTIONS

      1
      2                                         .TITLE  TEST 1 - HARDWARE TEST 1-8 TESTS
      3
     10
     11 023526                                  BGNMOD  TSV7B
        023526                          TSV7B::
     17
```

```
                                        .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
                                ;
                                ;
                                ;
                                ;-
023526                                  BGNTST
023526                                                                          T1::
023526  012737  006354  002172          MOV     @#PRT1,PRTSW            ;PRIMARY ERROR MESSAGE
023534  012700  032117                  MOV     @#TST29ID,R0            ;ASCII MESSAGE TO IDENTIFY TEST
023540  004737  016570                  JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
023544  012737  000005  002210          MOV     @#5,LOOPCNT             ;PERFORM 5 ITERATIONS
023552  005037  026474                  CLR     T29CNT                  ;CLEAR TAPE RECORD COUNTER
023556                          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.
                                ;
                                ;
                                ;
                                ;-
023556                                  BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
023556                                                                          T1.1:
023556  104402                                                                  TRAP    C$BSUB
023560  004737  032146                  JSR     PC,T29REST              ;SET COMMAND PACKET
023564  004737  032240                  JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
023570  004737  032302                  JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
023574  012737  023420  026500          MOV     #10000.,T29DLY          ;SET UP DELAY ROUTINE
023602  004737  016054          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
023606  103426                  BCS     20$                             ;BR IF INIT WAS OK
023610                          DELAY   250                             ;DELAY ABOUT .25 SECONDS
023610  012727  000250                                                          MOV     #250.,(PC)+
023614  000000                                                                  .WORD   0
023616  013727  002116                                                          MOV     L$DLY,(PC)+
023622  000000                                                                  .WORD   0
023624  005367  177772                                                          DEC     -6(PC)
023630  001375                                                                  BNE     .-4
023632  005367  177756                                                          DEC     -22(PC)
023636  001367                                                                  BNE     .-20
023640  005337  026500                  DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
023644  001356                  BNE     10$                             ;BR, IF MORE DELAY TIME LEFT
023646  005237  002214                  INC     FATFLG                          ;ERROR COUNT
023652  010001                  MOV     R0,R1                           ;CONTENTS OF TSSR REGISTER
023654                          ERRDF   ERRNO,SFIERR,SFIMSG             ;FATAL ERROR TSSR WAS NOT OK
023654  104455                                                                  TRAP    C$ERDF
023656  000145                                                                  .WORD   101
023660  003646                                                                  .WORD   SFIERR
```

```
                023662  012114                                                          .WORD   SFIMSG
     76         023664  013737  002174  026340  20$:    MOV     UNITN,T29DSW           ;SET UP UNIT NUMBER
     77
     78         023672  012704  026320                   MOV     #T29PACKET,R4          ;SUBROUTINE NEEDS PACKET ADDRESS
     79         023676  004737  010742                   JSR     PC,WRTCHR              ;ISSUE WRITE CHARACTERISTICS
     80         023702  103407                           BCS     25$                    ;BR. IF COMMAND ISSUED OK
     81         023704  005237  002214                   INC     FATFLG                         ;ERROR COUNT
     85         023710  010001                           MOV     R0,R1                  ;SAVE CONTENTS OF TSSR
     86         023712                                   ERRHRD  ERRNO,WRTMSG,SFIMSG    ;WRITE CHARACTERISTISC FAILED
                023712  104456                                                          TRAP    C$ERHRD
                023714  000146                                                          .WORD   102
                023716  005052                                                          .WORD   WRTMSG
                023720  012114                                                          .WORD   SFIMSG
     87         023722                   25$:    CKLOOP                                 ;LOOP IF SELECTED
                023722  104406                                                          TRAP    C$CLP1
     88         023724  016501  000002                   MOV     TSSR(R5),R1            ;GET THE TSSR
     89         023730  010102                           MOV     R1,R2                  ;SET UP EXPECTED
     90         023732  042702  000100                   BIC     #OFL,R2                ;OFF LINE SHOULD NOT BE SET
     91         023736  020102                           CMP     R1,R2                  ;THEY SHOULD BE EQUAL
     92         023740  001406                           BEQ     26$                    ;BR. IF OFL IS NOT SET
     96         023742                                   ERRDF   ERRNO,T290FL,EXPREC    ;DRIVE IS OFF LINE
                023742  104455                                                          TRAP    C$ERDF
                023744  000147                                                          .WORD   103
                023746  026502                                                          .WORD   T290FL
                023750  015554                                                          .WORD   EXPREC
     97         023752  004737  017262                   JSR     PC,CKDROP              ;TRY AND DROP DRIVE
     98         023756  004737  011074           26$:    JSR     PC,REWIND              ;CALL TAPE REWIND COMMAND
     99         023762  016501  000002                   MOV     TSSR(R5),R1            ;GET TSSR
    100         023766  012702  000200                   MOV     #SSR,R2                ;SET UP EXPECTED TSSR
    101         023772  103407                           BCS     30$                    ;BR. IF NO PROBLEM
    102         023774  010004                           MOV     R0,R4                  ;PACKET ADDRESS SET UP
    103         023776  005237  002214                   INC     FATFLG                         ;ERROR COUNT
    107         024002                                   ERRHRD  ERRNO,T29RWN,PKTSSR    ;REWIND NOT ACCEPTED
                024002  104456                                                          TRAP    C$ERHRD
                024004  000150                                                          .WORD   104
                024006  030305                                                          .WORD   T29RWN
                024010  012126                                                          .WORD   PKTSSR
    108         024012                   30$:    CKLOOP                                 ;LOOP IF SELECTED
                024012  104406                                                          TRAP    C$CLP1
    109         024014  013701  026350                   MOV     T29BFR+6,R1            ;PICK UP XSTO
    110         024020  010102                           MOV     R1,R2                  ;SET UP EXPECTED
    111         024022  052702  000002                   BIS     #BIT1,R2               ;SET BOT BIT IN EXPECTED
    112         024026  020102                           CMP     R1,R2                  ;DOES EXP = REC'D
    113         024030  001406                           BEQ     40$                    ;BR. IF EQUAL (OK)
    114         024032  005237  002214                   INC     FATFLG                         ;ERROR COUNT
    118         024036                                   ERRHRD  ERRNO,T29BOT,EXPREC    ;TAPE NOT AT BOT AFTER REWIND
                024036  104456                                                          TRAP    C$ERHRD
                024040  000151                                                          .WORD   105
                024042  027776                                                          .WORD   T29BOT
                024044  015554                                                          .WORD   EXPREC
    119         024046                   40$:    CKLOOP                                 ;LOOP IF SELECTED
                024046  104406                                                          TRAP    C$CLP1
    120         024050  013737  003116  026442           MOV     FREE,T29RB             ;ADDRESS OF READ BUFFER
    121         024056  012737  141011  026440           MOV     #141011,T29PK3         ;WRITE TAPE MARK RETRY,CVC=1,ACK COMMAND
    122         024064  012704  026440                   MOV     #T29PK3,R4             ;SET UP R4 WITH PACKET ADDRESS
    123         024070  010465  000000                   MOV     R4,TSDB(R5)            ;ISSUE COMMAND
    124         024074  004737  016330                   JSR     PC,WAITF               ;WAIT FOR SSR TO SET
```

```
    125 024100  016501  000002              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
    126 024104  012702  100206              MOV     #SSR!SC!BIT1!BIT2,R2    ;SET UP EXPECTED
    127 024110  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
    128 024112  001406                      BEQ     75$                     ;BR, IF OK
    129 024114  005237  002214                      INC     FATFLG                  ;ERROR COUNT
    133 024120                              ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
        024120  104456                                                              TRAP    C$ERHRD
        024122  000152                                                              .WORD   106
        024124  027562                                                              .WORD   T29WDE
        024126  012126                                                              .WORD   PKTSSR
    134 024130                      75$:    CKLOOP                          ;LOOP IF SELECTED
        024130  104406                                                              TRAP    C$CLP1
    135 024132  013701  026350              MOV     T29BFR+6,R1             ;GET XSTO STATUS WORD
    136 024136  010102                      MOV     R1,R2                   ;SET UP EXPECTED
    137 024140  052702  002000              BIS     #BIT10,R2               ;SET THE NEF BIT
    138 024144  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
    139 024146  001406                      BEQ     170$                    ;BR, IF EQUAL (GOOD)
    140 024150  005237  002214                      INC     FATFLG                  ;ERROR COUNT
    144 024154                              ERRHRD  ERRNO,T29NEF,EXPREC     ;NEF SHOULD BE SET
        024154  104456                                                              TRAP    C$ERHRD
        024156  000153                                                              .WORD   107
        024160  026630                                                              .WORD   T29NEF
        024162  015554                                                              .WORD   EXPREC
    145 024164                      170$:
    146 024164  005103                      COM     R3                      ;RESET THE SWITCH
    147 024166  001273                      BNE     26$                     ;BR, IF FIRST TIME THROUGH HERE
    148 024170                              ENDSUB
        024170                                                                      L10037:
        024170  104403                                                              TRAP    C$ESUB
    149 024172  023727  002214  000017              CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
    150 024200  103402                      BLO     999$                    ;BR, IF LESS THAN 25
    151 024202  004737  017262              JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
    152 024206                      999$:
    153                             ;*
    154                             ;
    155                             ;TEST 1, SUBTEST 2
    156                             ;
    157                             ;VERIFIES THAT A WRITE TAPE MARK RETRY COMMAND ISSUED WHILE THE TAPE
    158                             ;IS POSITIONED BEFORE THE FIRST RECORD ON TAPE (BUT NOT AT BOT) RESULTS IN
    159                             ;TAPE STATUS ALERT TERMINATION, WITH THE REVERSE INTO BOT (RIB) STATUS BIT
    160                             ;SET.
    161                             ;
    162                             ;
    163                             ;
    164                             ;-
    165 024206                              BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
        024206                                                                      T1.2:
        024206  104402                                                              TRAP    C$BSUB
    166 024210  004737  032146              JSR     PC,T29REST              ;SET COMMAND PACKET
    167 024214  004737  032240              JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
    168 024220  004737  032302              JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
    169 024224  004737  016054              JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
    170 024230  103407                      BCS     20$                     ;BR IF INIT WAS OK
    171 024232  005237  002214                      INC     FATFLG                  ;ERROR COUNT
    175 024236  010001                      MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
    176 024240                              ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
        024240  104455                                                              TRAP    C$ERDF
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 096
TEST  1: WRITE TAPE MARK RETRY

     024242  000154                                                              .WORD   108
     024244  003646                                                              .WORD   SFIERR
     024246  012114                                                              .WORD   SFIMSG
177  024250  013737  002174  026340  20$:    MOV     UNITN,T29DSW        ;SET UP UNIT NUMBER
178
179  024256  012704  026320                  MOV     #T29PACKET,R4       ;SUBROUTINE NEEDS PACKET ADDRESS
180  024262  004737  010742                  JSR     PC,WRTCHR           ;ISSUE WRITE CHARACTERISTICS
181  024266  103407                          BCS     25$                 ;BR, IF COMMAND ISSUED OK
182  024270  005237  002214                  INC     FATFLG                      ;ERROR COUNT
186  024274  010001                          MOV     R0,R1               ;SAVE CONTENTS OF TSSR
187  024276                                  ERRHRD  ERRNO,WRTMSG,SFIMSG ;WRITE CHARACTERISTISC FAILED
     024276  104456                                                              TRAP    C$ERHRD
     024300  000155                                                              .WORD   109
     024302  005052                                                              .WORD   WRTMSG
     024304  012114                                                              .WORD   SFIMSG
188  024306                          25$:    CKLOOP                      ;LOOP IF SELECTED
     024306  104406                                                              TRAP    C$CLP1
189  024310  004737  011074          26$:    JSR     PC,REWIND           ;CALL TAPE REWIND COMMAND
190  024314  016501  000002                  MOV     TSSR(R5),R1         ;GET TSSR
191  024320  012702  000200                  MOV     #SSR,R2             ;SET UP EXPECTED TSSR
192  024324  103407                          BCS     30$                 ;BR, IF NO PROBLEM
193  024326  010004                          MOV     R0,R4               ;PACKET ADDRESS SET UP
194  024330  005237  002214                  INC     FATFLG                      ;ERROR COUNT
198  024334                                  ERRHRD  ERRNO,T29RWN,PKTSSR ;REWIND NOT ACCEPTED
     024334  104456                                                              TRAP    C$ERHRD
     024336  000156                                                              .WORD   110
     024340  030305                                                              .WORD   T29RWN
     024342  012126                                                              .WORD   PKTSSR
199  024344                          30$:    CKLOOP                      ;LOOP IF SELECTED
     024344  104406                                                              TRAP    C$CLP1
200  024346  013701  026350                  MOV     T29BFR+6,R1         ;PICK UP XSTO
201  024352  010102                          MOV     R1,R2               ;SET UP EXPECTED
202  024354  052702  000002                  BIS     #BIT1,R2            ;SET BOT BIT IN EXPECTED
203  024360  020102                          CMP     R1,R2               ;DOES EXP = REC'D
204  024362  001406                          BEQ     40$                 ;BR, IF EQUAL (OK)
205  024364  005237  002214                  INC     FATFLG                      ;ERROR COUNT
209  024370                                  ERRHRD  ERRNO,T29BOT,EXPREC ;TAPE NOT AT BOT AFTER REWIND
     024370  104456                                                              TRAP    C$ERHRD
     024372  000157                                                              .WORD   111
     024374  027776                                                              .WORD   T29BOT
     024376  015554                                                              .WORD   EXPREC
210  024400  012737  000001  026442  40$:    MOV     #1,T29RB            ;NUMBER OF RECORDS TO SPACE OVER
211  024406  012737  000400  026446          MOV     #256.,T29SZ         ;SET UP RECORD SIZE
212  024414  012737  140005  026440          MOV     #140005,T29PK3      ;WRITE FORWARD,CVC=1,ACK COMMAND
213  024422  012704  026440                  MOV     #T29PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
214  024426  010465  000000                  MOV     R4,TSDB(R5)         ;ISSUE COMMAND
215  024432  004737  016330                  JSR     PC,WAITF            ;WAIT FOR SSR TO SET
216  024436  016501  000002                  MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
217  024442  012702  000200                  MOV     #SSR,R2             ;SET UP EXPECTED
218  024446  020102                          CMP     R1,R2               ;ARE THEY EQUAL
219  024450  001420                          BEQ     75$                 ;BR, IF OK
220  024452  013703  026350                  MOV     T29BFR+6,R3         ;PICK UP XTSO
221  024456  032703  000004                  BIT     #4,R3               ;IS UNIT WRITE-LOCKED?
222  024462  001405                          BEQ     41$                 ;NO,PROCEED WITH NORMAL ERROR
223  024464                                  ERRDF   ERRNO,T29WLK,SFIMSG ;TAPE IS WRITE LOCKED
     024464  104455                                                              TRAP    C$ERDF
     024466  000157                                                              .WORD   111
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 097
TEST  1: WRITE TAPE MARK RETRY

        024470  027644                                                          .WORD   T29WLK
        024472  012114                                                          .WORD   SFIMSG
    224 024474                          DOCLN                           ;DROP IT
        024474  104444                                                          TRAP    C$DCLN
    225 024476  005237  002214      41$:    INC     FATFLG                          ;ERROR COUNT
    229 024502                          ERRHRD  ERRNO,T29WRT,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        024502  104456                                                          TRAP    C$ERHRD
        024504  000160                                                          .WORD   112
        024506  027731                                                          .WORD   T29WRT
        024510  012126                                                          .WORD   PKTSSR
    230 024512                      75$:    CKLOOP                          ;LOOP IF SELECTED
        024512  104406                                                          TRAP    C$CLP1
    231 024514  012737  000001  026442      MOV     #1,T29RB                ;NUMBER OF RECORDS TO SPACE OVER
    232 024522  012737  140410  026440      MOV     #140410,T29PK3          ;SET UP COMMAND IN APCKET                       ;SET
UP SPACE REVERSE
    233 024530  012704  026440              MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
    234 024534  010465  000000              MOV     R4,TSDB(R5)             ;ISSUE COMMAND
    235 024540  004737  016330              JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    236 024544  016501  000002              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
    237 024550  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED
    238 024554  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
    239 024556  001406                      BEQ     175$                    ;BR, IF OK
    240 024560  005237  002214              INC     FATFLG                          ;ERROR COUNT
    244 024564                              ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
        024564  104456                                                          TRAP    C$ERHRD
        024566  000161                                                          .WORD   113
        024570  027562                                                          .WORD   T29WDE
        024572  012126                                                          .WORD   PKTSSR
    245 024574                      175$:   CKLOOP                          ;LOOP IF SELECTED
        024574  104406                                                          TRAP    C$CLP1
    246 024576  013737  003116  026442      MOV     FREE,T29RB              ;ADDRESS OF BUFFER
    247 024604  012737  141011  026440      MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMD.
    248 024612  012704  026440              MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
    249 024616  010465  000000              MOV     R4,TSDB(R5)             ;ISSUE COMMAND
    250 024622  004737  016330              JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    251 024626  016501  000002              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
    252 024632  012702  100204              MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
    253 024636  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
    254 024640  001406                      BEQ     180$                    ;BR, IF OK
    255 024642  005237  002214              INC     FATFLG                          ;ERROR COUNT
    259 024646                              ERRHRD  ERRNO,T29WDE,PKTSSP     ;TSSR INCORRECT AFTER READ DATA
        024646  104456                                                          TRAP    C$ERHRD
        024650  000162                                                          .WORD   114
        024652  027562                                                          .WORD   T29WDE
        024654  012126                                                          .WORD   PKTSSR
    260 024656                      180$:   CKLOOP                          ;LOOP IF SELECTED
        024656  104406                                                          TRAP    C$CLP1
    261 024660  013701  026356              MOV     T29BFR+14,R1            ;GET XST3 STATUS WORD
    262 024664  010102                      MOV     R1,R2                   ;SET UP EXPECTED
    263 024666  052702  000001              BIS     #BIT0,R2                ;SET THE RIB BIT
    264 024672  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
    265 024674  001406                      BEQ     190$                    ;BR, IF EQUAL (GOOD)
    266 024676  005237  002214              INC     FATFLG                          ;ERROR COUNT
    270 024702                              ERRHRD  ERRNO,T29RIB,EXPREC     ;NEF SHOULD BE SET
        024702  104456                                                          TRAP    C$ERHRD
        024704  000163                                                          .WORD   115
        024706  031724                                                          .WORD   T29RIB
        024710  015554                                                          .WORD   EXPREC
```

```
                                190$:
                                        ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
                                                                                        L10040:
024712                                                                                          TRAP    C$ESUB
024712  104403
024714  023727  002214  000017        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
024722  103402                        BLO     999$                            ;BR, IF LESS THAN 25
024724  004737  017262                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
024730                          999$:
                                ;*
                                ;
                                ;TEST 1, SUBTEST 3
                                ;
                                ;VERIFIES THAT A WRITE TAPE MARK RETRY COMMAND TERMINATES
                                ;PROPERLY AND WRITES THE TAPE MARK ONTO TAPE (BY ISSUING A READ REVERSE
                                ;COMMAND AND CHECKING FOR TAPE STATUS ALERT TERMINATION AND TMK=1).
                                ;
                                ;-
                                        BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
024730                                                                                          T1.3:
024730  104402                                                                          TRAP    C$BSUB
024732  004737  032146                JSR     PC,T29REST              ;SET COMMAND PACKET
024736  004737  032240                JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
024742  004737  032302                JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
024746  012737  023420  026500        MOV     #10000.,T29DLY          ;SET UP DELAY ROUTINE
024754  004737  016054          10$:  JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
024760  103426                        BCS     20$                     ;BR IF INIT WAS OK
024762                                DELAY   250                     ;DELAY ABOUT .25 SECONDS
024762  012727  000250                                                                  MOV     #250.,(PC)+
024766  000000                                                                          .WORD   0
024770  013727  002116                                                                  MOV     L$DLY,(PC)+
024774  000000                                                                          .WORD   0
024776  005367  177772                                                                  DEC     -6(PC)
025002  001375                                                                          BNE     .-4
025004  005367  177756                                                                  DEC     -22(PC)
025010  001367                                                                          BNE     .-20
025012  005337  026500                DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
025016  001356                        BNE     10$                     ;BR, IF MORE DELAY TIME LEFT
025020  005237  002214                INC     FATFLG                          ;ERROR COUNT
025024  010001                        MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
025026                                ERRDF   ERRNO.SFIERR.SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
025026  104455                                                                  TRAP    C$ERDF
025030  000164                                                                  .WORD   116
025032  003646                                                                  .WORD   SFIERR
025034  012114                                                                  .WORD   SFIMSG
025036  013737  002174  026340  20$:   MOV     UNITN,T29DSW            ;SET UP DRIVE NUMBER
025044  012704  026320                MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
025050  004737  010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
025054  103407                        BCS     23$                     ;BR, IF COMMAND ISSUED OK
025056  005237  002214                INC     FATFLG                          ;ERROR COUNT
025062  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
025064                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
025064  104456                                                                  TRAP    C$ERHRD
025066  000165                                                                  .WORD   117
025070  005052                                                                  .WORD   WRTMSG
025072  012114                                                                  .WORD   SFIMSG
025074                          23$:  CKLOOP                          ;LOOP IF SELECTED
025074  104406                                                                  TRAP    C$CLP1
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 099
TEST  1: WRITE TAPE MARK RETRY

    313 025076  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
    314 025102  103411                          BCS     30$                     ;BR, IF NO PROBLEM
    315 025104  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR
    316 025110  010004                          MOV     R0,R4                   ;SAVE PACKET ADDRESS
    317 025112  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    321 025116                                  ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
        025116  104456                                                              TRAP    C$ERHRD
        025120  000166                                                              .WORD   118
        025122  030305                                                              .WORD   T29RWN
        025124  012126                                                              .WORD   PKTSSR
    322 025126                          30$:    CKLOOP                          ;LOOP IF SELECTED
        025126  104406                                                              TRAP    C$CLP1
    323 025130  013701  026350                  MOV     T29BFR+6,R1             ;PICK UP XSTO
    324 025134  010102                          MOV     R1,R2                   ;SET UP EXPECTED
    325 025136  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
    326 025142  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
    327 025144  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
    328 025146  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    332 025152                                  ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        025152  104456                                                              TRAP    C$ERHRD
        025154  000167                                                              .WORD   119
        025156  027776                                                              .WORD   T29BOT
        025160  015554                                                              .WORD   EXPREC
    333 025162                          40$:    CKLOOP                          ;LOOP IF SELECTED
        025162  104406                                                              TRAP    C$CLP1
    334 025164  012737  140011  026440          MOV     #140011,T29PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
    335 025172  012704  026440                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
    336 025176  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
    337 025202  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    338 025206  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
    339 025212  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
    340 025216  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
    341 025220  001406                          BEQ     70$                     ;BR, IF OK
    342 025222  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    346 025226                                  ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE TAPE MARK
        025226  104456                                                              TRAP    C$ERHRD
        025230  000170                                                              .WORD   120
        025232  030677                                                              .WORD   T29WDC
        025234  012126                                                              .WORD   PKTSSR
    347 025236                          70$:    CKLOOP                          ;LOOP IF SELECTED
        025236  104406                                                              TRAP    C$CLP1
    348 025240  012703  000001          150$:   MOV     #1.,R3                  ;NUMBER OF RECORDS TO WRITE TM
    349 025244  012737  141011  026440          MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMMAND
    350 025252  012704  026440                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
    351 025256  010465  000000          155$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
    352 025262  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    353 025266  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
    354 025272  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
    355 025276  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
    356 025300  001406                          BEQ     165$                    ;BR, IF TERMINATION WAS GOOD
    357 025302  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    361 025306                                  ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
        025306  104456                                                              TRAP    C$ERHRD
        025310  000171                                                              .WORD   121
        025312  030677                                                              .WORD   T29WDC
        025314  012126                                                              .WORD   PKTSSR
    362 025316                          165$:   CKLOOP                          ;LOOP IF SELECTED
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 100
TEST  1: WRITE TAPE MARK RETRY

     025316  104406                                                                  TRAP    C$CLP1
363  025320  012737  140401  026440          MOV     #140401,T29PK3      ;READ REVERSE,ACK, COMMAND
364  025326  013737  003116  026442          MOV     FREE,T29RB          ;NUMBER OF RECORDS TO SPACE BACK
365  025334  012704  026440                  MOV     #T29PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
366  025340  010465  000000                  MOV     R4,TSDB(R5)         ;ISSUE COMMAND
367  025344  004737  016330                  JSR     PC,WAITF            ;WAIT FOR SSR TO SET
368  025350  016501  000002                  MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
369  025354  012702  100204                  MOV     #SSR!SC!BIT2,R2     ;SET UP EXPECTED
370  025360  020102                          CMP     R1,R2               ;ARE THEY EQUAL
371  025362  001406                          BEQ     222$                ;BR, IF OK
372  025364  005237  002214                  INC     FATFLG                      ;ERROR COUNT
376  025370                                  ERRHRD  ERRNO,T29RDG,PKTSSR ;TSSR INCORRECT AFTER SPACE CMD.
     025370  104456                                                                 TRAP    C$ERHRD
     025372  000172                                                                 .WORD   122
     025374  031643                                                                 .WORD   T29RDG
     025376  012126                                                                 .WORD   PKTSSR
377  025400                          222$:   CKLOOP                      ;LOOP IF SELECTED
     025400  104406                                                                 TRAP    C$CLP1
378  025402  013701  026350                  MOV     T29BFR+6,R1         ;PICK UP XSTO
379  025406  010102                          MOV     R1,R2               ;SET UP EXPECTED
380  025410  052702  100000                  BIS     #BIT15,R2           ;TMK SHOULD BE SET
381  025414  020102                          CMP     R1,R2               ;IS TMK SET
382  025416  001406                          BEQ     226$                ;BR, IF TMK WAS SET (GOOD)
383  025420  005237  002214                  INC     FATFLG                      ;ERROR COUNT
387  025424                                  ERRHRD  ERRNO,T29RRN,EXPREC ;TMK NOT SET AFTER READ REV
     025424  104456                                                                 TRAP    C$ERHRD
     025426  000173                                                                 .WORD   123
     025430  032024                                                                 .WORD   T29RRN
     025432  015554                                                                 .WORD   EXPREC
388  025434                          226$:   CKLOOP                      ;LOOP IF SELECTED
     025434  104406                                                                 TRAP    C$CLP1
389  025436                                  ENDSUB                      ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     025436                                                                      L10041:
     025436  104403                                                                 TRAP    C$ESUB
390  025440  023727  002214  000017            CMP     FATFLG,#15.                 ;IS ERROR COUNT AT 25
391  025446  103402                          BLO     999$                        ;BR, IF LESS THAN 25
392  025450  004737  017262                  JSR     PC,CKDROP                   ;TRY TO DROP THE UNIT
393  025454                          999$:
394                                  ;*
395                                  ;
396                                  ;TEST 1, SUBTEST 4
397                                  ;
398                                  ;VERIFIES THAT THE SPACE-REVERSE PORTION OF THE WRITE TAPE MARK
399                                  ;RETRY OPERATION IS PERFORMED BY REWINDING THE TAPE, ISSUING SEVERAL
400                                  ;WRITE TAPE MARK RETRY COMMANDS IN SUCCESSION, THEN ISSUING TWO SPACE
401                                  ;RECORDS REVERSE COMMANDS IN SUCCESSION.  THE SECOND SPACE RECORDS REVERSE
402                                  ;COMMAND SHOULD TERMINATE WITH REVERSE INTO BOT (RIB) STATUS SET.
403                                  ;
404                                  ;-
405  025454                                  BGNSUB                      ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     025454                                                                      T1.4:
     025454  104402                                                                 TRAP    C$BSUB
406  025456  004737  032146                  JSR     PC,T29REST          ;SET COMMAND PACKET
407  025462  004737  032240                  JSR     PC,T29RT2           ;SET UP OTHER COMMAND PACKET
408  025466  004737  032302                  JSR     PC,T29RT3           ;SET UP OTHER COMMAND PACKET
409  025472  012737  02342v  026500          MOV     #10000.,T29DLY      ;SET UP DELAY ROUTINE
410  025500  004737  016054          10$:    JSR     PC,SOFINIT          ;DO INITIALIZE ON CONTROLLER
```

```
    411 025504  103426                      BCS     20$                 ;BR IF INIT WAS OK
    412 025506                               DELAY   250                 ;DELAY ABOUT .25 SECONDS
        025506  012727  000250                                                MOV     #250,(PC)+
        025512  000000                                                       .WORD   0
        025514  013727  002116                                               MOV     L$DLY,(PC)+
        025520  000000                                                       .WORD   0
        025522  005367  177772                                               DEC     -6(PC)
        025526  001375                                                       BNE     .-4
        025530  005367  177756                                               DEC     -22(PC)
        025534  001367                                                       BNE     .-20
    413 025536  005337  026500               DEC     T29DLY              ;BUMP DELAY ROUTINE DOWN
    414 025542  001356                      BNE     10$                 ;BR, IF MORE DELAY TIME LEFT
    415 025544  005237  002214               INC     FATFLG                      ;ERROR COUNT
    419 025550  010001                       MOV     R0,R1               ;CONTENTS OF TSSR REGISTER
    420 025552                               ERRDF   ERRNO,SFIERR,SFIMSG ;FATAL ERROR TSSR WAS NOT OK
        025552  104455                                                      TRAP    C$ERDF
        025554  000174                                                      .WORD   124
        025556  003646                                                      .WORD   SFIERR
        025560  012114                                                      .WORD   SFIMSG
    421 025562  013737  002174  026340  20$:  MOV     UNITN,T29DSW        ;SET UP DRIVE NUMBER
    422 025570  012704  026320               MOV     #T29PACKET,R4       ;SUBROUTINE NEEDS PACKET ADDRESS
    423 025574  004737  010742               JSR     PC,WRTCHR           ;ISSUE WRITE CHARACTERISTICS
    424 025600  103407                       BCS     23$                 ;BR, IF COMMAND ISSUED OK
    425 025602  005237  002214               INC     FATFLG                      ;ERROR COUNT
    429 025606  010001                       MOV     R0,R1               ;SAVE CONTENTS OF TSSR
    430 025610                               ERRHRD  ERRNO,WRTMSG,SFIMSG ;WRITE CHARACTERISTISC FAILED
        025610  104456                                                      TRAP    C$ERHRD
        025612  000175                                                      .WORD   125
        025614  005052                                                      .WORD   WRTMSG
        025616  012114                                                      .WORD   SFIMSG
    431 025620                       23$:    CKLOOP                      ;LOOP IF SELECTED
        025620  104406                                                      TRAP    C$CLP1
    432 025622  004737  011074               JSR     PC,REWIND           ;CALL TAPE REWIND COMMAND
    433 025626  103411                       BCS     30$                 ;BR, IF NO PROBLEM
    434 025630  016501  000002               MOV     TSSR(R5),R1         ;GET TSSR
    435 025634  010004                       MOV     R0,R4               ;SAVE PACKET ADDRESS
    436 025636  005237  002214               INC     FATFLG                      ;ERROR COUNT
    440 025642                               ERRHRD  ERRNO,T29RWN,PKTSSR ;REWIND NOT ACCEPTED
        025642  104456                                                      TRAP    C$ERHRD
        025644  000176                                                      .WORD   126
        025646  030305                                                      .WORD   T29RWN
        025650  012126                                                      .WORD   PKTSSR
    441 025652                       30$:    CKLOOP                      ;LOOP IF SELECTED
        025652  104406                                                      TRAP    C$CLP1
    442 025654  013701  026350               MOV     T29BFR+6,R1         ;PICK UP XSTO
    443 025660  010102                       MOV     R1,R2               ;SET UP EXPECTED
    444 025662  052702  000002               BIS     #BIT1,R2            ;SET BOT BIT IN EXPECTED
    445 025666  020102                       CMP     R1,R2               ;DOES EXP = REC'D
    446 025670  001406                       BEQ     40$                 ;BR, IF EQUAL (OK)
    447 025672  005237  002214               INC     FATFLG                      ;ERROR COUNT
    451 025676                               ERRHRD  ERRNO,T29BOT,EXPREC ;TAPE NOT AT BOT AFTER REWIND
        025676  104456                                                      TRAP    C$ERHRD
        025700  000177                                                      .WORD   127
        025702  027776                                                      .WORD   T29BOT
        025704  015554                                                      .WORD   EXPREC
    452 025706                       40$:    CKLOOP                      ;LOOP IF SELECTED
        025706  104406                                                      TRAP    C$CLP1
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 102
TEST  1: WRITE TAPE MARK RETRY

    453 025710  012737  140011  026440          MOV     #140011,T29PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
    454 025716  012704  026440                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
    455 025722  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
    456 025726  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    457 025732  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
    458 025736  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
    459 025742  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
    460 025744  001406                          BEQ     70$                     ;BR, IF OK
    461 025746  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    465 025752                                  ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE TAPE MARK
        025752  104456                                                                     TRAP    C$ERHRD
        025754  000200                                                                     .WORD   128
        025756  030677                                                                     .WORD   T29WDC
        025760  012126                                                                     .WORD   PKTSSR
    466 025762                          70$:    CKLOOP                          ;LOOP IF SELECTED
        025762  104406                                                                     TRAP    C$CLP1
    467 025764  012703  000012          150$:   MOV     #10.,R3                 ;NUMBER OF RECORDS TO WRITE TM
    468 025770  012737  000001  026442          MOV     #1,T29RB                ;SET UP PACKET
    469 025776  012737  141011  026440          MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMMAND
    470 026004  012704  026440                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
    471 026010  010465  000000          155$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
    472 026014  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    473 026020  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
    474 026024  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
    475 026030  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
    476 026032  001406                          BEQ     165$                    ;BR, IF TERMINATION WAS GOOD
    477 026034  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    481 026040                                  ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
        026040  104456                                                                     TRAP    C$ERHRD
        026042  000201                                                                     .WORD   129
        026044  030677                                                                     .WORD   T29WDC
        026046  012126                                                                     .WORD   PKTSSR
    482 026050                          165$:   CKLOOP                          ;LOOP IF SELECTED
        026050  104406                                                                     TRAP    C$CLP1
    483 026052  005303                          DEC     R3                      ;BUMP COUNTER DOWN
    484 026054  001355                          BNE     155$                    ;BR, IF LESS THAN 10 TAPE MARKS
    485 026056  012737  140410  026440          MOV     #140410,T29PK3          ;SPACE REVERSE,ACK,CVC=1, COMMAND
    486 026064  012737  000001  026442          MOV     #1,T29RB                ;NUMBER OF RECORDS TO SPACE BACK
    487 026072  012704  026440                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
    488 026076  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
    489 026102  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    490 026106  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
    491 026112  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
    492 026116  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
    493 026120  001406                          BEQ     222$                    ;BR, IF OK
    494 026122  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    498 026126                                  ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER SPACE CMD.
        026126  104456                                                                     TRAP    C$ERHRD
        026130  000202                                                                     .WORD   130
        026132  027562                                                                     .WORD   T29WDE
        026134  012126                                                                     .WORD   PKTSSR
    499 026136                          222$:   CKLOOP                          ;LOOP IF SELECTED
        026136  104406                                                                     TRAP    C$CLP1
    500 026140  012737  100410  026440          MOV     #100410,T29PK3          ;SPACE REVERSE,ACK, COMMAND
    501 026146  012737  000005  026442          MOV     #5,T29RB                ;NUMBER OF RECORDS TO SPACE BACK
    502 026154  012704  026440                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
    503 026160  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 103
TEST  1: WRITE TAPE MARK RETRY

    504 026164  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    505 026170  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
    506 026174  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
    507 026200  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
    508 026202  001406                          BEQ     260$                    ;BR, IF OK
    509 026204  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    513 026210                                  ERRHRD  ERRNO,T29RDG,PKTSSR     ;TSSR INCORRECT AFTER SPACE REV CMD.
        026210  104456                                                                 TRAP    C$ERHRD
        026212  000203                                                                 .WORD   131
        026214  031643                                                                 .WORD   T29RDG
        026216  012126                                                                 .WORD   PKTSSR
    514 026220                          260$:   CKLOOP                          ;LOOP IF SELECTED
        026220  104406                                                                 TRAP    C$CLP1
    515 026222  013701  026356                  MOV     T29BFR+14,R1            ;PICK UP XST3
    516 026226  010102                          MOV     R1,R2                   ;SET UP EXPECTED
    517 026230  052702  000001                  BIS     #BIT0,R2                ;RIB SHOULD BE SET
    518 026234  020102                          CMP     R1,R2                   ;IS RIB SET
    519 026236  001406                          BEQ     270$                    ;BR, IF RIB WAS SET (GOOD)
    520 026240  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    524 026244                                  ERRHRD  ERRNO,T29RIB,EXPREC     ;TMK NOT SET AFTER READ REV
        026244  104456                                                                 TRAP    C$ERHRD
        026246  000204                                                                 .WORD   132
        026250  031724                                                                 .WORD   T29RIB
        026252  015554                                                                 .WORD   EXPREC
    525 026254                          270$:   CKLOOP                          ;LOOP IF SELECTED
        026254  104406                                                                 TRAP    C$CLP1
    526 026256                          330$:   CKLOOP                          ;LOOP IF SELECTED
        026256  104406                                                                 TRAP    C$CLP1
    527 026260                                  ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
        026260                                                                      L10042:
        026260  104403                                                                 TRAP    C$ESUB
    528 026262  023727  002214  000017                CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
    529 026270  103402                          BLO     999$                    ;BR, IF LESS THAN 25
    530 026272  004737  017262                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
    531 026276                          999$:
    532                                 ;
    533                                 ;
    534                                 ;
    535 026276  004737  016536                  JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
    536 026302  103002                          BCC     163$                    ;BR, IF NO LOOP REQUIRED
    537 026304  000137  023556                  JMP     T29LOOP                 ;EXECUTE AGAIN
    538 026310                          163$:   EXIT    TST                     ;ALL DONE THIS TEST
        026310  104432                                                                 TRAP    C$EXIT
        026312  004020                                                                 .WORD   L10036-.
    539                                 ;+
    540                                 ;LOCAL STORAGE FOR THIS TEST
    541                                 ;-
    543         026320                          .=<.+10>&177770
    545 026320                          T29PACKET:                              ;COMMAND PACKET FOR TEST
    546 026320  014004                          .WORD   14004                   ;WRITE CHARACTERISTICS COMMAND, WITH CVC=1, ACK
    547 026322  026330                          .WORD   T29DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
    548 026324  000000                          .WORD   0
    549 026326  000012                          .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
    550 026330                          T29DATA:                                ;CHARACTERISTICS DATA BLOCK
    551 026330  026342                          .WORD   T29BFR                  ;ADDRESS OF MESSAGE BUFFER
    552 026332  000000                          .WORD   0
    553 026334  000024                          .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
```

```
                                        .WORD   0
026340  000000                T29DSW: .WORD   0                       ;SELECT DRIVE 0
026342                          T29BFR: .BLKW   25.                     ;MESSAGE BUFFER
                                ;
                                ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                ;
        026430                          .=<.+10>&177770
026430                          T29PK2:
026430  100006                        .WORD   100006                  ;WRITE SUB SYS MEM COMMAND, AND ACK
026432  026450                        .WORD   T29BF2                  ;ADDRESS OF SELECT BLOCK DATA
026434  000000                        .WORD   0
026436  000006                        .WORD   6.                      ;SIZE OF DATA PACKET

026440                          T29PK3:
026440  140005                        .WORD   140005                  ;WRITE TAPE MARK RETRY COMMAND, CVC=1 AND ACK
026442                          T29RB:
026442  003116                  T29WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
026444  000000                        .WORD   0
026446  000000                  T29SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
                                        .EVEN
                                ;
                                ;
                                ;
026450                          T29BF2:
026450     010                  T29BS0: .BYTE   10                      ;BSEL0 AREA
026451     200                  T29BS1: .BYTE   200                     ;BSEL1 AREA
026452  000000                  T29S2:  .WORD   0                       ;SEL 2 AREA
026454  000000                  T29S3:  .WORD   0                       ;DATA AREA
                                ;
                                ;
                                        .EVEN
                                ;TAPE MOTION PACKET COMMAND VALUES

026456  140001                  T29RN:  .WORD   140001                  ;READ DATA
026460  140401                  T29WDR: .WORD   140401                  ;READ DATA REVERSE
026462  141001                  T29CON: .WORD   141001                  ;READ PREVIOUS OPP=0
026464  161001                        .WORD   161001                  ;READ PREVIOUS OPP=1
026466  141401                        .WORD   141401                  ;WRITE TAPE MARK RETRY NEXT OPP=0
026470  161401                        .WORD   161401                  ;WRITE TAPE MARK RETRY NEXT OPP=1
026472  177777                        .WORD   177777                  ;END OF DATA

                                ;
026474  000000                  T29CNT: .WORD   0                       ;TAPE RECORD COUNTER STORAGE AREA

026476  000000                  T29RSZ: .WORD   0                       ;RECORD STORAGE SIZE  AREA
026500  000000                  T29DLY: .WORD                   ;DELAY COUNTER STORAGE AREA
                                ;+
                                ;LOCAL TEXT MESSAGES FOR TEST
                                ;-

026502     104  162  151  T29OFL: .ASCIZ  'Drive is OFFLINE'
026523     124  141  160  T29WNG: .ASCIZ  'Tape Position Incorrect After WRITE TAPE MARK RETRY Previous (OPP=1)'
026630     127  122  111  T29NEF: .ASCIZ  'WRITE TAPE MARK RETRY, At BOT, Failed To Set NEF (XSTO)'
026720     124  123  123  T29RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
026767     127  122  111  T29RRF: .ASCIZ  'WRITE TAPE MARK RETRY Previous (Space Reverse, Read Forward) Command Failed

027103     127  122  111  T29RRG: .ASCIZ  'WRITE TAPE MARK RETRY Previous (Read Forward, Space Reverse) Command Failed

027217     120  117  123  T29SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
```

```
                616 027301      122     111     102  T29LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
                617 027351      124     123     123  T29WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
                618 027426      111     154     154  T29LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
                619 027507      127     122     111  T29SSR: .ASCIZ  'WRITE TAPE MARK RETRY COMMAND Not Accepted'
                620 027562      124     123     123  T29WDE: .ASCIZ  'TSSR Not Correct After SPACE REVERSE DATA Command'
                621 027644      052     052     052  T29WLK: .ASCIZ  '*****TAPE IS WRITE-LOCKED AND WILL CAUSE ERRORS*****'
                622 027731      124     123     123  T29WRT: .ASCIZ  'TSSR Not Correct After WRITE Command'
                623 027776      124     141     160  T29BOT: .ASCIZ  'Tape Not At BOT After REWIND Command'
                624 030043      104     141     164  T29DTA: .ASCIZ  'Data Written To Tape Not Equal To Data Read From Tape'
                625 030131      127     122     111  T29EOT: .ASCIZ  'WRITE TAPE MARK RETRY DATA OVER EOT GAVE NO TAPE STATUS ALERT'
                626 030227      124     123     123  T29TM:  .ASCIZ  'TSSR Not Correct After SPACE REVERSE Into BOT'
                627 030305      122     145     167  T29RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
                628 030354      122     101     115  T29RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
                629 030427      124     123     123  T29AM3: .ASCIZ  'TSSR Init. Failed After WRITE TAPE MARK RETRY COMMAND'
                630 030515      104     162     151  T29OF7: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
                631 030570      124     123     123  T29WDD: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK RETRY DATA Command, SWB Bit Set'
                632 030677      124     123     123  T29WDC: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK RETRY DATA Command'
                633 030771      103     126     103  T29VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
                634 031044      124     123     102  T29BA:  .ASCIZ  'TSBA Not Correct After WRITE TAPE MARK RETRY DATA Command'
                635 031135      127     122     111  T29WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
                636 031225      122     145     141  T29LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XSTO'
                637 031307      122     145     141  T29LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
                638 031371      122     145     163  T29PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
                639 031457      122     145     141  T29TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
                640 031545      104     141     164  T29NEQ: .ASCIZ  'Data WRITE TAPE MARK RETRY From Tape Not Correct, After SWB=1'
                641 031643      124     123     123  T29RDG: .ASCIZ  'TSSR Incorrect After READ REVERSE Into Tape Mark'
                642 031724      127     122     111  T29RIB: .ASCIZ  'WRITE TAPE MARK RETRY At First Record, Failed To Set RIB (XST3)'
                643 032024      124     115     113  T29RRN: .ASCIZ  'TMK (XSTO) Failed To Set After READ REVERSE Into Tape Mark'
                644 032117      127     162     151  TST29ID:        .ASCIZ  'Write Tape Mark Retry'
                645                                                  .EVEN
                646                                  ;*
                647                                  ;
                648                                  ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                649                                  ;WRITE SUBSYSTEM MEMORY COMMAND
                650                                  ;
                651                                  ;-
                652
                653 032146                           T29REST:
                654 032146                                   SAVREG                          ;SAVE THE REGISTERS
                655 032152  012701  026320                    MOV     @T29PACKET,R1           ;START OF THE PACKET
                656 032156  012721  140004                    MOV     @140004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK, CVC=1
                657 032162  012721  026330                    MOV     @T29DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
                658 032166  005021                            CLR     (R1)+                   ;EXTENDED ADDRESS
                659 032170  012721  000012                    MOV     @10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
                660 032174  012721  026342                    MOV     @T29BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
                661 032200  005021                            CLR     (R1)+
                662 032202  012721  000024                    MOV     @20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
                663 032206  005021                            CLR     (R1)+
                664 032210  012711  000000                    MOV     @0,(R1)                 ;SELECT DRIVE ZERO (0)
                665 032214  012702  000030                    MOV     @24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
                666 032220  012762  177777  026342  64$:     MOV     @177777,T29BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
                667 032226  005742                            TST     -(R2)                   ;NEXT LOCATION
                668 032230  020227  000000                    CMP     R2,@0                   ;CHECK FOR END OF LOOP
                669 032234  001371                            BNE     64$                     ;KEEP GOING UNTIL DONE
                670 032236  000207                            RTS     PC                      ;RETURN
                671
                672 032240                           T29RT2:
```

```
673 032240                              SAVREG                          ;SAVE THE REGISTERS
674 032244  012701  026430              MOV     #T29PK2,R1              ;START OF THE PACKET
675 032250  012721  140006              MOV     #140006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,CVC=1,
676 032254  012721  026450              MOV     #T29BF2,(R1)+           ;ADDRESS OF DATA BLOCK
677 032260  005021                      CLR     (R1)+                   ;EXTENDED ADDRESS
678 032262  012721  000006              MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
679 032266  005021                      CLR     (R1)+
680 032270  012701  026450              MOV     #T29BF2,R1              ;POINT TO DATA SEL AREA
681 032274  005021                      CLR     (R1)+
682 032276  005011                      CLR     (R1)
683 032300  000207                      RTS     PC                      ;RETURN
684 032302                      T29RT3:
685 032302                              SAVREG                          ;SAVE THE REGISTERS
686 032306  012701  026440              MOV     #T29PK3,R1              ;START OF THE PACKET
687 032312  012721  000000              MOV     #0,(R1)+                ;WRITE SUBSYSTEM MEM. WITH ACK,
688 032316  012721  000000              MOV     #0,(R1)+                ;ADDRESS OF DATA BLOCK
689 032322  005021                      CLR     (R1)+                   ;EXTENDED ADDRESS
690 032324  012711  000000              MOV     #0,(R1)         ;SIZE OF DATA BLOCK IN BYTES
691 032330  000207                      RTS     PC                      ;RETURN
692 032332                              ENDTST
    032332                                                          L10036:
    032332  104401                                                          TRAP    C$ETST
693                                     .SBTTL  TEST  2: SKIP TAPE MARKS
694                             ;+
695                             ;
696                             ;THIS TEST VERIFIES PROPER OPERATION OF THE SKIP TAPE MARKS
697                             ;FORWARD AND SKIP TAPE MARKS REVERSE COMMANDS. PROPER OPERATION
698                             ;UNDER CONTROL OF ALL COMBINATIONS OF THE ENABLE SKIP TAPE MARKS
699                             ;STOP (ESS) AND ENABLE TAPE MARKS STOP OFF BOT (ENB) BITS SPECIFIED
700                             ;BY THE WRITE CHARACTERISTICS COMMAND. THE TEST CONSISTS OF THE
701                             ;FOLLOWING SUBTESTS (FOR EACH SUBTEST, THE TAPE IS FIRST WRITTEN
702                             ;WITH AN APPROPRIATE SERIES OF DATA RECORDS AND/OR TAPE MARKS
703                             ;AND/OR DOUBLE TAPE MARKS.
704                             ;
705                             ;
706                             ;THE TEST CONSISTS OF THE FOLLOWING 11 SUBTESTS
707                             ;
708                             ;
709                             ;
710                             ;-
711 032334                              BGNTST
    032334                                                              T2::
712 032334  012737  006354  002172      MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
717 032342  012700  041231              MOV     #TST30ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
718 032346  004737  016570              JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
719 032352  012737  000005  002210      MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
720                             ;+
721                             ;
722                             ;TEST 2, SUBTEST 1
723                             ;
724                             ;
725                             ;VERIFIES THAT A SKIP TAPE MARKS FORWARD COMMAND WITH
726                             ;A TAPE MARK COUNT OF 1 OPERATES OPERATES PROPERLY. THE TAPE
727                             ;IS FIRST REWOUND, THEN WRITTEN WITH SEVERAL "FILES";
728                             ;EACH FILE CONSISTS OF A NUMBER OF DATA RECORDS
729                             ;FOLLOWED BY A TAPE MARK. THE FINAL FILE IS
730                             ;TERMINATED BY A DOUBLE TAPE MARK. EACH DATA RECORD
```

```
                                        ;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.
                                        ;
                                        ;
                                        ;-

032360                                  T30LOOP:
032360                                          BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
032360                                                                                  T2.1:
032360  104402                                                                          TRAP    C$BSUB
032362  004737  041252                          JSR     PC,T30REST              ;SET COMMAND PACKET
032366  005037  036654                          CLR     T30FCN                  ;CLEAR FILE COUNTER
032372  004737  041344                          JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
032376  004737  041406                          JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
032402  012737  176750  036656                  MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
032410  004737  016054          10$:            JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
032414  103426                                  BCS     20$                     ;BR IF INIT WAS OK
032416                                          DELAY   250                     ;DELAY ROUTINE CALL
032416  012727  000250                                                                  MOV     #250.,(PC)+
032422  000000                                                                          .WORD   0
032424  013727  002116                                                                  MOV     L$DLY,(PC)+
032430  000000                                                                          .WORD   0
032432  005367  177772                                                                  DEC     -6(PC)
032436  001375                                                                          BNE     .-4
032440  005367  177756                                                                  DEC     -22(PC)
032444  001367                                                                          BNE     .-20
032446  005337  036656                  DEC     T30DLY                  ;BUMP COUNTER
032452  001356                          BNE     10$                     ;BR, IF MORE COUNTING TO DO
032454  005237  002214                  INC     FATFLG                          ;ERROR COUNT
032460  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
032462                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
032462  104455                                                                  TRAP    C$ERDF
032464  000311                                                                  .WORD   201
032466  003646                                                                  .WORD   SFIERR
032470  012114                                                                  .WORD   SFIMSG
032472                          20$:
032472  013737  002174  036520          MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
032500  012704  036500                  MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

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

032504  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
032510  103407                          BCS     23$                     ;BR, IF COMMAND ISSUED OK
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 108
TEST  2: SKIP TAPE MARKS

    777 032512  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    781 032516  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
    782 032520                                   ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        032520  104456                                                                  TRAP    C$ERHRD
        032522  000312                                                                  .WORD   202
        032524  005052                                                                  .WORD   WRTMSG
        032526  012114                                                                  .WORD   SFIMSG
    783 032530                          23$:    CKLOOP                          ;LOOP IF SELECTED
        032530  104406                                                                  TRAP    C$CLP1
    784
    785                                 ;***************************************************************
    786                                 ;
    787                                 ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
    788                                 ;
    789                                 ;***************************************************************
    790
    791 032532  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
    792 032536  103411                          BCS     30$                     ;BR, IF NO PROBLEM
    793 032540  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
    794 032542  016501  000002                  MOV     TSSR(R5),R1             ;GET STATUS REGISTER
    795 032546  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    799 032552                                  ERRHRD  ERRNO,T3ORWN,PKTSSR     ;REWIND NOT ACCEPTED
        032552  104456                                                                  TRAP    C$ERHRD
        032554  000313                                                                  .WORD   203
        032556  040240                                                                  .WORD   T3ORWN
        032560  012126                                                                  .WORD   PKTSSR
    800 032562                          30$:    CKLOOP                          ;LOOP IF SELECTED
        032562  104406                                                                  TRAP    C$CLP1
    801
    802                                 ;***************************************************************
    803                                 ;
    804                                 ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
    805                                 ;
    806                                 ;***************************************************************
    807
    808 032564  013701  036530                      MOV     T30BFR+6,R1             ;PICK UP XST0
    809 032570  010102                              MOV     R1,R2                   ;SET UP EXPECTED
    810 032572  052702  000002                      BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
    811 032576  020102                              CMP     R1,R2                   ;DOES EXP = REC'D
    812 032600  001406                              BEQ     40$                     ;BR, IF EQUAL (OK)
    813 032602  005237  002214                      INC     FATFLG                          ;ERROR COUNT
    817 032606                                      ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        032606  104456                                                                      TRAP    C$ERHRD
        032610  000314                                                                      .WORD   204
        032612  040041                                                                      .WORD   T30BOT
        032614  015554                                                                      .WORD   EXPREC
    818 032616                              40$:    CKLOOP                          ;LOOP IF SELECTED
        032616  104406                                                                      TRAP    C$CLP1
    819 032620  012737  000001  036654              MOV     #1.,T30FCN              ;SET "FILE" COUNTER AT 1 DECIMAL
    820 032626  012703  000001              64$:    MOV     #1,R3                   ;ONE RECORD  PER "FILE"
    821 032632  013737  003116  036622      65$:    MOV     FREE,T30WB              ;SET UP PACKETS'S WRITE BUFFER
    822 032640  012737  003720  036626              MOV     #2000.,T30SZ            ;SET RECORD SIZE AT 2000 BYTES
    823
    824                                 ;***************************************************************
    825                                 ;
    826                                 ;WRITE DATA,ACK,CVC=1 COMMAND
    827                                 ;
```

```
828                                     ;*****************************************************************
829
830 032646  012737  140005  036620          MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
831 032654  012704  036620                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
832 032660  013702  036654                  MOV     T30FCN,R2               ;GET FILE COUNTER
833 032664  000302                          SWAB    R2                      ;MOVE TO UPPER BYTE
834 032666  010301                          MOV     R3,R1                   ;GET RECORD COUNTER
835 032670  060201                          ADD     R2,R1                   ;FILE COUNTER IN UPPER, RECORD # LOW
836 032672  010177  150220                  MOV     R1,@FREE                ;MOV TO OUT PUT BUFFER
837 032676  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
838 032702  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
839 032706  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
840 032712  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
841 032716  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
842 032720  001406                          BEQ     70$                     ;BR, IF OK
843 032722  005237  002214                  INC     FATFLG                          ;ERROR COUNT
847 032726                                  ERRHRD  ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
    032726  104456                                                                  TRAP    C$ERHRD
    032730  000315                                                                  .WORD   205
    032732  037170                                                                  .WORD   T30WDD
    032734  012126                                                                  .WORD   PKTSSR
848 032736                              70$:    CKLOOP                          ;LOOP IF SELECTED
    032736  104406                                                                  TRAP    C$CLP1
849 032740  005203                          INC     R3                      ;COUNT THE RECORD COUNTER DOWN
850 032742  020327  000021                  CMP     R3,#21                  ;AT 20 YET
851 032746  001331                          BNE     65$                     ;BR, IF NOT AT 20 RECORDS WRITTEN
852
853                                     ;*****************************************************************
854                                     ;
855                                     ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
856                                     ;
857                                     ;*****************************************************************
858
859 032750  012737  141011  036620          MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
860 032756  012704  036620                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
861 032762  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
862 032766  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
863 032772  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
864 032776  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
865 033002  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
866 033004  001406                          BEQ     160$                    ;BR, IF TERMINATION WAS GOOD
867 033006  005237  002214                  INC     FATFLG                          ;ERROR COUNT
871 033012                                  ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
    033012  104456                                                                  TRAP    C$ERHRD
    033014  000316                                                                  .WORD   206
    033016  040362                                                                  .WORD   T30WDC
    033020  012126                                                                  .WORD   PKTSSR
872 033022                              160$:   CKLOOP                          ;LOOP IF SELECTED
    033022  104406                                                                  TRAP    C$CLP1
873 033024  005237  036654                  INC     T30FCN                  ;COUNT THE "FILE" COUNTER DOWN
874 033030  023727  036654  000006          CMP     T30FCN,#6               ;WRITE 5 FILE TO TAPE
875 033036  001273                          BNE     64$                     ;BR, IF NOT AT 5 FILES WRITTEN
876
877                                     ;*****************************************************************
878                                     ;
879                                     ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
880                                     ;
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 110
TEST  2: SKIP TAPE MARKS

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

 033114  004737  011074               JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 033120  103411                       BCS     170$                    ;BR, IF NO PROBLEM
 033122  010004                       MOV     R0,R4                   ;GET PACKET ADDRESS
 033124  016501  000002               MOV     TSSR(R5),R1             ;GET STATUS REGISTER
 033130  005237  002214               INC     FATFLG                          ;ERROR COUNT
 033134                               ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
 033134  104456                                                               TRAP    C$ERHRD
 033136  000320                                                               .WORD   208
 033140  040240                                                               .WORD   T30RWN
 033142  012126                                                               .WORD   PKTSSR
170$:    CKLOOP                          ;LOOP IF SELECTED
 033144  104406                                                               TRAP    C$CLP1

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

 033146  013701  036530               MOV     T30BFR+6,R1             ;PICK UP XST0
 033152  010102                       MOV     R1,R2                   ;SET UP EXPECTED
 033154  052702  000002               BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 033160  020102                       CMP     R1,R2                   ;DOES EXP = REC'D
 033162  001406                       BEQ     180$                    ;BR, IF EQUAL (OK)
 033164  005237  002214               INC     FATFLG                          ;ERROR COUNT
 033170                               ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
 033170  104456                                                               TRAP    C$ERHRD
 033172  000321                                                               .WORD   209
 033174  040041                                                               .WORD   T30BOT
 033176  015554                                                               .WORD   EXPREC
180$:    CKLOOP                          ;LOOP IF SELECTED
 033200  104406                                                               TRAP    C$CLP1
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 111
TEST  2: SKIP TAPE MARKS

    932 033202  012703  036636                  MOV     #T30IMV,R3              ;SET UP POINTER TO COMMAND TABLE
    933 033206  013737  002174  036520          MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
    934 033214  011337  036516          182$:   MOV     (R3),T30ETM             ;GET NEXT COMMAND
    935 033220  012704  036500                  MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
    936
    937                                 ;***************************************************************
    938                                 ;
    939                                 ;ISSUE WRITE CHARACTERISTICS COMMAND
    940                                 ;
    941                                 ;***************************************************************
    942
    943 033224  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
    944 033230  103407                          BCS     188$                    ;BR, IF COMMAND ISSUED OK
    945 033232  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    949 033236  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
    950 033240                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        033240  104456                                                                  TRAP    C$ERHRD
        033242  000322                                                                  .WORD   210
        033244  005052                                                                  .WORD   WRTMSG
        033246  012114                                                                  .WORD   SFIMSG
    951 033250                          188$:   CKLOOP                          ;LOOP IF SELECTED
        033250  104406                                                                  TRAP    C$CLP1
    952
    953                                 ;***************************************************************
    954                                 ;
    955                                 ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
    956                                 ;
    957                                 ;***************************************************************
    958
    959 033252  012737  141010  036620          MOV     #141010,T30PK3          ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
    960 033260  012737  000001  036622          MOV     #1,T30RB                ;SET UP NUMBER TO SKIP
    961 033266  012704  036620                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
    962 033272  010465  000000          189$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
    963 033276  012737  176750  036656          MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
    964 033304  004737  016330          190$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    965 033310  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
    966 033314  032701  000200                  BIT     #SSR,R1                 ;IS SSR SET YET
    967 033320  001017                          BNE     191$                    ;BR, IF SSR IS SET
    968 033322                                  DELAY   250                     ;CALL DELAY ROUTINE
        033322  012727  000250                                                          MOV     #250.,(PC)+
        033326  000000                                                                  .WORD   0
        033330  013727  002116                                                          MOV     L$DLY,(PC)+
        033334  000000                                                                  .WORD   0
        033336  005367  177772                                                          DEC     -6(PC)
        033342  001375                                                                  BNE     .-4
        033344  005367  177756                                                          DEC     -22(PC)
        033350  001367                                                                  BNE     .-20
    969 033352  005337  036656                  DEC     T30DLY                  ;BUMP DELAY ROUTINE
    970 033356  001352                          BNE     190$                    ;BR, IF MORE DELAY TO GO
    971 033360  012702  000200          191$:   MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
    972 033364  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
    973 033366  001406                          BEQ     192$                    ;BR, IF TERMINATION WAS GOOD
    974 033370  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    978 033374                                  ERRHRD  ERRNO,T30SKM,PKTSSR     ;TSSR NOT CORRECT AFTER SKIP TAPE M.
        033374  104456                                                                  TRAP    C$ERHRD
        033376  000323                                                                  .WORD   211
        033400  037114                                                                  .WORD   T30SKM
```

```
     033402  012126                                                                        .WORD   PKTSSR
     033404                            192$:   CKLOOP                    ;LOOP IF SELECTED
     033404  104406                                                                        TRAP    C$CLP1


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

     033406  013701  036530                    MOV     T30BFR+6,R1       ;PICK UP XSTO
     033412  010102                            MOV     R1,R2             ;SET UP EXPECTED
     033414  052702  100000                    BIS     #BIT15,R2         ;SET TMK BIT IN EXPECTED
     033420  020102                            CMP     R1,R2             ;DOES EXP = REC'D
     033422  001406                            BEQ     195$              ;BR, IF EQUAL (OK)
     033424  005237  002214                    INC     FATFLG                ;ERROR COUNT
     033430                                    ERRHRD  ERRNO,T30TMK,EXPREC   ;TMK NOT SET AFTER WRT TAPE MARK
     033430  104456                                                                        TRAP    C$ERHRD
     033432  000324                                                                        .WORD   212
     033434  040514                                                                        .WORD   T30TMK
     033436  015554                                                                        .WORD   EXPREC
     033440                            195$:   CKLOOP                    ;LOOP IF SELECTED
     033440  104406                                                                        TRAP    C$CLP1
     033442  012700  177777                    MOV     #177777,R0        ;VALUE TO WRITTEN TO MEMORY
     033446  004737  017502                    JSR     PC,FILLMEM        ;FILL MEM WITH ALL ONES
     033452  013737  003116  036622            MOV     FREE,T30RB        ;STARTING READ BUFFER ADDRESS

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

     033460  012737  140001  036620            MOV     #140001,T30PK3    ;READ FORWARD,ACK,CVC=1 COMMAND
     033466  012704  036620                    MOV     #T30PK3,R4        ;SET UP R4 WITH PACKET ADDRESS
     033472  012737  003720  036626            MOV     #2000.,T30SZ      ;SET UP RECORD SIZE IN PACKET
     033500  010465  000000                    MOV     R4,TSDB(R5)       ;ISSUE COMMAND
     033504  004737  016330                    JSR     PC,WAITF          ;WAIT FOR SSR TO SET
     033510  016501  000002                    MOV     TSSR(R5),R1       ;GET TSSR CONTENTS
     033514  012702  000200                    MOV     #SSR,R2           ;SET UP EXPECTED
     033520  020102                            CMP     R1,R2             ;ARE THEY EQUAL
     033522  001406                            BEQ     200$              ;BR, IF OK
     033524  005237  002214                    INC     FATFLG                ;ERROR COUNT
     033530                                    ERRHRD  ERRNO,T30RDF,PKTSSR   ;TSSR INCORRECT AFTER WRITE DATA
     033530  104456                                                                        TRAP    C$ERHRD
     033532  000325                                                                        .WORD   213
     033534  037413                                                                        .WORD   T30RDF
     033536  012126                                                                        .WORD   PKTSSR
     033540                            200$:   CKLOOP                    ;LOOP IF SELECTED
     033540  104406                                                                        TRAP    C$CLP1
     033542  017701  147350                    MOV     @FREE,R1          ;FIRST LOC IN READ BUFFER
     033546  012702  177777                    MOV     #177777,R2        ;EXPECTED IF NO DATA TRANS.
     033552  020102                            CMP     R1,R2             ;DID ANY DATA GET TRANSFERRED
     033554  001006                            BNE     220$              ;BR, IF NO DATA TRANS (GOOD)
     033556  005237  002214                    INC     FATFLG                ;ERROR COUNT
     033562                                    ERRHRD  ERRNO,T30DTR,EXPREC   ;DATA TRANSFERRED ON READ TAPE MARK
     033562  104456                                                                        TRAP    C$ERHRD
```

```
                033564  000326                                                          .WORD   214
                033566  041070                                                          .WORD   T30DTR
                033570  015554                                                          .WORD   EXPREC
          1032  033572                  220$:   CKLOOP                  ;LOOP IF SELECTED
                033572  104406                                                          TRAP    C$CLP1
          1033  033574  012702  001001          MOV     #1001,R2        ;SET UP RECORD NUMBER EXPECTED (FILE 2)
          1034  033600  017701  147312          MOV     @FREE,R1        ;GET INFO FROM BUFFER
          1035  033604  020201                  CMP     R2,R1           ;ARE THEY EQUAL
          1036  033606  001406                  BEQ     228$            ;BR, IF EQUAL (OK)
          1037  033610  005237  002214          INC     FATFLG                  ;ERROR COUNT
          1041  033614                  ERRHRD  ERRNO,T30PTB,EXPREC     ;RECORD POSITION WAS NOT CORRECT
                033614  10445                                                           TRAP    C$ERHRD
                033616  000327                                                          .WORD   215
                033620  037242                                                          .WORD   T30PTB
                033622  015554                                                          .WORD   EXPREC
          1042  033624                  228$:   CKLOOP                  ;LOOP IF SELECTED
                033624  104406                                                          TRAP    C$CLP1
          1043
          1044                          ;*****************************************************************
          1045                          ;
          1046                          ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
          1047                          ;
          1048                          ;*****************************************************************
          1049
          1050  033626  004737  011074          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
          1051  033632  103411                  BCS     230$            ;BR, IF NO PROBLEM
          1052  033634  010004                  MOV     R0,R4           ;SAVE PACKET ADDRESS
          1053  033636  016501  000002          MOV     TSSR(R5),R1     ;GET TSSR STATUS
          1054  033642  005237  002214          INC     FATFLG                  ;ERROR COUNT
          1058  033646                  ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
                033646  104456                                                          TRAP    C$ERHRD
                033650  000330                                                          .WORD   216
                033652  040240                                                          .WORD   T30RWN
                033654  012126                                                          .WORD   PKTSSR
          1059  033656                  230$:   CKLOOP                  ;LOOP IF SELECTED
                033656  104406                                                          TRAP    C$CLP1
          1060
          1061                          ;*****************************************************************
          1062                          ;
          1063                          ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
          1064                          ;
          1065                          ;*****************************************************************
          1066
          1067  033660  013701  036530          MOV     T30BFR+6,R1     ;PICK UP XST0
          1068  033664  010102                  MOV     R1,R2           ;SET UP EXPECTED
          1069  033666  052702  000002          BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
          1070  033672  020102                  CMP     R1,R2           ;DOES EXP = REC'D
          1071  033674  001406                  BEQ     240$            ;BR, IF EQUAL (OK)
          1072  033676  005237  002214          INC     FATFLG                  ;ERROR COUNT
          1076  033702                  ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                033702  104456                                                          TRAP    C$ERHRD
                033704  000331                                                          .WORD   217
                033706  040041                                                          .WORD   T30BOT
                033710  015554                                                          .WORD   EXPREC
          1077  033712                  240$:   CKLOOP                  ;LOOP IF SELECTED
                033712  104406                                                          TRAP    C$CLP1
          1078  033714  005723                  TST     (R3)+           ;POINT TO NEXT POSITION
```

```
1079 033716  011301                          MOV     (R3),R1                 ;GET NEXT COMMAND ETC.
1080 033720  020127  177777                  CMP     R1,#177777              ;END OF TABLE MARKER
1081 033724  001402                          BEQ     330$                    ;BR, IF AT END OF TABLE
1082 033726  000137  033214                  JMP     182$                    ;JUMP TO MORE COMMANDS TO DO
1083 033732                          330$:   CKLOOP                          ;LOOP IF SELECTED
     033732  104406                                                                  TRAP    C$CLP1
1084 033734                          ENDSUB                                  ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     033734                                                                       L10044:
     033734  104403                                                                 TRAP    C$ESUB
1085 033736  023727  002214  000017          CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
1086 033744  103402                          BLO     999$                            ;BR, IF LESS THAN 25
1087 033746  004737  017262                  JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
1088 033752                          999$:
1089                                 ;+
1090                                 ;
1091                                 ;TEST 2, SUBTEST 2
1092                                 ;
1093                                 ;VERIFIES THAT SKIP TAPE MARKS COMMANDS WITH A TAPE
1094                                 ;MARK COUNT GREATER THAN 1 OPERATE PROPERLY. COUNTS
1095                                 ;OF 2,3,8,64,256, AND 512 ARE TESTED. THE
1096                                 ;TESTING SEQUENCE IS SIMILAR TO THAT USED IN SUBTEST 1.
1097                                 ;
1098                                 ;
1099                                 ;
1100                                 ;-
1101
1102 033752                          BGNSUB                                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     033752                                                                       T2.2:
     033752  104402                                                                 TRAP    C$BSUB
1103 033754  004737  041252                  JSR     PC,T30REST              ;SET COMMAND PACKET
1104 033760  005037  036654                  CLR     T30FCN                  ;CLEAR FILE COUNTER
1105 033764  004737  041344                  JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
1106 033770  004737  041406                  JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
1107 033774  012737  176750  036656          MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
1108 034002  004737  016054          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
1109 034006  103426                          BCS     20$                     ;BR IF INIT WAS OK
1110 034010                          DELAY   250                             ;DELAY ROUTINE CALL
     034010  012727  000250                                                         MOV     #250.,(PC)+
     034014  000000                                                                 .WORD   0
     034016  013727  002116                                                         MOV     L$DLY,(PC)+
     034022  000000                                                                 .WORD   0
     034024  005367  177772                                                         DEC     -6(PC)
     034030  001375                                                                 BNE     .-4
     034032  005367  177756                                                         DEC     -22(PC)
     034036  001367                                                                 BNE     .-20
1111 034040  005337  036656                  DEC     T30DLY                  ;BUMP COUNTER
1112 034044  001356                          BNE     10$                     ;BR, IF MORE COUNTING TO DO
1113 034046  005237  002214                  INC     FATFLG                          ;ERROR COUNT
1117 034052  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
1118 034054                          ERRDF   ERRNO,SFIERR,SFIMSG             ;FATAL ERROR TSSR WAS NOT OK
     034054  104455                                                                 TRAP    C$ERDF
     034056  000332                                                                 .WORD   218
     034060  003646                                                                 .WORD   SFIERR
     034062  012114                                                                 .WORD   SFIMSG
1119 034064                          20$:
1120 034064  013737  002174  036520          MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
1121 034072  012704  036500                  MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
```

```
1122
1123                                    ;*****************************************************************
1124                                    ;
1125                                    ;ISSUE WRITE CHARACTERISTICS COMMAND
1126                                    ;
1127                                    ;*****************************************************************
1128
1129 034076  004737  010742                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
1130 034102  103407                            BCS     23$                     ;BR, IF COMMAND ISSUED OK
1131 034104  005237  002214                    INC     FATFLG                          ;ERROR COUNT
1135 034110  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
1136 034112                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     034112  104456                                                                    TRAP    C$ERHRD
     034114  000333                                                                    .WORD   219
     034116  005052                                                                    .WORD   WRTMSG
     034120  012114                                                                    .WORD   SFIMSG
1137 034122                            23$:    CKLOOP                          ;LOOP IF SELECTED
     034122  104406                                                                    TRAP    C$CLP1
1138
1139                                    ;*****************************************************************
1140                                    ;
1141                                    ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
1142                                    ;
1143                                    ;*****************************************************************
1144
1145 034124  004737  011074                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
1146 034130  103411                            BCS     30$                     ;BR, IF NO PROBLEM
1147 034132  010004                            MOV     R0,R4                   ;GET PACKET ADDRESS
1148 034134  016501  000002                    MOV     TSSR(R5),R1             ;GET STATUS REGISTER
1149 034140  005237  002214                    INC     FATFLG                          ;ERROR COUNT
1153 034144                                    ERRHRD  ERRNO,T3ORWN,PKTSSR     ;REWIND NOT ACCEPTED
     034144  104456                                                                    TRAP    C$ERHRD
     034146  000334                                                                    .WORD   220
     034150  040240                                                                    .WORD   T3ORWN
     034152  012126                                                                    .WORD   PKTSSR
1154 034154                            30$:    CKLOOP                          ;LOOP IF SELECTED
     034154  104406                                                                    TRAP    C$CLP1
1155
1156                                    ;*****************************************************************
1157                                    ;
1158                                    ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
1159                                    ;
1160                                    ;*****************************************************************
1161
1162 034156  013701  036530                    MOV     T30BFR+6,R1             ;PICK UP XSTO
1163 034162  010102                            MOV     R1,R2                   ;SET UP EXPECTED
1164 034164  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
1165 034170  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
1166 034172  001406                            BEQ     40$                     ;BR, IF EQUAL (OK)
1167 034174  005237  002214                    INC     FATFLG                          ;ERROR COUNT
1171 034200                                    ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     034200  104456                                                                    TRAP    C$ERHRD
     034202  000335                                                                    .WORD   221
     034204  040041                                                                    .WORD   T30BOT
     034206  015554                                                                    .WORD   EXPREC
1172 034210                            40$:    CKLOOP                          ;LOOP IF SELECTED
     034210  104406                                                                    TRAP    C$CLP1
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 116
TEST  2: SKIP TAPE MARKS

 1173 034212  012737  000001  036654          MOV     #1.,T30FCN              ;SET "FILE" COUNTER AT 1 DECIMAL
 1174 034220  012703  000001          64$:    MOV     #1,R3                   ;ONE RECORD  PER "FILE"
 1175 034224  013737  003116  036622  65$:    MOV     FREE,T30WB              ;SET UP PACKETS'S WRITE BUFFER
 1176 034232  012737  000024  036626          MOV     #20.,T30SZ              ;SET RECORD SIZE AT 2000 BYTES
 1177
 1178                                ;***************************************************************
 1179                                ;
 1180                                ;WRITE DATA,ACK,CVC=1 COMMAND
 1181                                ;
 1182                                ;***************************************************************
 1183
 1184 034240  012737  140005  036620          MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
 1185 034246  012704  036620                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 1186 034252  013702  036654                  MOV     T30FCN,R2               ;GET FILE COUNTER
 1187 034256  000302                          SWAB    R2                      ;MOVE TO UPPER BYTE
 1188 034260  010301                          MOV     R3,R1                   ;GET RECORD COUNTER
 1189 034262  060201                          ADD     R2,R1                   ;FILE COUNTER IN UPPER, RECORD # LOW
 1190 034264  010177  146626                  MOV     R1,@FREE                ;MOV TO OUT PUT BUFFER
 1191 034270  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 1192 034274  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 1193 034300  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 1194 034304  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 1195 034310  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 1196 034312  001406                          BEQ     70$                     ;BR, IF OK
 1197 034314  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 1201 034320                                  ERRHRD  ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      034320  104456                                                                  TRAP    C$ERHRD
      034322  000336                                                                  .WORD   222
      034324  037170                                                                  .WORD   T30WDD
      034326  012126                                                                  .WORD   PKTSSR
 1202 034330                          70$:    CKLOOP                          ;LOOP IF SELECTED
      034330  104406                                                                  TRAP    C$CLP1
 1203 034332  005203                          INC     R3                      ;COUNT THE RECORD COUNTER DOWN
 1204 034334  020327  000021                  CMP     R3,#21                  ;AT 20 YET
 1205 034340  001331                          BNE     65$                     ;BR, IF NOT AT 20 RECORDS WRITTEN
 1206
 1207                                ;***************************************************************
 1208                                ;
 1209                                ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
 1210                                ;
 1211                                ;***************************************************************
 1212
 1213 034342  012737  141011  036620          MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
 1214 034350  012704  036620                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 1215 034354  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 1216 034360  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 1217 034364  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
 1218 034370  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
 1219 034374  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
 1220 034376  001406                          BEQ     160$                    ;BR, IF TERMINATION WAS GOOD
 1221 034400  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 1225 034404                                  ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
      034404  104456                                                                  TRAP    C$ERHRD
      034406  000337                                                                  .WORD   223
      034410  040362                                                                  .WORD   T30WDC
      034412  012126                                                                  .WORD   PKTSSR
 1226 034414                          160$:   CKLOOP                          ;LOOP IF SELECTED
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 117
TEST  2: SKIP TAPE MARKS

      034414  104406                                                              TRAP    C$CLP1
1227  034416  005237  036654                  INC     T30FCN                  ;COUNT THE "FILE" COUNTER DOWN
1228  034422  023727  036654  000031          CMP     T30FCN,#25.             ;WRITE 25 FILES TO TAPE
1229  034430  001273                          BNE     64$                     ;BR, IF NOT AT 25 FILES WRITTEN
1230
1231                                  ;*****************************************************************
1232                                  ;
1233                                  ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
1234                                  ;
1235                                  ;*****************************************************************
1236
1237  034432  012737  141011  036620          MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
1238  034440  012704  036620                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
1239  034444  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
1240  034450  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1241  034454  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
1242  034460  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
1243  034464  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
1244  034466  001406                          BEQ     165$                    ;BR, IF TERMINATION WAS GOOD
1245  034470  005237  002214                  INC     FATFLG                          ;ERROR COUNT
1249  034474                                  ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
      034474  104456                                                              TRAP    C$ERHRD
      034476  000340                                                              .WORD   224
      034500  040362                                                              .WORD   T30WDC
      034502  012126                                                              .WORD   PKTSSR
1250  034504                          165$:   CKLOOP                          ;LOOP IF SELECTED
      034504  104406                                                              TRAP    C$CLP1
1251
1252                                  ;*****************************************************************
1253                                  ;
1254                                  ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
1255                                  ;
1256                                  ;*****************************************************************
1257
1258  034506  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
1259  034512  103411                          BCS     170$                    ;BR, IF NO PROBLEM
1260  034514  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
1261  034516  016501  000002                  MOV     TSSR(R5),R1             ;GET STATUS REGISTER
1262  034522  005237  002214                  INC     FATFLG                          ;ERROR COUNT
1266  034526                                  ERRHRD  ERRNO,T30RWN,PKTSSR     :REWIND NOT ACCEPTED
      034526  104456                                                              TRAP    C$ERHRD
      034530  000341                                                              .WORD   225
      034532  040240                                                              .WORD   T30RWN
      034534  012126                                                              .WORD   PKTSSR
1267  034536                          170$:   CKLOOP                          ;LOOP IF SELECTED
      034536  104406                                                              TRAP    C$CLP1
1268
1269                                  ;*****************************************************************
1270                                  ;
1271                                  ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
1272                                  ;
1273                                  ;*****************************************************************
1274
1275  034540  013701  036530                  MOV     T30BFR+6,R1             ;PICK UP XSTO
1276  034544  010102                          MOV     R1,R2                   ;SET UP EXPECTED
1277  034546  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
1278  034552  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 118
TEST  2: SKIP TAPE MARKS

1279 034554  001406                        BEQ     180$                    ;BR, IF EQUAL (OK)
1280 034556  005237  002214                INC     FATFLG                          ;ERROR COUNT
1284 034562                                ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     034562  104456                                                               TRAP    C$ERHRD
     034564  000342                                                               .WORD   226
     034566  040041                                                               .WORD   T30BOT
     034570  015554                                                               .WORD   EXPREC
1285 034572                        180$:   CKLOOP                          ;LOOP IF SELECTED
     034572  104406                                                               TRAP    C$CLP1
1286 034574  012737  000002  036654          MOV     #2,T30FCN               ;SET TO NUMBER OF SKIP "FILES"
1287 034602  012703  036636                MOV     #T30IMV,R3              ;SET UP POINTER TO COMMAND TABLE
1288 034606  013737  002174  036520          MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
1289 034614  011337  036516        182$:   MOV     (R3),T30ETM             ;GET NEXT COMMAND
1290 034620  012704  036500                MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
1291
1292                               ;*************************************************************
1293                               ;
1294                               ;ISSUE WRITE CHARACTERISTICS COMMAND
1295                               ;
1296                               ;*************************************************************
1297
1298 034624  004737  010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
1299 034630  103407                        BCS     188$                    ;BR, IF COMMAND ISSUED OK
1300 034632  005237  002214                INC     FATFLG                          ;ERROR COUNT
1304 034636  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
1305 034640                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     034640  104456                                                               TRAP    C$ERHRD
     034642  000343                                                               .WORD   227
     034644  005052                                                               .WORD   WRTMSG
     034646  012114                                                               .WORD   SFIMSG
1306 034650                        188$:   CKLOOP                          ;LOOP IF SELECTED
     034650  104406                                                               TRAP    C$CLP1
1307
1308                               ;*************************************************************
1309                               ;
1310                               ;SKIP TAPE MARK,ACK,CVC+1 COMMAND
1311                               ;
1312                               ;*************************************************************
1313
1314 034652  012737  141010  036620          MOV     #141010,T30PK3          ;SKIP TAPE MARK,ACK,CVC+1 COMMAND
1315 034660  013737  036654  036622          MOV     T30FCN,T30RB            ;SET UP NUMBER TO SKIP
1316 034666  012704  036620                MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
1317 034672  010465  000000        189$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
1318 034676  012737  176750  036656          MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
1319 034704  004737  016330        190$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1320 034710  016501  000002                MOV     TSSR(R5),R1             ;PICK UP TSSR
1321 034714  032701  000200                BIT     #SSR,R1                 ;IS SSR SET YET
1322 034720  001017                        BNE     191$                    ;BR, IF SSR IS SET
1323 034722                                DELAY   250                     ;CALL DELAY ROUTINE
     034722  012727  000250                                                               MOV     #250,(PC)+
     034726  000000                                                               .WORD   0
     034730  013727  002116                                                               MOV     L$DLY,(PC)+
     034734  000000                                                               .WORD   0
     034736  005367  177772                                                               DEC     -6(PC)
     034742  001375                                                               BNE     .-4
     034744  005367  177756                                                               DEC     -22(PC)
     034750  001367                                                               BNE     .-20
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 119
TEST 2: SKIP TAPE MARKS

1324 034752  005337  036656                DEC     T30DLY                  ;BUMP DELAY ROUTINE
1325 034756  001352                        BNE     190$                    ;BR, IF MORE DELAY TO GO
1326 034760  012702  000200          191$: MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
1327 034764  020102                        CMP     R1,R2                   ;WAS STATUS GOOD
1328 034766  001406                        BEQ     192$                    ;BR, IF TERMINATION WAS GOOD
1329 034770  005237  002214                INC     FATFLG                          ;ERROR COUNT
1333 034774                                ERRHRD  ERRNO,T30SKM,PKTSSR     ;TSSR NOT CORRECT AFTER SKIP TAPE M.
     034774  104456                                                               TRAP    C$ERHRD
     034776  000344                                                               .WORD   228
     035000  037114                                                               .WORD   T30SKM
     035002  012126                                                               .WORD   PKTSSR
1334 035004                          192$: CKLOOP                          ;LOOP IF SELECTED
     035004  104406                                                               TRAP    C$CLP1
1335
1336                                 ;*************************************************************
1337                                 ;
1338                                 ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
1339                                 ;
1340                                 ;*************************************************************
1341
1342 035006  013701  036530                MOV     T30BFR+6,R1             ;PICK UP XSTO
1343 035012  010102                        MOV     R1,R2                   ;SET UP EXPECTED
1344 035014  052702  100000                BIS     #BIT15,R2               ;SET TMK BIT IN EXPECTED
1345 035020  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
1346 035022  001406                        BEQ     195$                    ;BR, IF EQUAL (OK)
1347 035024  005237  002214                INC     FATFLG                          ;ERROR COUNT
1351 035030                                ERRHRD  ERRNO,T30TMK,EXPREC     ;TMK NOT SET AFTER WRT TAPE MARK
     035030  104456                                                               TRAP    C$ERHRD
     035032  000345                                                               .WORD   229
     035034  040514                                                               .WORD   T30TMK
     035036  015554                                                               .WORD   EXPREC
1352 035040                          195$: CKLOOP                          ;LOOP IF SELECTED
     035040  104406                                                               TRAP    C$CLP1
1353 035042  012700  177777                MOV     #177777,R0              ;VALUE TO WRITTEN TO MEMORY
1354 035046  004737  017502                JSR     PC,FILLMEM              ;FILL MEM WITH ALL ONES
1355 035052  013737  003116  036622        MOV     FREE,T30RB              ;STARTING READ BUFFER ADDRESS
1356
1357                                 ;*************************************************************
1358                                 ;
1359                                 ;READ FORWARD,ACK,CVC=1 COMMAND
1360                                 ;
1361                                 ;*************************************************************
1362
1363 035060  012737  140001  036620        MOV     #140001,T30PK3          ;READ FORWARD,ACK,CVC=1 COMMAND
1364 035066  012704  036620                MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
1365 035072  012737  000024  036626        MOV     #20.,T30SZ              ;SET UP RECORD SIZE IN PACKET
1366 035100  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
1367 035104  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1368 035110  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
1369 035114  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
1370 035120  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
1371 035122  001406                        BEQ     200$                    ;BR, IF OK
1372 035124  005237  002214                INC     FATFLG                          ;ERROR COUNT
1376 035130                                ERRHRD  ERRNO,T30RDF,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     035130  104456                                                               TRAP    C$ERHRD
     035132  000346                                                               .WORD   230
     035134  037413                                                               .WORD   T30RDF
```

```
     035136  012126                                                                       .WORD   PKTSSR
     035140                          200$:   CKLOOP                     ;LOOP IF SELECTED
     035140  104406                                                                       TRAP    C$CLP1
     035142  017701  145750                  MOV     @FREE,R1           ;FIRST LOC IN READ BUFFER
     035146  012702  177777                  MOV     #177777,R2         ;EXPECTED IF NO DATA TRANS.
     035152  020102                          CMP     R1,R2              ;DID ANY DATA GET TRANSFERRED
     035154  001006                          BNE     220$               ;BR, IF NO DATA TRANS (GOOD)
     035156  005237  002214                  INC     FATFLG                     ;ERROR COUNT
     035162                                  ERRHRD  ERRNO,T30DTR,EXPREC ;DATA TRANSFERRED ON READ TAPE MARK
     035162  104456                                                                       TRAP    C$ERHRD
     035164  000347                                                                       .WORD   231
     035166  041070                                                                       .WORD   T30DTR
     035170  015554                                                                       .WORD   EXPREC
     035172                          220$:   CKLOOP                     ;LOOP IF SELECTED
     035172  104406                                                                       TRAP    C$CLP1
     035174  013702  036654                  MOV     T30FCN,R2          ;GET NUMBER OF SKIPS
     035200  005202                          INC     R2                 ;SET TO CORRECT FILE VALUE
     035202  000302                          SWAB    R2                 ;SWAP BYTE HALVES
     035204  052702  000001                  BIS     #BIT0,R2           ;SET FOR RECORD #1
     035210  017701  145702                  MOV     @FREE,R1           ;GET INFO FROM BUFFER
     035214  020201                          CMP     R2,R1              ;ARE THEY EQUAL
     035216  001406                          BEQ     228$               ;BR, IF EQUAL (OK)
     035220  005237  002214                  INC     FATFLG                     ;ERROR COUNT
     035224                                  ERRHRD  ERRNO,T30PTB,EXPREC ;RECORD POSITION WAS NOT CORRECT
     035224  104456                                                                       TRAP    C$ERHRD
     035226  000350                                                                       .WORD   232
     035230  037242                                                                       .WORD   T30PTB
     035232  015554                                                                       .WORD   EXPREC
     035234                          228$:   CKLOOP                     ;LOOP IF SELECTED
     035234  104406                                                                       TRAP    C$CLP1

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

     035236  004737  011074                  JSR     PC,REWIND          ;CALL TAPE REWIND COMMAND
     035242  103411                          BCS     230$               ;BR, IF NO PROBLEM
     035244  010004                          MOV     R0,R4              ;SAVE PACKET ADDRESS
     035246  016501  000002                  MOV     TSSR(R5),R1        ;GET TSSR STATUS
     035252  005237  002214                  INC     FATFLG                     ;ERROR COUNT
     035256                                  ERRHRD  ERRNO,T30RWN,PKTSSR ;REWIND NOT ACCEPTED
     035256  104456                                                                       TRAP    C$ERHRD
     035260  000351                                                                       .WORD   233
     035262  040240                                                                       .WORD   T30RWN
     035264  012126                                                                       .WORD   PKTSSR
     035266                          230$:   CKLOOP                     ;LOOP IF SELECTED
     035266  104406                                                                       TRAP    C$CLP1

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

     035270  013701  036530                  MOV     T30BFR+6,R1        ;PICK UP XST0
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                                    SEQ 121
TEST  2: SKIP TAPE MARKS

1426 035274  010102                          MOV     R1,R2                   ;SET UP EXPECTED
1427 035276  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
1428 035302  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
1429 035304  001406                          BEQ     240$                    ;BR, IF EQUAL (OK)
1430 035306  005237  002214                  INC     FATFLG                          ;ERROR COUNT
1434 035312                                  ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     035312  104456                                                                      TRAP    C$ERHRD
     035314  000352                                                                      .WORD   234
     035316  040041                                                                      .WORD   T30BOT
     035320  015554                                                                      .WORD   EXPREC
1435 035322                          240$:   CKLOOP                          ;LOOP IF SELECTED
     035322  104406                                                                      TRAP    C$CLP1
1436 035324  005723                          TST     (R3)+                   ;POINT TO NEXT POSITION
1437 035326  011301                          MOV     (R3),R1                 ;GET NEXT COMMAND ETC.
1438 035330  020127  177777                  CMP     R1,#177777              ;END OF TABLE MARKER
1439 035334  001410                          BEQ     330$                    ;BR, IF AT END OF TABLE
1440 035336  013701  036654                  MOV     T30FCN,R1               ;GET NUMBER OF SKIPS
1441 035342  000241                          CLC                             ;CLEAR THE CARRY BIT
1442 035344  006101                          ROL     R1                      ;PUSH OVER ONE POSITION
1443 035346  010137  036654                  MOV     R1,T30FCN               ;PUT BACK IN COUNTER
1444 035352  000137  034614                  JMP     182$                    ;JUMP TO MORE COMMANDS TO DO
1445 035356                          330$:   CKLOOP                          ;LOOP IF SELECTED
     035356  104406                                                                      TRAP    C$CLP1
1446 035360                                  ENDSUB                  ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     035360                                                                      L10045:
     035360  104403                                                                      TRAP    C$ESUB
1447 035362  023727  002214  000017                  CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
1448 035370  103402                                  BLO     999$                    ;BR, IF LESS THAN 25
1449 035372  004737  017262                          JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
1450 035376                          999$:
1451                                 ;+
1452                                 ;
1453                                 ;TEST 2, SUBTEST 3
1454                                 ;
1455                                 ;
1456                                 ;VERIFIES THAT A SKIP TAPE MARKS REVERSE COMMAND
1457                                 ;ISSUED WHILE THE TAPE IS POSITIONED AT BOT CAUSES
1458                                 ;FUNCTION REJECT TERMINATION, WITH THE NON-EXECUTABLE
1459                                 ;FUNCTION (NEF) ERROR BIT SET.
1460                                 ;
1461                                 ;
1462                                 ;
1463                                 ;
1464                                 ;
1465                                 -
1466 035376                                  BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     035376                                                                      T2.3:
     035376  104402                                                                      TRAP    C$BSUB
1467 035400  004737  041252                  JSR     PC,T30REST              ;SET COMMAND PACKET
1468 035404  005037  036654                  CLR     T30FCN                  ;CLEAR FILE COUNTER
1469 035410  004737  041344                  JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
1470 035414  004737  041406                  JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
1471 035420  012737  176750  036656          MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
1472 035426  004737  016054          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
1473 035432  103426                          BCS     20$                     ;BR IF INIT WAS OK
1474 035434                                  DELAY   250                     ;DELAY ROUTINE CALL
     035434  012727  000250                                                                  MOV     #250,(PC)+
```

```
                035440  000000                                                          .WORD   0
                035442  013727  002116                                                  MOV     L$DLY,(PC)+
                035446  000000                                                          .WORD   0
                035450  005367  177772                                                  DEC     -6(PC)
                035454  001375                                                          BNE     .-4
                035456  005367  177756                                                  DEC     -22(PC)
                035462  001367                                                          BNE     .-20
     1475       035464  005337  036656          DEC     T30DLY                  ;BUMP COUNTER
     1476       035470  001356                  BNE     10$                     ;BR, IF MORE COUNTING TO DO
     1477       035472  005237  002214          INC     FATFLG                          ;ERROR COUNT
     1481       035476  010001                  MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
     1482       035500                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
                035500  104455                                                          TRAP    C$ERDF
                035502  000353                                                          .WORD   235
                035504  003646                                                          .WORD   SFIERR
                035506  012114                                                          .WORD   SFIMSG
     1483       035510                  20$:
     1484       035510  013737  002174  036520          MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
     1485       035516  012704  036500                  MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
     1486
     1487                               ;*****************************************************************
     1488                               ;
     1489                               ;ISSUE WRITE CHARACTERISTICS COMMAND
     1490                               ;
     1491                               ;*****************************************************************
     1492
     1493       035522  004737  010742          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
     1494       035526  103407                  BCS     23$                     ;BR, IF COMMAND ISSUED OK
     1495       035530  005237  002214          INC     FATFLG                          ;ERROR COUNT
     1499       035534  010001                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
     1500       035536                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
                035536  104456                                                          TRAP    C$ERHRD
                035540  000354                                                          .WORD   236
                035542  005052                                                          .WORD   WRTMSG
                035544  012114                                                          .WORD   SFIMSG
     1501       035546                  23$:    CKLOOP                          ;LOOP IF SELECTED
                035546  104406                                                          TRAP    C$CLP1
     1502
     1503                               ;*****************************************************************
     1504                               ;
     1505                               ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
     1506                               ;
     1507                               ;*****************************************************************
     1508
     1509       035550  004737  011074          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
     1510       035554  103411                  BCS     30$                     ;BR, IF NO PROBLEM
     1511       035556  010004                  MOV     R0,R4                   ;GET PACKET ADDRESS
     1512       035560  016501  000002          MOV     TSSR(R5),R1             ;GET STATUS REGISTER
     1513       035564  005237  002214          INC     FATFLG                          ;ERROR COUNT
     1517       035570                          ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
                035570  104456                                                          TRAP    C$ERHRD
                035572  000355                                                          .WORD   237
                035574  040240                                                          .WORD   T30RWN
                035576  012126                                                          .WORD   PKTSSR
     1518       035600                  30$:    CKLOOP                          ;LOOP IF SELECTED
                035600  104406                                                          TRAP    C$CLP1
     1519
```

```
1520                                    ;*****************************************************************
1521                                    ;
1522                                    ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
1523                                    ;
1524                                    ;*****************************************************************
1525
1526 035602  013701  036530                    MOV     T30BFR+6,R1             ;PICK UP XST0
1527 035606  010102                            MOV     R1,R2                   ;SET UP EXPECTED
1528 035610  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
1529 035614  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
1530 035616  001406                            BEQ     40$                     ;BR, IF EQUAL (OK)
1531 035620  005237  002214                    INC     FATFLG                          ;ERROR COUNT
1535 035624                                    ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     035624  104456                                                                    TRAP    C$ERHRD
     035626  000356                                                                    .WORD   238
     035630  040041                                                                    .WORD   T30BOT
     035632  015554                                                                    .WORD   EXPREC
1536 035634                            40$:    CKLOOP                          ;LOOP IF SELECTED
     035634  104406                                                                    TRAP    C$CLP1
1537 035636  012737  000001  036622            MOV     #1,T30WB                ;SET # OF TM TO SKIP
1538
1539                                    ;*****************************************************************
1540                                    ;
1541                                    ;SKIP TAPE MARK REVERSE,ACK,CVC=1 COMMAND
1542                                    ;
1543                                    ;*****************************************************************
1544
1545 035644  012737  141410  036620            MOV     #141410,T30PK3          ;SKIP TAPE MARK REVERSE,ACK,CVC=1 CMD
1546 035652  012704  036620                    MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
1547 035656  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
1548 035662  004737  016330                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1549 035666  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
1550 035672  012702  100206                    MOV     #SSR!SC!BIT1!BIT2,R2    ;SET UP EXPECTED
1551 035676  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
1552 035700  001406                            BEQ     70$                     ;BR, IF OK
1553 035702  005237  002214                    INC     FATFLG                          ;ERROR COUNT
1557 035706                                    ERRHRD  ERRNO,T30IBT,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     035706  104456                                                                    TRAP    C$ERHRD
     035710  000357                                                                    .WORD   239
     035712  037031                                                                    .WORD   T30IBT
     035714  012126                                                                    .WORD   PKTSSR
1558 035716                            70$:    CKLOOP                          ;LOOP IF SELECTED
     035716  104406                                                                    TRAP    C$CLP1
1559
1560                                    ;*****************************************************************
1561                                    ;
1562                                    ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
1563                                    ;
1564                                    ;*****************************************************************
1565
1566 035720  013701  036530                    MOV     T30BFR+6,R1             ;PICK UP XST0
1567 035724  010102                            MOV     R1,R2                   ;SET UP EXPECTED
1568 035726  052702  002000                    BIS     #BIT10,R2               ;SET NEF BIT IN EXPECTED
1569 035732  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
1570 035734  001406                            BEQ     180$                    ;BR, IF EQUAL (OK)
1571 035736  005237  002214                    INC     FATFLG                          ;ERROR COUNT
1575 035742                                    ERRHRD  ERRNO,T30NEF,EXPREC     ;TAPE NOT AT NEF
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 124
TEST  2: SKIP TAPE MARKS

      035742  104456                                                          TRAP    C$ERHRD
      035744  000360                                                          .WORD   240
      035746  040576                                                          .WORD   T30NEF
      035750  015554                                                          .WORD   EXPREC
 1576 035752                          180$:   CKLOOP                         ;LOOP IF SELECTED
      035752  104406                                                          TRAP    C$CLP1
 1577 035754                                  ENDSUB                         ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
      035754                                                                  L10046:
      035754  104403                                                          TRAP    C$ESUB
 1578 035756  023727  002214  000017         CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
 1579 035764  103402                         BLO     999$                            ;BR, IF LESS THAN 25
 1580 035766  004737  017262                 JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
 1581 035772                          999$:
 1582                                 ;+
 1583                                 ;
 1584                                 ;TEST 2, SUBTEST 4
 1585                                 ;
 1586                                 ;
 1587                                 ;VERIFIES THAT A SKIP TAPE MARKS REVERSE COMMAND
 1588                                 ;ISSUED WHILE THE TAPE IS POSITIONED JUST BEFORE THE
 1589                                 ;FIRST RECORD ON ON TAPE (BUT NOT AT BOT) CAUSES TAPE
 1590                                 ;STATUS ALERT TERMINATION, WITH THE REVERSE INTO BOT
 1591                                 ;(RIB) STATUS BIT SET.
 1592                                 ;
 1593                                 ;
 1594                                 ;
 1595                                 ;
 1596                                 ;
 1597                                 ;-
 1598 035772                                  BGNSUB                         ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
      035772                                                                  T2.4:
      035772  104402                                                          TRAP    C$BSUB
 1599 035774  004737  041252                 JSR     PC,T30REST              ;SET COMMAND PACKET
 1600 036000  005037  036654                 CLR     T30FCN                  ;CLEAR FILE COUNTER
 1601 036004  004737  041344                 JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
 1602 036010  004737  041406                 JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
 1603 036014  012737  176750  036656         MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
 1604 036022  004737  016054          10$:   JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 1605 036026  103426                         BCS     20$                     ;BR IF INIT WAS OK
 1606 036030                                  DELAY   250                     ;DELAY ROUTINE CALL
      036030  012727  000250                                                  MOV     #250.,(PC)+
      036034  000000                                                          .WORD   0
      036036  013727  002116                                                  MOV     L$DLY,(PC)+
      036042  000000                                                          .WORD   0
      036044  005367  177772                                                  DEC     -6(PC)
      036050  001375                                                          BNE     .-4
      036052  005367  177756                                                  DEC     -22(PC)
      036056  001367                                                          BNE     .-20
 1607 036060  005337  036656                 DEC     T30DLY                  ;BUMP COUNTER
 1608 036064  001356                         BNE     10$                     ;BR, IF MORE COUNTING TO DO
 1609 036066  005237  002214                 INC     FATFLG                          ;ERROR COUNT
 1613 036072  010001                         MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 1614 036074                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      036074  104455                                                          TRAP    C$ERDF
      036076  000361                                                          .WORD   241
      036100  003646                                                          .WORD   SFIERR
      036102  012114                                                          .WORD   SFIMSG
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 125
TEST  2: SKIP TAPE MARKS

 1615 036104                                20$:
 1616 036104  013737  002174  036520              MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
 1617 036112  012704  036500                      MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 1618
 1619                                       ;*************************************************************
 1620                                       ;
 1621                                       ;ISSUE WRITE CHARACTERISTICS COMMAND
 1622                                       ;
 1623                                       ;*************************************************************
 1624
 1625 036116  004737  010742                      JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 1626 036122  103407                              BCS     23$                     ;BR, IF COMMAND ISSUED OK
 1627 036124  005237  002214                      INC     FATFLG                          ;ERROR COUNT
 1631 036130  010001                              MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 1632 036132                                      ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      036132  104456                                                                      TRAP    C$ERHRD
      036134  000362                                                                      .WORD   242
      036136  005052                                                                      .WORD   WRTMSG
      036140  012114                                                                      .WORD   SFIMSG
 1633 036142                                23$:    CKLOOP                          ;LOOP IF SELECTED
      036142  104406                                                                      TRAP    C$CLP1
 1634
 1635                                       ;*************************************************************
 1636                                       ;
 1637                                       ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
 1638                                       ;
 1639                                       ;*************************************************************
 1640
 1641 036144  004737  011074                      JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 1642 036150  103411                              BCS     30$                     ;BR, IF NO PROBLEM
 1643 036152  010004                              MOV     R0,R4                   ;GET PACKET ADDRESS
 1644 036154  016501  000002                      MOV     TSSR(R5),R1             ;GET STATUS REGISTER
 1645 036160  005237  002214                      INC     FATFLG                          ;ERROR COUNT
 1649 036164                                      ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
      036164  104456                                                                      TRAP    C$ERHRD
      036166  000363                                                                      .WORD   243
      036170  040240                                                                      .WORD   T30RWN
      036172  012126                                                                      .WORD   PKTSSR
 1650 036174                                30$:    CKLOOP                          ;LOOP IF SELECTED
      036174  104406                                                                      TRAP    C$CLP1
 1651
 1652                                       ;*************************************************************
 1653                                       ;
 1654                                       ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
 1655                                       ;
 1656                                       ;*************************************************************
 1657
 1658 036176  013701  036530                      MOV     T30BFR+6,R1             ;PICK UP XST0
 1659 036202  010102                              MOV     R1,R2                   ;SET UP EXPECTED
 1660 036204  052702  000002                      BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 1661 036210  020102                              CMP     R1,R2                   ;DOES EXP = REC'D
 1662 036212  001406                              BEQ     40$                     ;BR, IF EQUAL (OK)
 1663 036214  005237  002214                      INC     FATFLG                          ;ERROR COUNT
 1667 036220                                      ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      036220  104456                                                                      TRAP    C$ERHRD
      036222  000364                                                                      .WORD   244
      036224  040041                                                                      .WORD   T30BOT
```

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TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 126
TEST  2: SKIP TAPE MARKS

      036226  015554                                                            .WORD   EXPREC
 1668 036230                          40$:    CKLOOP                          ;LOOP IF SELECTED
      036230  104406                                                            TRAP    C$CLP1
 1669 036232  013737  003116  036622          MOV     FREE,T30WB              ;SET UP GOOD WRITE BUFFER
 1670 036240  012737  000400  036626          MOV     #256.,T30SZ             ;SET UP SIZE
 1671
 1672                                 ;*****************************************************************
 1673                                 ;
 1674                                 ;WRITE DATA,ACK,CVC=1 COMMAND
 1675                                 ;
 1676                                 ;*****************************************************************
 1677
 1678 036246  012737  140005  036620          MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
 1679 036254  012704  036620                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 1680 036260  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 1681 036264  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 1682 036270  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 1683 036274  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 1684 036300  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 1685 036302  001406                          BEQ     70$                     ;BR, IF OK
 1686 036304  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 1690 036310                                  ERRHRD  ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      036310  104456                                                            TRAP    C$ERHRD
      036312  000365                                                            .WORD   245
      036314  037170                                                            .WORD   T30WDD
      036316  012126                                                            .WORD   PKTSSR
 1691 036320                          70$:    CKLOOP                          ;LOOP IF SELECTED
      036320  104406                                                            TRAP    C$CLP1
 1692
 1693                                 ;*****************************************************************
 1694                                 ;
 1695                                 ;SKIP TAPE MARK REVERSE,ACK,CVC=1 COMMAND
 1696                                 ;
 1697                                 ;*****************************************************************
 1698
 1699 036322  012737  000001  036622          MOV     #1,T30WB                ;# OF TM TO SKIP
 1700 036330  012737  141410  036620          MOV     #141410,T30PK3          ;SKIP TAPE MARK REVERSE,ACK,CVC=1 CMD
 1701 036336  012704  036620                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 1702 036342  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 1703 036346  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 1704 036352  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
 1705 036356  012702  100204                  MOV     #SSR!BIT2!SC,R2         ;SET UP EXPECTED (SSR AND SC ONLY)
 1706 036362  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
 1707 036364  001406                          BEQ     160$                    ;BR, IF TERMINATION WAS GOOD
 1708 036366  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 1712 036372                                  ERRHRD  ERRNO,T30IBU,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
      036372  104456                                                            TRAP    C$ERHRD
      036374  000366                                                            .WORD   246
      036376  036660                                                            .WORD   T30IBU
      036400  012126                                                            .WORD   PKTSSR
 1713 036402                          160$:   CKLOOP                          ;LOOP IF SELECTED
      036402  104406                                                            TRAP    C$CLP1
 1714
 1715                                 ;*****************************************************************
 1716                                 ;
 1717                                 ;GET EXTENDED STATUS REGISTER ZERO (XST3) FROM MESSAGE BUFFER
 1718                                 ;
```

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

     036404  013701  036536                      MOV     T30BFR+14,R1                ;PICK UP XST3
     036410  010102                              MOV     R1,R2                       ;SET UP EXPECTED
     036412  052702  000001                      BIS     #BIT0,R2                    ;SET RIB BIT IN EXPECTED
     036416  020102                              CMP     R1,R2                       ;DOES EXP = REC'D
     036420  001406                              BEQ     170$                        ;BR, IF EQUAL (OK)
     036422  005237  002214                      INC     FATFLG                          ;ERROR COUNT
     036426                                      ERRHRD  ERRNO,T30RIB,EXPREC         ;TAPE NOT AT RIB
     036426  104456                                                                              TRAP    C$ERHRD
     036430  000367                                                                              .WORD   247
     036432  036745                                                                              .WORD   T30RIB
     036434  015554                                                                              .WORD   EXPREC
     036436                              170$:   CKLOOP                              ;LOOP IF SELECTED
     036436  104406                                                                              TRAP    C$CLP1
     036440                                      ENDSUB                              ;<<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     036440                                                                                   L10047:
     036440  104403                                                                              TRAP    C$ESUB
     036442  023727  002214  000017              CMP     FATFLG,#15.                         ;IS ERROR COUNT AT 25
     036450  103402                              BLO     999$                                ;BR, IF LESS THAN 25
     036452  004737  017262                      JSR     PC,CKDROP                           ;TRY TO DROP THE UNIT
     036456                              999$:
                                         ;SUBTEST END
                                         ;
                                         ;
     036456  004737  016536                      JSR     PC,TSTLOOP                  ;DO WE NEED TO ITERATE TEST
     036462  103002                              BCC     400$                        ;BR, IF NO LOOP REQUIRED
     036464  000137  032360                      JMP     T30LOOP                     ;EXECUTE AGAIN
     036470                              400$:   EXIT    TST                         ;ALL DONE THIS TEST
     036470  104432                                                                              TRAP    C$EXIT
     036472  002736                                                                              .WORD   L10043-.
                                         ;+
                                         ;LOCAL STORAGE FOR THIS TEST
                                         ;-
             036500                              .=<.+10>&177770
     036500                              T30PACKET:                                  ;COMMAND PACKET FOR TEST
     036500  100004                              .WORD   100004                      ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
     036502  036510                              .WORD   T30DATA                     ;ADDRESS OF CHARACTERISTICS BLOCK
     036504  000000                              .WORD   0
     036506  000012                              .WORD   10.                         ;STARTING VALUE OF BLOCK SIZE
     036510                              T30DATA:                                    ;CHARACTERISTICS DATA BLOCK
     036510  036522                              .WORD   T30BFR                      ;ADDRESS OF MESSAGE BUFFER
     036512  000000                              .WORD   0
     036514  000024                              .WORD   20.                         ;LENGTH OF MESSAGE BUFFER
     036516  000000                      T30ETM: .WORD   0                           ;SKIP TAPE MARK CONTROL
     036520  000000                      T30DSW: .WORD   0                           ;SELECT DRIVE 0
     036522                              T30BFR: .BLKW   25.                         ;MESSAGE BUFFER
                                         ;
                                         ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                         ;
             036610                              .=<.+10>&177770
     036610                              T30PK2:
     036610  100006                              .WORD   100006                      ;WRITE SUB SYS MEM COMMAND,  AND ACK
     036612  036630                              .WORD   T30BF2                      ;ADDRESS OF SELECT BLOCK DATA
     036614  000000                              .WORD   0
     036616  000006                              .WORD   6.                          ;SIZE OF DATA PACKET
```

```
1777 036620                        T30PK3:
1778 036620  100205                       .WORD   100205          ;REREAD COMMAND, IE AND ACK
1779 036622                        T30RB:
1780 036622  003116                T30WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
1781 036624  000000                        .WORD   0
1782 036626  000000                T30SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
1783                                       .EVEN
1784                               ;
1785                               ;
1786                               ;
1787 036630                        T30BF2:
1788 036630     010                T30BS0: .BYTE   10              ;BSEL0 AREA
1789 036631     200                T30BS1: .BYTE   200             ;BSEL1 AREA
1790 036632  000000                T30S2:  .WORD   0               ;SEL 2 AREA
1791 036634  000000                T30S3:  .WORD   0               ;DATA AREA
1792                               ;
1793                               ;
1794                                       .EVEN
1795                               ;TAPE MOTION PACKET COMMAND VALUES
1796
1797 036636                        T30IMV:
1798 036636                        T30RN:
1799 036636  000000                       .WORD   000000          ;NEITHER EWB NOR ESS
1800 036640  000100                       .WORD   000100          ;EWB SET
1801 036642  000200                       .WORD   000200          ;ESS SET
1802 036644  000300                       .WORD   000300          ;BOTH EWB AND ESS SET
1803 036646  177777                       .WORD   177777          ;END OF DATA
1804
1805                               ;
1806 036650  000000                T30CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
1807 036652  000000                T30CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
1808 036654  000000                T30FCN: .WORD   0               ;FILE NUMBER COUNTER
1809 036656  000000                T30DLY: .WORD   0               ;DELAY COUNTER STORAGE
1810                               ;+
1811                               ;LOCAL TEXT MESSAGES FOR TEST
1812                               ;-
1813
1814 036660     124     123     123  T30IBU: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE Into BOT'
1815 036745     122     111     102  T30RIB: .ASCIZ  'RIB Bit (XST3) Failed To Set After Reverse Into BOT'
1816 037031     124     123     123  T30IBT: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE At BOT'
1817 037114     124     123     123  T30SKM: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK Command'
1818 037170     124     123     123  T30WDD: .ASCIZ  'TSSR Not Correct After WRITE DATA Command'
1819 037242     124     141     160  T30PTB: .ASCIZ  'Tape Not Positioned On Correct Record After READ REVERSE'
1820 037333     124     141     160  T30TPB: .ASCIZ  'Tape Not Positioned On Second File First Record'
1821 037413     124     123     123  T30RDF: .ASCIZ  'TSSR Incorrect After READ FORWARD Into "File"'
1822 037471     124     123     123  T30RDG: .ASCIZ  'TSSR Incorrect After SPACE Command Into TAPE MARK'
1823 037553     124     123     123  T30WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
1824 037630     111     154     154  T30LOG: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
1825 037711     127     122     111  T30SSR: .ASCIZ  'WRITE MISCELLANEOUS Command Not Accepted'
1826 037762     124     123     123  T30WDE: .ASCIZ  'TSSR Not Correct After SKIP TAPE MARKS, At BOT'
1827 040041     124     141     160  T30BOT: .ASCIZ  'Tape Not At BOT After REWIND Command'
1828 040106     124     123     123  T30TM:  .ASCIZ  'TSSR Not Correct After SPACE FORWARD Command'
1829 040163     124     123     123  T30TM2: .ASCIZ  'TSSR Not Correct After SPACE REVERSE Command'
1830 040240     122     145     167  T30RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
1831 040307     104     162     151  T30OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
1832 040362     124     123     123  T30WDC: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK Command'
1833 040441     103     126     103  T30VCK: .ASCIZ  'CVC Set, Didn't Reset VCK In Message Buffer'
```

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1834 040514      124     115     113  T30TMK: .ASCIZ  'TMK Not Set After WRITE TAPE MARK (RETRY) Command'
1835 040576      123     113     111  T30NEF: .ASCIZ  'SKIP TAPE MARKS, At BOT, Failed To Set NEF Bit'
1836 040655      124     115     113  T30RRM: .ASCIZ  'TMK Not Set After READ REVERSE Into TAPE MARK'
1837 040733      124     115     113  T30RRN: .ASCIZ  'TMK Not Set After SPACE REVERSE Into TAPE MARK'
1838 041012      124     115     113  T30RRP: .ASCIZ  'TMK Not Set After READ FORWARD Into TAPE MARK'
1839 041070      116     117     040  T30DTR: .ASCIZ  'NO Data Transferred On READ FORWARD'
1840 041134      104     141     164  T30DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
1841 041231      123     153     151  TST30ID:        .ASCIZ  'Skip Tape Marks'
1842                                                  .EVEN
1843                                 ;+
1844                                 ;
1845                                 ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
1846                                 ;WRITE SUBSYSTEM MEMORY COMMAND
1847                                 ;
1848                                 ;-
1849
1850 041252                          T30REST:
1851 041252                                  SAVREG                          ;SAVE THE REGISTERS
1852 041256  012701  036500                  MOV     #T30PACKET,R1           ;START OF THE PACKET
1853 041262  012721  100004                  MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
1854 041266  012721  036510                  MOV     #T30DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
1855 041272  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
1856 041274  012721  000012                  MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
1857 041300  012721  036522                  MOV     #T30BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
1858 041304  005021                          CLR     (R1)+
1859 041306  012721  000024                  MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
1860 041312  005021                          CLR     (R1)+
1861 041314  012711  000000                  MOV     #0,(R1)                 ;SELECT DRIVE ZERO
1862 041320  012702  000030                  MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
1863 041324  012762  177777  036522  64$:    MOV     #177777,T30BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
1864 041332  005742                          TST     -(R2)                   ;NEXT LOCATION
1865 041334  022702  000000                  CMP     #0.,R2                          ;CHECK R2 FOR DONE
1866 041340  001371                          BNE     64$                     ;KEEP GOING UNTIL DONE
1867 041342  000207                          RTS     PC                      ;RETURN
1868
1869 041344                          T30RT2:
1870 041344                                  SAVREG                          ;SAVE THE REGISTERS
1871 041350  012701  036610                  MOV     #T30PK2,R1              ;START OF THE PACKET
1872 041354  012721  100006                  MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
1873 041360  012721  036630                  MOV     #T30BF2,(R1)+           ;ADDRESS OF DATA BLOCK
1874 041364  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
1875 041366  012721  000006                  MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
1876 041372  005021                          CLR     (R1)+
1877 041374  012701  036630                  MOV     #T30BF2,R1              ;POINT TO DATA SEL AREA
1878 041400  005021                          CLR     (R1)+
1879 041402  005011                          CLR     (R1)
1880 041404  000207                          RTS     PC                      ;RETURN
1881 041406                          T30RT3:
1882 041406                                  SAVREG                          ;SAVE REGISTERS
1883 041412  012701  036620                  MOV     #T30PK3,R1              ;SET UP POINTER ADDRESS
1884 041416  005021                          CLR     (R1)+                   ;COMMAND SPACE
1885 041420  005021                          CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
1886 041422  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
1887 041424  005011                          CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
1888 041426  000207                          RTS     PC                      ;RETURN
1889 041430                                  ENDTST
     041430                                                                  L10043:
```

```
041430  104401                                                                  TRAP    C$ETST
                                        .SBTTL  TEST  3: NO-OP ("CLEAN TAPE") AND INITIALIZE
                                ;+
                                ;
                                ;THIS TEST VERIFIES PROPER OPERATION OF THE NO-OP ("CLEAN TAPE") AND INITIALIZE
                                ;COMMAND (SPACE REVERSE, ERASE, WRITE DATA)
                                ;
                                ;
                                ;THE TEST CONSISTS OF THE FOLLOWING 2 SUBTESTS
                                ;
                                ;
                                ;
                                ;-
041432                                  BGNTST
041432                                                                  T3::
041432  012737  006354  002172          MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
041440  012700  046543                  MOV     #TST31ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
041444  004737  016570                  JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
041450  012737  000005  002210          MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
041456  005037  043336                  CLR     T31CNT                  ;CLEAR TAPE RECORD COUNTER
                                ;
                                ;-

041462                          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.
                                ;
                                ;
                                ;
                                ;
                                ;
                                ;
                                ;
                                ;-
041462                                  BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
041462                                                                  T3.1:
041462  104402                                                                  TRAP    C$BSUB
041464  004737  046610                  JSR     PC,T31REST              ;SET COMMAND PACKET
041470  004737  046702                  JSR     PC,T31RT2               ;SET UP OTHER COMMAND PACKET
041474  004737  046744                  JSR     PC,T31RT3               ;SET UP OTHER COMMAND PACKET
041500  012737  176750  043342          MOV     #65000.,T31DLY          ;SET UP DELAY COUNTER
041506  004737  016054          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
041512  103426                          BCS     20$                     ;BR IF INIT WAS OK
041514                                  DELAY   250                     ;DELAY ABOUT .25 SEC
041514  012727  000250                                                          MOV     #250,(PC)+
041520  000000                                                                  .WORD   0
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 131
TEST  3: NO-OP ("CLEAN TAPE") AND INITIALIZE

        041522  013727  002116                                                  MOV     L$DLY,(PC)+
        041526  000000                                                          .WORD   0
        041530  005367  177772                                                  DEC     -6(PC)
        041534  001375                                                          BNE     .-4
        041536  005367  177756                                                  DEC     -22(PC)
        041542  001367                                                          BNE     .-20
  1945  041544  005337  043342            DEC     T31DLY                  ;BUMP COUNTER
  1946  041550  001356                    BNE     10$                     ;BR, IF COUNTER NOT DONE
  1947  041552  005237  002214            INC     FATFLG                          ;ERROR COUNT
  1951  041556  010001                    MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
  1952  041560                            ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
        041560  104455                                                          TRAP    C$ERDF
        041562  000455                                                          .WORD   301
        041564  003646                                                          .WORD   SFIERR
        041566  012114                                                          .WORD   SFIMSG
  1953  041570  013737  002174  043210  20$:   MOV     UNITN,T31DSW            ;SET UP UNIT NUMBER IN PACKET
  1954  041576  012704  043170            MOV     @T31PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
  1955  041602  004737  010742            JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
  1956  041606  103407                    BCS     23$                     ;BR, IF COMMAND ISSUED OK
  1957  041610  005237  002214            INC     FATFLG                          ;ERROR COUNT
  1961  041614  010001                    MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
  1962  041616                            ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        041616  104456                                                          TRAP    C$ERHRD
        041620  000456                                                          .WORD   302
        041622  005052                                                          .WORD   WRTMSG
        041624  012114                                                          .WORD   SFIMSG
  1963  041626                    23$:    CKLOOP                          ;LOOP IF SELECTED
        041626  104406                                                          TRAP    C$CLP1
  1964  041630  004737  011074            JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
  1965  041634  103407                    BCS     30$                     ;BR, IF NO PROBLEM
  1966  041636  010004                    MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
  1967  041640  005237  002214            INC     FATFLG                          ;ERROR COUNT
  1971  041644                            ERRHRD  ERRNO,T31RWN,PKTSSR     ;REWIND NOT ACCEPTED
        041644  104456                                                          TRAP    C$ERHRD
        041646  000457                                                          .WORD   303
        041650  044674                                                          .WORD   T31RWN
        041652  012126                                                          .WORD   PKTSSR
  1972  041654                    30$:    CKLOOP                          ;LOOP IF SELECTED
        041654  104406                                                          TRAP    C$CLP1
  1973  041656  013701  043220            MOV     T31BFR+6,R1             ;PICK UP XSTO
  1974  041662  010102                    MOV     R1,R2                   ;SET UP EXPECTED
  1975  041664  052702  000002            BIS     @BIT1,R2                ;SET BOT BIT IN EXPECTED
  1976  041670  020102                    CMP     R1,R2                   ;DOES EXP = REC'D
  1977  041672  001406                    BEQ     40$                     ;BR, IF EQUAL (OK)
  1978  041674  005237  002214            INC     FATFLG                          ;ERROR COUNT
  1982  041700                            ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        041700  104456                                                          TRAP    C$ERHRD
        041702  000460                                                          .WORD   304
        041704  044345                                                          .WORD   T31BOT
        041706  015554                                                          .WORD   EXPREC
  1983  041710                    40$:    CKLOOP                          ;LOOP IF SELECTED
        041710  104406                                                          TRAP    C$CLP1
  1984  041712  013737  003116  043312            MOV     FREE,T31WB              ;STARTING WRITE BUFFER ADDRESS
  1985  041720  012737  140005  043310  65$:    MOV     @140005,T31PK3          ;WRITE DATA,CVC=1,ACK COMMAND
  1986  041726  012704  043310            MOV     @T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
  1987  041732  012700  000144            MOV     @100.,R0                        ;SET PATTERN IN CORRECT REGISTER
  1988  041736  004737  017502            JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
```

```
1989 041742  012737  000144  043316          MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
1990 041750  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
1991 041754  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1992 041760  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
1993 041764  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
1994 041770  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
1995 041772  001406                          BEQ     80$                     ;BR, IF OK
1996 041774  005237  002214                  INC     FATFLG                          ;ERROR COUNT
2000 042000                                  ERRHRD  ERRNO,T31WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     042000  104456                                                                  TRAP    C$ERHRD
     042002  000461                                                                  .WORD   305
     042004  045230                                                                  .WORD   T31WDC
     042006  012126                                                                  .WORD   PKTSSR
2001 042010                          80$:    CKLOOP                          ;LOOP IF SELECTED
     042010  104406                                                                  TRAP    C$CLP1
2002 042012  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
2003 042016  103407                          BCS     230$                    ;BR, IF NO PROBLEM
2004 042020  010001                          MOV     R0,R1                   ;SAVE TSSR
2005 042022  005237  002214                  INC     FATFLG                          ;ERROR COUNT
2009 042026                                  ERRHRD  ERRNO,T31RWN,EXPREC     ;REWIND NOT ACCEPTED
     042026  104456                                                                  TRAP    C$ERHRD
     042030  000462                                                                  .WORD   306
     042032  044674                                                                  .WORD   T31RWN
     042034  015554                                                                  .WORD   EXPREC
2010 042036                          230$:   CKLOOP                          ;LOOP IF SELECTED
     042036  104406                                                                  TRAP    C$CLP1
2011 042040  013701  043220                  MOV     T31BFR+6,R1             ;PICK UP XSTO
2012 042044  010102                          MOV     R1,R2                   ;SET UP EXPECTED
2013 042046  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2014 042052  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
2015 042054  001406                          BEQ     240$                    ;BR, IF EQUAL (OK)
2016 042056  005237  002214                  INC     FATFLG                          ;ERROR COUNT
2020 042062                                  ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     042062  104456                                                                  TRAP    C$ERHRD
     042064  000463                                                                  .WORD   307
     042066  044345                                                                  .WORD   T31BOT
     042070  015554                                                                  .WORD   EXPREC
2021 042072                          240$:   CKLOOP                          ;LOOP IF SELECTED
     042072  104406                                                                  TRAP    C$CLP1
2022 042074  012737  041012  043310  265$:   MOV     #041012,T31PK3          ;NO-OP,CVC=1 COMMAND
2023 042102  012704  043310                  MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2024 042106  010337  043316                  MOV     R3,T31SZ                ;SET UP RECORD SIZE IN PACKET
2025 042112  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2026 042116  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2027 042122  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2028 042126  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
2029 042132  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
2030 042134  001406                          BEQ     280$                    ;BR, IF OK
2031 042136  005237  002214                  INC     FATFLG                          ;ERROR COUNT
2035 042142                                  ERRHRD  ERRNO,T31RDF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     042142  104456                                                                  TRAP    C$ERHRD
     042144  000464                                                                  .WORD   308
     042146  043543                                                                  .WORD   T31RDF
     042150  012126                                                                  .WORD   PKTSSR
2036 042152                          280$:   CKLOOP                          ;LOOP IF SELECTED
     042152  104406                                                                  TRAP    C$CLP1
2037 042154  013701  043220                  MOV     T31BFR+6,R1             ;PICK UP XSTO
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 133
TEST  3: NO-OP ("CLEAN TAPE") AND INITIALIZE

 2038 042160  010102                          MOV     R1,R2                   ;SET UP EXPECTED.
 2039 042162  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 2040 042166  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
 2041 042170  001406                          BEQ     285$                    ;BR, IF EQUAL (OK)
 2042 042172  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 2046 042176                                  ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      042176  104456                                                                  TRAP    C$ERHRD
      042200  000465                                                                  .WORD   309
      042202  044345                                                                  .WORD   T31BOT
      042204  015554                                                                  .WORD   EXPREC
 2047 042206                          285$:   CKLOOP                          ;LOOP IF SELECTED
      042206  104406                                                                  TRAP    C$CLP1
 2048 042210  012737  140001  043310          MOV     #140001,T31PK3          ;READ,ACK,CVC=1 COMMAND
 2049 042216  012704  043310                  MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 2050 042222  012737  000144  043316          MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
 2051 042230  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 2052 042234  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 2053 042240  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 2054 042244  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 2055 042250  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 2056 042252  001406                          BEQ     290$                    ;BR, IF OK
 2057 042254  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 2061 042260                                  ERRHRD  ERRNO,T31RDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      042260  104456                                                                  TRAP    C$ERHRD
      042262  000466                                                                  .WORD   310
      042264  043344                                                                  .WORD   T31RDE
      042266  012126                                                                  .WORD   PKTSSR
 2062 042270                          290$:   CKLOOP                          ;LOOP IF SELECTED
      042270  104406                                                                  TRAP    C$CLP1
 2063 042272  017701  140620                  MOV     @FREE,R1                ;GET DATA READ
 2064 042276  012702  000144                  MOV     #100.,R2                ;READ EXPECTED
 2065 042302  020102                          CMP     R1,R2                   ;DID TAPE STAY POSITIONED
 2066 042304  001406                          BEQ     330$                    ;BR, IF EXPD = RECD
 2067 042306  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 2071 042312                                  ERRHRD  ERRNO,T31WNG,EXPREC     ;TAPE DATA NOT CORRECT
      042312  104456                                                                  TRAP    C$ERHRD
      042314  000467                                                                  .WORD   311
      042316  043471                                                                  .WORD   T31WNG
      042320  015554                                                                  .WORD   EXPREC
 2072 042322                          330$:
 2073 042322                          ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      042322                                                                      L10051:
      042322  104403                                                                  TRAP    C$ESUB
 2074 042324  023727  002214  000017          CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
 2075 042332  103402                          BLO     999$                    ;BR, IF LESS THAN 25
 2076 042334  004737  017262                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
 2077 042340                          999$:
 2078                                 ;*
 2079                                 ;
 2080                                 ;TEST 3, SUBTEST 2
 2081                                 ;
 2082                                 ;
 2083                                 ;       VERIFIES THAT THE INITIALIZE COMMAND OPERATES AS A NO-OP,
 2084                                 ;       ASSUMING NO MICRODIAGNOSTIC ERRORS ARE PRESENT (THEY WOULD
 2085                                 ;       ALREADY HAVE BEEN DETECTED IN PREVIOUS TESTS).  THE TEST
 2086                                 ;       SEQUENCE IS SIMILAR TO THAT USED IN SUBTEST 1.
 2087                                 ;
```

```
                                        ;
                                        ;
                                        ;-
042340                                  BGNSUB                                  ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
042340                                                                                      T3.2:
042340  104402                                                                              TRAP    C$BSUB
042342  004737  046610                  JSR     PC,T31REST                      ;SET COMMAND PACKET
042346  004737  046702                  JSR     PC,T31RT2                       ;SET UP OTHER COMMAND PACKET
042352  004737  046744                  JSR     PC,T31RT3                       ;SET UP OTHER COMMAND PACKET
042356  004737  016054                  JSR     PC,SOFINIT                      ;DO INITIALIZE ON CONTROLLER
042362  103407                          BCS     20$                             ;BR IF INIT WAS OK
042364  005237  002214                  INC     FATFLG                                  ;ERROR COUNT
042370  010001                          MOV     R0,R1                           ;CONTENTS OF TSSR REGISTER
042372                                  ERRDF   ERRNO,SFIERR,SFIMSG             ;FATAL ERROR TSSR WAS NOT OK
042372  104455                                                                              TRAP    C$ERDF
042374  000470                                                                              .WORD   312
042376  003646                                                                              .WORD   SFIERR
042400  012114                                                                              .WORD   SFIMSG
042402  013737  002174  043210  20$:     MOV     UNITN,T31DSW                    ;SET UP UNIT NUMBER IN PACKET
042410  012704  043170                  MOV     #T31PACKET,R4                   ;SUBROUTINE NEEDS PACKET ADDRESS
042414  004737  010742                  JSR     PC,WRTCHR                       ;ISSUE WRITE CHARACTERISTICS
042420  103407                          BCS     23$                             ;BR, IF COMMAND ISSUED OK
042422  005237  002214                  INC     FATFLG                                  ;ERROR COUNT
042426  010001                          MOV     R0,R1                           ;SAVE CONTENTS OF TSSR
042430                                  ERRHRD  ERRNO,WRTMSG,SFIMSG             ;WRITE CHARACTERISTISC FAILED
042430  104456                                                                              TRAP    C$ERHRD
042432  000471                                                                              .WORD   313
042434  005052                                                                              .WORD   WRTMSG
042436  012114                                                                              .WORD   SFIMSG
042440                          23$:    CKLOOP                                  ;LOOP IF SELECTED
042440  104406                                                                              TRAP    C$CLP1
042442  004737  011074                  JSR     PC,REWIND                       ;CALL TAPE REWIND COMMAND
042446  103407                          BCS     30$                             ;BR, IF NO PROBLEM
042450  010004                          MOV     R0,R4                           ;SET UP REWIND PACKET ADDRESS
042452  005237  002214                  INC     FATFLG                                  ;ERROR COUNT
042456                                  ERRHRD  ERRNO,T31RWN,PKTSSR             ;REWIND NOT ACCEPTED
042456  104456                                                                              TRAP    C$ERHRD
042460  000472                                                                              .WORD   314
042462  044674                                                                              .WORD   T31RWN
042464  012126                                                                              .WORD   PKTSSR
042466                          30$:    CKLOOP                                  ;LOOP IF SELECTED
042466  104406                                                                              TRAP    C$CLP1
042470  013701  043220                  MOV     T31BFR+6,R1                     ;PICK UP XSTO
042474  010102                          MOV     R1,R2                           ;SET UP EXPECTED
042476  052702  000002                  BIS     #BIT1,R2                        ;SET BOT BIT IN EXPECTED
042502  020102                          CMP     R1,R2                           ;DOES EXP = REC'D
042504  001406                          BEQ     40$                             ;BR, IF EQUAL (OK)
042506  005237  002214                  INC     FATFLG                                  ;ERROR COUNT
042512                                  ERRHRD  ERRNO,T31BOT,EXPREC             ;TAPE NOT AT BOT AFTER REWIND
042512  104456                                                                              TRAP    C$ERHRD
042514  000473                                                                              .WORD   315
042516  044345                                                                              .WORD   T31BOT
042520  015554                                                                              .WORD   EXPREC
042522                          40$:    CKLOOP                                  ;LOOP IF SELECTED
042522  104406                                                                              TRAP    C$CLP1
042524  013737  003116  043312          MOV     FREE,T31WB                      ;STARTING WRITE BUFFER ADDRESS
042532  012737  140005  043310  65$:     MOV     #140005,T31PKT                  ;WRITE DATA,CVC=1,ACK COMMAND
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 135
TEST  3: NO-OP ("CLEAN TAPE") AND INITIALIZE

 2136 042540  012704  043310                MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 2137 042544  012700  000144                MOV     #100.,R0                        ;SET PATTERN IN CORRECT REGISTER
 2138 042550  004737  017502                JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
 2139 042554  012737  000144  043316        MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
 2140 042562  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 2141 042566  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 2142 042572  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 2143 042576  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 2144 042602  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 2145 042604  001406                        BEQ     80$                     ;BR, IF OK
 2146 042606  005237  002214                INC     FATFLG                          ;ERROR COUNT
 2150 042612                                ERRHRD  ERRNO,T31WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      042612  104456                                                                TRAP    C$ERHRD
      042614  000474                                                                .WORD   316
      042616  045230                                                                .WORD   T31WDC
      042620  012126                                                                .WORD   PKTSSR
 2151 042622                        80$:    CKLOOP                          ;LOOP IF SELECTED
      042622  104406                                                                TRAP    C$CLP1
 2152 042624  004737  011074                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 2153 042630  103407                        BCS     230$                    ;BR, IF NO PROBLEM
 2154 042632  010001                        MOV     R0,R1                   ;SAVE TSSR
 2155 042634  005237  002214                INC     FATFLG                          ;ERROR COUNT
 2159 042640                                ERRHRD  ERRNO,T31RWN,EXPREC     ;REWIND NOT ACCEPTED
      042640  104456                                                                TRAP    C$ERHRD
      042642  000475                                                                .WORD   317
      042644  044674                                                                .WORD   T31RWN
      042646  015554                                                                .WORD   EXPREC
 2160 042650                        230$:   CKLOOP                          ;LOOP IF SELECTED
      042650  104406                                                                TRAP    C$CLP1
 2161 042652  013701  043220                MOV     T31BFR+6,R1             ;PICK UP XSTO
 2162 042656  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 2163 042660  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 2164 042664  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 2165 042666  001406                        BEQ     240$                    ;BR, IF EQUAL (OK)
 2166 042670  005237  002214                INC     FATFLG                          ;ERROR COUNT
 2170 042674                                ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      042674  104456                                                                TRAP    C$ERHRD
      042676  000476                                                                .WORD   318
      042700  044345                                                                .WORD   T31BOT
      042702  015554                                                                .WORD   EXPREC
 2171 042704                        240$:   CKLOOP                          ;LOOP IF SELECTED
      042704  104406                                                                TRAP    C$CLP1
 2172 042706  012737  041012  043310  265$:   MOV     #041012,T31PK3          ;INITIALIZE,CVC=1 COMMAND
 2173 042714  012704  043310                MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 2174 042720  010337  043316                MOV     R3,T31SZ                ;SET UP RECORD SIZE IN PACKET
 2175 042724  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 2176 042730  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 2177 042734  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 2178 042740  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 2179 042744  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 2180 042746  001406                        BEQ     280$                    ;BR, IF OK
 2181 042750  005237  002214                INC     FATFLG                          ;ERROR COUNT
 2185 042754                                ERRHRD  ERRNO,T31RDF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      042754  104456                                                                TRAP    C$ERHRD
      042756  000477                                                                .WORD   319
      042760  043543                                                                .WORD   T31RDF
      042762  012126                                                                .WORD   PKTSSR
```

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TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 136
TEST  3: NO-OP ("CLEAN TAPE") AND INITIALIZE

 2186 042764                            280$:   CKLOOP                          ;LOOP IF SELECTED
      042764  104406                                                                      TRAP    C$CLP1
 2187 042766  013701  043220                    MOV     T31BFR+6,R1             ;PICK UP XSTO
 2188 042772  010102                            MOV     R1,R2                   ;SET UP EXPECTED
 2189 042774  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 2190 043000  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
 2191 043002  001406                            BEQ     285$                    ;BR, IF EQUAL (OK)
 2192 043004  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 2196 043010                                    ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      043010  104456                                                                    TRAP    C$ERHRD
      043012  000500                                                                    .WORD   320
      043014  044345                                                                    .WORD   T31BOT
      043016  015554                                                                    .WORD   EXPREC
 2197 043020                            285$:   CKLOOP                          ;LOOP IF SELECTED
      043020  104406                                                                    TRAP    C$CLP1
 2198 043022  012737  140001  043310            MOV     #140001,T31PK3          ;READ,ACK,CVC=1 COMMAND
 2199 043030  012704  043310                    MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 2200 043034  012737  000144  043316            MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
 2201 043042  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 2202 043046  004737  016330                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 2203 043052  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 2204 043056  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
 2205 043062  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
 2206 043064  001406                            BEQ     290$                    ;BR, IF OK
 2207 043066  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 2211 043072                                    ERRHRD  ERRNO,T31RDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      043072  104456                                                                    TRAP    C$ERHRD
      043074  000501                                                                    .WORD   321
      043076  043344                                                                    .WORD   T31RDE
      043100  012126                                                                    .WORD   PKTSSR
 2212 043102                            290$:   CKLOOP                          ;LOOP IF SELECTED
      043102  104406                                                                    TRAP    C$CLP1
 2213 043104  017701  140006                    MOV     @FREE,R1                ;GET DATA READ
 2214 043110  012702  000144                    MOV     #100.,R2                ;READ EXPECTED
 2215 043114  020102                            CMP     R1,R2                   ;DID TAPE STAY POSITIONED
 2216 043116  001406                            BEQ     330$                    ;BR, IF EXPD = RECD
 2217 043120  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 2221 043124                                    ERRHRD  ERRNO,T31WNH,EXPREC     ;TAPE POSITION NOT CORRECT AFTER INIT
      043124  104456                                                                    TRAP    C$ERHRD
      043126  000502                                                                    .WORD   322
      043130  043410                                                                    .WORD   T31WNH
      043132  015554                                                                    .WORD   EXPREC
 2222 043134                            330$:
 2223 043134                                    ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
      043134                                                                                L10052:
      043134  104403                                                                    TRAP    C$ESUB
 2224 043136  023727  002214  000017            CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
 2225 043144  103402                            BLO     999$                            ;BR, IF LESS THAN 25
 2226 043146  004737  017262                    JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
 2227 043152                            999$:
 2228                                   ;
 2229                                   ;
 2230                                   ;
 2231 043152  004737  016536                    JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
 2232 043156  103002                            BCC     163$                    ;BR, IF NO LOOP REQUIRED
 2233 043160  000137  041462                    JMP     T31LOOP                 ;EXECUTE AGAIN
 2234 043164                            163$:   EXIT    TST                     ;ALL DONE THIS TEST
```

```
043164  104432                                                          TRAP    C$EXIT
043166  003600                                                          .WORD   L10050-.
2235                            ;*
2236                            ;LOCAL STORAGE FOR THIS TEST
2237                            ;-
2241 043170                     T31PACKET:                              ;COMMAND PACKET FOR TEST
2242 043170  100004                     .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
2243 043172  043200                     .WORD   T31DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
2244 043174  000000                     .WORD   0
2245 043176  000012                     .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
2246 043200                     T31DATA:                                ;CHARACTERISTICS DATA BLOCK
2247 043200  043212                     .WORD   T31BFR                  ;ADDRESS OF MESSAGE BUFFER
2248 043202  000000                     .WORD   0
2249 043204  000024                     .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
2250 043206  000000                     .WORD   0
2251 043210  000000             T31DSW: .WORD   0                       ;SELECT DRIVE 0
2252 043212                     T31BFR: .BLKW   25.                     ;MESSAGE BUFFER
2253                            ;
2254                            ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
2255                            ;
2257            043300                   .=<.+10>&177770
2259 043300                     T31PK2:
2260 043300  100006                     .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
2261 043302  043320                     .WORD   T31BF2                  ;ADDRESS OF SELECT BLOCK DATA
2262 043304  000000                     .WORD   0
2263 043306  000006                     .WORD   6.                      ;SIZE OF DATA PACKET
2264
2268 043310                     T31PK3:
2269 043310  100005                     .WORD   100005                  ;REREAD COMMAND, AND ACK
2270 043312                     T31RB:
2271 043312  003116             T31WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
2272 043314  000000                     .WORD   0
2273 043316  000000             T31SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
2274                                    .EVEN
2275                            ;
2276                            ;
2277                            ;
2278 043320                     T31BF2:
2279 043320     010             T31BS0: .BYTE   10                      ;BSEL0 AREA
2280 043321     200             T31BS1: .BYTE   200                     ;BSEL1 AREA
2281 043322  000000             T31S2:  .WORD   0                       ;SEL 2 AREA
2282 043324  000000             T31S3:  .WORD   0                       ;DATA AREA
2283                            ;
2284                            ;
2285                                    .EVEN
2286                            ;TAPE MOTION PACKET COMMAND VALUES
2287
2288 043326  100205             T31RN:  .WORD   100205                  ;REREAD DATA (NEXT)
2289 043330  100605             T31WDR: .WORD   100605                  ;REREAD DATA RETRY
2290 043332  102205             T31CON: .WORD   102205                  ;WRITE CONTINOUS
2291 043334  177777                     .WORD   177777                  ;END OF DATA
2292
2293                            ;
2294 043336  000000             T31CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
2295 043340  000000             T31CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
2296 043342  000000             T31DLY: .WORD   0                       ;DELAY COUNTER
2297                            ;*
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TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 138
TEST  3: NO-OP ("CLEAN TAPE") AND INITIALIZE

                                        ;LOCAL TEXT MESSAGES FOR TEST
                                        ;-

043344      124     123     123  T31RDE: .ASCIZ  'TSSR Not Correct After READ Command'
043410      124     141     160  T31WNH: .ASCIZ  'Tape Position Incorrect After INITIALIZE Command'
043471      124     141     160  T31WNG: .ASCIZ  'Tape Position Incorrect After NOP Command'
043543      124     123     123  T31RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
043612      122     105     122  T31RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
043707      120     117     123  T31SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
043771      122     111     102  T31LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
044041      124     123     123  T31WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
044116      111     154     154  T31LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
044177      122     105     122  T31SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
044233      124     123     123  T31WDE: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE Command,At BOT'
044345      124     141     160  T31BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XSTO)'
044440      116     117     055  T31TIM: .ASCIZ  'NO-OP ("CLEAN TAPE") AND INITIALIZE''S Erase Tape Not Long Enough'
044540      122     105     122  T31EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
044617      124     123     123  T31TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
044674      122     145     167  T31RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
044743      122     101     115  T31RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
045016      124     123     123  T31AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
045065      104     162     151  T31OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
045140      124     123     123  T31WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
045230      124     123     123  T31WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
045303      103     126     103  T31VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
045356      124     123     102  T31BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
045431      127     122     111  T31WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
045520      122     145     141  T31LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XSTO'
045602      122     145     141  T31LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
045664      122     145     163  T31PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
045752      122     145     141  T31TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
046040      116     117     055  T31NEF: .ASCIZ  'NO-OP ("CLEAN TAPE") AND INITIALIZE, At First Record, Failed To Set RIB Bit
X
046161      124     123     123  T31SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
046236      124     123     123  T31TSA: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE, Into BOT'
046343      124     123     123  T31WRF: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE Command'
046446      104     141     164  T31DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
046543      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
                                        ;
                                        ;-

046610                                  T31REST:
046610                                          SAVREG                          ;SAVE THE REGISTERS
046614  012701  043170                          MOV     #T31PACKET,R1           ;START OF THE PACKET
046620  012721  100004                          MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
046624  012721  043200                          MOV     #T31DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
046630  005021                                  CLR     (R1)+                   ;EXTENDED ADDRESS
046632  012721  000012                          MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
046636  012721  043212                          MOV     #T31BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
046642  005021                                  CLR     (R1)+
046644  012721  000024                          MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
046650  005021                                  CLR     (R1)+
046652  012711  000000                          MOV     #0,(R1)                 ;SELECT DRIVE ZERO
```

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

 2355 046656  012702  000030                    MOV     #24.,R2         ;NUMBER OF LOCATIONS TO BE CLEARED
 2356 046662  012762  177777  043212  64$:      MOV     #177777,T31BFR(R2)  ;ALL ONES TO MESSAGE BUFFER
 2357 046670  005742                            TST     -(R2)           ;NEXT LOCATION
 2358 046672  022702  000000                    CMP     #0,R2           ;AT END OF LOOP YET
 2359 046676  001371                            BNE     64$             ;KEEP GOING UNTIL DONE
 2360 046700  000207                            RTS     PC              ;RETURN
 2361
 2362 046702                          T31RT2:
 2363 046702                                    SAVREG                  ;SAVE THE REGISTERS
 2364 046706  012701  043300                    MOV     #T31PK2,R1      ;START OF THE PACKET
 2365 046712  012721  100006                    MOV     #100006,(R1)+   ;WRITE SUBSYSTEM MEM. WITH ACK,
 2366 046716  012721  043320                    MOV     #T31BF2,(R1)+   ;ADDRESS OF DATA BLOCK
 2367 046722  005021                            CLR     (R1)+           ;EXTENDED ADDRESS
 2368 046724  012721  000006                    MOV     #6.,(R1)+       ;SIZE OF DATA BLOCK IN BYTES
 2369 046730  005021                            CLR     (R1)+
 2370 046732  012701  043320                    MOV     #T31BF2,R1      ;POINT TO DATA SEL AREA
 2371 046736  005021                            CLR     (R1)+
 2372 046740  005011                            CLR     (R1)
 2373 046742  000207                            RTS     PC              ;RETURN
 2374 046744                          T31RT3:
 2375 046744                                    SAVREG                  ;SAVE REGISTERS
 2376 046750  012701  043310                    MOV     #T31PK3,R1      ;SET UP POINTER ADDRESS
 2377 046754  005021                            CLR     (R1)+           ;COMMAND SPACE
 2378 046756  005021                            CLR     (R1)+           ;ADDRESS OF DATA BLOCK
 2379 046760  005021                            CLR     (R1)+           ;EXTENDED ADDRESS
 2380 046762  005011                            CLR     (R1)            ;SIZE OF DATA TRANSFER BLOCK
 2381 046764  000207                            RTS     PC              ;RETURN
 2382 046766                                    ENDTST
      046766                                                                    L10050:
      046766  104401                                                           TRAP    C$ETST
 2383                                 .SBTTL  TEST  4: Erase And Operation Incomplete
 2384                                ;+
 2385                                ;
 2386                                ;       VERIFIES THAT AN ERASE COMMAND ISSUED WHEN THE TAPE IS
 2387                                ;       POSITIONED AT BOT OPERATES PROPERLY AND ACTUALLY ERASES TAPE.
 2388                                ;       THE FOLLOWING TEST SEQUENCE IS PERFORMED:
 2389                                ;
 2390                                ;
 2391                                ;            1.  THE TAPE IS FIRST REWOUND, SEVERAL TEST RECORDS ARE
 2392                                ;                WRITTEN, AND THE TAPE IS REWOUND AGAIN.
 2393                                ;
 2394                                ;            2.  AN ERASE COMMAND IS ISSUED, WHICH SHOULD ERASE A NUMBER
 2395                                ;                OF THE TEST RECORDS.
 2396                                ;
 2397                                ;            3.  NORMAL TERMINATION IS VERIFIED AND STATUS IS CHECKED
 2398                                ;                (BOT SHOULD BE 0).
 2399                                ;
 2400                                ;            4.  A READ REVERSE COMMAND IS ISSUED.  IT IS VERIFIED THAT
 2401                                ;                THE COMMAND TERMINATES WITH TAPE STATUS ALERT, THAT THE
 2402                                ;                REVERSE INTO BOT (RIB) STATUS BIT IS SET, AND THAT NO
 2403                                ;                DATA IS TRANSFERRED.  THIS DEMONSTRATES THAT NO DATA
 2404                                ;                WAS ENCOUNTERED IN THE AREA ERASED BY THE ERASE
 2405                                ;                COMMAND.
 2406                                ;
 2407                                ;
 2408                                ;
 2409                                ;
```

```
                                        ;
                                        ;
                                        ;
                                        ;THE TEST CONSISTS OF THE FOLLOWING 3 SUBTESTS
                                        ;
                                        ;
                                        ;
                                        ;-
046770                                          BGNTST
046770                                                                          T4::
046770  012737  006354  002172                  MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
046776  012700  052640                          MOV     #TST32ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
047002  004737  016570                          JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
047006  012737  000005  002210                  MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
047014  005037  051510                          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.
                                        ;
                                        ;
                                        ;-

047020                                  T32LOOP:
                                        ;
                                        ;
                                        ;-
047020                                          BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
047020                                                                          T4.1:
047020  104402                                                                  TRAP    C$BSUB
047022  004737  052700                  JSR     PC,T32REST              ;SET COMMAND PACKET
047026  004737  052772                  JSR     PC,T32RT2               ;SET UP OTHER COMMAND PACKET
047032  004737  053022                  JSR     PC,T32RT3               ;SET UP OTHER COMMAND PACKET
047036  012737  176750  051514          MOV     #65000.,T32DLY          ;SET UP DELAY COUNTER
047044  004737  016054          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
047050  103426                  BCS     20$                             ;BR IF INIT WAS OK
047052                          DELAY   250                             ;DELAY ABOUT .25 SEC
047052  012727  000250                                                  MOV     #250.,(PC)+
047056  000000                                                          .WORD   0
047060  013727  002116                                                  MOV     L$DLY,(PC)+
047064  000000                                                          .WORD   0
047066  005367  177772                                                  DEC     -6(PC)
047072  001375                                                          BNE     .-4
047074  005367  177756                                                  DEC     -22(PC)
047100  001367                                                          BNE     .-20
047102  005337  051514                  DEC     T32DLY                  ;BUMP COUNTER
047106  001356                  BNE     10$                             ;BR, IF COUNTER NOT DONE
047110  005237  002214                  INC     FATFLG                          ;ERROR COUNT
047114  010001                  MOV     R0,R1                           ;CONTENTS OF TSSR REGISTER
047116                          ERRDF   ERRNO,SFIERR,SFIMSG             ;FATAL ERROR TSSR WAS NOT OK
047116  104455                                                                  TRAP    C$ERDF
047120  000621                                                                  .WORD   401
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```
                                                                                .WORD   SFIERR
                                                                                .WORD   SFIMSG
2461 047126 013737 002174 051350 20$:   MOV     UNITN,T32DSW            ;SET UP DRIVE NUMBER
2462 047134 012704 051330                MOV     #T32PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
2463 047140 004737 010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
2464 047144 103407                       BCS     25$                     ;BR, IF COMMAND ISSUED OK
2465 047146 005237 002214                INC     FATFLG                          ;ERROR COUNT
2469 047152 010001                       MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
2470 047154                              ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     047154 104456                                                              TRAP    C$ERHRD
     047156 000622                                                              .WORD   402
     047160 005052                                                              .WORD   WRTMSG
     047162 012114                                                              .WORD   SFIMSG
2471 047164                      25$:    CKLOOP                          ;LOOP IF SELECTED
     047164 104406                                                              TRAP    C$CLP1
2472 047166 004737 011074                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
2473 047172 103411                       BCS     26$                     ;BR, IF NO PROBLEM
2474 047174 010004                       MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
2475 047176 016501 000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2476 047202 005237 002214                INC     FATFLG                          ;ERROR COUNT
2480 047206                              ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
     047206 104456                                                              TRAP    C$ERHRD
     047210 000623                                                              .WORD   403
     047212 051700                                                              .WORD   T32RWN
     047214 012126                                                              .WORD   PKTSSR
2481 047216                      26$:    CKLOOP                          ;LOOP IF SELECTED
     047216 104406                                                              TRAP    C$CLP1
2482 047220 012703 000400                MOV     #256.,R3                ;STARTING RECORD SIZE
2483 047224 013737 003116 051452         MOV     FREE,T32WB              ;STARTING WRITE BUFFER ADDRESS
2484 047232 012737 140005 051450         MOV     #140005,T32PK3          ;WRITE DATA,CVC=1,ACK COMMAND
2485 047240 012704 051450                MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2486 047244 010337 051456        27$:    MOV     R3,T32SZ                ;SET UP RECORD SIZE IN PACKET
2487 047250 010465 000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2488 047254 004737 016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2489 047260 016501 000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2490 047264 012702 000200                MOV     #SSR,R2                 ;SET UP EXPECTED
2491 047270 020102                       CMP     R1,R2                   ;ARE THEY EQUAL
2492 047272 001406                       BEQ     28$                     ;BR, IF OK
2493 047274 005237 002214                INC     FATFLG                          ;ERROR COUNT
2497 047300                              ERRHRD  ERRNO,T32WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     047300 104456                                                              TRAP    C$ERHRD
     047302 000624                                                              .WORD   404
     047304 052536                                                              .WORD   T32WDC
     047306 012126                                                              .WORD   PKTSSR
2498 047310                      28$:    CKLOOP                          ;LOOP IF SELECTED
     047310 104406                                                              TRAP    C$CLP1
2499 047312 005723                       TST     (R3)+                   ;BUMP RECORD COUNTER
2500 047314 020327 001002                CMP     R3,#514.                ;AT MAX SIZE YET
2501 047320 001351                       BNE     27$                     ;BR, IF NOT AT END OF LOOP
2502 047322 004737 011074                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
2503 047326 103411                       BCS     30$                     ;BR, IF NO PROBLEM
2504 047330 016501 000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2505 047334 010004                       MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
2506 047336 005237 002214                INC     FATFLG                          ;ERROR COUNT
2510 047342                              ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
     047342 104456                                                              TRAP    C$ERHRD
     047344 000625                                                              .WORD   405
```

```
                                                                                .WORD   T32RWN
                                                                                .WORD   PKTSSR
2511 047352                             30$:    CKLOOP                          ;LOOP IF SELECTED
     047352 104406                                                              TRAP    C$CLP1
2512 047354 013701 051360                       MOV     T32BFR+6,R1             ;PICK UP XSTO
2513 047360 010102                              MOV     R1,R2                   ;SET UP EXPECTED
2514 047362 052702 000002                       BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2515 047366 020102                              CMP     R1,R2                   ;DOES EXP = REC'D
2516 047370 001406                              BEQ     40$                     ;BR, IF EQUAL (OK)
2517 047372 005237 002214                       INC     FATFLG                          ;ERROR COUNT
2521 047376                                     ERRHRD  ERRNO,T32BOE,EXPREC     ;TAPE AT BOT AFTER ERASE
     047376 104456                                                              TRAP    C$ERHRD
     047400 000626                                                              .WORD   406
     047402 052366                                                              .WORD   T32BOE
     047404 015554                                                              .WORD   EXPREC
2522 047406                             40$:    CKLOOP                          ;LOOP IF SELECTED
     047406 104406                                                              TRAP    C$CLP1
2523 047410 012737 140411 051450                MOV     #140411,T32PK3          ;ERASE TAPE,CVC=1,ACK COMMAND
2524 047416 012704 051450                       MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2525 047422 010465 000000                       MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2526 047426 004737 016330                       JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2527 047432 016501 000002                       MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2528 047436 012702 000200                       MOV     #SSR,R2                 ;SET UP EXPECTED
2529 047442 020102                              CMP     R1,R2                   ;ARE THEY EQUAL
2530 047444 001406                              BEQ     50$                     ;BR, IF OK
2531 047446 005237 002214                       INC     FATFLG                          ;ERROR COUNT
2535 047452                                     ERRHRD  ERRNO,T32ERA,PKTSSR     ;TSSR INCORRECT AFTER ERASE DATA
     047452 104456                                                              TRAP    C$ERHRD
     047454 000627                                                              .WORD   407
     047456 052016                                                              .WORD   T32ERA
     047460 012126                                                              .WORD   PKTSSR
2536 047462                             50$:    CKLOOP                          ;LOOP IF SELECTED
     047462 104406                                                              TRAP    C$CLP1
2537 047464 013701 051360                       MOV     T32BFR+6,R1             ;PICK UP XSTO
2538 047470 010102                              MOV     R1,R2                   ;SET UP EXPECTED
2539 047472 042702 000002                       BIC     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2540 047476 020102                              CMP     R1,R2                   ;DOES EXP = REC'D
2541 047500 001406                              BEQ     55$                     ;BR, IF EQUAL (OK)
2542 047502 005237 002214                       INC     FATFLG                          ;ERROR COUNT
2546 047506                                     ERRHRD  ERRNO,T32BOE,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     047506 104456                                                              TRAP    C$ERHRD
     047510 000630                                                              .WORD   408
     047512 052366                                                              .WORD   T32BOE
     047514 015554                                                              .WORD   EXPREC
2547 047516                             55$:    CKLOOP                          ;LOOP IF SELECTED
     047516 104406                                                              TRAP    C$CLP1
2548 047520 013737 003116 051452                MOV     FREE,T32RB              ;ADDRESS OF BUFFER
2549 047526 012737 140401 051450                MOV     #140401,T32PK3          ;READ REVERSE,ACK,CVC=1 COMMAND
2550 047534 012737 000400 051456                MOV     #256.,T32SZ             ;SET UP THE SIZE OF RECORD
2551 047542 012704 051450                       MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2552 047546 010465 000000                       MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2553 047552 004737 016330                       JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2554 047556 016501 000002                       MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2555 047562 012702 100204                       MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED TAPE STATUS ALERT
2556 047566 020102                              CMP     R1,R2                   ;ARE THEY EQUAL
2557 047570 001406                              BEQ     180$                    ;BR, IF OK
2558 047572 005237 002214                       INC     FATFLG                          ;ERROR COUNT
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2562 047576                                ERRHRD  ERRNO,T32TSA,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     047576  104456                                                              TRAP    C$ERHRD
     047600  000631                                                              .WORD   409
     047602  052311                                                              .WORD   T32TSA
     047604  012126                                                              .WORD   PKTSSR
2563 047606                         180$:  CKLOOP                          ;LOOP IF SELECTED
     047606  104406                                                              TRAP    C$CLP1
2564 047610  013701  051366                MOV     T32BFR+14,R1            ;GET XST3 STATUS WORD
2565 047614  010102                        MOV     R1,R2                   ;SET UP EXPECTED
2566 047616  052702  000001                BIS     #BIT0,R2                ;SET THE RIB BIT
2567 047622  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
2568 047624  001406                        BEQ     190$                    ;BR, IF EQUAL (GOOD)
2569 047626  005237  002214                INC     FATFLG                          ;ERROR COUNT
2573 047632                                ERRHRD  ERRNO,T32RIB,EXPREC     ;RIB SHOULD BE SET
     047632  104456                                                              TRAP    C$ERHRD
     047634  000632                                                              .WORD   410
     047636  052136                                                              .WORD   T32RIB
     047640  015554                                                              .WORD   EXPREC
2574 047642                         190$:
2575 047642                                ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
     047642                                                                          L10054:
     047642  104403                                                              TRAP    C$ESUB
2576 047644  023727  002214  000017                CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
2577 047652  103402                                BLO     999$                            ;BR, IF LESS THAN 25
2578 047654  004737  017262                        JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
2579 047660                         999$:
2580                                ;*
2581                                ;
2582                                ;TEST 4, SUBTEST 2
2583                                ;
2584                                ;       VERIFIES THAT AN ERASE COMMAND EXECUTED WHEN THE TAPE IS NOT
2585                                ;       POSITIONED AT BOT OPERATES PROPERLY AND DOES NOT CORRUPT
2586                                ;       PREVIOUS TAPE RECORDS.  THE TEST SEQUENCE IS:
2587                                ;
2588                                ;            1.  THE TAPE IS FIRST REWOUND, SEVERAL TEST RECORDS ARE
2589                                ;                WRITTEN, AND THE TAPE IS REWOUND AGAIN.
2590                                ;
2591
2592                                ;            2.  A SPACE RECORDS FORWARD COMMAND IS ISSUED TO MOVE THE
2593                                ;                TAPE OFF OF BOT AND SKIP OVER THE FIRST SEVERAL
2594                                ;                RECORDS.
2595                                ;
2596                                ;            3.  AN ERASE COMMAND IS ISSUED, WHICH SHOULD ERASE A NUMBER
2597                                ;                OF THE TEST RECORDS.
2598                                ;
2599                                ;            4.  NORMAL TERMINATION IS VERIFIED AND STATUS IS CHECKED.
2600                                ;
2601                                ;            5.  A READ REVERSE COMMAND IS ISSUED.  IT IS VERIFIED THAT
2602                                ;                NORMAL TERMINATION IS ACCOMPLISHED AND THAT THE DATA
2603                                ;                TRANSFERRED CORRESPONDS TO THAT FOR THE EXPECTED
2604                                ;                RECORD.  THIS DEMONSTRATES THAT NO DATA WAS ENCOUNTERED
2605                                ;                IN THE AREA ERASED BY THE ERASE COMMAND, AND THAT THE
2606                                ;                PREVIOUS RECORD WAS NOT CORRUPTED.
2607                                ;
2608                                ;
2609                                ;
2610                                ;
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2611                                    ;
2612                                    ;
2613                                    ;-
2614 047660                             BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
     047660                                                                          T4.2:
     047660  104402                                                                    TRAP    C$BSUB
2615 047662  004737  052700             JSR     PC,T32REST              ;SET COMMAND PACKET
2616 047666  004737  052772             JSR     PC,T32RT2               ;SET UP OTHER COMMAND PACKET
2617 047672  004737  053022             JSR     PC,T32RT3               ;SET UP OTHER COMMAND PACKET
2618 047676  004737  016054             JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
2619 047702  103407                     BCS     20$                     ;BR IF INIT WAS OK
2620 047704  005237  002214             INC     FATFLG                          ;ERROR COUNT
2624 047710  010001                     MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
2625 047712                             ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     047712  104455                                                                    TRAP    C$ERDF
     047714  000633                                                                    .WORD   411
     047716  003646                                                                    .WORD   SFIERR
     047720  012114                                                                    .WORD   SFIMSG
2626 047722  013737  002174  051350 20$:    MOV     UNITN,T32DSW            ;SET UP UNIT NUMBER IN PACKET
2627 047730  012704  051330             MOV     #T32PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
2628 047734  004737  010742             JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
2629 047740  103407                     BCS     23$                     ;BR, IF COMMAND ISSUED OK
2630 047742  005237  002214             INC     FATFLG                          ;ERROR COUNT
2634 047746  010001                     MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
2635 047750                             ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     047750  104456                                                                    TRAP    C$ERHRD
     047752  000634                                                                    .WORD   412
     047754  005052                                                                    .WORD   WRTMSG
     047756  012114                                                                    .WORD   SFIMSG
2636 047760                     23$:    CKLOOP                          ;LOOP IF SELECTED
     047760  104406                                                                    TRAP    C$CLP1
2637 047762  004737  011074             JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
2638 047766  103407                     BCS     30$                     ;BR, IF NO PROBLEM
2639 047770  010004                     MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
2640 047772  005237  002214             INC     FATFLG                          ;ERROR COUNT
2644 047776                             ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
     047776  104456                                                                    TRAP    C$ERHRD
     050000  000635                                                                    .WORD   413
     050002  051700                                                                    .WORD   T32RWN
     050004  012126                                                                    .WORD   PKTSSR
2645 050006                     30$:    CKLOOP                          ;LOOP IF SELECTED
     050006  104406                                                                    TRAP    C$CLP1
2646 050010  013701  051360             MOV     T32BFR+6,R1             ;PICK UP XSIO
2647 050014  010102                     MOV     R1,R2                   ;SET UP EXPECTED
2648 050016  052702  000002             BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2649 050022  020102                     CMP     R1,R2                   ;DOES EXP = REC'D
2650 050024  001406                     BEQ     40$                     ;BR, IF EQUAL (OK)
2651 050026  005237  002214             INC     FATFLG                          ;ERROR COUNT
2655 050032                             ERRHRD  ERRNO,T32BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     050032  104456                                                                    TRAP    C$ERHRD
     050034  000636                                                                    .WORD   414
     050036  051516                                                                    .WORD   T32BOT
     050040  015554                                                                    .WORD   EXPREC
2656 050042                     40$:    CKLOOP                          ;LOOP IF SELECTED
     050042  104406                                                                    TRAP    C$CLP1
2657 050044  012703  000144             MOV     #100.,R3                ;STARTING RECORD SIZE
2658 050050  010300                     MOV     R3,R0                   ;SET UP MEMORY FILL
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2659 050052  004737  017502                    JSR     PC,FILLMEM          ;CALL MEMORY FILLER
2660 050056  013737  003116  051452            MOV     FREE,T32WB          ;STARTING WRITE BUFFER ADDRESS
2661 050064  012737  140005  051450  65$:      MOV     #140005,T32PK3      ;WRITE DATA,CVC=1,ACK COMMAND
2662 050072  012704  051450                    MOV     #T32PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
2663 050076  010300                            MOV     R3,R0               ;SET PATTERN IN CORRECT REGISTER
2664 050100  004737  017502                    JSR     PC,FILLMEM          ;FILL MEMORY WITH RECORD SIZE
2665 050104  010337  051456                    MOV     R3,T32SZ            ;SET UP RECORD SIZE IN PACKET
2666 050110  010465  000000                    MOV     R4,TSDB(R5)         ;ISSUE COMMAND
2667 050114  004737  016330                    JSR     PC,WAITF            ;WAIT FOR SSR TO SET
2668 050120  016501  000002                    MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
2669 050124  012702  000200                    MOV     #SSR,R2             ;SET UP EXPECTED
2670 050130  020102                            CMP     R1,R2               ;ARE THEY EQUAL
2671 050132  001406                            BEQ     80$                 ;BR, IF OK
2672 050134  005237  002214                    INC     FATFLG                      ;ERROR COUNT
2676 050140                                    ERRHRD  ERRNO,T32WDC,PKTSSR ;TSSR INCORRECT AFTER WRITE DATA
     050140  104456                                                            TRAP    C$ERHRD
     050142  000637                                                            .WORD   415
     050144  052536                                                            .WORD   T32WDC
     050146  012126                                                            .WORD   PKTSSR
2677 050150                            80$:    CKLOOP                      ;LOOP IF SELECTED
     050150  104406                                                            TRAP    C$CLP1
2678 050152  005723                            TST     (R3)+               ;BUMP RECORD SIZE COUNTER
2679 050154  020327  000156                    CMP     R3,#110.            ;AT 160 SIZE YET
2680 050160  001341                            BNE     65$                 ;BR, IF MORE RECORDS TO WRITE
2681 050162  004737  011074                    JSR     PC,REWIND           ;CALL TAPE REWIND COMMAND
2682 050166  103407                            BCS     230$                ;BR, IF NO PROBLEM
2683 050170  010001                            MOV     R0,R1               ;SAVE TSSR
2684 050172  005237  002214                    INC     FATFLG                      ;ERROR COUNT
2688 050176                                    ERRHRD  ERRNO,T32RWN,EXPREC ;REWIND NOT ACCEPTED
     050176  104456                                                            TRAP    C$ERHRD
     050200  000640                                                            .WORD   416
     050202  051700                                                            .WORD   T32RWN
     050204  015554                                                            .WORD   EXPREC
2689 050206                            230$:   CKLOOP                      ;LOOP IF SELECTED
     050206  104406                                                            TRAP    C$CLP1
2690 050210  013701  051360                    MOV     T32BFR+6,R1         ;PICK UP XSTO
2691 050214  010102                            MOV     R1,R2               ;SET UP EXPECTED
2692 050216  052702  000002                    BIS     #BIT1,R2            ;SET BOT BIT IN EXPECTED
2693 050222  020102                            CMP     R1,R2               ;DOES EXP = REC'D
2694 050224  001406                            BEQ     240$                ;BR, IF EQUAL (OK)
2695 050226  005237  002214                    INC     FATFLG                      ;ERROR COUNT
2699 050232                                    ERRHRD  ERRNO,T32BOT,EXPREC ;TAPE NOT AT BOT AFTER REWIND
     050232  104456                                                            TRAP    C$ERHRD
     050234  000641                                                            .WORD   417
     050236  051516                                                            .WORD   T32BOT
     050240  015554                                                            .WORD   EXPREC
2700 050242                            240$:   CKLOOP                      ;LOOP IF SELECTED
     050242  104406                                                            TRAP    C$CLP1
2701 050244  012703  000001                    MOV     #1,R3               ;SET UP FOR SPACE COMMAND
2702 050250  004737  010544                    JSR     PC,SPACE            ;ISSUE SPACE COMMAND 1 FORWARD
2703 050254  012737  140411  051450  265$:     MOV     #140411,T32PK3      ;ERASE DATA,ACK COMMAND
2704 050262  012704  051450                    MOV     #T32PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
2705 050266  010465  000000                    MOV     R4,TSDB(R5)         ;ISSUE COMMAND
2706 050272  004737  016330                    JSR     PC,WAITF            ;WAIT FOR SSR TO SET
2707 050276  016501  000002                    MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
2708 050302  012702  000200                    MOV     #SSR,R2             ;SET UP EXPECTED
2709 050306  020102                            CMP     R1,R2               ;ARE THEY EQUAL
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2710 050310  001406                        BEQ     280$                    ;BR, IF OK
2711 050312  005237  002214                INC     FATFLG                  ;ERROR COUNT
2715 050316                                ERRHRD  ERRNO,T32ERA,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     050316  104456                                                        TRAP    C$ERHRD
     050320  000642                                                        .WORD   418
     050322  052016                                                        .WORD   T32ERA
     050324  012126                                                        .WORD   PKTSSR
2716 050326                        280$:   CKLOOP                          ;LOOP IF SELECTED
     050326  104406                                                        TRAP    C$CLP1
2717 050330  013737  003116  051452        MOV     FREE,T32RB              ;ADDRESS OF BUFFER
2718 050336  012737  140401  051450        MOV     #140401,T32PK3          ;READ REVERSE,ACK,CVC=1 COMMAND
2719 050344  012737  000144  051456        MOV     #100.,T32SZ             ;SET UP THE SIZE OF RECORD
2720 050352  012704  051450                MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2721 050356  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2722 050362  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2723 050366  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2724 050372  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED TAPE STATUS ALERT
2725 050376  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
2726 050400  001406                        BEQ     290$                    ;BR, IF OK
2727 050402  005237  002214                INC     FATFLG                  ;ERROR COUNT
2731 050406                                ERRHRD  ERRNO,T32TSA,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     050406  104456                                                        TRAP    C$ERHRD
     050410  000643                                                        .WORD   419
     050412  052311                                                        .WORD   T32TSA
     050414  012126                                                        .WORD   PKTSSR
2732 050416                        290$:   CKLOOP                          ;LOOP IF SELECTED
     050416  104406                                                        TRAP    C$CLP1
2733 050420  017701  132472                MOV     @FREE,R1                ;GET DATA READ
2734 050424  012702  000144                MOV     #100.,R2                ;SHOULD BE 100
2735 050430  020102                        CMP     R1,R2                   ;CHECK'EM OUT
2736 050432  001406                        BEQ     300$                    ;BR, IF OK
2737 050434  005237  002214                INC     FATFLG                  ;ERROR COUNT
2741 050440                                ERRHRD  ERRNO,T32ECF,EXPREC     ;ERASE COMMAND DIDN'T WORK
     050440  104456                                                        TRAP    C$ERHRD
     050442  000644                                                        .WORD   420
     050444  052455                                                        .WORD   T32ECF
     050446  015554                                                        .WORD   EXPREC
2742 050450                        300$:   CKLOOP                          ;LOOP IF SELECTED
     050450  104406                                                        TRAP    C$CLP1
2743 050452                        330$:
2744 050452                                ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
     050452                                                                L10055:
     050452  104403                                                        TRAP    C$ESUB
2745 050454  023727  002214  000017                CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
2746 050462  103402                                BLO     999$                    ;BR, IF LESS THAN 25
2747 050464  004737  017262                        JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
2748 050470                        999$:
2749                               ;*
2750                               ;
2751                               ;TEST 4, SUBTEST 3
2752                               ;
2753                               ;       VERIFIES THAT AN ERASE COMMAND ENCOUNTERING THE EOT MARKER, OR
2754                               ;       EXECUTED BEYOND THE EOT MARKER, CAUSES TAPE STATUS ALERT
2755                               ;       TERMINATION WITH THE EOT STATUS BIT SET.  ALSO VERIFIES THAT THE
2756                               ;       OTHER TAPE MOTION COMMANDS EXECUTED WHEN THE TAPE IS BLANK
2757                               ;       RESULT IN UNRECOVERABLE ERROR TERMINATION AND OPERATION
2758                               ;       INCOMPLETE STATUS.  THE FOLLOWING TEST SEQUENCE IS EXECUTED:
```

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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
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-
2787 050470                                     BGNSUB                  ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
     050470                                                                     T4.3:
     050470  104402                                                                    TRAP    C$BSUB
2788 050472  004737  052700                     JSR     PC,T32REST      ;SET COMMAND PACKET
2789 050476  004737  052772                     JSR     PC,T32RT2       ;SET UP OTHER COMMAND PACKET
2790 050502  004737  053022                     JSR     PC,T32RT3       ;SET UP OTHER COMMAND PACKET
2791 050506  012737  176750  051514             MOV     #65000.,T32DLY  ;SET UP DELAY COUNTER
2792 050514  004737  016054          10$:       JSR     PC,$OFINIT      ;DO INITIALIZE ON CONTROLLER
2793 050520  103426                             BCS     20$             ;BR IF INIT WAS OK
2794 050522                                     DELAY   250             ;DELAY ABOUT .25 SEC
     050522  012727  000250                                                    MOV     #250.,(PC)+
     050526  000000                                                            .WORD   0
     050530  013727  002116                                                    MOV     L$DLY,(PC)+
     050534  000000                                                            .WORD   0
     050536  005367  177772                                                    DEC     -6(PC)
     050542  001375                                                            BNE     .-4
     050544  005367  177756                                                    DEC     -22(PC)
     050550  001367                                                            BNE     .-20
2795 050552  005337  051514                     DEC     T32DLY          ;BUMP COUNTER
2796 050556  001356                             BNE     10$             ;BR, IF COUNTER NOT DONE
2797 050560  005237  002214                     INC     FATFLG                  ;ERROR COUNT
2801 050564  010001                             MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
2802 050566                                     ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     050566  104455                                                                TRAP    C$ERDF
     050570  000645                                                                .WORD   421
     050572  003646                                                                .WORD   SFIERR
     050574  012114                                                                .WORD   SFIMSG
2803 050576  013737  002174  051350  20$:       MOV     UNITN,T32DSW    ;SET UP UNIT (DRIVE) NUMBER
2804 050604  052737  000040  051350             BIS     #BIT5,T32DSW    ;TURN ON HIGH SPEED TO SAVE TIME
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 148
TEST  4: ERASE AND OPERATION INCOMPLETE

 2805 050612  012704  051330                MOV     #T32PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 2806 050616  004737  010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 2807 050622  103407                        BCS     23$                     ;BR, IF COMMAND ISSUED OK
 2808 050624  005237  002214                INC     FATFLG                          ;ERROR COUNT
 2812 050630  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 2813 050632                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      050632  104456                                                                TRAP    C$ERHRD
      050634  000646                                                                .WORD   422
      050636  005052                                                                .WORD   WRTMSG
      050640  012114                                                                .WORD   SFIMSG
 2814 050642                        23$:    CKLOOP                          ;LOOP IF SELECTED
      050642  104406                                                                TRAP    C$CLP1
 2815 050644  004737  011074                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 2816 050650  103411                        BCS     30$                     ;BR, IF NO PROBLEM
 2817 050652  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 2818 050656  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
 2819 050660  005237  002214                INC     FATFLG                          ;ERROR COUNT
 2823 050664                                ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
      050664  104456                                                                TRAP    C$ERHRD
      050666  000647                                                                .WORD   423
      050670  051700                                                                .WORD   T32RWN
      050672  012126                                                                .WORD   PKTSSR
 2824 050674                        30$:    CKLOOP                          ;LOOP IF SELECTED
      050674  104406                                                                TRAP    C$CLP1
 2825 050676  013701  051360                MOV     T32BFR+6,R1             ;PICK UP XSTO
 2826 050702  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 2827 050704  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 2828 050710  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 2829 050712  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
 2830 050714  005237  002214                INC     FATFLG                          ;ERROR COUNT
 2834 050720                                ERRHRD  ERRNO,T32BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      050720  104456                                                                TRAP    C$ERHRD
      050722  000650                                                                .WORD   424
      050724  051516                                                                .WORD   T32BOT
      050726  015554                                                                .WORD   EXPREC
 2835 050730                        40$:    CKLOOP                          ;LOOP IF SELECTED
      050730  104406                                                                TRAP    C$CLP1
 2836 050732  012737  140411  051450  65$:    MOV     #140411,T32PK3          ;ERASE DATA,CVC=1,ACK COMMAND
 2837 050740  012704  051450                MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 2838 050744  010337  051456                MOV     R3,T32SZ                ;SET UP RECORD SIZE IN PACKET
 2839 050750  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 2840 050754  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 2841 050760  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 2842 050764  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 2843 050770  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 2844 050772  001757                        BEQ     65$                     ;BR, IF OK
 2845 050774  032701  000004                BIT     #BIT2,R1                ;CHECK FOR TAPE STATUS ALERT
 2846 051000  001006                        BNE     80$                     ;BR, IF TAPE STATUS ALERT SET
 2847 051002  005237  002214                INC     FATFLG                          ;ERROR COUNT
 2851 051006                                ERRHRD  ERRNO,T32WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      051006  104456                                                                TRAP    C$ERHRD
      051010  000651                                                                .WORD   425
      051012  052536                                                                .WORD   T32WDC
      051014  012126                                                                .WORD   PKTSSR
 2852 051016                        80$:    CKLOOP                          ;LOOP IF SELECTED
      051016  104406                                                                TRAP    C$CLP1
 2853 051020  013701  051360                MOV     T32BFR+6,R1             ;PICK UP XSTO
```

```
2854 051024  010102                        MOV     R1,R2                   ;SET UP EXPECTED
2855 051026  052702  000001                BIS     #BIT0,R2                ;SET EOT BIT IN EXPECTED
2856 051032  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
2857 051034  001406                        BEQ     240$                    ;BR, IF EQUAL (OK)
2858 051036  005237  002214                INC     FATFLG                          ;ERROR COUNT
2862 051042                                ERRHRD  ERRNO,T32EOT,EXPREC     ;TAPE NOT AT EOT AFTER ERASE COMMANDS
     051042  104456                                                                TRAP    C$ERHRD
     051044  000652                                                                .WORD   426
     051046  051611                                                                .WORD   T32EOT
     051050  015554                                                                .WORD   EXPREC
2863 051052                        240$:   CKLOOP                          ;LOOP IF SELECTED
     051052  104406                                                                TRAP    C$CLP1
2864 051054  012703  051460                MOV     #T32CMD,R3              ;STARTING RECORD SIZE
2865 051060  013737  003116  051452        MOV     FREE,T32RB              ;STARTING READ BUFFER ADDRESS
2866 051066  011337  051450        265$:   MOV     (R3),T32PK3             ;READ DATA,ACK COMMAND
2867 051072  012704  051450                MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2868 051076  012700  177777                MOV     #177777,R0              ;SET PATTERN IN CORRECT REGISTER
2869 051102  004737  017502                JSR     PC,FILLMEM              ;FILL MEMORY WITH ALL ONES
2870 051106  012737  000144  051456        MOV     #100.,T32SZ             ;SET UP RECORD SIZE IN PACKET
2871 051114  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2872 051120  012737  000062  051514        MOV     #50.,T32DLY             ;SET UP DELAY COUNTER
2873 051126  004737  016330        270$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2874 051132  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2875 051136  012702  100214                MOV     #SSR!SC!BIT2!BIT3,R2    ;SET UP EXPECTED
2876 051142  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
2877 051144  001425                        BEQ     280$                    ;BR, IF OK
2878 051146                                DELAY   250                     ;DELAY FOR SSR TO BE SET
     051146  012727  000250                                                        MOV     #250.,(PC)+
     051152  000000                                                                .WORD   0
     051154  013727  002116                                                        MOV     L$DLY,(PC)+
     051160  000000                                                                .WORD   0
     051162  005367  177772                                                        DEC     -6(PC)
     051166  001375                                                                BNE     .-4
     051170  005367  177756                                                        DEC     -22(PC)
     051174  001367                                                                BNE     .-20
2879 051176  005337  051514        DEC     T32DLY                  ;COUNT DELAY ROUTINE DOWN
2880 051202  001351                BNE     270$                    ;BR, IF DELAY HAS NOT ENDED
2881 051204  005237  002214                INC     FATFLG                  ;ERROR COUNT
2885 051210                                ERRHRD  ERRNO,T32ECF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     051210  104456                                                                TRAP    C$ERHRD
     051212  000653                                                                .WORD   427
     051214  052455                                                                .WORD   T32ECF
     051216  012126                                                                .WORD   PKTSSR
2886 051220                        280$:   CKLOOP                          ;LOOP IF SELECTED
     051220  104406                                                                TRAP    C$CLP1
2887 051222  013701  051366                MOV     T32BFR+14,R1            ;PICK UP XST3
2888 051226  010102                        MOV     R1,R2                   ;SET UP EXPECTED
2889 051230  052702  000100                BIS     #BIT6,R2                ;SET OPI BIT IN EXPECTED
2890 051234  020102                        CMP     R1,R2                   ;IS OPI BIT SET
2891 051236  001406                        BEQ     290$                    ;BR, IF BIT IS SET
2892 051240  005237  002214                INC     FATFLG                          ;ERROR COUNT
2896 051244                                ERRHRD  ERRNO,T320PI,EXPREC     ;OPI BIT NOT SET
     051244  104456                                                                TRAP    C$ERHRD
     051246  000654                                                                .WORD   428
     051250  052603                                                                .WORD   T320PI
     051252  015554                                                                .WORD   EXPREC
2897 051254                        290$:   CKLOOP                          ;LOOP IF SELECTED
```

```
051254  104406                                                                TRAP    C$CLP1
051256  005723                         TST     (R3)+                  ;BUMP COMMAND POINTER
051260  021327  177777                 CMP     (R3),#177777           ;AT END OF TABLE YET
051264  001300                         BNE     265$                   ;BR, KEEP TRYING COMMANDS
051266                                 ENDSUB                         ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
051266                                                                        L10056:
051266  104403                                                                TRAP    C$ESUB
051270  023727  002214  000017         CMP     FATFLG,#15.              ;IS ERROR COUNT AT 25
051276  103402                         BLO     999$                     ;BR, IF LESS THAN 25
051300  004737  017262                 JSR     PC,CKDROP                ;TRY TO DROP THE UNIT
051304                         999$:
                               ;
                               ;
                               ;
051304  004737  016536                 JSR     PC,TSTLOOP             ;DO WE NEED TO ITERATE TEST
051310  103002                         BCC     163$                   ;BR, IF NO LOOP REQUIRED
051312  000137  047020                 JMP     T32LOOP                ;EXECUTE AGAIN
051316                         163$:   EXIT    TST                    ;ALL DONE THIS TEST
051316  104432                                                                TRAP    C$EXIT
051320  001524                                                                .WORD   L10053-.
                               ;+
                               ;LOCAL STORAGE FOR THIS TEST
                               ;-
        051330                         .=<.+10>&177770
051330                         T32PACKET:                             ;COMMAND PACKET FOR TEST
051330  100004                         .WORD   100004                 ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
051332  051340                         .WORD   T32DATA                ;ADDRESS OF CHARACTERISTICS BLOCK
051334  000000                         .WORD   0
051336  000012                         .WORD   10.                    ;STARTING VALUE OF BLOCK SIZE
051340                         T32DATA:                               ;CHARACTERISTICS DATA BLOCK
051340  051352                         .WORD   T32BFR                 ;ADDRESS OF MESSAGE BUFFER
051342  000000                         .WORD   0
051344  000024                         .WORD   20.                    ;LENGTH OF MESSAGE BUFFER
051346  000000                         .WORD   0
051350  000000                 T32DSW: .WORD   0                      ;SELECT DRIVE 0
051352                         T32BFR: .BLKW   25.                    ;MESSAGE BUFFER
                               ;
                               ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                               ;
        051440                         .=<.+10>&177770
051440                         T32PK2:
051440  100006                         .WORD   100006                 ;WRITE SUB SYS MEM COMMAND,  AND ACK
051442  000000                         .WORD   0                      ;ADDRESS OF SELECT BLOCK DATA
051444  000000                         .WORD   0
051446  000006                         .WORD   6.                     ;SIZE OF DATA PACKET

051450                         T32PK3:
051450  100005                         .WORD   100005                 ;REREAD COMMAND, AND ACK
051452                         T32RB:
051452  003116                 T32WB:  .WORD   FREE                   ;ADDRESS OF WRITE BUFFER
051454  000000                         .WORD   0
051456  000000                 T32SZ:  .WORD   0                      ;SIZE OF BUFFER (EXTENT)
                                       .EVEN
                               ;
                               ;
                               ;
                               ;
```

```
                                        ;
                                                .EVEN
                                        ;TAPE MOTION PACKET COMMAND VALUES
                                        ;
051460                                  T32CMD:
051460  140410                                  .WORD   140410          ;SPACE RECORDS REVERSE
051462  141410                                  .WORD   141410          ;SKIP TAPE MARKS REVERSE
051464  140401                                  .WORD   140401          ;READ REVERSE
051466  141001                                  .WORD   141001          ;REREAD PREVIOUS (OPP=0)
051470  161401                                  .WORD   161401          ;REREAD NEXT (OPP=1)
051472  161001                                  .WORD   161001          ;REREAD PREVIOUS (OPP=1)
051474  141401                                  .WORD   141401          ;REREAD NEXT (OPP=0)
051476  140001                                  .WORD   140001          ;READ NEXT
051500  141410                                  .WORD   141410          ;SKIP TAPE MARKS REVERSE
051502  141010                                  .WORD   141010          ;SKIP RECORDS FORWARD
051504  141005                                  .WORD   141005          ;WRITE DATA RETRY
051506  177777                                  .WORD   177777          ;END OF DATA
                                        ;
                                        ;
051510  000000                        T32CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
051512  000000                        T32CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
051514  000000                        T32DLY: .WORD   0               ;DELAY COUNTER
                                        ;+
                                        ;LOCAL TEXT MESSAGES FOR TEST
                                        ;-
                                        ;
051516    124     141     160   T32BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
051611    124     141     160   T32EOT: .ASCIZ  'Tape Status Alert During Erase To EOT, But EOT Not Set'
051700    122     145     167   T32RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
051747    124     123     123   T32AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
052016    124     123     123   T32ERA: .ASCIZ  'TSSR Not Correct After ERASE Command'
052063    124     123     102   T32BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
052136    122     105     101   T32RIB: .ASCIZ  'READ REVERSE, After ERASE From BOT, Failed To Set RIB In XST3'
052234    124     123     123   T32SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
052311    124     123     123   T32TSA: .ASCIZ  'TSSR Not Correct After READ REVERSE Into BOT'
052366    102     117     124   T32BOE: .ASCIZ 'BOT (XST0) Still Set After Erase From Tape''s BOT Marker'
052455    105     122     101   T32ECF: .ASCIZ  'ERASE Failed To Clear Tape (Erase) Tape Properly'
052536    124     123     123   T32WDC: .ASCIZ  'TSSR Not Correct After ERASE Command'
052603    117     120     111   T32OPI: .ASCIZ  'OPI Bit (XST3) Failed To Set'
052640    105     162     141   TST32ID:        .ASCIZ  'Erase And Operation Incomplete'
                                                .EVEN
                                        ;+
                                        ;
                                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                        ;WRITE SUBSYSTEM MEMORY COMMAND
                                        ;
                                        ;-
                                        T32REST:
052700                                          SAVREG                  ;SAVE THE REGISTERS
052704  012701  051330                        MOV     #T32PACKET,R1   ;START OF THE PACKET
052710  012721  100004                        MOV     #100004,(R1)+   ;WRITE SUBSYSTEM MEM. WITH ACK.
052714  012721  051340                        MOV     #T32DATA,(R1)+  ;ADDRESS OF CHARAISTICS DATA BLOCK
052720  005021                              CLR     (R1)+           ;EXTENDED ADDRESS
052722  012721  000012                        MOV     #10.,(R1)+      ;SIZE OF DATA BLOCK IN BYTES
052726  012721  051352                        MOV     #T32BFR,(R1)+   ;ADDRESS OF MESSAGE BUFFER
052732  005021                              CLR     (R1)+
```

```
3014 052734  012721  000024                MOV     #20.,(R1)+          ;LENGTH OF MESSAGE BUFFER
3015 052740  005021                        CLR     (R1)+
3016 052742  012711  000000                MOV     #0,(R1)             ;SELECT DRIVE ZERO
3017 052746  012702  000030                MOV     #24.,R2             ;NUMBER OF LOCATIONS TO BE CLEARED
3018 052752  012762  177777  051352  64$:  MOV     #177777,T32BFR(R2)  ;ALL ONES TO MESSAGE BUFFER
3019 052760  005742                        TST     -(R2)               ;NEXT LOCATION
3020 052762  022702  000000                CMP     #0,R2               ;AT END OF LOOP YET
3021 052766  001371                        BNE     64$                 ;KEEP GOING UNTIL DONE
3022 052770  000207                        RTS     PC                  ;RETURN
3023
3024 052772                        T32RT2:
3025 052772                                SAVREG                      ;SAVE THE REGISTERS
3026 052776  012701  051440                MOV     #T32PK2,R1          ;START OF THE PACKET
3027 053002  012721  100006                MOV     #100006,(R1)+       ;WRITE SUBSYSTEM MEM. WITH ACK,
3028 053006  005021                        CLR     (R1)+               ;ADDRESS OF DATA BLOCK
3029 053010  005021                        CLR     (R1)+               ;EXTENDED ADDRESS
3030 053012  012721  000006                MOV     #6.,(R1)+           ;SIZE OF DATA BLOCK IN BYTES
3031 053016  005021                        CLR     (R1)+
3032 053020  000207                        RTS     PC                  ;RETURN
3033 053022                        T32RT3:
3034 053022                                SAVREG                      ;SAVE REGISTERS
3035 053026  012701  051450                MOV     #T32PK3,R1          ;SET UP POINTER ADDRESS
3036 053032  005021                        CLR     (R1)+               ;COMMAND SPACE
3037 053034  005021                        CLR     (R1)+               ;ADDRESS OF DATA BLOCK
3038 053036  005021                        CLR     (R1)+               ;EXTENDED ADDRESS
3039 053040  005011                        CLR     (R1)                ;SIZE OF DATA TRANSFER BLOCK
3040 053042  000207                        RTS     PC                  ;RETURN
3041 053044                                ENDTST
     053044                                                        L10053:
     053044  104401                                                    TRAP    C$ETST
3042                                .SBTTL  TEST  5: DATA PARITY TEST
3043                                ;+
3044                                ;
3045                                ;
3046                                ;
3047                                ;
3048                                ;
3049                                ;TEST 5 -- Data Parity Test
3050                                ;
3051                                ;
3052                                ;This test verifies that the data parity circuitry in both the controller and the
3053                                ;transport  is operating properly by forcing data records with wrong parity to be
3054                                ;written onto tape and checking the results obtained when the data is read.   The
3055                                ;following test sequence is performed:
3056                                ;
3057                                ;     1.  A Write Characteristics command is issued and the resulting  status  is
3058                                ;         examined to determine the states of the Extended Features and Buffering
3059                                ;         Enable switches on the controller module.  If buffering is disabled, no
3060                                ;         further  actions need be taken in this step and the program proceeds to
3061                                ;         the next step.  If buffering is enabled, it is disabled via the  Buffer
3062                                ;         Control  field  in the extended characteristics data word supplied by a
3063                                ;         Write Characteristics command.  (The module must be in  Extended  mode,
3064                                ;         so  if it is not already, a Write Subsystem Memory command is issued to
3065                                ;         change the logical sense of the Extended Features switch.)
3066                                ;
3067                                ;     2.  The Write Subsystem Memory command is  used  to  set  the  Force  Wrong
3068                                ;         Parity control flip flop.
```

```
                                          ;
                                          ;       3.  The tape is rewound.
                                          ;
                                          ;       4.  A Write Data command is issued to write a data  record  containing  all
                                          ;           0's.  It  is  verified  that this command results in Recoverable Error
                                          ;           termination (TC=4) and that the Uncorrectable Data  Error  (UNC)  error
                                          ;           bit is set.
                                          ;
                                          ;       5.  The previous step is  repeated  for  each  data  value  2  through  377
                                          ;           (octal).
                                          ;
                                          ;       6.  The tape is rewound.
                                          ;
                                          ;       7.  A Read Next command is issued to read a record with faulty parity.   It
                                          ;           is  verified that this command results in Recoverable Error termination
                                          ;           (TC=4) and that both the Uncorrectable Data (UNC) and Read  Bus  Parity
                                          ;           (RBP)  error  bits are set.  It is also verified that the data actually
                                          ;           read is correct.
                                          ;
                                          ;       8.  A Read Reverse command with OPP=1 is issued to read,  in  reverse,  the
                                          ;           same  record  with  faulty  parity as read in the previous step.  It is
                                          ;           verified that this command results  in  Recoverable  Error  termination
                                          ;           (TC=4)  and  that both the Uncorrectable Data (UNC) and Read Bus Parity
                                          ;           (RBP) error bits are set.  It is also verified that the  data  actually
                                          ;           read is correct.
                                          ;
                                          ;       9.  Tape is spaced forward one record.
                                          ;
                                          ;      10.  The previous three steps are executed for each test  record  originally
                                          ;           written.
                                          ;
                                          ;      11.  The controller is initialized to  clear  the  special  test  conditions
                                          ;           previously set up.
                                          ;
                                          ;
                                          ;
                                          ;-
053046                                            BGNTST
053046                                                                          T5::
053046  012737  006413  002172                    MOV     #EPRT2,EPRTSW         ;SECONDARY ERROR MESSAGE
053054  012700  055645                            MOV     #TST33ID,R0           ;ASCII MESSAGE TO IDENTIFY TEST
053060  004737  016570                            JSR     PC,TSTSETUP           ;DO INITIAL TEST SETUP
053064  012737  000005  002210                    MOV     #5,LOOPCNT            ;PERFORM 5 ITERATIONS
053072  005037  054716                            CLR     T33CNT                ;CLEAR TAPE RECORD COUNTER
                                          ;+
                                          ;
053076                                    T33LOOP:
053076                                            BGNSUB                        ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
053076                                                                          T5.1:
053076  104402                                                                          TRAP    C$BSUB
053100  005037  002216                            CLR     INTRECV               ;INTERRUPT INDICATOR
053104  005037  054716                            CLR     T33CNT                ;TIMER FOR WRITE DATA SPACING
053110  005037  054720                            CLR     T33CNU                ;TIMER FOR WRITE DATA RETRY SPACING
053114  004737  055662                            JSR     PC,T33REST            ;SET COMMAND PACKET
053120  004737  055754                            JSR     PC,T33RT2             ;SET UP OTHER COMMAND PACKET
053124  004737  056016                            JSR     PC,T33RT3             ;SET UP OTHER COMMAND PACKET
053130  012737  176750  054722                    MOV     #65000.,T33DLY        ;SET UP DELAY COUNTER
```

```
3127 053136  004737  016054          10$:    JSR     PC,SOFINIT          ;DO INITIALIZE ON CONTROLLER
3128 053142  103426                          BCS     20$                 ;BR IF INIT WAS OK
3129 053144                                  DELAY   250                 ;DELAY ABOUT .25 SEC
     053144  012727  000250                                                    MOV     #250,(PC)+
     053150  000000                                                            .WORD   0
     053152  013727  002116                                                    MOV     L$DLY,(PC)+
     053156  000000                                                            .WORD   0
     053160  005367  177772                                                    DEC     -6(PC)
     053164  001375                                                            BNE     .-4
     053166  005367  177756                                                    DEC     -22(PC)
     053172  001367                                                            BNE     .-20
3130 053174  005337  054722                  DEC     T33DLY              ;BUMP COUNTER
3131 053200  001356                          BNE     10$                 ;BR, IF COUNTER NOT DONE
3132 053202  005237  002214                  INC     FATFLG                      ;ERROR COUNT
3136 053206  010001                          MOV     R0,R1               ;CONTENTS OF TSSR REGISTER
3137 053210                                  ERRDF   ERRNO,SFIERR,SFIMSG ;FATAL ERROR TSSR WAS NOT OK
     053210  104455                                                            TRAP    C$ERDF
     053212  000765                                                            .WORD   501
     053214  003646                                                            .WORD   SFIERR
     053216  012114                                                            .WORD   SFIMSG
3138 053220  013737  002174  054570  20$:    MOV     UNITN,T33DSW        ;SET UP UNIT NUMBER
3139
3140 053226  012704  054550                  MOV     #T33PACKET,R4       ;SUBROUTINE NEEDS PACKET ADDRESS
3141 053232  004737  010742                  JSR     PC,WRTCHR           ;ISSUE WRITE CHARACTERISTICS
3142 053236  103407                          BCS     23$                 ;BR, IF COMMAND ISSUED OK
3143 053240  005237  002214                  INC     FATFLG                      ;ERROR COUNT
3147 053244  010001                          MOV     R0,R1               ;SAVE CONTENTS OF TSSR
3148 053246                                  ERRHRD  ERRNO,WRTMSG,SFIMSG ;WRITE CHARACTERISTISC FAILED
     053246  104456                                                            TRAP    C$ERHRD
     053250  000766                                                            .WORD   502
     053252  005052                                                            .WORD   WRTMSG
     053254  012114                                                            .WORD   SFIMSG
3149 053256                          23$:    CKLOOP                      ;LOOP IF SELECTED
     053256  104406                                                            TRAP    C$CLP1
3150 053260  004737  011074                  JSR     PC,REWIND           ;CALL TAPE REWIND COMMAND
3151 053264  103411                          BCS     30$                 ;BR, IF NO PROBLEM
3152 053266  016501  000002                  MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
3153 053272  010004                          MOV     R0,R4               ;GET PACKET ADDRESS
3154 053274  005237  002214                  INC     FATFLG                      ;ERROR COUNT
3158 053300                                  ERRHRD  ERRNO,T33RWN,PKTSSR ;REWIND NOT ACCEPTED
     053300  104456                                                            TRAP    C$ERHRD
     053302  000767                                                            .WORD   503
     053304  055420                                                            .WORD   T33RWN
     053306  012126                                                            .WORD   PKTSSR
3159 053310                          30$:    CKLOOP                      ;LOOP IF SELECTED
     053310  104406                                                            TRAP    C$CLP1
3160 053312  013701  054600                  MOV     T33BFR+6,R1         ;PICK UP XSTO
3161 053316  010102                          MOV     R1,R2               ;SET UP EXPECTED
3162 053320  052702  000002                  BIS     #BIT1,R2            ;SET BOT BIT IN EXPECTED
3163 053324  020102                          CMP     R1,R2               ;DOES EXP = REC'D
3164 053326  001406                          BEQ     40$                 ;BR, IF EQUAL (OK)
3165 053330  005237  002214                  INC     FATFLG                      ;ERROR COUNT
3169 053334                                  ERRHRD  ERRNO,T33BOT,EXPREC ;TAPE NOT AT BOT AFTER REWIND
     053334  104456                                                            TRAP    C$ERHRD
     053336  000770                                                            .WORD   504
     053340  055325                                                            .WORD   T33BOT
     053342  015554                                                            .WORD   EXPREC
```

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3170 053344                          40$:   CKLOOP                          ;LOOP IF SELECTED
     053344  104406                                                                 TRAP    C$CLP1
3171 053346  005737  002220          42$:   TST     EXTFEA                  ;CHECK FOR EXTENDED FEATURES SW SWITCH
3172 053352  001025                         BNE     55$                     ;BR IF SWITCH IS ON
3173 053354  112737  000200  054701         MOVB    #200,T33BS1             ;WRITE MISCELLANEOUS CONT/READ STATUS
3174 053362  112737  000010  054700         MOVB    #10,T33BSO              ;FUNC. SEL. BIT (TURN ON EXTFEA SWITCH)
3175 053370  012704  054660                 MOV     #T33PK2,R4              ;WRITE SUBSYS MEM PACKET
3176 053374  010465  000000                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3177 053400  004737  016416                 JSR     PC,CHKTSSR              ;WAIT FOR SSR
3178 053404  103407                         BCS     50$                     ;BR, IF NO ERROR
3179 053406  010001                         MOV     R0,R1                   ;ERROR, SAVE TSSR
3180 053410  005237  002214                 INC     FATFLG                          ;ERROR COUNT
3184 053414                                 ERRHRD  ERRNO,T33SSR,PKTSSR     ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
     053414  104456                                                                 TRAP    C$ERHRD
     053416  000771                                                                 .WORD   505
     053420  055241                                                                 .WORD   T33SSR
     053422  012126                                                                 .WORD   PKTSSR
3185 053424                          50$:   CKLOOP                          ;LOOP IF SELECTED
     053424  104406                                                                 TRAP    C$CLP1
3186 053426  005737  002222          55$:   TST     BENBSW                  ;CHECK FOR BUFFER ENABLED
3187 053432  001426                         BEQ     70$                     ;BR, IF BUFFERING NOT ENABLED
3188 053434  013737  002174  054570         MOV     UNITN,T33DSW            ;SET UP UNIT NUMBER
3189 053442  042737  000020  054570         BIC     #BIT4,T33DSW            ;BUFFER DISABLE
3190 053450  052737  000010  054570         BIS     #BIT3,T33DSW            ;BUFFER DISABLE SEND 01 TO BITS 4 AND 3
3191 053456  012704  054550                 MOV     #T33PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
3192 053462  004737  010742                 JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
3193 053466  103407                         BCS     60$                     ;BR, IF COMMAND ISSUED OK
3194 053470  005237  002214                 INC     FATFLG                          ;ERROR COUNT
3198 053474  010001                         MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
3199 053476                                 ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     053476  104456                                                                 TRAP    C$ERHRD
     053500  000772                                                                 .WORD   506
     053502  005052                                                                 .WORD   WRTMSG
     053504  012114                                                                 .WORD   SFIMSG
3200 053506                          60$:   CKLOOP                          ;LOOP IF SELECTED
     053506  104406                                                                 TRAP    C$CLP1
3201 053510                          70$:
3202 053510  112737  000100  054701         MOVB    #100,T33BS1             ;WRITE MISCELLANEOUS CONT/READ STATUS
3203 053516  112737  000011  054700         MOVB    #11,T33BSO              ;FUNC. SEL. BIT (SET WRONG PARITY)
3204 053524  012704  054660                 MOV     #T33PK2,R4              ;WRITE SUBSYS MEM PACKET
3205 053530  010465  000000                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3206 053534  004737  016416                 JSR     PC,CHKTSSR              ;WAIT FOR SSR
3207 053540  103407                         BCS     80$                     ;BR, IF NO ERROR
3208 053542  010001                         MOV     R0,R1                   ;ERROR, SAVE TSSR
3209 053544  005237  002214                 INC     FATFLG                          ;ERROR COUNT
3213 053550                                 ERRHRD  ERRNO,T33SSR,PKTSSR     ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
     053550  104456                                                                 TRAP    C$ERHRD
     053552  000773                                                                 .WORD   507
     053554  055241                                                                 .WORD   T33SSR
     053556  012126                                                                 .WORD   PKTSSR
3214 053560                          80$:   CKLOOP                          ;LOOP IF SELECTED
     053560  104406                                                                 TRAP    C$CLP1
3215 053562  012703  000026                 MOV     #22.,R3         ;NUMBER OF RECORDS TO BE WRITTEN
3216 053566  013737  003116  054672         MOV     FREE,T33WB              ;STARTING WRITE BUFFER ADDRESS
3217 053574  005037  054720                 CLR     T33CNU                  ;MAKE SURE ITS CLEAR
3218 053600  012737  140005  054670  110$:  MOV     #140005,T33PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
3219 053606  012704  054670                 MOV     #T33PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
```

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3220 053612  012737  000024  054676          MOV     #20.,T33SZ              ;SET UP RECORD SIZE IN PACKET
3221 053620  013777  054720  127270          MOV     T33CNU,@FREE            ;MEMORY FILLED WITH DATA IN RECORD
3222 053626  005237  054720                  INC     T33CNU                  ;READY FOR NEXT RECORD
3223 053632  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3224 053636  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3225 053642  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3226 053646  012702  100210                  MOV     #SSR!SC!BIT3,R2         ;SET UP EXPECTED
3227 053652  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3228 053654  001406                          BEQ     120$                    ;BR, IF OK
3229 053656  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3233 053662                                  ERRHRD  ERRNO,T33WPW,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     053662  104456                                                                  TRAP    C$ERHRD
     053664  000774                                                                  .WORD   508
     053666  055002                                                                  .WORD   T33WPW
     053670  012126                                                                  .WORD   PKTSSR
3234 053672                          120$:   CKLOOP                          ;LOOP IF SELECTED
     053672  104406                                                                  TRAP    C$CLP1
3235 053674  013701  054602                  MOV     T33BFR+10,R1            ;PICK UP XST1
3236 053700  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3237 053702  052702  000002                  BIS     #BIT1,R2                ;SET UNC BIT IN EXPECTED
3238 053706  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
3239 053710  001406                          BEQ     130$                    ;BR, IF EQUAL (OK)
3240 053712  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3244 053716                                  ERRHRD  ERRNO,T33UNC,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     053716  104456                                                                  TRAP    C$ERHRD
     053720  000775                                                                  .WORD   509
     053722  055062                                                                  .WORD   T33UNC
     053724  015554                                                                  .WORD   EXPREC
3245 053726                          130$:   CKLOOP                          ;LOOP IF SELECTED
     053726  104406                                                                  TRAP    C$CLP1
3246 053730  005303                          DEC     R3                      ;DEC RECORD COUNTER
3247 053732  001322                          BNE     110$                    ;BR, IF MORE RECORDS TO WRITE
3248 053734  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
3249 053740  103411                          BCS     140$                    ;BR, IF NO PROBLEM
3250 053742  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3251 053746  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
3252 053750  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3256 053754                                  ERRHRD  ERRNO,T33RWN,PKTSSR     ;REWIND NOT ACCEPTED
     053754  104456                                                                  TRAP    C$ERHRD
     053756  000776                                                                  .WORD   510
     053760  055420                                                                  .WORD   T33RWN
     053762  012126                                                                  .WORD   PKTSSR
3257 053764                          140$:   CKLOOP                          ;LOOP IF SELECTED
     053764  104406                                                                  TRAP    C$CLP1
3258 053766  013701  054600                  MOV     T33BFR+6,R1             ;PICK UP XST0
3259 053772  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3260 053774  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
3261 054000  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
3262 054002  001406                          BEQ     150$                    ;BR, IF EQUAL (OK)
3263 054004  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3267 054010                                  ERRHRD  ERRNO,T33BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     054010  104456                                                                  TRAP    C$ERHRD
     054012  000777                                                                  .WORD   511
     054014  055325                                                                  .WORD   T33BOT
     054016  015554                                                                  .WORD   EXPREC
3268 054020                          150$:   CKLOOP                          ;LOOP IF SELECTED
     054020  104406                                                                  TRAP    C$CLP1
```

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3269 054022  005037  054720                    CLR     T33CNU                  ;CLEAR DATA VALUE IN RECORD
3270 054026  012703  000024                    MOV     #20.,R3                 ;RECORD SIZE
3271 054032  013737  003116  054672  155$:     MOV     FREE,T33RB              ;STARTING WRITE BUFFER ADDRESS
3272 054040  012737  140001  054670            MOV     #140001,T33PK3          ;READ DATA,CVC=1,ACK COMMAND
3273 054046  012704  054670                    MOV     #T33PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
3274 054052  012737  000024  054676            MOV     #20.,T33SZ              ;SET UP RECORD SIZE IN PACKET
3275 054060  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3276 054064  004737  016330                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3277 054070  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3278 054074  012702  100210                    MOV     #SSR!SC!BIT3,R2         ;SET UP EXPECTED
3279 054100  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
3280 054102  001406                            BEQ     160$                    ;BR, IF OK
3281 054104  005237  002214                    INC     FATFLG                          ;ERROR COUNT
3285 054110                                    ERRHRD  ERRNO,T33WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     054110  104456                                                                    TRAP    C$ERHRD
     054112  001000                                                                    .WORD   512
     054114  055467                                                                    .WORD   T33WDC
     054116  012126                                                                    .WORD   PKTSSR
3286 054120                            160$:   CKLOOP                          ;LOOP IF SELECTED
     054120  104406                                                                    TRAP    C$CLP1
3287 054122  013701  054602                    MOV     T33BFR+10,R1            ;PICK UP XST1
3288 054126  010102                            MOV     R1,R2                   ;SET UP EXPECTED
3289 054130  052702  000002                    BIS     #BIT1,R2                ;SET UNC BIT IN EXPECTED
3290 054134  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
3291 054136  001406                            BEQ     170$                    ;BR, IF EQUAL (OK)
3292 054140  005237  002214                    INC     FATFLG                          ;ERROR COUNT
3296 054144                                    ERRHRD  ERRNO,T33UND,EXPREC     ;UNC BIT NOT SET AFTER READ CMD.
     054144  104456                                                                    TRAP    C$ERHRD
     054146  001001                                                                    .WORD   513
     054150  055152                                                                    .WORD   T33UND
     054152  015554                                                                    .WORD   EXPREC
3297 054154                            170$:   CKLOOP                          ;LOOP IF SELECTED
     054154  104406                                                                    TRAP    C$CLP1
3298 054156  013701  054602                    MOV     T33BFR+10,R1            ;PICK UP XST1
3299 054162  010102                            MOV     R1,R2                   ;SET UP EXPECTED
3300 054164  052702  000400                    BIS     #BIT8,R2                ;SET RBP BIT IN EXPECTED
3301 054170  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
3302 054172  001406                            BEQ     180$                    ;BR, IF EQUAL (OK)
3303 054174  005237  002214                    INC     FATFLG                          ;ERROR COUNT
3307 054200                                    ERRHRD  ERRNO,T33RBP,EXPREC     ;READ BUS PARITY ERROR BIT NOT SET
     054200  104456                                                                    TRAP    C$ERHRD
     054202  001002                                                                    .WORD   514
     054204  054724                                                                    .WORD   T33RBP
     054206  015554                                                                    .WORD   EXPREC
3308 054210                            180$:   CKLOOP                          ;LOOP IF SELECTED
     054210  104406                                                                    TRAP    C$CLP1
3309 054212  017701  126700                    MOV     @FREE,R1                ;GET DATA READ
3310 054216  013702  054720                    MOV     T33CNU,R2                       ;GET PATTERN
3311 054222  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
3312 054224  001406                            BEQ     182$                    ;BR, IF OK
3313 054226  005237  002214                    INC     FATFLG                          ;ERROR COUNT
3317 054232                                    ERRHRD  ERRNO,T33DTA,EXPREC     ;DATA NOT CORRECT
     054232  104456                                                                    TRAP    C$ERHRD
     054234  001003                                                                    .WORD   515
     054236  055550                                                                    .WORD   T33DTA
     054240  015554                                                                    .WORD   EXPREC
3318 054242                            182$:   CKLOOP                          ;LOOP IF SELECTED
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     054242  104406                                                          TRAP    C$CLP1
3319 054244  013737  003116  054672          MOV     FREE,T33WB              ;STARTING WRITE BUFFER ADDRESS
3320 054252  012737  140401  054670  195$:   MOV     #140401,T33PK3          ;READ REVERSE DATA RETRY,ACK COMMAND
3321 054260  012704  054670                  MOV     #T33PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
3322 054264  012737  000024  054676          MOV     #20.,T33SZ              ;SET UP RECORD SIZE IN PACKET
3323 054272  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3324 054276  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3325 054302  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3326 054306  012702  100210                  MOV     #SC!SSR!BIT3,R2                 ;SET UP EXPECTED
3327 054312  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3328 054314  001406                          BEQ     190$                    ;BR, IF OK
3329 054316  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3333 054322                                  ERRHRD  ERRNO,T33WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     054322  104456                                                          TRAP    C$ERHRD
     054324  001004                                                          .WORD   516
     054326  055467                                                          .WORD   T33WDC
     054330  012126                                                          .WORD   PKTSSR
3334 054332                          190$:   CKLOOP                          ;LOOP IF SELECTED
     054332  104406                                                          TRAP    C$CLP1
3335 054334  013701  054602                  MOV     T33BFR+10,R1            ;PICK UP XST1
3336 054340  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3337 054342  052702  000002                  BIS     #BIT1,R2                ;SET UNC BIT IN EXPECTED
3338 054346  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
3339 054350  001406                          BEQ     200$                    ;BR, IF EQUAL (OK)
3340 054352  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3344 054356                                  ERRHRD  ERRNO,T33UND,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     054356  104456                                                          TRAP    C$ERHRD
     054360  001005                                                          .WORD   517
     054362  055152                                                          .WORD   T33UND
     054364  015554                                                          .WORD   EXPREC
3345 054366                          200$:   CKLOOP                          ;LOOP IF SELECTED
     054366  104406                                                          TRAP    C$CLP1
3346 054370  013701  054602                  MOV     T33BFR+10,R1            ;PICK UP XST0
3347 054374  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3348 054376  052702  000400                  BIS     #BIT8,R2                ;SET RBP BIT IN EXPECTED
3349 054402  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
3350 054404  001406                          BEQ     210$                    ;BR, IF EQUAL (OK)
3351 054406  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3355 054412                                  ERRHRD  ERRNO,T33RBP,EXPREC     ;READ BUS PARITY ERROR BIT NOT SET
     054412  104456                                                          TRAP    C$ERHRD
     054414  001006                                                          .WORD   518
     054416  054724                                                          .WORD   T33RBP
     054420  015554                                                          .WORD   EXPREC
3356 054422                          210$:   CKLOOP                          ;LOOP IF SELECTED
     054422  104406                                                          TRAP    C$CLP1
3357 054424  017701  126466                  MOV     @FREE,R1                ;GET DATA READ
3358 054430  013702  054720                  MOV     T33CNU,R2                       ;GET PATTERN
3359 054434  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3360 054436  001406                          BEQ     215$                    ;BR, IF OK
3361 054440  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3365 054444                                  ERRHRD  ERRNO,T33DTA,EXPREC     ;DATA NOT CORRECT
     054444  104456                                                          TRAP    C$ERHRD
     054446  001007                                                          .WORD   519
     054450  055550                                                          .WORD   T33DTA
     054452  015554                                                          .WORD   EXPREC
3366 054454                          215$:   CKLOOP                          ;LOOP IF SELECTED
     054454  104406                                                          TRAP    C$CLP1
```

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3367 054456  010302                        MOV     R3,R2           ;SAVE R3 FOR A MOMENT
3368 054460  012703  000001                MOV     #1,R3           ;SPACE FORWARD ONE RECORD
3369 054464  004737  010544                JSR     PC,SPACE        ;CALL ROUTINE
3370 054470  010203                        MOV     R2,R3           ;RESTORE R3
3371 054472  005237  054720                INC     T33CNU          ;BUMP TO NEXT RECORD NUMBER
3372 054476  005303                        DEC     R3              ;BUMP COUNTER
3373 054500  001402                        BEQ     220$            ;BR, IF DONE
3374 054502  000137  054032                JMP     155$            ;BR, IF NOT DONE YET
3375 054506                          220$:
3376 054506                                ENDSUB                  ;<<<<<<<<<<<<< END SUBTEST >>>>>>>>>>>>
     054506                                                              L10060:
     054506  104403                                                        TRAP    C$ESUB
3377 054510  023727  002214  000017        CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
3378 054516  103402                        BLO     999$                    ;BR, IF LESS THAN 25
3379 054520  004737  017262                JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
3380 054524                          999$:
3381                                 ;
3382                                 ;
3383                                 ;
3384 054524  004737  016536                JSR     PC,TSTLOOP      ;DO WE NEED TO ITERATE TEST
3385 054530  103002                        BCC     230$            ;BR, IF NO LOOP REQUIRED
3386 054532  000137  053076                JMP     T33LOOP         ;EXECUTE AGAIN
3387 054536                          230$: EXIT    TST             ;ALL DONE THIS TEST
     054536  104432                                                        TRAP    C$EXIT
     054540  001300                                                        .WORD   L10057-.
3388                                 ;+
3389                                 ;LOCAL STORAGE FOR THIS TEST
3390                                 ;-
3392         054550                          .=<.+10>&177770
3394 054550                          T33PACKET:                      ;COMMAND PACKET FOR TEST
3395 054550  100004                        .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH . ACK
3396 054552  054560                        .WORD   T33DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
3397 054554  000000                        .WORD   0
3398 054556  000012                        .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
3399 054560                          T33DATA:                        ;CHARACTERISTICS DATA BLOCK
3400 054560  054572                        .WORD   T33BFR          ;ADDRESS OF MESSAGE BUFFER
3401 054562  000000                        .WORD   0
3402 054564  000024                        .WORD   20.             ;LENGTH OF MESSAGE BUFFER
3403 054566  000000                        .WORD   0
3404 054570  000000                  T33DSW: .WORD   0               ;SELECT DRIVE 0
3405 054572                          T33BFR: .BLKW   25.             ;MESSAGE BUFFER
3406                                 ;
3407                                 ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
3408                                 ;
3410         054660                          .=<.+10>&177770
3412 054660                          T33PK2:
3413 054660  100006                        .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
3414 054662  054700                        .WORD   T33BF2          ;ADDRESS OF SELECT BLOCK DATA
3415 054664  000000                        .WORD   0
3416 054666  000006                        .WORD   6.              ;SIZE OF DATA PACKET
3417
3421 054670                          T33PK3:
3422 054670  100005                        .WORD   100005          ;REREAD COMMAND, AND ACK
3423 054672                          T33RB:
3424 054672  003116                  T33WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
3425 054674  000000                        .WORD   0
3426 054676  000000                  T33SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
```

```
3427                                            .EVEN
3428                                    ;
3429                                    ;
3430                                    ;
3431 054700                             T33BF2:
3432 054700     010                     T33BS0: .BYTE   10                      ;BSEL0 AREA
3433 054701     200                     T33BS1: .BYTE   200                     ;BSEL1 AREA
3434 054702  000000                     T33S2:  .WORD   0                       ;SEL 2 AREA
3435 054704  000000                     T33S3:  .WORD   0                       ;DATA AREA
3436                                    ;
3437                                    ;
3438                                            .EVEN
3439                                    ;TAPE MOTION PACKET COMMAND VALUES
3440
3441 054706  100205                     T33RN:  .WORD   100205                  ;REREAD DATA (NEXT)
3442 054710  100605                     T33WDR: .WORD   100605                  ;REREAD DATA RETRY
3443 054712  102205                     T33CON: .WORD   102205                  ;WRITE CONTINOUS
3444 054714  177777                             .WORD   177777                  ;END OF DATA
3445
3446                                    ;
3447 054716  000000                     T33CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
3448 054720  000000                     T33CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
3449 054722  000000                     T33DLY: .WORD   0                       ;DELAY COUNTER
3450                                    ;+
3451                                    ;LOCAL TEXT MESSAGES FOR TEST
3452                                    ;-
3453
3454 054724     122     145     141     T33RBP: .ASCIZ  'Read Bus Parity Bit Not Set (XST1), Should Be'
3455 055002     124     123     123     T33WPW: .ASCIZ  'TSSR Incorrect After Wrong Parity Write Command'
3456 055062     125     116     103     T33UNC: .ASCIZ  'UNC Bit (XST1) Not Set After Wrong Parity WRITE Command'
3457 055152     125     116     103     T33UND: .ASCIZ  'UNC Bit (XST1) Not Set After Wrong Parity READ Command'
3458 055241     127     122     111     T33SSR: .ASCIZ  'WRITE MISSCELLANEOUS CONT/READ COMMAND Not Accepted'
3459 055325     124     141     160     T33BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
3460 055420     122     145     167     T33RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
3461 055467     124     123     123     T33WDC: .ASCIZ  'TSSR Not Correct After READ Wrong Parity Command'
3462 055550     104     141     164     T33DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
3463 055645     104     141     164     TST33ID:        .ASCIZ  'Data Parity'
3464                                            .EVEN
3465                                    ;+
3466                                    ;
3467                                    ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
3468                                    ;WRITE SUBSYSTEM MEMORY COMMAND
3469                                    ;
3470                                    ;-
3471
3472 055662                             T33REST:
3473 055662                                     SAVREG                          ;SAVE THE REGISTERS
3474 055666  012701  054550                     MOV     @T33PACKET,R1           ;START OF THE PACKET
3475 055672  012721  100004                     MOV     @100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
3476 055676  012721  054560                     MOV     @T33DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
3477 055702  005021                             CLR     (R1)+                   ;EXTENDED ADDRESS
3478 055704  012721  000012                     MOV     @10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
3479 055710  012721  054572                     MOV     @T33BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
3480 055714  005021                             CLR     (R1)+
3481 055716  012721  000024                     MOV     @20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
3482 055722  005021                             CLR     (R1)+
3483 055724  012711  000000                     MOV     @0,(R1)                 ;SELECT DRIVE ZERO
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 161
TEST  5: DATA PARITY TEST

 3484 055730  012702  000030                MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
 3485 055734  012762  177777  054572  64$:  MOV     #177777,T33BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
 3486 055742  005742                        TST     -(R2)                   ;NEXT LOCATION
 3487 055744  022702  000000                CMP     #0,R2                   ;AT END OF LOOP YET
 3488 055750  001371                        BNE     64$                     ;KEEP GOING UNTIL DONE
 3489 055752  000207                        RTS     PC                      ;RETURN
 3490
 3491 055754                        T33RT2:
 3492 055754                                SAVREG                          ;SAVE THE REGISTERS
 3493 055760  012701  054660                MOV     #T33PK2,R1              ;START OF THE PACKET
 3494 055764  012721  100006                MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
 3495 055770  012721  054700                MOV     #T33BF2,(R1)+           ;ADDRESS OF DATA BLOCK
 3496 055774  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
 3497 055776  012721  000006                MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
 3498 056002  005021                        CLR     (R1)+
 3499 056004  012701  054700                MOV     #T33BF2,R1              ;POINT TO DATA SEL AREA
 3500 056010  005021                        CLR     (R1)+
 3501 056012  005011                        CLR     (R1)
 3502 056014  000207                        RTS     PC                      ;RETURN
 3503 056016                        T33RT3:
 3504 056016                                SAVREG                          ;SAVE REGISTERS
 3505 056022  012701  054670                MOV     #T33PK3,R1              ;SET UP POINTER ADDRESS
 3506 056026  005021                        CLR     (R1)+                   ;COMMAND SPACE
 3507 056030  005021                        CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
 3508 056032  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
 3509 056034  005011                        CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
 3510 056036  000207                        RTS     PC                      ;RETURN
 3511 056040                                ENDTST
      056040                                                            L10057:
      056040  104401                                                           TRAP    C$ETST
 3512                                       .SBTTL  TEST  6: OPERATIONS AT EOT
 3513                                       ;+
 3514                                       ;
 3515                                       ;THIS TEST VERIFIES PROPER OPERATION OF THE WRITE DATA RETRY
 3516                                       ;COMMAND (SPACE REVERSE, ERASE, WRITE DATA)
 3517                                       ;
 3518                                       ;
 3519                                       ;THE TEST CONSISTS OF THE FOLLOWING 1 SUBTEST
 3520                                       ;
 3521                                       ;
 3522                                       ;
 3523                                       ;-
 3524 056042                                BGNTST
      056042                                                                T6::
 3525 056042  012737  006354  002172        MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
 3530 056050  012700  063207                MOV     #TST34ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
 3531 056054  004737  016570                JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
 3532 056060  012737  000005  002210        MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
 3533 056066  005037  060672                CLR     T34CNT                  ;CLEAR TAPE RECORD COUNTER
 3534                                       ;+
 3535                                       ;
 3536                                       ;TEST 6, SUBTEST 1
 3537                                       ;
 3538                                       ;
 3539                                       ;       THIS TEST VERIFIES THAT THE EOT STATUS IS HANDLED PROPERLY BY
 3540                                       ;       THE VARIOUS TAPE MOTION COMMANDS.  THE FOLLOWING TEST SEQUENCE
 3541                                       ;       IS PERFORMED:
```

```
3542                                    ;
3543                                    ;       1.  THE TAPE IS REWOUND.
3544                                    ;
3545                                    ;       2.  WRITE DATA COMMANDS ARE REPEATEDLY ISSUED UNTIL TAPE
3546                                    ;           STATUS ALERT TERMINATION IS SEEN WITH EOT=1.  ERRORS
3547                                    ;           OTHER THAN OCCASIONAL CORRECTABLE OR UNCORRECTABLE DATA
3548                                    ;           ERRORS CAUSE A FATAL ERROR REPORT.  RECORDS WITH DATA
3549                                    ;           ERRORS ARE RETRIED, SO THE TAPE ENDS UP WITH GOOD DATA.
3550                                    ;
3551                                    ;       3.  ANOTHER WRITE DATA COMMAND IS ISSUED, AND IT IS CHECKED
3552                                    ;           THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=1.
3553                                    ;
3554                                    ;       4.  A WRITE TAPE MARK COMMAND IS ISSUED, AND IT IS CHECKED
3555                                    ;           THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=1.
3556                                    ;
3557                                    ;       5.  A SKIP TAPE MARKS REVERSE COMMAND IS ISSUED, AND IT IS
3558                                    ;           CHECKED THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH
3559                                    ;           EOT=1 AND TMK=1.
3560                                    ;
3561                                    ;       6.  A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF
3562                                    ;           1, IS ISSUED, AND IT IS CHECKED THAT TAPE STATUS ALERT
3563                                    ;           TERMINATION OCCURS, WITH EOT=1 AND TMK=1.
3564                                    ;
3565                                    ;       7.  A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF
3566                                    ;           1, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
3567                                    ;           OCCURS, WITH EOT=1.
3568                                    ;
3569                                    ;       8.  A SPACE RECORDS FORWARD COMMAND, WITH A RECORD COUNT OF
3570                                    ;           1, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
3571                                    ;           OCCURS, WITH EOT=1.
3572                                    ;
3573                                    ;       9.  A READ REVERSE COMMAND IS ISSUED, AND IT IS CHECKED
3574                                    ;           THAT NORMAL TERMINATION OCCURS, WITH EOT=1.
3575                                    ;
3576                                    ;       10. A READ FORWARD COMMAND IS ISSUED, AND IT IS CHECKED
3577                                    ;           THAT NORMAL TERMINATION OCCURS, WITH EOT=1.
3578                                    ;
3579                                    ;       11. A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF
3580                                    ;           3, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
3581                                    ;           OCCURS, WITH EOT=0.
3582                                    ;
3583                                    ;       12. A SPACE RECORDS FORWARD COMMAND, WITH A RECORD COUNT OF
3584                                    ;           3, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
3585                                    ;           OCCURS, WITH EOT=1.
3586                                    ;
3587                                    ;       13. A SKIP FILE MARKS REVERSE COMMAND IS ISSUED, WHICH
3588                                    ;           SHOULD SKIP ALL THE WAY TO BOT, AND IT IS CHECKED THAT
3589                                    ;           TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=0,
3590                                    ;           BOT=1, AND RIB=1.
3591                                    ;
3592                                    ;
3593                                    ;
3594                                    ;
3595                                    ;-
3596
3597 056072                            T34LOOP:
3598                                    ;*
```

```
                                        ;
                                        ;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.
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-

056072                                          BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
056072                                                                                  T6.1:
056072  104402                                                                                  TRAP    C$BSUB
056074  004737  063232                          JSR     PC,T34REST              ;SET COMMAND PACKET
056100  004737  063366                          JSR     PC,T34RT3               ;RESTORE PACKET
056104  004737  063324                          JSR     PC,T34RT2               ;SET UP OTHER COMMAND PACKET
056110  012737  176750  060674                  MOV     #65000.,T34DLY          ;SET UP COUNTER
056116  004737  016054          10$:            JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
056122  103433                                  BCS     20$                     ;BR IF INIT WAS OK
056124                                          DELAY   250                     ;DELAY A WHILE
056124  012727  000250                                                                  MOV     #250.,(PC)+
056130  000000                                                                          .WORD   0
056132  013727  002116                                                                  MOV     L$DLY,(PC)+
056136  000000                                                                          .WORD   0
056140  005367  177772                                                                  DEC     -6(PC)
056144  001375                                                                          BNE     .-4
056146  005367  177756                                                                  DEC     -22(PC)
056152  001367                                                                          BNE     .-20
056154  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR STATUS
056160  032701  000200                  BIT     #SSR,R1                 ;CHECK FOR SSR SET
056164  001012                          BNE     20$                     ;BR, WHEN SSR IS SET
056166  005337  060674                  DEC     T34DLY                  ;BUMP COUNTER DOWN
056172  001351                          BNE     10$                     ;BR, IF MORE DELAY REQUIRED
056174  005237  002214                  INC     FATFLG                          ;ERROR COUNT
056200  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
056202                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
056202  104455                                                                          TRAP    C$ERDF
056204  001131                                                                          .WORD   601
056206  003646                                                                          .WORD   SFIERR
056210  012114                                                                          .WORD   SFIMSG
056212                          20$:    CKLOOP                          ;LOOP IF SELECTED
056212  104406                                                                          TRAP    C$CLP1
056214  013737  002174  060560          MOV     UNITN,T34DSW            ;SET UP DRIVE NUMBER
056222  052737  000040  060560          BIS     #BIT5,T34DSW            ;TURN ON HIGH SPEED TO SAVE TIME
056230  012704  060540                  MOV     #T34PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
```

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TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 164
TEST  6: OPERATIONS AT EOT

 3644 056234  004737  010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 3645 056240  103407                        BCS     30$                     ;BR, IF COMMAND ISSUED OK
 3646 056242  005237  002214                INC     FATFLG                          ;ERROR COUNT
 3650 056246  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 3651 056250                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      056250  104456                                                                    TRAP    C$ERHRD
      056252  001132                                                                    .WORD   602
      056254  005052                                                                    .WORD   WRTMSG
      056256  012114                                                                    .WORD   SFIMSG
 3652 056260                        30$:    CKLOOP                          ;LOOP IF SELECTED
      056260  104406                                                                    TRAP    C$CLP1
 3653 056262  004737  011074                JSR     PC,REWIND               ;REWIND CALL
 3654 056266  103411                        BCS     35$                     ;BR, IF TSSR IS OK (GOOD)
 3655 056270  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR
 3656 056274  010004                        MOV     R0,R4                   ;SET UP PACKET
 3657 056276  005237  002214                INC     FATFLG                          ;ERROR COUNT
 3661 056302                                ERRHRD  ERRNO,T34RWN,PKTSSR     ;TSSR IS INCORRECT AFTER REWIND
      056302  104456                                                                    TRAP    C$ERHRD
      056304  001133                                                                    .WORD   603
      056306  062337                                                                    .WORD   T34RWN
      056310  012126                                                                    .WORD   PKTSSR
 3662 056312                        35$:    CKLOOP                          ;LOOP IF SELECTED
      056312  104406                                                                    TRAP    C$CLP1
 3663 056314  012737  140005  060660          MOV     #140005,T34PK3          ;WRITE DATA, ACK, CVC=1
 3664 056322  012703  176750                MOV     #65000.,R3              ;SET MAX NUMBER OF WRITES
 3665 056326  013737  003116  060662        MOV     FREE,T34WB              ;SET UP WRITE BUFFER ADDRESS
 3666 056334  012737  006654  060666        MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (4K BYTES)
 3667 056342  012704  060660                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
 3668 056346  010465  000000        40$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 3669 056352  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 3670 056356  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 3671 056362  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 3672 056366  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 3673 056370  001010                        BNE     50$                     ;BR, IT MIGHT BE END OF TAPE
 3674 056372  005303                        DEC     R3                      ;DEC RECORD COUNTER
 3675 056374  001364                        BNE     40$                     ;BR, IF MORE TO GO
 3676 056376  005237  002214                INC     FATFLG                          ;ERROR COUNT
 3680 056402                                ERRDF   ERRNO,T34ET,PKTSSR      ;EOT NOT FOUND (USE SHORTER TAPE?)
      056402  104455                                                                    TRAP    C$ERDF
      056404  001134                                                                    .WORD   604
      056406  062116                                                                    .WORD   T34ET
      056410  012126                                                                    .WORD   PKTSSR
 3681 056412  032701  000004        50$:    BIT     #BIT2,R1                ;CHECK FOR TAPE STATUS ALERT
 3682 056416  001001                        BNE     60$                     ;BR, IF SET
 3683 056420  000752                        BR      40$                     ;KEEP GOING
 3684 056422  013701  060570        60$:    MOV     T34BFR+6,R1             ;PICK UP XSTO
 3685 056426  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 3686 056430  052702  000001                BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
 3687 056434  020102                        CMP     R1,R2                   ;WAS THE BIT ON
 3688 056436  001402                        BEQ     80$                     ;BR, IF EOT WAS FOUND
 3689 056440  000137  056346                JMP     40$                     ;KEEP LOOKING
 3690 056444                        80$:    CKLOOP                          ;LOOP IF SELECTED
      056444  104406                                                                    TRAP    C$CLP1
 3691 056446  012737  140005  060660          MOV     #140005,T34PK3          ;WRITE DATA, ACK, CVC=1
 3692 056454  013737  003116  060662        MOV     FREE,T34WB              ;SET UP WRITE BUFFER ADDRESS
 3693 056462  012737  006654  060666        MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (4K BYTES)
 3694 056470  012704  060660                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
```

TEST 6: OPERATIONS AT EOT

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3695 056474  010465  000000                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3696 056500  004737  016330                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3697 056504  016501  000002                 MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3698 056510  012702  100204                 MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
3699 056514  020102                         CMP     R1,R2                   ;ARE THEY EQUAL
3700 056516  001406                         BEQ     90$                     ;BR, IF THEY ARE OK
3701 056520  005237  002214                 INC     FATFLG                          ;ERROR COUNT
3705 056524                                 ERRHRD  ERRNO,T34ET2,PKTSSR     ;WRITE TAPE AT EOT FAILED TO SET TSA
     056524  104456                                                                 TRAP    C$ERHRD
     056526  001135                                                                 .WORD   605
     056530  061367                                                                 .WORD   T34ET2
     056532  012126                                                                 .WORD   PKTSSR
3706 056534                         90$:    CKLOOP                          ;LOOP IF SELECTED
     056534  104406                                                                 TRAP    C$CLP1
3707 056536  013701  060570                 MOV     T34BFR+6,R1             ;PICK UP XSTO
3708 056542  010102                         MOV     R1,R2                   ;SET UP EXPECTED
3709 056544  052702  000001                 BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
3710 056550  020102                         CMP     R1,R2                   ;WAS THE BIT ON
3711 056552  001406                         BEQ     100$                    ;BR, IF EOT WAS FOUND
3712 056554  005237  002214                 INC     FATFLG                          ;ERROR COUNT
3716 056560                                 ERRHRD  ERRNO,T34ETN,EXPREC     ;EOT BIT (XSTO) NOT SET
     056560  104456                                                                 TRAP    C$ERHRD
     056562  001136                                                                 .WORD   606
     056564  061451                                                                 .WORD   T34ETN
     056566  015554                                                                 .WORD   EXPREC
3717 056570                         100$:   CKLOOP                          ;LOOP IF SELECTED
     056570  104406                                                                 TRAP    C$CLP1
3718 056572  012737  140011  060660           MOV     #140011,T34PK3          ;WRITE TAPE MARK, ACK, CVC=1 COMMAND
3719 056600  012704  060660                 MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3720 056604  010465  000000                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3721 056610  004737  016330                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3722 056614  016501  000002                 MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3723 056620  012702  100204                 MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
3724 056624  020102                         CMP     R1,R2                   ;ARE THEY EQUAL
3725 056626  001406                         BEQ     110$                    ;BR, IF STATUS IS GOOD (OK)
3726 056630  005237  002214                 INC     FATFLG                          ;ERROR COUNT
3730 056634                                 ERRHRD  ERRNO,T34WTM,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     056634  104456                                                                 TRAP    C$ERHRD
     056636  001137                                                                 .WORD   607
     056640  061300                                                                 .WORD   T34WTM
     056642  012126                                                                 .WOPD   PKTSSR
3731 056644                         110$:   CKLOOP                          ;LOOP IF SELECTED
     056644  104406                                                                 TRAP    C$CLP1
3732 056646  013701  060570                 MOV     T34BFR+6,R1             ;PICK UP XSTO
3733 056652  010102                         MOV     R1,R2                   ;SET UP EXPECTED
3734 056654  052702  000001                 BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
3735 056660  020102                         CMP     R1,R2                   ;WAS THE BIT ON
3736 056662  001406                         BEQ     120$                    ;BR, IF EOT WAS FOUND
3737 056664  005237  002214                 INC     FATFLG                          ;ERROR COUNT
3741 056670                                 ERRHRD  ERRNO,T34ET0,EXPREC     ;EOT BIT (XSTO) NOT SET
     056670  104456                                                                 TRAP    C$ERHRD
     056672  001140                                                                 .WORD   608
     056674  061002                                                                 .WORD   T34ET0
     056676  015554                                                                 .WORD   EXPREC
3742 056700                         120$:   CKLOOP                          ;LOOP IF SELECTED
     056700  104406                                                                 TRAP    C$CLP1
3743 056702  012737  141410  060660           MOV     #141410,T34PK3          ;SKIP TAPE MARK REVERSE ACK,CVC=1 COMMAND
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```
3744 056710  012737  000001  060662          MOV     #1,T34WB                ;SET NUMBER (1) OF TMS TO SKIP
3745 056716  012704  060660                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3746 056722  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3747 056726  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3748 056732  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3749 056736  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
3750 056742  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3751 056744  001406                          BEQ     130$                    ;BR, IF STATUS IS GOOD (OK)
3752 056746  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3756 056752                                  ERRHRD  ERRNO,T34STM,PKTSSR     ;SKIP TAPE MARK REV. DIDN'T SET TSA
     056752  104456                                                                  TRAP    C$ERHRD
     056754  001141                                                                  .WORD   609
     056756  061700                                                                  .WORD   T34STM
     056760  012126                                                                  .WORD   PKTSSR
3757 056762                          130$:   CKLOOP                          ;LOOP IF SELECTED
     056762  104406                                                                  TRAP    C$CLP1
3758 056764  013701  060570                  MOV     T34BFR+6,R1             ;PICK UP XSTO
3759 056770  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3760 056772  052702  000001                  BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
3761 056776  020102                          CMP     R1,R2                   ;WAS THE BIT ON
3762 057000  001406                          BEQ     140$                    ;BR, IF EOT WAS FOUND
3763 057002  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3767 057006                                  ERRHRD  ERRNO,T34ETN,EXPREC     ;EOT BIT (XSTO) NOT SET
     057006  104456                                                                  TRAP    C$ERHRD
     057010  001142                                                                  .WORD   610
     057012  061451                                                                  .WORD   T34ETN
     057014  015554                                                                  .WORD   EXPREC
3768 057016                          140$:   CKLOOP                          ;LOOP IF SELECTED
     057016  104406                                                                  TRAP    C$CLP1
3769 057020  013701  060570                  MOV     T34BFR+6,R1             ;PICK UP XSTO
3770 057024  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3771 057026  052702  100000                  BIS     #BIT15,R2               ;SET THE TMK BIT ON IN EXPECTED
3772 057032  020102                          CMP     R1,R2                   ;WAS THE BIT ON
3773 057034  001406                          BEQ     150$                    ;BR, IF TMK WAS FOUND
3774 057036  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3778 057042                                  ERRHRD  ERRNO,T34TMK,EXPREC     ;EOT BIT (XSTO) NOT SET
     057042  104456                                                                  TRAP    C$ERHRD
     057044  001143                                                                  .WORD   611
     057046  061763                                                                  .WORD   T34TMK
     057050  015554                                                                  .WORD   EXPREC
3779 057052                          150$:   CKLOOP                          ;LOOP IF SELECTED
     057052  104406                                                                  TRAP    C$CLP1
3780 057054  012737  140410  060660          MOV     #140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD
3781 057062  012737  000001  060662          MOV     #1,T34WB                ;SPACE ONE RECORD REVERSE
3782 057070  012704  060660                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3783 057074  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3784 057100  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3785 057104  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3786 057110  012702  100204                  MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
3787 057114  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3788 057116  001006                          BNE     160$                    ;BR, IT MIGHT BE END OF TAPE
3789 057120  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3793 057124                                  ERRHRD  ERRNO,T34POS,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     057124  104456                                                                  TRAP    C$ERHRD
     057126  001144                                                                  .WORD   612
     057130  060714                                                                  .WORD   T34POS
     057132  012126                                                                  .WORD   PKTSSR
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3794 057134                          160$:  CKLOOP                                ;LOOP IF SELECTED
     057134  104406                                                                      TRAP    C$CLP1
3795 057136  013701  060570                 MOV     T34BFR+6,R1                  ;PICK UP XSTO
3796 057142  010102                         MOV     R1,R2                        ;SET UP EXPECTED
3797 057144  052702  000001                 BIS     #BIT0,R2                     ;SET THE EOT BIT ON IN EXPECTED
3798 057150  020102                         CMP     R1,R2                        ;WAS THE BIT ON
3799 057152  001406                         BEQ     163$                         ;BR, IF EOT WAS FOUND
3800 057154  005237  002214                 INC     FATFLG                               ;ERROR COUNT
3804 057160                                 ERRHRD  ERRNO,T34ETN,EXPREC          ;EOT BIT (XSTO) NOT SET
     057160  104456                                                                      TRAP    C$ERHRD
     057162  001145                                                                      .WORD   613
     057164  061451                                                                      .WORD   T34ETN
     057166  015554                                                                      .WORD   EXPREC
3805 057170                          163$:  CKLOOP                                ;LOOP IF SELECTED
     057170  104406                                                                      TRAP    C$CLP1
3806 057172  013701  060570                 MOV     T34BFR+6,R1                  ;PICK UP XSTO
3807 057176  010102                         MOV     R1,R2                        ;SET UP EXPECTED
3808 057200  042702  100000                 BIC     #BIT15,R2                    ;CLEAR THE TMK BIT ON IN EXPECTED
3809 057204  020102                         CMP     R1,R2                        ;WAS THE BIT ON
3810 057206  001406                         BEQ     165$                         ;BR, IF TMK WAS FOUND
3811 057210  005237  002214                 INC     FATFLG                               ;ERROR COUNT
3815 057214                                 ERRHRD  ERRNO,T34TMK,EXPREC          ;EOT BIT (XSTO) NOT SET
     057214  104456                                                                      TRAP    C$ERHRD
     057216  001146                                                                      .WORD   614
     057220  061763                                                                      .WORD   T34TMK
     057222  015554                                                                      .WORD   EXPREC
3816 057224                          165$:  CKLOOP                                ;LOOP IF SELECTED
     057224  104406                                                                      TRAP    C$CLP1
3817 057226  012737  140410  060660         MOV     #140410,T34PK3               ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD
3818 057234  012737  000001  060662         MOV     #1,T34WB                     ;SPACE ONE RECORD REVERSE
3819 057242  012704  060660                 MOV     #T34PK3,R4                   ;R4 = POINTER TO PACKET
3820 057246  010465  000000                 MOV     R4,TSDB(R5)                  ;ISSUE COMMAND
3821 057252  004737  016330                 JSR     PC,WAITF                     ;WAIT FOR SSR TO SET
3822 057256  016501  000002                 MOV     TSSR(R5),R1                  ;GET TSSR CONTENTS
3823 057262  012702  000200                 MOV     #SSR,R2                      ;SET UP EXPECTED
3824 057266  020102                         CMP     R1,R2                        ;ARE THEY EQUAL
3825 057270  001406                         BEQ     167$                         ;BR, IT MIGHT BE END OF TAPE
3826 057272  005237  002214                 INC     FATFLG                               ;ERROR COUNT
3830 057276                                 ERRHRD  ERRNO,T34POS,PKTSSR          ;EOT NOT FOUND (USE SHORTER TAPE?)
     057276  104456                                                                      TRAP    C$ERHRD
     057300  001147                                                                      .WORD   615
     057302  060714                                                                      .WORD   T34POS
     057304  012126                                                                      .WORD   PKTSSR
3831 057306                          167$:  CKLOOP                                ;LOOP IF SELECTED
     057306  104406                                                                      TRAP    C$CLP1
3832 057310  013701  060570                 MOV     T34BFR+6,R1                  ;PICK UP XSTO
3833 057314  010102                         MOV     R1,R2                        ;SET UP EXPECTED
3834 057316  042702  000001                 BIC     #BIT0,R2                     ;CLEAR THE EOT BIT ON IN EXPECTED
3835 057322  020102                         CMP     R1,R2                        ;WAS THE BIT OFF
3836 057324  001400                         BEQ     170$                         ;BR, IF EOT WAS FOUND
3837 057326                          170$:  CKLOOP                                ;LOOP IF SELECTED
     057326  104406                                                                      TRAP    C$CLP1
3838 057330  012737  140010  060660         MOV     #140010,T34PK3               ;SPACE RECORDS FORWARD, ACK, CVC=1
3839 057336  012737  000002  060662         MOV     #2,T34WB                     ;SPACE TWO RECORDS
3840 057344  012704  060660                 MOV     #T34PK3,R4                   ;R4 = POINTER TO PACKET
3841 057350  010465  000000                 MOV     R4,TSDB(R5)                  ;ISSUE COMMAND
3842 057354  004737  016330                 JSR     PC,WAITF                     ;WAIT FOR SSR TO SET
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3843 057360  016501  000002                MOV     TSSR(R5),R1          ;GET TSSR CONTENTS
3844 057364  012702  000200                MOV     #SSR,R2              ;SET UP EXPECTED
3845 057370  020102                        CMP     R1,R2                ;ARE THEY EQUAL
3846 057372  001406                        BEQ     190$                 ;BR, IT MIGHT BE END OF TAPE
3847 057374  005237  002214                INC     FATFLG                       ;ERROR COUNT
3851 057400                                ERRHRD  ERRNO,T34POS,PKTSSR  ;EOT NOT FOUND (USE SHORTER TAPE?)
     057400  104456                                                            TRAP    C$ERHRD
     057402  001150                                                            .WORD   616
     057404  060714                                                            .WORD   T34POS
     057406  012126                                                            .WORD   PKTSSR
3852 057410                        190$:   CKLOOP                       ;LOOP IF SELECTED
     057410  104406                                                            TRAP    C$CLP1
3853 057412  013701  060570                MOV     T34BFR+6,R1          ;PICK UP XSTO
3854 057416  010102                        MOV     R1,R2                ;SET UP EXPECTED
3855 057420  052702  000001                BIS     #BIT0,R2             ;SET THE EOT BIT ON IN EXPECTED
3856 057424  020102                        CMP     R1,R2                ;WAS THE BIT ON
3857 057426  001406                        BEQ     200$                 ;BR, IF EOT WAS FOUND
3858 057430  005237  002214                INC     FATFLG                       ;ERROR COUNT
3862 057434                                ERRHRD  ERRNO,T34ETS,EXPREC  ;EOT BIT (XSTO) NOT SET
     057434  104456                                                            TRAP    C$ERHRD
     057436  001151                                                            .WORD   617
     057440  061530                                                            .WORD   T34ETS
     057442  015554                                                            .WORD   EXPREC
3863 057444                        200$:   CKLOOP                       ;LOOP IF SELECTED
     057444  104406                                                            TRAP    C$CLP1
3864 057446  012737  140401  060660        MOV     #140401,T34PK3       ;READ REVERSE, ACK, CVC=1
3865 057454  013737  003116  060662        MOV     FREE,T34RB           ;SET UP WRITE BUFFER ADDRESS
3866 057462  012704  060660                MOV     #T34PK3,R4           ;R4 = POINTER TO PACKET
3867 057466  010465  000000                MOV     R4,TSDB(R5)          ;ISSUE COMMAND
3868 057472  004737  016330                JSR     PC,WAITF             ;WAIT FOR SSR TO SET
3869 057476  016501  000002                MOV     TSSR(R5),R1          ;GET TSSR CONTENTS
3870 057502  012702  000200                MOV     #SSR,R2              ;SET UP EXPECTED
3871 057506  020102                        CMP     R1,R2                ;ARE THEY EQUAL
3872 057510  001406                        BEQ     205$                 ;BR, ONLY SSR IS SET
3873 057512  005237  002214                INC     FATFLG                       ;ERROR COUNT
3877 057516                                ERRHRD  ERRNO,T34RRE,PKTSSR  ;EOT NOT FOUND (USE SHORTER TAPE?)
     057516  104456                                                            TRAP    C$ERHRD
     057520  001152                                                            .WORD   618
     057522  061066                                                            .WORD   T34RRE
     057524  012126                                                            .WORD   PKTSSR
3878 057526                        205$:   CKLOOP                       ;LOOP IF SELECTED
     057526  104406                                                            TRAP    C$CLP1
3879 057530  012737  140401  060660        MOV     #140401,T34PK3       ;READ REVERSE, ACK, CVC=1
3880 057536  013737  003116  060662        MOV     FREE,T34RB           ;SET UP WRITE BUFFER ADDRESS
3881 057544  012704  060660                MOV     #T34PK3,R4           ;R4 = POINTER TO PACKET
3882 057550  010465  000000                MOV     R4,TSDB(R5)          ;ISSUE COMMAND
3883 057554  004737  016330                JSR     PC,WAITF             ;WAIT FOR SSR TO SET
3884 057560  016501  000002                MOV     TSSR(R5),R1          ;GET TSSR CONTENTS
3885 057564  012702  000200                MOV     #SSR,R2              ;SET UP EXPECTED
3886 057570  020102                        CMP     R1,R2                ;ARE THEY EQUAL
3887 057572  001406                        BEQ     210$                 ;BR, IT MIGHT BE END OF TAPE
3888 057574  005237  002214                INC     FATFLG                       ;ERROR COUNT
3892 057600                                ERRHRD  ERRNO,T34RRE,PKTSSR  ;EOT NOT FOUND (USE SHORTER TAPE?)
     057600  104456                                                            TRAP    C$ERHRD
     057602  001153                                                            .WORD   619
     057604  061066                                                            .WORD   T34RRE
     057606  012126                                                            .WORD   PKTSSR
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TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 169
TEST  6: OPERATIONS AT EOT

 3893 057610                          210$:   CKLOOP                          ;LOOP IF SELECTED
      057610  104406                                                                TRAP    C$CLP1
 3894 057612  012737  140001  060660          MOV     #140001,T34PK3          ;READ DATA, ACK, CVC=1
 3895 057620  013737  003116  060662          MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
 3896 057626  012737  006654  060666          MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (4K BYTES)
 3897 057634  012704  060660                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
 3898 057640  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 3899 057644  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 3900 057650  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 3901 057654  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 3902 057660  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 3903 057662  001406                          BEQ     230$                    ;BR, IT MIGHT BE END OF TAPE
 3904 057664  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 3908 057670                                  ERRHRD  ERRNO,T34RRE,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
      057670  104456                                                                TRAP    C$ERHRD
      057672  001154                                                                .WORD   620
      057674  061066                                                                .WORD   T34RRE
      057676  012126                                                                .WORD   PKTSSR
 3909 057700                          230$:   CKLOOP                          ;LOOP IF SELECTED
      057700  104406                                                                TRAP    C$CLP1
 3910 057702  012737  140001  060660          MOV     #140001,T34PK3          ;READ DATA, ACK, CVC=1
 3911 057710  013737  003116  060662          MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
 3912 057716  012737  006654  060666          MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (4K BYTES)
 3913 057724  012704  060660                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
 3914 057730  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 3915 057734  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 3916 057740  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 3917 057744  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 3918 057750  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 3919 057752  001406                          BEQ     235$                    ;BR, IT MIGHT BE END OF TAPE
 3920 057754  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 3924 057760                                  ERRHRD  ERRNO,T34RRE,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
      057760  104456                                                                TRAP    C$ERHRD
      057762  001155                                                                .WORD   621
      057764  061066                                                                .WORD   T34RRE
      057766  012126                                                                .WORD   PKTSSR
 3925 057770                          235$:   CKLOOP                          ;LOOP IF SELECTED
      057770  104406                                                                TRAP    C$CLP1
 3926 057772  013701  060570                  MOV     T34BFR+6,R1             ;PICK UP XSTO
 3927 057776  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 3928 060000  052702  000001                  BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
 3929 060004  020102                          CMP     R1,R2                   ;WAS THE BIT ON
 3930 060006  001406                          BEQ     240$                    ;BR, IF EOT WAS FOUND
 3931 060010  005237  002214                  INC     FATFLG                          ;ERROR COUNT
 3935 060014                                  ERRHRD  ERRNO,T34ETZ,EXPREC     ;EOT BIT (XSTO) NOT SET
      060014  104456                                                                TRAP    C$ERHRD
      060016  001156                                                                .WORD   622
      060020  061622                                                                .WORD   T34ETZ
      060022  015554                                                                .WORD   EXPREC
 3936 060024                          240$:   CKLOOP                          ;LOOP IF SELECTED
      060024  104406                                                                TRAP    C$CLP1
 3937 060026  012737  140410  060660          MOV     #140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD.
 3938 060034  012737  000005  060662          MOV     #5,T34RB                ;NUMBER OF RECORDS TO SPACE
 3939 060042  012704  060660                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
 3940 060046  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 3941 060052  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 3942 060056  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
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TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 170
TEST  6: OPERATIONS AT EOT

 3943 060062  012702  000200                MOV     @SSR,R2                 ;SET UP EXPECTED
 3944 060066  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 3945 060070  001406                        BEQ     250$                    ;BR, IT MIGHT BE END OF TAPE
 3946 060072  005237  002214                INC     FATFLG                          ;ERROR COUNT
 3950 060076                                ERRHRD  ERRNO,T34POS,PKTSSR     ;POSITION COMMAND DIDN'T WORK
      060076  104456                                                                TRAP    C$ERHRD
      060100  001157                                                                .WORD   623
      060102  060714                                                                .WORD   T34POS
      060104  012126                                                                .WORD   PKTSSR
 3951 060106                        250$:   CKLOOP                          ;LOOP IF SELECTED
      060106  104406                                                                TRAP    C$CLP1
 3952 060110  013701  060570                MOV     T34BFR+6,R1             ;PICK UP XSTO
 3953 060114  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 3954 060116  042702  000001                BIC     @BIT0,R2                ;CLEAR THE EOT BIT ON IN EXPECTED
 3955 060122  020102                        CMP     R1,R2                   ;WAS THE BIT ON
 3956 060124  001406                        BEQ     260$                    ;BR, IF EOT WAS FOUND
 3957 060126  005237  002214                INC     FATFLG                          ;ERROR COUNT
 3961 060132                                ERRHRD  ERRNO,T34ETC,EXPREC     ;EOT BIT (XSTO) NOT CLEAR
      060132  104456                                                                TRAP    C$ERHRD
      060134  001160                                                                .WORD   624
      060136  061157                                                                .WORD   T34ETC
      060140  015554                                                                .WORD   EXPREC
 3962 060142                        260$:   CKLOOP                          ;LOOP IF SELECTED
      060142  104406                                                                TRAP    C$CLP1
 3963 060144  012737  140010  060660          MOV     @140010,T34PK3          ;SPACE RECORDS FORWARD, ACK, CVC=1 CMD.
 3964 060152  012737  000005  060662          MOV     @5,T34RB                ;NUMBER OF RECORDS TO SPACE
 3965 060160  012704  060660                MOV     @T34PK3,R4              ;R4 = POINTER TO PACKET
 3966 060164  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 3967 060170  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 3968 060174  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 3969 060200  012702  000200                MOV     @SSR,R2                 ;SET UP EXPECTED
 3970 060204  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 3971 060206  001406                        BEQ     270$                    ;BR, IT MIGHT BE END OF TAPE
 3972 060210  005237  002214                INC     FATFLG                          ;ERROR COUNT
 3976 060214                                ERRHRD  ERRNO,T34ET,PKTSSR      ;TSSR NOT CORRECT
      060214  104456                                                                TRAP    C$ERHRD
      060216  001161                                                                .WORD   625
      060220  062116                                                                .WORD   T34ET
      060222  012126                                                                .WORD   PKTSSR
 3977 060224                        270$:   CKLOOP                          ;LOOP IF SELECTED
      060224  104406                                                                TRAP    C$CLP1
 3978 060226  013701  060570                MOV     T34BFR+6,R1             ;PICK UP XSTO
 3979 060232  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 3980 060234  052702  000001                BIS     @BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
 3981 060240  020102                        CMP     R1,R2                   ;WAS THE BIT ON
 3982 060242  001400                        BEQ     280$                    ;BR, IF EOT WAS FOUND
 3983 060244                        280$:   CKLOOP                          ;LOOP IF SELECTED
      060244  104406                                                                TRAP    C$CLP1
 3984 060246  012737  141410  060660          MOV     @141410,T34PK3          ;SKIP FILE MARKS REVERSE,ACK,CVC=1 COMMAND
 3985 060254  012737  000003  060662          MOV     @3,T34RB                ;NUMBER OF FILE MARKS
 3986 060262  012704  060660                MOV     @T34PK3,R4              ;R4 = POINTER TO PACKET
 3987 060266  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 3988 060272  012737  176750  060674          MOV     @65000.,T34DLY          ;SET UP DELAY COUNTER
 3989 060300  004737  016330        285$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 3990 060304  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 3991 060310  032701  000200                BIT     @SSR,R1                 ;CHECK FOR SSR SET
 3992 060314  001017                        BNE     286$                    ;BR, WHEN SSR IS SET
```

```
TEST 1 - HARDWARE TEST 1.8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 171
TEST  6: OPERATIONS AT EOT

 3993 060316                                DELAY   250                 ;WAIT ABOUT .25 SECONDS
      060316  012727  000250                                                    MOV     #250,(PC)+
      060322  000000                                                           .WORD   0
      060324  013727  002116                                                    MOV     L$DLY,(PC)+
      060330  000000                                                           .WORD   0
      060332  005367  177772                                                    DEC     -6(PC)
      060336  001375                                                           BNE     .-4
      060340  005367  177756                                                    DEC     -22(PC)
      060344  001367                                                           BNE     .-20
 3994 060346  005337  060674                DEC     T34DLY              ;BUMP COUNTER
 3995 060352  001352                        BNE     285$                ;BR, IF MORE TO COUNT
 3996 060354  012702  000200          286$: MOV     #SSR,R2             ;SET UP EXPECTED
 3997 060360  020102                        CMP     R1,R2               ;ARE THEY EQUAL
 3998 060362  001007                        BNE     290$                ;BR, IT MIGHT BE END OF TAPE
 3999 060364  005303                        DEC     R3                  ;DEC RECORD COUNTER
 4000 060366  005237  002214                INC     FATFLG                      ;ERROR COUNT
 4004 060372                                ERRHRD  ERRNO,T34ET,PKTSSR  ;EOT NOT FOUND (USE SHORTER TAPE?)
      060372  104456                                                           TRAP    C$ERHRD
      060374  001162                                                           .WORD   626
      060376  062116                                                           .WORD   T34ET
      060400  012126                                                           .WORD   PKTSSR
 4005 060402  032701  000004          290$: BIT     #BIT2,R1            ;CHECK FOR TAPE STATUS ALERT
 4006 060406  013701  060570                MOV     T34BFR+6,R1         ;PICK UP XSTO
 4007 060412  010102                        MOV     R1,R2               ;SET UP EXPECTED
 4008 060414  042702  000001                BIC     #BIT0,R2            ;CLEAR THE EOT BIT IN EXPECTED
 4009 060420  020102                        CMP     R1,R2               ;WAS THE BIT ON
 4010 060422  001406                        BEQ     300$                ;BR, IF EOT WAS FOUND
 4011 060424  005237  002214                INC     FATFLG                      ;ERROR COUNT
 4015 060430                                ERRHRD  ERRNO,T34ETC,EXPREC ;EOT BIT (XSTO) NOT CLEAR
      060430  104456                                                           TRAP    C$ERHRD
      060432  001163                                                           .WORD   627
      060434  061157                                                           .WORD   T34ETC
      060436  015554                                                           .WORD   EXPREC
 4016 060440                          300$: CKLOOP                      ;LOOP IF SELECTED
      060440  104406                                                           TRAP    C$CLP1
 4017 060442  013701  060570                MOV     T34BFR+6,R1         ;PICK UP XSTO
 4018 060446  010102                        MOV     R1,R2               ;SET UP EXPECTED
 4019 060450  052702  000002                BIS     #BIT1,R2            ;SET THE BOT BIT ON IN EXPECTED
 4020 060454  020102                        CMP     R1,R2               ;WAS THE BIT ON
 4021 060456  001406                        BEQ     320$                ;BR, IF BOT WAS FOUND
 4022 060460  005237  002214                INC     FATFLG                      ;ERROR COUNT
 4026 060464                                ERRHRD  ERRNO,T34BOT,EXPREC ;EOT BIT (XSTO) NOT CLEAR
      060464  104456                                                           TRAP    C$ERHRD
      060466  001164                                                           .WORD   628
      060470  061234                                                           .WORD   T34BOT
      060472  015554                                                           .WORD   EXPREC
 4027 060474                          320$: CKLOOP                      ;LOOP IF SELECTED
      060474  104406                                                           TRAP    C$CLP1
 4028 060476                          600$:
 4029 060476                                ENDSUB                      ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      060476                                                                L10062:
      060476  104403                                                           TRAP    C$ESUB
 4030 060500  023727  002214  000017        CMP     FATFLG,#15.                 ;IS ERROR COUNT AT 25
 4031 060506  103402                        BLO     999$                        ;BR, IF LESS THAN 25
 4032 060510  004737  017262                JSR     PC,CKDROP                   ;TRY TO DROP THE UNIT
 4033 060514                          999$:
 4034 060514  004737  016536                JSR     PC,TSTLOOP          ;DO WE NEED TO ITERATE TEST
```

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4035 060520  103002                    BCC     163$                    ;BR, IF NO LOOP REQUIRED
4036 060522  000137  056072            JMP     T34LOOP                 ;EXECUTE AGAIN
4037 060526                    163$:   EXIT    TST                     ;ALL DONE THIS TEST
     060526  104432                                                            TRAP    C$EXIT
     060530  002662                                                            .WORD   L10061-.
4038                                   ;+
4039                                   ;LOCAL STORAGE FOR THIS TEST
4040                                   ;-
4042          060540                           .=<.+10>&177770
4044 060540                            T34PACKET:                      ;COMMAND PACKET FOR TEST
4045 060540  100004                            .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH ACK
4046 060542  060550                            .WORD   T34DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
4047 060544  000000                            .WORD   0
4048 060546  000010                            .WORD   8.              ;STARTING VALUE OF BLOCK SIZE
4049 060550                            T34DATA:                        ;CHARACTERISTICS DATA BLOCK
4050 060550  060562                            .WORD   T34BFR          ;ADDRESS OF MESSAGE BUFFER
4051 060552  000000                            .WORD   0
4052 060554  000012                            .WORD   10.             ;LENGTH OF MESSAGE BUFFER
4053 060556  000000                            .WORD   0
4054 060560  000000                    T34DSW: .WORD   0               ;SELECT DRIVE 0
4055 060562                            T34BFR: .BLKW   25.             ;MESSAGE BUFFER
4056                                   ;
4057                                   ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
4058                                   ;
4060          060650                           .=<.+10>&177770
4062 060650                            T34PK2:
4063 060650  100006                            .WORD   100006          ;WRITE SUB SYS MEM COMMAND, AND ACK
4064 060652  060676                            .WORD   T34BF2          ;ADDRESS OF SELECT BLOCK DATA
4065 060654  000000                            .WORD   0
4066 060656  000006                            .WORD   6.              ;SIZE OF DATA PACKET
4067
4071 060660                            T34PK3:
4072 060660  100005                            .WORD   100005          ;WRITE COMMAND,  AND ACK
4073 060662                            T34RB:
4074 060662  000000                    T34WB:  .WORD   0               ;ADDRESS OF WRITE/READ BUFFER
4075 060664  000000                            .WORD   0
4076 060666  000000                    T34SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
4077                                           .EVEN
4078                                   ;
4079 060670  000000                    T34RSZ: .WORD   0               ;LARGEST TAPE RECORD IN BYTES
4080 060672  000000                    T34CNT: .WORD   0               ;TAPE RECORD COUNTER
4081 060674  000000                    T34DLY: .WORD   0               ;DELAY COUNTER
4082                                   ;
4083                                   ;
4084 060676                            T34BF2:
4085 060676     010                    T34BS0: .BYTE   10              ;BSEL0 AREA
4086 060677     200                    T34BS1: .BYTE   200             ;BSEL1 AREA
4087 060700  000000                    T34S2:  .WORD   0               ;SEL 2 AREA
4088 060702  000000                    T34S3:  .WORD   0               ;DATA AREA
4089                                   ;
4090                                   ;
4091                                           .EVEN
4092                                   ;TAPE MOTION PACKET COMMAND VALUES
4093
4094 060704  100005                    T34WD:  .WORD   100005          ;WRITE DATA (NEXT)
4095 060706  100405                    T34WDR: .WORD   100405          ;WRITE DATA RETRY
4096 060710  102005                    T34CON: .WORD   102005          ;WRITE CONTINOUS
```

```
4097 060712  177777                        .WORD   177777              ;END OF DATA
4098                                ;+
4099                                ;LOCAL TEXT MESSAGES FOR TEST
4100                                ;-
4101
4102 060714    124   123   123    T34POS: .ASCIZ  'TSSR Incorrect After Position (SPACE RECORDS) Command'
4103 061002    127   122   111    T34ETO: .ASCIZ  'WRITE TAPE MARK At EOT Failed To Set EOT Bit (XSTO)'
4104 061066    122   105   101    T34RRE: .ASCIZ  'READ Command At EOT Didn''t Give Normal Termination (TSSR)'
4105 061157    125   156   141    T34ETC: .ASCIZ  'Unable To Clear EOT Indication, (XSTO) Bit 0'
4106 061234    122   105   127    T34BOT: .ASCIZ  'REWIND Failed To Set BOT (XSTO) Bit'
4107 061300    127   122   111    T34WTM: .ASCIZ  'WRITE TAPE MARK At EOT Failed To Set Tape Status Alert'
4108 061367    127   122   111    T34ET2: .ASCIZ  'WRITE DATA At EOT Failed To Set Tape Status Alert'
4109 061451    127   122   111    T34ETN: .ASCIZ  'WRITE DATA At EOT Failed To Set EOT Bit (XSTO)'
4110 061530    123   120   101    T34ETS: .ASCIZ  'SPACE RECORDS FORWARD At EOT Failed To Set EOT Bit (XSTO)'
4111 061622    122   105   101    T34ETZ: .ASCIZ  'READ DATA At EOT Failed To Set EOT Bit (XSTO)'
4112 061700    124   123   123    T34STM: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE At EOT'
4113 061763    120   117   123    T34TMK: .ASCIZ  'POSITION Command At EOT Onto Tape Mark Failed To Set TMK (XSTO)'
4114 062063    127   122   111    T34SSR: .ASCIZ  'WRITE Command Not Accepted'
4115 062116    105   117   124    T34ET:  .ASCIZ  'EOT Not Found In 65000 3.5K Writes, (Use Shorter Tape)'
4116 062205    127   122   111    T34EOT: .ASCIZ  'WRITE DATA OVER EOT GAVE NO TAPE STATUS ALERT'
4117 062263    124   123   123    T34TM:  .ASCIZ  'TSSR Not Correct After WRITE Command Reject'
4118 062337    122   145   167    T34RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
4119 062406    122   101   115    T34RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
4120 062461    124   123   123    T34AM3: .ASCIZ  'TSSR Init. Failed After WRITE Command'
4121 062527    104   162   151    T34OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
4122 062602    124   123   123    T34WDD: .ASCIZ  'TSSR Not Correct After WRITE DATA Command, SWB Bit Set'
4123 062671    124   123   123    T34WDC: .ASCIZ  'TSSR Not Correct After WRITE DATA Command, Check For Tape Offline'
4124 062773    103   126   103    T34VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
4125 063046    124   123   102    T34BA:  .ASCIZ  'TSBA Not Correct After WRITE DATA Command'
4126 063120    127   122   111    T34WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
4127 063207    117   160   145    TST34ID:        .ASCIZ  'Operations At EOT'
4128                                .EVEN
4129                                ;+
4130                                ;
4131                                ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
4132                                ;WRITE SUBSYSTEM MEMORY COMMAND
4133                                ;
4134                                ;-
4135
4136 063232                         T34REST:
4137 063232                                 SAVREG                      ;SAVE THE REGISTERS
4138 063236  012701  060540                 MOV     #T34PACKET,R1       ;START OF THE PACKET
4139 063242  012721  100004                 MOV     #100004,(R1)+       ;WRITE SUBSYSTEM MEM. WITH ACK
4140 063246  012721  060550                 MOV     #T34DATA,(R1)+      ;ADDRESS OF CHARAISTICS DATA BLOCK
4141 063252  005021                         CLR     (R1)+               ;EXTENDED ADDRESS
4142 063254  012721  000012                 MOV     #10.,(R1)+          ;SIZE OF DATA BLOCK IN BYTES
4143 063260  012721  060562                 MOV     #T34BFR,(R1)+       ;ADDRESS OF MESSAGE BUFFER
4144 063264  005021                         CLR     (R1)+
4145 063266  012721  000024                 MOV     #20.,(R1)+          ;LENGTH OF MESSAGE BUFFER
4146 063272  005021                         CLR     (R1)+
4147 063274  012711  000000                 MOV     #0,(R1)             ;SELECT DRIVE ZERO
4148 063300  012702  000030                 MOV     #24.,R2             ;NUMBER OF LOCATIONS TO BE CLEARED
4149 063304  012762  177777  060562  64$:   MOV     #177777,T34BFR(R2)  ;ALL ONES TO MESSAGE BUFFER
4150 063312  005742                         TST     -(R2)               ;BUMP DOWN TO NEXT LOCATION
4151 063314  020227  000000                 CMP     R2,#0               ;R2 AT ZERO YET
4152 063320  001371                         BNE     64$                 ;KEEP GOING UNTIL DONE
4153 063322  000207                         RTS     PC                  ;RETURN
```

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4154
4155 063324                                T34RT2:
4156 063324                                        SAVREG                          ;SAVE THE REGISTERS
4157 063330  012701  060650                       MOV     #T34PK2,R1              ;START OF THE PACKET
4158 063334  012721  100006                       MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK
4159 063340  012721  060676                       MOV     #T34BF2,(R1)+           ;ADDRESS OF DATA BLOCK
4160 063344  005021                               CLR     (R1)+                   ;EXTENDED ADDRESS
4161 063346  012721  000006                       MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
4162 063352  012701  060676                       MOV     #T34BF2,R1              ;POINT TO DATA SEL AREA
4163 063356  005021                               CLR     (R1)+
4164 063360  005021                               CLR     (R1)+
4165 063362  005011                               CLR     (R1)
4166 063364  000207                               RTS     PC                      ;RETURN
4167 063366                                T34RT3:
4168 063366                                        SAVREG                          ;SAVE THE REGISTERS
4169 063372  012701  060660                       MOV     #T34PK3,R1              ;START OF THE PACKET
4170 063376  012721  100005                       MOV     #100005,(R1)+           ;WRITE  TAPE. WITH ACK
4171 063402  005021                               CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
4172 063404  005021                               CLR     (R1)+                   ;EXTENDED ADDRESS
4173 063406  005011                               CLR     (R1)                    ;SIZE OF DATA BLOCK
4174 063410  000207                               RTS     PC                              ;RETURN
4175 063412                                        ENDTST
     063412                                                                                L10061:
     063412  104401                                                                              TRAP    C$ETST
4176                                       .SBTTL  TEST  7: EXTENDED MODE FEATURES
4177                                       ;+
4178                                       ;
4179                                       ;       THIS TEST VERIFIES THE OPERATION OF COMMANDS ONLY AVAILABLE WHEN
4180                                       ;       THE CONTROLLER IS IN THE EXTENDED FEATURES MODE.  THESE COMMANDS
4181                                       ;       ARE:
4182                                       ;
4183                                       ;               REWIND WITH IMMEDIATE INTERRUPT
4184                                       ;
4185                                       ;       IF THE CONTROLLER IS NOT ALREADY IN EXTENDED FEATURES MODE, IT
4186                                       ;       IS PLACED THERE VIA A WRITE SUBSYSTEM MEMORY COMMAND.
4187                                       ;
4188                                       ;
4189                                       ;
4190                                       ;THE TEST CONSISTS OF THE FOLLOWING 7 SUBTESTS
4191                                       ;
4192                                       ;
4193                                       ;
4194                                       ;-
4195 063414                                        BGNTST
     063414                                                                             T7::
4196 063414  012737  006354  002172                MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
4201 063422  012700  073133                       MOV     #TST35ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
4202 063426  004737  016570                       JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
4203 063432  012737  000005  002210                MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
4204 063440  005037  067536                       CLR     T35CNT                  ;CLEAR TAPE RECORD COUNTER
4205                                       ;+
4206                                       ;
4207                                       ;TEST 7, SUBTEST 1
4208                                       ;
4209                                       ;
4210                                       ;       VERIFIES THAT A REWIND WITH IMMEDIATE INTERRUPT COMMAND, ISSUED
4211                                       ;       WITH THE INTERRUPT ENABLE (IE) BIT CLEAR (0), CAUSES ALMOST
```

```
4212                                    ;       IMMEDIATE TERMINATION BUT NO INTERRUPT.  STATUS IN THE MESSAGE
4213                                    ;       BUFFER IS CHECKED TO VERIFY THAT THE MOTION (MOT) AND OPERATION
4214                                    ;       IN PROGRESS (OPM) STATUS BITS ARE BOTH SET.
4215                                    ;
4216                                    ;
4217                                    ;
4218                                    ;
4219                                    ;
4220                                    ;-
4221
4222 063444                            T35LOOP:
4223 063444                                    BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      063444                                                                            T7.1:
      063444  104402                                                                      TRAP    C$BSUB
4224 063446  004737  073164                    JSR     PC,T35REST              ;SET COMMAND PACKET
4225 063452  005037  002216                    CLR     INTRECV                 ;CLEAR INTERRUPT RECETVED FLAG
4226 063456  004737  073256                    JSR     PC,T35RT2               ;SET UP OTHER COMMAND PACKET
4227 063462  004737  073320                    JSR     PC,T35RT3               ;SET UP OTHER COMMAND PACKET
4228 063466  012737  176750  067542            MOV     #65000.,T35DLY          ;SET UP DELAY COUNTER
4229 063474  005037  067536                    CLR     T35CNT                  ;CLEAR COUNTER
4230 063500  004737  016054            10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
4231 063504  103426                            BCS     20$                     ;BR IF INIT WAS OK
4232 063506                                    DELAY   250                     ;DELAY ABOUT .25 SEC
      063506  012727  000250                                                           MOV     #250,(PC)+
      063512  000000                                                                   .WORD   0
      063514  013727  002116                                                           MOV     L$DLY,(PC)+
      063520  000000                                                                   .WORD   0
      063522  005367  177772                                                           DEC     -6(PC)
      063526  001375                                                                   BNE     .-4
      063530  005367  177756                                                           DEC     -22(PC)
      063534  001367                                                                   BNE     .-20
4233 063536  005337  067542                    DEC     T35DLY                  ;BUMP COUNTER
4234 063542  001356                            BNE     10$                     ;BR, IF COUNTER NOT DONE
4235 063544  005237  002214                    INC     FATFLG                          ;ERROR COUNT
4239 063550  010001                            MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
4240 063552                                    ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      063552  104455                                                                   TRAP    C$ERDF
      063554  001275                                                                   .WORD   701
      063556  003646                                                                   .WORD   SFIERR
      063560  012114                                                                   .WORD   SFIMSG
4241 063562  013737  002174  067410    20$:    MOV     UNITN,T35DSW            ;SET UP DRIVE NUMBER
4242 063570  012704  067370                    MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4243 063574  004737  010742                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4244 063600  103407                            BCS     25$                     ;BR, IF COMMAND ISSUED OK
4245 063602  005237  002214                    INC     FATFLG                          ;ERROR COUNT
4249 063606  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4250 063610                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      063610  104456                                                                   TRAP    C$ERHRD
      063612  001276                                                                   .WORD   702
      063614  005052                                                                   .WORD   WRTMSG
      063616  012114                                                                   .WORD   SFIMSG
4251 063620                            25$:    CKLOOP                          ;LOOP IF SELECTED
      063620  104406                                                                   TRAP    C$CLP1
4252 063622  004737  011074                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4253 063626  103411                            BCS     30$                     ;BR, IF NO PROBLEM
4254 063630  010004                            MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
4255 063632  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR FOR PRINTOUT
```

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TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 176
TEST  7: EXTENDED MODE FEATURES

 4256 063636  005237  002214                INC     FATFLG                          ;ERROR COUNT
 4260 063642                                ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
      063642  104456                                                                TRAP    C$ERHRD
      063644  001277                                                                .WORD   703
      063646  070644                                                                .WORD   T35RWN
      063650  012126                                                                .WORD   PKTSSR
 4261 063652                        30$:    CKLOOP                          ;LOOP IF SELECTED
      063652  104406                                                                TRAP    C$CLP1
 4262 063654  013701  067420                MOV     T35BFR+6,R1             ;PICK UP XSTO
 4263 063660  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 4264 063662  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 4265 063666  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 4266 063670  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
 4267 063672  005237  002214                INC     FATFLG                          ;ERROR COUNT
 4271 063676                                ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      063676  104456                                                                TRAP    C$ERHRD
      063700  001300                                                                .WORD   704
      063702  070340                                                                .WORD   T35BOT
      063704  015554                                                                .WORD   EXPREC
 4272 063706                        40$:    CKLOOP                          ;LOOP IF SELECTED
      063706  104406                                                                TRAP    C$CLP1
 4273 063710  012703  000024                MOV     #20.,R3                 ;NUMBER OF RECORDS
 4274 063714  012737  000400  067516        MOV     #256.,T35SZ             ;SET UP RECORD SIZE
 4275 063722  013737  003116  067512        MOV     FREE,T35WB              ;ADDRESS OF WRITE BUFFER
 4276
 4277                                       ;*****************************************
 4278                                       ;
 4279                                       ;WRITE DATA,ACK,CVC=1 COMMAND
 4280                                       ;
 4281                                       ;*****************************************
 4282
 4283 063730  012737  140005  067510        MOV     #140005,T35PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
 4284 063736  012704  067510                MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 4285 06374_  010465  000000        50$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 4286 063746  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 4287 063752  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 4288 063756  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 4289 063762  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 4290 063764  001406                        BEQ     60$                     ;BR, IF OK
 4291 063766  005237  002214                INC     FATFLG                          ;ERROR COUNT
 4295 063772                                ERRHRD  ERRNO,T35WDE,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      063772  104456                                                                TRAP    C$ERHRD
      063774  001301                                                                .WORD   705
      063776  070266                                                                .WORD   T35WDE
      064000  012126                                                                .WORD   PKTSSR
 4296 064002                        60$:    CKLOOP                          ;LOOP IF SELECTED
      064002  104406                                                                TRAP    C$CLP1
 4297 064004  005303                        DEC     R3                      ;BUMP RECORD COUNTER
 4298 064006  001355                        BNE     50$                     ;BR, IF MORE RRECORDS TO COUNT
 4299
 4300                                       ;*****************************************
 4301                                       ;
 4302                                       ;WAIT FOR TAPE TO STOP ALL MOTION
 4303                                       ;
 4304                                       ;*****************************************
 4305
 4306 064010  012737  000012  067542        MOV     #10.,T35DLY             ;SET UP DELAY COUNTER
```

```
4307 064016                                70$:    DELAY   250                     ;WAIT ABOUT .25 SEC
     064016  012727  000250                                                                 MOV     #250,(PC)+
     064022  000000                                                                         .WORD   0
     064024  013727  002116                                                                 MOV     L$DLY,(PC)+
     064030  000000                                                                         .WORD   0
     064032  005367  177772                                                                 DEC     -6(PC)
     064036  001375                                                                         BNE     .-4
     064040  005367  177756                                                                 DEC     -22(PC)
     064044  001367                                                                         BNE     .-20
4308 064046  005337  067542                        DEC     T35DLY                  ;BUMP COUNTER DOWN
4309 064052  001361                                BNE     70$                     ;BR, IF MORE TO DELAY
4310 064054  005737  002220                        TST     EXTFEA                  ;CHECK FOR EXTENDED FEATURES SW SWITCH
4311 064060  001042                                BNE     110$                    ;BR IF SWITCH IS ON
4312 064062  112737  000200  067521                MOVB    #200,T35BS1             ;WRITE MISCELLANEOUS CONT/READ STATUS
4313 064070  112737  000010  067520                MOVB    #10,T35BS0              ;FUNCTION SELECTION BIT (TURN ON EXTFEA HW SWITCH)
4314 064076  012704  067500                        MOV     #T35PK2,R4              ;WRITE SUBSYS MEM PACKET
4315 064102  010465  000000                        MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4316 064106  004737  016416                        JSR     PC,CHKTSSR              ;WAIT FOR SSR
4317 064112  103407                                BCS     90$                     ;BR, IF NO ERROR
4318 064114  010001                                MOV     R0,R1                   ;ERROR, SAVE TSSR
4319 064116  005237  002214                        INC     FATFLG                          ;ERROR COUNT
4323 064122                                        ERRHRD  ERRNO,T35SSR,PKTSSR     ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
     064122  104456                                                                         TRAP    C$ERHRD
     064124  001302                                                                         .WORD   706
     064126  072422                                                                         .WORD   T35SSR
     064130  012126                                                                         .WORD   PKTSSR
4324 064132                                90$:    CKLOOP                          ;LOOP IF SELECTED
     064132  104406                                                                         TRAP    C$CLP1
4325 064134  012704  067370                        MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4326 064140  004737  010742                        JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4327 064144  103407                                BCS     100$                    ;BR, IF COMMAND ISSUED OK
4328 064146  005237  002214                        INC     FATFLG                          ;ERROR COUNT
4332 064152  010001                                MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4333 064154                                        ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     064154  104456                                                                         TRAP    C$ERHRD
     064156  001303                                                                         .WORD   707
     064160  005052                                                                         .WORD   WRTMSG
     064162  012114                                                                         .WORD   SFIMSG
4334 064164                                100$:   CKLOOP                          ;SCOPE LOOP
     064164  104406                                                                         TRAP    C$CLP1
4335 064166  012737  176750  067542        110$:   MOV     #65000.,T35DLY          ;SET UP DELAY COUNTER
4336 064174  005037  067536                        CLR     T35CNT                  ;DELAY COUNTER
4337
4338                                       ;*******************************************
4339                                       ;
4340                                       ;REWIND IMED. INTERRUPT,ACK,CVC=1,IE=0 COMMAND
4341                                       ;
4342                                       ;*******************************************
4343
4344 064200  012737  142012  067510                MOV     #142012,T35PK3          ;REWIND IMED. INTERRUPT,ACK,CVC=1,IE=0 COMMAND
4345 064206  012704  067510                        MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4346 064212  010465  000000                        MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4347 064216  016501  000002        120$:   MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4348 064222  032701  000200                        BIT     #SSR,R1                 ;CHECK FOR SSR SET
4349 064226  001021                                BNE     130$                    ;BR, WHEN SSR IS SET
4350 064230  005237  067536                        INC     T35CNT                  ;BUMP THE CYCLE COUNTER
4351 064234                                        DELAY   1                       ;DELAY TO KEEP COUNTER DOWN
```

```
        064234  012727  000001                                                  MOV     #1,(PC)+
        064240  000000                                                          .WORD   0
        064242  013727  002116                                                  MOV     L$DLY,(PC)+
        064246  000000                                                          .WORD   0
        064250  005367  177772                                                  DEC     -6(PC)
        064254  001375                                                          BNE     .-4
        064256  005367  177756                                                  DEC     -22(PC)
        064262  001367                                                          BNE     .-20
4352    064264  005337  067542                  DEC     T35DLY          ;DROP DEAD TIMER BUMP DOWN
4353    064270  001352                          BNE     120$            ;BR, IF MORE TIME TO GO
4354    064272  012702  000200          130$:   MOV     #SSR,R2         ;SET UP EXPECTED
4355    064276  020102                          CMP     R1,R2           ;ARE THEY EQUAL
4356    064300  001406                          BEQ     140$            ;BR, IF OK
4357    064302  005237  002214                  INC     FATFLG                  ;ERROR COUNT
4361    064306                                  ERRHRD  ERRNO,T35RWE,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        064306  104456                                                          TRAP    C$ERHRD
        064310  001304                                                          .WORD   708
        064312  072770                                                          .WORD   T35RWE
        064314  012126                                                          .WORD   PKTSSR
4362    064316                  140$:   CKLOOP                          ;LOOP IF SELECTED
        064316  104406                                                          TRAP    C$CLP1
4363    064320  005737  002216                  TST     INTRECV         ;CHECK FOR INTERRUPTS
4364    064324  001410                          BEQ     150$            ;BR, IF NO INTERRUPTS DETECTED
4365    064326  016501  000002                  MOV     TSSR(R5),R1     ;GET TSSR STATUS FOR PRINTOUT
4366    064332  005237  002214                  INC     FATFLG                  ;ERROR COUNT
4370    064336                                  ERRHRD  ERRNO,T35INT,PKTSSR     ;INTERRUPT RECEIVED (BAD)
        064336  104456                                                          TRAP    C$ERHRD
        064340  001305                                                          .WORD   709
        064342  072601                                                          .WORD   T35INT
        064344  012126                                                          .WORD   PKTSSR
4371    064346                  150$:   CKLOOP                          ;LOOP IF SELECTED
        064346  104406                                                          TRAP    C$CLP1
4372
4373                            ;*****************************************
4374                            ;
4375                            ;NOW CHECK FOR THE MOTION BITS SET
4376                            ;
4377                            ;*****************************************
4378
4379    064350  013701  067420          MOV     T35BFR+6,R1             ;PICK UP XSTO
4380    064354  010102                   MOV     R1,R2                   ;SET UP EXPECTED
4381    064356  052702  000200          BIS     #BIT7,R2                ;SET MOT BIT IN EXPECTED
4382    064362  020102                   CMP     R1,R2                   ;DOES EXP = REC'D
4383    064364  001406                   BEQ     160$                    ;BR, IF EQUAL (OK)
4384    064366  005237  002214          INC     FATFLG                          ;ERROR COUNT
4388    064372                           ERRHRD  ERRNO,T35MOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        064372  104456                                                          TRAP    C$ERHRD
        064374  001306                                                          .WORD   710
        064376  072503                                                          .WORD   T35MOT
        064400  015554                                                          .WORD   EXPREC
4389    064402                  160$:   CKLOOP                          ;LOOP IF SELECTED
        064402  104406                                                          TRAP    C$CLP1
4390    064404  013701  067424          MOV     T35BFR+12,R1            ;PICK UP XST2
4391    064410  010102                   MOV     R1,R2                   ;SET UP EXPECTED
4392    064412  052702  100000          BIS     #BIT15,R2               ;SET OPM BIT IN EXPECTED
4393    064416  020102                   CMP     R1,R2                   ;DOES EXP = REC'D
4394    064420  001406                   BEQ     170$                    ;BR, IF EQUAL (OK)
```

```
4395 064422  005237  002214            INC     FATFLG                      ;ERROR COUNT
4399 064426                            ERRHRD  ERRNO,T350PM,EXPREC  ;OPM BIT NOT SET
     064426  104456                                                        TRAP    C$ERHRD
     064430  001307                                                        .WORD   711
     064432  072672                                                        .WORD   T350PM
     064434  015554                                                        .WORD   EXPREC
4400 064436                    170$:   CKLOOP                      ;LOOP IF SELECTED
     064436  104406                                                        TRAP    C$CLP1
4401 064440  012737  000027  067542        MOV     #23.,T35DLY         ;SET UP DELAY COUNTER
4402 064446                    175$:   DELAY   250                 ;START DELAY
     064446  012727  000250                                               MOV     #250,(PC)+
     064452  000000                                                       .WORD   0
     064454  013727  002116                                               MOV     L$DLY,(PC)+
     064460  000000                                                       .WORD   0
     064462  005367  177772                                               DEC     -6(PC)
     064466  001375                                                       BNE     .-4
     064470  005367  177756                                               DEC     -22(PC)
     064474  001367                                                       BNE     .-20
4403 064476  005337  067542            DEC     T35DLY              ;BUMP DELAY COUNTER
4404 064502  001361                    BNE     175$                ;BR, IF MORE DELAY
4405 064504                            ENDSUB
     064504                                                     L10064:
     064504  104403                                                        TRAP    C$ESUB
4406 064506  023727  002214  000017        CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
4407 064514  103402                    BLO     999$                ;BR, IF LESS THAN 25
4408 064516  004737  017262            JSR     PC,CKDROP           ;TRY TO DROP THE UNIT
4409 064522                    999$:
4410                           ;+
4411                           ;
4412                           ;TEST 7: SUBTEST 2
4413                           ;
4414                           ;       WITH THE INTERRUPT ENABLE (IE) BIT SET (1), CAUSES ALMOST
4415                           ;       IMMEDIATE TERMINATION AND AN INTERRUPT.  STATUS IN THE MESSAGE
4416                           ;       BUFFER IS CHECKED TO VERIFY THAT THE MOTION (MOT) AND OPERATION
4417                           ;       IN PROGRESS (OPM) STATUS BITS ARE BOTH SET.
4418                           ;
4419                           ;
4420                           ;
4421                           ;
4422                           ;
4423                           ;
4424                           ;
4425                           ;-
4426 064522                            BGNSUB                      ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     064522                                                           T7.2:
     064522  104402                                                        TRAP    C$BSUB
4427 064524                            SETPRI  #PRI00      ;ENABLE INTERRUPTS.
     064524  012700  000000                                               MOV     #PRI00,R0
     064530  104441                                                        TRAP    C$SPRI
4428 064532  004737  073164            JSR     PC,T35REST          ;SET COMMAND PACKET
4429 064536  005037  002216            CLR     INTRECV             ;CLEAR INTERRUPT RECEIVED FLAG
4430 064542  004737  073256            JSR     PC,T35RT2           ;SET UP OTHER COMMAND PACKET
4431 064546  004737  073320            JSR     PC,T35RT3           ;SET UP OTHER COMMAND PACKET
4432 064552  012737  176750  067542        MOV     #65000.,T35DLY      ;SET UP DELAY COUNTER
4433 064560  005037  067536            CLR     T35CNT              ;CLEAR COUNTER
4434 064564  004737  016054    10$:    JSR     PC,SOFINIT          ;DO INITIALIZE ON CONTROLLER
4435 064570  103426                    BCS     20$                 ;BR IF INIT WAS OK
```

```
4436 064572                                DELAY   250                 ;DELAY ABOUT .25 SEC
     064572  012727  000250                                                  MOV     #250,(PC)+
     064576  000000                                                         .WORD   0
     064600  013727  002116                                                  MOV     L$DLY,(PC)+
     064604  000000                                                         .WORD   0
     064606  005367  177772                                                  DEC     -6(PC)
     064612  001375                                                         BNE     .-4
     064614  005367  177756                                                  DEC     -22(PC)
     064620  001367                                                         BNE     .-20
4437 064622  005337  067542                DEC     T35DLY              ;BUMP COUNTER
4438 064626  001356                        BNE     10$                 ;BR, IF COUNTER NOT DONE
4439 064630  005237  002214                INC     FATFLG                      ;ERROR COUNT
4443 064634  010001                        MOV     R0,R1               ;CONTENTS OF TSSR REGISTER
4444 064636                                ERRDF   ERRNO,SFIERR,SFIMSG ;FATAL ERROR TSSR WAS NOT OK
     064636  104455                                                         TRAP    C$ERDF
     064640  001310                                                         .WORD   712
     064642  003646                                                         .WORD   SFIERR
     064644  012114                                                         .WORD   SFIMSG
4445 064646  013737  002174  067410  20$:   MOV     UNITN,T35DSW        ;SET UP DRIVE NUMBER
4446 064654  012704  067370                MOV     #T35PACKET,R4       ;SUBROUTINE NEEDS PACKET ADDRESS
4447 064660  004737  010742                JSR     PC,WRTCHR           ;ISSUE WRITE CHARACTERISTICS
4448 064664  103407                        BCS     25$                 ;BR, IF COMMAND ISSUED OK
4449 064666  005237  002214                INC     FATFLG                      ;ERROR COUNT
4453 064672  010001                        MOV     R0,R1               ;SAVE CONTENTS OF TSSR
4454 064674                                ERRHRD  ERRNO,WRTMSG,SFIMSG ;WRITE CHARACTERISTISC FAILED
     064674  104456                                                         TRAP    C$ERHRD
     064676  001311                                                         .WORD   713
     064700  005052                                                         .WORD   WRTMSG
     064702  012114                                                         .WORD   SFIMSG
4455 064704                        25$:    CKLOOP                      ;LOOP IF SELECTED
     064704  104406                                                         TRAP    C$CLP1
4456 064706  004737  011074                JSR     PC,REWIND           ;CALL TAPE REWIND COMMAND
4457 064712  103411                        BCS     30$                 ;BR, IF NO PROBLEM
4458 064714  010004                        MOV     R0,R4               ;SET UP REWIND PACKET ADDRESS
4459 064716  016501  000002                MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
4460 064722  005237  002214                INC     FATFLG                      ;ERROR COUNT
4464 064726                                ERRHRD  ERRNO,T35RWN,PKTSSR ;REWIND NOT ACCEPTED
     064726  104456                                                         TRAP    C$ERHRD
     064730  001312                                                         .WORD   714
     064732  070644                                                         .WORD   T35RWN
     064734  012126                                                         .WORD   PKTSSR
4465 064736                        30$:    CKLOOP                      ;LOOP IF SELECTED
     064736  104406                                                         TRAP    C$CLP1
4466 064740  013701  067420                MOV     T35BFR+6,R1         ;PICK UP XSTO
4467 064744  010102                        MOV     R1,R2               ;SET UP EXPECTED
4468 064746  052702  000002                BIS     #BIT1,R2            ;SET BOT BIT IN EXPECTED
4469 064752  020102                        CMP     R1,R2               ;DOES EXP = REC'D
4470 064754  001406                        BEQ     40$                 ;BR, IF EQUAL (OK)
4471 064756  005237  002214                INC     FATFLG                      ;ERROR COUNT
4475 064762                                ERRHRD  ERRNO,T35BOT,EXPREC ;TAPE NOT AT BOT AFTER REWIND
     064762  104456                                                         TRAP    C$ERHRD
     064764  001313                                                         .WORD   715
     064766  070340                                                         .WORD   T35BOT
     064770  015554                                                         .WORD   EXPREC
4476 064772                        40$:    CKLOOP                      ;LOOP IF SELECTED
     064772  104406                                                         TRAP    C$CLP1
4477 064774  012703  000024                MOV     #20.,R3             ;NUMBER OF RECORDS
```

```
4478 065000  012737  000400  067516          MOV     #256.,T35SZ             ;SET UP RECORD SIZE
4479 065006  013737  003116  067512          MOV     FREE,T35WB              ;ADDRESS OF WRITE BUFFER
4480
4481                                 ;****************************************
4482                                 ;
4483                                 ;WRITE DATA,ACK,CVC=1 COMMAND
4484                                 ;
4485                                 ;****************************************
4486
4487 065014  012737  140005  067510          MOV     #140005,T35PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
4488 065022  012704  067510                  MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4489 065026  010465  000000          50$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4490 065032  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4491 065036  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4492 065042  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
4493 065046  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4494 065050  001406                          BEQ     60$                     ;BR, IF OK
4495 065052  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4499 065056                                  ERRHRD  ERRNO,T35WDE,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     065056  104456                                                                  TRAP    C$ERHRD
     065060  001314                                                                  .WORD   716
     065062  070266                                                                  .WORD   T35WDE
     065064  012126                                                                  .WORD   PKTSSR
4500 065066                          60$:    CKLOOP                          ;LOOP IF SELECTED
     065066  104406                                                                  TRAP    C$CLP1
4501
4502                                 ;****************************************
4503                                 ;
4504                                 ;WAIT FOR TAPE TO STOP ALL MOTION
4505                                 ;
4506                                 ;****************************************
4507
4508 065070  012737  000012  067542          MOV     #10.,T35DLY             ;SET UP DELAY COUNTER
4509 065076                          70$:    DELAY   250                     ;WAIT ABOUT .25 SEC
     065076  012727  000250                                                          MOV     #250.,(PC)+
     065102  000000                                                                  .WORD   0
     065104  013727  002116                                                          MOV     L$DLY,(PC)+
     065110  000000                                                                  .WORD   0
     065112  005367  177772                                                          DEC     -6(PC)
     065116  001375                                                                  BNE     .-4
     065120  005367  177756                                                          DEC     -22(PC)
     065124  001367                                                                  BNE     .-20
4510 065126  005337  067542                  DEC     T35DLY                  ;BUMP COUNTER DOWN
4511 065132  001361                          BNE     70$                     ;BR, IF MORE TO DELAY
4512 065134  005737  002220                  TST     EXTFEA                  ;CHECK FOR EXTENDED FEATURES SW SWITCH
4513 065140  001042                          BNE     110$                    ;BR IF SWITCH IS ON
4514 065142  112737  000200  067521          MOVB    #200,T35BS1             ;WRITE MISCELLANEOUS CONT/READ STATUS
4515 065150  112737  000010  067520          MOVB    #10,T35BSO              ;FUNCTION SELECTION BIT (TURN ON EXTFEA HW SWITCH)
4516 065156  012704  067500                  MOV     #T35PK2,R4              ;WRITE SUBSYS MEM PACKET
4517 065162  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4518 065166  004737  016416                  JSR     PC,CHKTSSR              ;WAIT FOR SSR
4519 065172  103407                          BCS     90$                     ;BR, IF NO ERROR
4520 065174  010001                          MOV     R0,R1                   ;ERROR, SAVE TSSR
4521 065176  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4525 065202                                  ERRHRD  ERRNO,T35SSR,PKTSSR     ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
     065202  104456                                                                  TRAP    C$ERHRD
     065204  001315                                                                  .WORD   717
```

```
      065206  072422                                                        .WORD   ^T35SSR
      065210  012126                                                        .WORD   PKTSSR
4526  065212                          90$:    CKLOOP                      ;LOOP IF SELECTED
      065212  104406                                                        TRAP    C$CLP1
4527  065214  012704  067370                  MOV     #T35PACKET,R4       ;SUBROUTINE NEEDS PACKET ADDRESS
4528  065220  004737  010742                  JSR     PC,WRTCHR           ;ISSUE WRITE CHARACTERISTICS
4529  065224  103407                          BCS     100$                ;BR, IF COMMAND ISSUED OK
4530  065226  005237  002214                  INC     FATFLG                      ;ERROR COUNT
4534  065232  010001                          MOV     R0,R1               ;SAVE CONTENTS OF TSSR
4535  065234                                  ERRHRD  ERRNO,WRTMSG,SFIMSG ;WRITE CHARACTERISTISC FAILED
      065234  104456                                                        TRAP    C$ERHRD
      065236  001316                                                        .WORD   718
      065240  005052                                                        .WORD   WRTMSG
      065242  012114                                                        .WORD   SFIMSG
4536  065244                          100$:   CKLOOP                      ;SCOPE LOOP
      065244  104406                                                        TRAP    C$CLP1
4537  065246  012737  176750  067542  110$:   MOV     #65000.,T35DLY      ;SET UP DELAY COUNTER
4538  065254  005037  067536                  CLR     T35CNT              ;DELAY COUNTER
4539
4540                                  ;*****************************************
4541                                  ;
4542                                  ;REWIND IMMEDIATE,ACK,CVC=1,IE=1 COMMAND
4543                                  ;
4544                                  ;*****************************************
4545
4546  065260  012737  142212  067510          MOV     #142212,T35PK3      ;REWIND IMMEDIATE,ACK,CVC=1,IE=1 COMMAND
4547  065266  012704  067510                  MOV     #T35PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
4548  065272  010465  000000                  MOV     R4,TSDB(R5)         ;ISSUE COMMAND
4549  065276  016501  000002          120$:   MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
4550  065302  032701  000200                  BIT     #SSR,R1             ;CHECK FOR SSR SET
4551  065306  001021                          BNE     130$                ;BR, WHEN SSR IS SET
4552  065310  005237  067536                  INC     T35CNT              ;BUMP THE CYCLE COUNTER
4553  065314                                  DELAY   1                   ;DELAY TO KEEP COUNTER DOWN
      065314  012727  000001                                                MOV     #1,(PC)+
      065320  000000                                                        .WORD   0
      065322  013727  002116                                                MOV     L$DLY,(PC)+
      065326  000000                                                        .WORD   0
      065330  005367  177772                                                DEC     -6(PC)
      065334  001375                                                        BNE     .-4
      065336  005367  177756                                                DEC     -22(PC)
      065342  001367                                                        BNE     .-20
4554  065344  005337  067542                  DEC     T35DLY              ;DROP DEAD TIMER BUMP DOWN
4555  065350  001352                          BNE     120$                ;BR, IF MORE TIME TO GO
4556  065352  012702  000200          130$:   MOV     #SSR,R2             ;SET UP EXPECTED
4557  065356  020102                          CMP     R1,R2               ;ARE THEY EQUAL
4558  065360  001406                          BEQ     140$                ;BR, IF OK
4559  065362  005237  002214                  INC     FATFLG                      ;ERROR COUNT
4563  065366                                  ERRHRD  ERRNO,T35RWE,PKTSSR ;TSSR INCORRECT AFTER WRITE DATA
      065366  104456                                                        TRAP    C$ERHRD
      065370  001317                                                        .WORD   719
      065372  072770                                                        .WORD   T35RWE
      065374  012126                                                        .WORD   PKTSSR
4564  065376                          140$:   CKLOOP                      ;LOOP IF SELECTED
      065376  104406                                                        TRAP    C$CLP1
4565  065400  005737  002216                  TST     INTRECV             ;CHECK FOR INTERRUPTS
4566  065404  001010                          BNE     150$                ;BR, IF INTERRUPTS DETECTED
4567  065406  016501  000002                  MOV     TSSR(R5),R1         ;GET TSSR STATUS FOR PRINTOUT
```

```
065412 005237 002214                INC     FATFLG                         ;ERROR COUNT
065416                              ERRHRD  ERRNO,T35NIN,PKTSSR    ;INTERRUPT NOT RECEIVED (BAD)
065416 104456                                                                          TRAP    C$ERHRD
065420 001320                                                                          .WORD   720
065422 073056                                                                          .WORD   T35NIN
065424 012126                                                                          .WORD   PKTSSR
065426                      150$:   CKLOOP                         ;LOOP IF SELECTED
065426 104406                                                                          TRAP    C$CLP1

                            ;*****************************************
                            ;
                            ;NOW CHECK FOR THE MOTION BITS SET
                            ;
                            ;*****************************************

065430 013701 067420                MOV     T35BFR+6,R1            ;PICK UP XSTO
065434 010102                       MOV     R1,R2                  ;SET UP EXPECTED
065436 052702 000200                BIS     #BIT7,R2               ;SET MOT BIT IN EXPECTED
065442 020102                       CMP     R1,R2                  ;DOES EXP = REC'D
065444 001406                       BEQ     160$                   ;BR, IF EQUAL (OK)
065446 005237 002214                INC     FATFLG                         ;ERROR COUNT
065452                              ERRHRD  ERRNO,T35MOT,EXPREC    ;TAPE NOT AT BOT AFTER REWIND
065452 104456                                                                          TRAP    C$ERHRD
065454 001321                                                                          .WORD   721
065456 072503                                                                          .WORD   T35MOT
065460 015554                                                                          .WORD   EXPREC
065462                      160$:   CKLOOP                         ;LOOP IF SELECTED
065462 104406                                                                          TRAP    C$CLP1
065464 013701 067424                MOV     T35BFR+12,R1           ;PICK UP XST2
065470 010102                       MOV     R1,R2                  ;SET UP EXPECTED
065472 052702 100000                BIS     #BIT15,R2              ;SET OPM BIT IN EXPECTED
065476 020102                       CMP     R1,R2                  ;DOES EXP = REC'D
065500 001406                       BEQ     170$                   ;BR, IF EQUAL (OK)
065502 005237 002214                INC     FATFLG                         ;ERROR COUNT
065506                              ERRHRD  ERRNO,T35OPM,EXPREC    ;OPM BIT NOT SET
065506 104456                                                                          TRAP    C$ERHRD
065510 001322                                                                          .WORD   722
065512 072672                                                                          .WORD   T35OPM
065514 015554                                                                          .WORD   EXPREC
065516                      170$:   CKLOOP                         ;LOOP IF SELECTED
065516 104406                                                                          TRAP    C$CLP1
065520 012737 000027 067542         MOV     #23.,T35DLY            ;SET UP DELAY COUNTER
065526                      175$:   DELAY   250                    ;START DELAY
065526 012727 000250                                                                   MOV     #250,(PC)+
065532 000000                                                                          .WORD   0
065534 013727 002116                                                                   MOV     L$DLY,(PC)+
065540 000000                                                                          .WORD   0
065542 005367 177772                                                                   DEC     -6(PC)
065546 001375                                                                          BNE     .-4
065550 005367 177756                                                                   DEC     -22(PC)
065554 001367                                                                          BNE     .-20
065556 005337 067542                DEC     T35DLY                 ;BUMP DELAY COUNTER
065562 001361                       BNE     175$                   ;BR, IF MORE DELAY
065564                              ENDSUB
065564                                                                         L10065:
065564 104403                                                                          TRAP    C$ESUB
065566 023727 002214 000017         CMP     FATFLG,#15.                    ;IS ERROR COUNT AT 25
```

```
4609 065574  103402                        BLO     999$                    ;BR, IF LESS THAN 25
4610 065576  004737  017262                JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
4611 065602                          999$:
4612                                 ;*
4613                                 ;
4614                                 ;TEST 7, SUBTEST 3
4615                                 ;
4616                                 ;       VERIFIES THAT THE NON-TAPE-MOTION COMMAND GET STATUS, ISSUED
4617                                 ;       IMMEDIATATELY AFTER TERMINATION OF A REWIND WITH IMMEDIATE
4618                                 ;       INTERRUPT COMMAND, TERMINATES PROPERLY AND PROVIDES PROPER
4619                                 ;       STATUS.  FIRST, A NUMBER OF DATA RECORDS ARE WRITTEN FROM BOT.
4620                                 ;       THEN THE REWIND WITH IMMEDIATE INTERRUPT COMMAND IS ISSUED AND
4621                                 ;       TERMINATION VERIFIED.  THEN THE GET STATUS COMMAND IS ISSUED.
4622                                 ;       THE GET STATUS SHOULD TERMINATE ALMOST IMMEDIATELY AND SHOW
4623                                 ;       MOT=1 AND OPM=1 IN THE MESSAGE BUFFER.  AFTER A DELAY LONG
4624                                 ;       ENOUGH TO ALLOW THE REWIND TO COMPLETE AND THE TAPE COME TO
4625                                 ;       REST, GET STATUS IS AGAIN ISSUED AND THE STATUS CHECKED;  BOTH
4626                                 ;       MOT AND OPM SHOULD BE CLEAR.
4627                                 ;
4628                                 ;
4629                                 ;
4630                                 ;
4631                                 ;-
4632 065602                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      065602                                                                      T7.3:
      065602  104402                                                                TRAP    C$BSUB
4633 065604  004737  073164                JSR     PC,T35REST              ;SET COMMAND PACKET
4634 065610  004737  073256                JSR     PC,T35RT2               ;SET UP OTHER COMMAND PACKET
4635 065614  004737  073320                JSR     PC,T35RT3               ;SET UP OTHER COMMAND PACKET
4636 065620  004737  016054                JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
4637 065624  103407                        BCS     20$                     ;BR IF INIT WAS OK
4638 065626  005237  002214                INC     FATFLG                          ;ERROR COUNT
4642 065632  010001                        MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
4643 065634                                ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      065634  104455                                                                TRAP    C$ERDF
      065636  001323                                                                .WORD   723
      065640  003646                                                                .WORD   SFIERR
      065642  012114                                                                .WORD   SFIMSG
4644 065644  013737  002174  067410  20$:    MOV     UNITN,T35DSW            ;SET UP UNIT NUMBER IN PACKET
4645 065652  012704  067370                MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4646 065656  004737  010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4647 065662  103407                        BCS     23$                     ;BR, IF COMMAND ISSUED OK
4648 065664  005237  002214                INC     FATFLG                          ;ERROR COUNT
4652 065670  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4653 065672                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      065672  104456                                                                TRAP    C$ERHRD
      065674  001324                                                                .WORD   724
      065676  005052                                                                .WORD   WRTMSG
      065700  012114                                                                .WORD   SFIMSG
4654 065702                          23$:    CKLOOP                          ;LOOP IF SELECTED
      065702  104406                                                                TRAP    C$CLP1
4655 065704  004737  011074                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4656 065710  103411                        BCS     30$                     ;BR, IF NO PROBLEM
4657 065712  010004                        MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
4658 065714  016501  000002                MOV     TSSR(R5),R1             ;GET CONTENTS FOR CALL
4659 065720  005237  002214                INC     FATFLG                          ;ERROR COUNT
4663 065724                                ERRHRD  ERRNO,T35RWN,CKTSSR     ;REWIND NOT ACCEPTED
```

```
        065724  104456                                                          TRAP    C$ERHRD
        065726  001325                                                          .WORD   725
        065730  070644                                                          .WORD   T35RWN
        065732  012126                                                          .WORD   PKTSSR
4664    065734                          30$:    CKLOOP                          ;LOOP IF SELECTED
        065734  104406                                                          TRAP    C$CLP1
4665    065736  013701  067420                  MOV     T35BFR+6,R1             ;PICK UP XSTO
4666    065742  010102                          MOV     R1,R2                   ;SET UP EXPECTED
4667    065744  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4668    065750  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
4669    065752  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
4670    065754  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4674    065760                                  ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        065760  104456                                                          TRAP    C$ERHRD
        065762  001326                                                          .WORD   726
        065764  070340                                                          .WORD   T35BOT
        065766  015554                                                          .WORD   EXPREC
4675    065770                          40$:    CKLOOP                          ;LOOP IF SELECTED
        065770  104406                                                          TRAP    C$CLP1
4676    065772  012703  000024                  MOV     #20.,R3                 ;STARTING RECORD SIZE
4677    065776  013737  003116  067512          MOV     FREE,T35WB              ;STARTING WRITE BUFFER ADDRESS
4678
4679                                    ;*****************************************
4680                                    ;
4681                                    ;WRITE DATA,CVC=1,ACK COMMAND
4682                                    ;
4683                                    ;*****************************************
4684
4685    066004  012737  140005  067510  65$:    MOV     #140005,T35PK3          ;WRITE DATA,CVC=1,ACK COMMAND
4686    066012  012704  067510                  MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4687    066016  010300                          MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
4688    066020  004737  017502                  JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
4689    066024  010337  067516                  MOV     R3,T35SZ                ;SET UP RECORD SIZE IN PACKET
4690    066030  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4691    066034  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4692    066040  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4693    066044  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
4694    066050  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4695    066052  001406                          BEQ     80$                     ;BR, IF OK
4696    066054  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4700    066060                                  ERRHRD  ERRNO,T35WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        066060  104456                                                          TRAP    C$ERHRD
        066062  001327                                                          .WORD   727
        066064  071200                                                          .WORD   T35WDC
        066066  012126                                                          .WORD   PKTSSR
4701    066070                          80$:    CKLOOP                          ;LOOP IF SELECTED
        066070  104406                                                          TRAP    C$CLP1
4702
4703                                    ;*****************************************
4704                                    ;
4705                                    ;WRITE DATA RETRY,CVC=1,ACK COMMAND
4706                                    ;
4707                                    ;*****************************************
4708
4709    066072  012737  141005  067510          MOV     #141005,T35PK3          ;WRITE DATA RETRY,CVC=1,ACK COMMAND
4710    066100  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4711    066104  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
```

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TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 186
TEST  7: EXTENDED MODE FEATURES

4712 066110  016501  000002                MOV     TSSR(R5),R1          ;GET TSSR CONTENTS
4713 066114  012702  000200                MOV     #SSR,R2              ;SET UP EXPECTED
4714 066120  020102                        CMP     R1,R2                ;ARE THEY EQUAL
4715 066122  001406                        BEQ     90$                  ;BR, IF OK
4716 066124  005237  002214                INC     FATFLG                       ;ERROR COUNT
4720 066130                                ERRHRD  ERRNO,T35WRF,PKTSSR  ;TSSR INCORRECT AFTER WRITE DATA RETRY
     066130  104456                                                             TRAP    C$ERHRD
     066132  001330                                                             .WORD   728
     066134  072245                                                             .WORD   T35WRF
     066136  012126                                                             .WORD   PKTSSR
4721 066140                         90$:   CKLOOP                       ;LOOP IF SELECTED
     066140  104406                                                             TRAP    C$CLP1
4722 066142  005723                        TST     (R3)+                ;BUMP RECORD SIZE COUNTER
4723 066144  020327  000052                CMP     R3,#42.              ;AT 42 SIZE YET
4724 066150  001315                        BNE     65$                  ;BR, IF MORE RECORDS TO WRITE
4725 066152  004737  011074                JSR     PC,REWIND            ;CALL TAPE REWIND COMMAND
4726 066156  103411                        BCS     230$                 ;BR, IF NO PROBLEM
4727 066160  010001                        MOV     R0,R1                ;SAVE TSSR
4728 066162  016501  000002                MOV     TSSR(R5),R1          ;GET TSSR CONTENTS
4729 066166  005237  002214                INC     FATFLG                       ;ERROR COUNT
4733 066172                                ERRHRD  ERRNO,T35RWN,EXPREC  ;REWIND NOT ACCEPTED
     066172  104456                                                             TRAP    C$ERHRD
     066174  001331                                                             .WORD   729
     066176  070644                                                             .WORD   T35RWN
     066200  015554                                                             .WORD   EXPREC
4734 066202                         230$:  CKLOOP                       ;LOOP IF SELECTED
     066202  104406                                                             TRAP    C$CLP1
4735 066204  013701  067420                MOV     T35BFR+6,R1          ;PICK UP XSTO
4736 066210  010102                        MOV     R1,R2                ;SET UP EXPECTED
4737 066212  052702  000002                BIS     #BIT1,R2             ;SET BOT BIT IN EXPECTED
4738 066216  020102                        CMP     R1,R2                ;DOES EXP = REC'D
4739 066220  001406                        BEQ     240$                 ;BR, IF EQUAL (OK)
4740 066222  005237  002214                INC     FATFLG                       ;ERROR COUNT
4744 066226                                ERRHRD  ERRNO,T35BOT,EXPREC  ;TAPE NOT AT BOT AFTER REWIND
     066226  104456                                                             TRAP    C$ERHRD
     066230  001332                                                             .WORD   730
     066232  070340                                                             .WORD   T35BOT
     066234  015554                                                             .WORD   EXPREC
4745 066236                         240$:  CKLOOP                       ;LOOP IF SELECTED
     066236  104406                                                             TRAP    C$CLP1
4746 066240  012703  000024                MOV     #20.,R3              ;STARTING RECORD SIZE
4747 066244  013737  003116  067512        MOV     FREE,T35RB           ;STARTING READ BUFFER ADDRESS
4748
4749                                ;*****************************************
4750                                ;
4751                                ;READ DATA,ACK COMMAND
4752                                ;
4753                                ;*****************************************
4754
4755 066252  012737  100001  067510  265$:  MOV     #100001,T35PK3       ;READ DATA,ACK COMMAND
4756 066260  012704  067510                MOV     #T35PK3,R4           ;SET UP R4 WITH PACKET ADDRESS
4757 066264  012700  177777                MOV     #177777,R0           ;SET PATTERN IN CORRECT REGISTER
4758 066270  004737  017502                JSR     PC,FILLMEM           ;FILL MEMORY WITH RECORD SIZE
4759 066274  010337  067516                MOV     R3,T35SZ             ;SET UP RECORD SIZE IN PACKET
4760 066300  010465  000000                MOV     R4,TSDB(R5)          ;ISSUE COMMAND
4761 066304  004737  016330                JSR     PC,WAITF             ;WAIT FOR SSR TO SET
4762 066310  016501  000002                MOV     TSSR(R5),R1          ;GET TSSR CONTENTS
```

```
4763 066314  012702  000200            MOV     #SSR,R2          ;SET UP EXPECTED
4764 066320  020102                    CMP     R1,R2            ;ARE THEY EQUAL
4765 066322  001406                    BEQ     280$             ;BR, IF OK
4766 066324  005237  002214                    INC     FATFLG           ;ERROR COUNT
4770 066330                            ERRHRD  ERRNO,T35RDF,PKTSSR ;TSSR INCORRECT AFTER READ DATA
     066330  104456                                                    TRAP    C$ERHRD
     066332  001333                                                    .WORD   731
     066334  067632                                                    .WORD   T35RDF
     066336  012126                                                    .WORD   PKTSSR
4771 066340                    280$:   CKLOOP                   ;LOOP IF SELECTED
     066340  104406                                                    TRAP    C$CLP1
4772 066342  013702  003116            MOV     FREE,R2          ;GET BUFFER ADDRESS
4773 066346  010304                    MOV     R3,R4            ;GET RECORD SIZE
4774 066350  162704  000024            SUB     #20.,R4          ;POINT BACK TO 1ST RECORD
4775 066354  060204            285$:   ADD     R2,R4            ;POINT TO 1ST LOC IN BUFFER
4776 066356  021403                    CMP     (R4),R3          ;DATA WRITTEN = READ
4777 066360  001410                    BEQ     290$             ;BR, IF DATA OK (GOOD)
4778 066362  011401                    MOV     (R4),R1          ;PICK UP BAD DATA
4779 066364  010302                    MOV     R3,R2            ;SET UP EXPECTED
4780 066366  005237  002214                    INC     FATFLG           ;ERROR COUNT
4784 066372                            ERRHRD  ERRNO,T35DTA,EXPREC ;DATA IN BUFFER NOT CORRECT
     066372  104456                                                    TRAP    C$ERHRD
     066374  001334                                                    .WORD   732
     066376  072325                                                    .WORD   T35DTA
     066400  015554                                                    .WORD   EXPREC
4785 066402                    290$:   CKLOOP                   ;LOOP IF SELECTED
     066402  104406                                                    TRAP    C$CLP1
4786 066404  005724                    TST     (R4)+            ;BUMP TO NEXT ADDRESS
4787 066406  160204                    SUB     R2,R4            ;BACK TO RECORD SIZE
4788 066410  020403                    CMP     R4,R3            ;AT END OF RECORD YET
4789 066412  001360                    BNE     285$             ;BR, IF MORE DATA TO CHECK
4790 066414  005723                    TST     (R3)+            ;BUMP RECORD SIZE
4791 066416  020327  000050            CMP     R3,#40.          ;DONE YET
4792 066422  001313                    BNE     265$             ;BR, IF NOT DONE YET (MORE READS)
4793 066424                    300$:   CKLOOP                   ;LOOP IF SELECTED
     066424  104406                                                    TRAP    C$CLP1
4794 066426                    330$:
4795 066426                            ENDSUB                   ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     066426                                                          L10066:
     066426  104403                                                    TRAP    C$ESUB
4796 066430  023727  002214  000017        CMP     FATFLG,#15.              ;IS ERROR COUNT AT 25
4797 066436  103402                        BLO     999$                     ;BR, IF LESS THAN 25
4798 066440  004737  017262                JSR     PC,CKDROP                ;TRY TO DROP THE UNIT
4799 066444                    999$:
4800                           ;+
4801                           ;
4802                           ;TEST 7, SUBTEST 4
4803                           ;
4804                           ;       VERIFIES THAT A TAPE-MOTION COMMAND (READ, WRITE, POSITION),
4805                           ;       ISSUED IMMEDIATATELY AFTER TERMINATION OF A REWIND WITH
4806                           ;       IMMEDIATE INTERRUPT COMMAND, IS "QUEUED" BY THE CONTROLLER AND
4807                           ;       THEN EXECUTES PROPERLY.
4808                           ;
4809                           ;
4810                           ;
4811                           ;-
4812 066444                            BGNSUB                   ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
```

```
                066444                                                                  T7.4:
                066444  104402                                                                  TRAP    C$BSUB
4813            066446  004737  073164                  JSR     PC,T35REST      ;SET COMMAND PACKET
4814            066452  004737  073256                  JSR     PC,T35RT2       ;SET UP OTHER COMMAND PACKET
4815            066456  004737  073320                  JSR     PC,T35RT3       ;SET UP OTHER COMMAND PACKET
4816            066462  012737  176750  067542          MOV     #65000.,T35DLY  ;SET UP DELAY COUNTER
4817            066470  004737  016054          10$:    JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
4818            066474  103426                  BCS     20$             ;BR IF INIT WAS OK
4819            066476                          DELAY   250             ;DELAY ABOUT .25 SEC
                066476  012727  000250                                                  MOV     #250,(PC)+
                066502  000000                                                          .WORD   0
                066504  013727  002116                                                  MOV     L$DLY,(PC)+
                066510  000000                                                          .WORD   0
                066512  005367  177772                                                  DEC     -6(PC)
                066516  001375                                                          BNE     .-4
                066520  005367  177756                                                  DEC     -22(PC)
                066524  001367                                                          BNE     .-20
4820            066526  005337  067542                  DEC     T35DLY          ;BUMP COUNTER
4821            066532  001356                  BNE     10$             ;BR, IF COUNTER NOT DONE
4822            066534  005237  002214                  INC     FATFLG                  ;ERROR COUNT
4826            066540  010001                  MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
4827            066542                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
                066542  104455                                                          TRAP    C$ERDF
                066544  001335                                                          .WORD   733
                066546  003646                                                          .WORD   SFIERR
                066550  012114                                                          .WORD   SFIMSG
4828            066552  013737  002174  067410  20$:    MOV     UNITN,T35DSW    ;SET UP UNIT (DRIVE) NUMBER
4829            066560  012704  067370                  MOV     #T35PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
4830            066564  004737  010742                  JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
4831            066570  103407                  BCS     23$             ;BR, IF COMMAND ISSUED OK
4832            066572  005237  002214                  INC     FATFLG                  ;ERROR COUNT
4836            066576  010001                  MOV     R0,R1           ;SAVE CONTENTS OF TSSR
4837            066600                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
                066600  104456                                                          TRAP    C$ERHRD
                066602  001336                                                          .WORD   734
                066604  005052                                                          .WORD   WRTMSG
                066606  012114                                                          .WORD   SFIMSG
4838            066610          23$:    CKLOOP                          ;LOOP IF SELECTED
                066610  104406                                                          TRAP    C$CLP1
4839            066612  004737  011074                  JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
4840            066616  103411                  BCS     30$             ;BR, IF NO PROBLEM
4841            066620  016501  000002                  MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
4842            066624  010004                  MOV     R0,R4           ;GET PACKET ADDRESS
4843            066626  005237  002214                  INC     FATFLG                  ;ERROR COUNT
4847            066632                          ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
                066632  104456                                                          TRAP    C$ERHRD
                066634  001337                                                          .WORD   735
                066636  070644                                                          .WORD   T35RWN
                066640  012126                                                          .WORD   PKTSSR
4848            066642          30$:    CKLOOP                          ;LOOP IF SELECTED
                066642  104406                                                          TRAP    C$CLP1
4849            066644  013701  067420                  MOV     T35BFR+6,R1     ;PICK UP XSTO
4850            066650  010102                  MOV     R1,R2           ;SET UP EXPECTED
4851            066652  052702  000002                  BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
4852            066656  020102                  CMP     R1,R2           ;DOES EXP = REC'D
4853            066660  001406                  BEQ     40$             ;BR, IF EQUAL (OK)
4854            066662  005237  002214                  INC     FATFLG                  ;ERROR COUNT
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 189
TEST  7: EXTENDED MODE FEATURES

4858 066666                              ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     066666  104456                                                                TRAP    C$ERHRD
     066670  001340                                                                .WORD   736
     066672  070340                                                                .WORD   T35BOT
     066674  015554                                                                .WORD   EXPREC
4859 066676                        40$:  CKLOOP                           ;LOOP IF SELECTED
     066676  104406                                                                TRAP    C$CLP1
4860 066700  012703  000024              MOV     #20.,R3                  ;STARTING RECORD SIZE
4861 066704  013737  003116  067512      MOV     FREE,T35WB               ;STARTING WRITE BUFFER ADDRESS
4862
4863                               ;*****************************************
4864                               ;
4865                               ;WRITE DATA,CVC=1,ACK COMMAND
4866                               ;
4867                               ;*****************************************
4868
4869 066712  012737  140005  067510  65$:  MOV     #140005,T35PK3           ;WRITE DATA,CVC=1,ACK COMMAND
4870 066720  012704  067510              MOV     #T35PK3,R4               ;SET UP R4 WITH PACKET ADDRESS
4871 066724  010300                      MOV     R3,R0                    ;SET PATTERN IN CORRECT REGISTER
4872 066726  004737  017502              JSR     PC,FILLMEM               ;FILL MEMORY WITH RECORD SIZE
4873 066732  010337  067516              MOV     R3,T35SZ                 ;SET UP RECORD SIZE IN PACKET
4874 066736  010465  000000              MOV     R4,TSDB(R5)              ;ISSUE COMMAND
4875 066742  004737  016330              JSR     PC,WAITF                 ;WAIT FOR SSR TO SET
4876 066746  016501  000002              MOV     TSSR(R5),R1              ;GET TSSR CONTENTS
4877 066752  012702  000200              MOV     #SSR,R2                  ;SET UP EXPECTED
4878 066756  020102                      CMP     R1,R2                    ;ARE THEY EQUAL
4879 066760  001406                      BEQ     80$                      ;BR, IF OK
4880 066762  005237  002214              INC     FATFLG                           ;ERROR COUNT
4884 066766                              ERRHRD  ERRNO,T35WDC,PKTSSR      ;TSSR INCORRECT AFTER WRITE DATA
     066766  104456                                                                TRAP    C$ERHRD
     066770  001341                                                                .WORD   737
     066772  071200                                                                .WORD   T35WDC
     066774  012126                                                                .WORD   PKTSSR
4885 066776                        80$:  CKLOOP                           ;LOOP IF SELECTED
     066776  104406                                                                TRAP    C$CLP1
4886
4887                               ;*****************************************
4888                               ;
4889                               ;WRITE DATA RETRY,ACK,SWB=1 COMMAND
4890                               ;
4891                               ;*****************************************
4892
4893 067000  012737  111005  067510          MOV     #111005,T35PK3       ;WRITE DATA RETRY,ACK,SWB=1 COMMAND
4894 067006  010465  000000                  MOV     R4,TSDB(R5)          ;ISSUE COMMAND
4895 067012  004737  016330                  JSR     PC,WAITF             ;WAIT FOR SSR TO SET
4896 067016  016501  000002                  MOV     TSSR(R5),R1          ;GET TSSR CONTENTS
4897 067022  012702  000200                  MOV     #SSR,R2              ;SET UP EXPECTED
4898 067026  020102                          CMP     R1,R2                ;ARE THEY EQUAL
4899 067030  001406                          BEQ     90$                  ;BR, IF OK
4900 067032  005237  002214                  INC     FATFLG                       ;ERROR COUNT
4904 067036                                  ERRHRD  ERRNO,T35WRF,EXPREC  ;TSSR INCORRECT AFTER WRITE DATA RETRY
     067036  104456                                                                TRAP    C$ERHRD
     067040  001342                                                                .WORD   738
     067042  072245                                                                .WORD   T35WRF
     067044  015554                                                                .WORD   EXPREC
4905 067046                            90$:  CKLOOP                       ;LOOP IF SELECTED
     067046  104406                                                                TRAP    C$CLP1
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1143  06-FEB-84 18:04                    SEQ 190
TEST  7: EXTENDED MODE FEATURES

 4906 067050  005723                        TST     (R3)+                   ;BUMP RECORD SIZE COUNTER
 4907 067052  020327  000052                CMP     R3,#42.                 ;AT 42 SIZE YET
 4908 067056  001315                        BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
 4909 067060  004737  011074                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 4910 067064  103411                        BCS     230$                    ;BR, IF NO PROBLEM
 4911 067066  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 4912 067072  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
 4913 067074  005237  002214                INC     FATFLG                          ;ERROR COUNT
 4917 067100                                ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
      067100  104456                                                                TRAP    C$ERHRD
      067102  001343                                                                .WORD   739
      067104  070644                                                                .WORD   T35RWN
      067106  012126                                                                .WORD   PKTSSR
 4918 067110                        230$:   CKLOOP                          ;LOOP IF SELECTED
      067110  104406                                                                TRAP    C$CLP1
 4919 067112  013701  067420                MOV     T35BFR+6,R1             ;PICK UP XSTO
 4920 067116  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 4921 067120  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 4922 067124  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 4923 067126  001406                        BEQ     240$                    ;BR, IF EQUAL (OK)
 4924 067130  005237  002214                INC     FATFLG                          ;ERROR COUNT
 4928 067134                                ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      067134  104456                                                                TRAP    C$ERHRD
      067136  001344                                                                .WORD   740
      067140  070340                                                                .WORD   T35BOT
      067142  015554                                                                .WORD   EXPREC
 4929 067144                        240$:   CKLOOP                          ;LOOP IF SELECTED
      067144  104406                                                                TRAP    C$CLP1
 4930 067146  012703  000024                MOV     #20.,R3                 ;STARTING RECORD SIZE
 4931 067152  013737  003116  067512        MOV     FREE,T35RB              ;STARTING READ BUFFER ADDRESS
 4932
 4933                                       ;****************************************
 4934                                       ;
 4935                                       ;READ DATA,ACK COMMAND
 4936                                       ;
 4937                                       ;****************************************
 4938
 4939 067160  012737  100001  067510  265$:  MOV     #100001,T35PK3          ;READ DATA,ACK COMMAND
 4940 067166  012704  067510                MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 4941 067172  010337  067516                MOV     R3,T35SZ                ;SET UP RECORD SIZE IN PACKET
 4942 067176  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 4943 067202  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 4944 067206  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 4945 067212  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 4946 067216  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 4947 067220  001406                        BEQ     280$                    ;BR, IF OK
 4948 067222  005237  002214                INC     FATFLG                          ;ERROR COUNT
 4952 067226                                ERRHRD  ERRNO,T35RDF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      067226  104456                                                                TRAP    C$ERHRD
      067230  001345                                                                .WORD   741
      067232  067632                                                                .WORD   T35RDF
      067234  012126                                                                .WORD   PKTSSR
 4953 067236                        280$:   CKLOOP                          ;LOOP IF SELECTED
      067236  104406                                                                TRAP    C$CLP1
 4954 067240  013702  003116                MOV     FREE,R2                 ;GET BUFFER ADDRESS
 4955 067244  010304                        MOV     R3,R4                   ;GET RECORD SIZE
 4956 067246  162704  000024                SUB     #20.,R4                 ;POINT BACK TO 1ST RECORD
```

```
 4957 067252  060204                285$:   ADD     R2,R4                   ;POINT TO 1ST LOC IN BUFFER
 4958 067254  000303                        SWAB    R3                      ;SWAP BYTES SWB=1 ETC.
 4959 067256  021403                        CMP     (R4),R3                 ;DATA WRITTEN = READ
 4960 067260  001410                        BEQ     290$                    ;BR, IF DATA OK (GOOD)
 4961 067262  011401                        MOV     (R4),R1                 ;PICK UP BAD DATA
 4962 067264  010302                        MOV     R3,R2                   ;SET UP EXPECTED
 4963 067266  005237  002214                INC     FATFLG                          ;ERROR COUNT
 4967 067272                                ERRHRD  ERRNO,T35DTA,EXPREC     ;DATA IN BUFFER NOT CORRECT
      067272  104456                                                                    TRAP    C$ERHRD
      067274  001346                                                                    .WORD   742
      067276  072325                                                                    .WORD   T35DTA
      067300  015554                                                                    .WORD   EXPREC
 4968 067302                        290$:   CKLOOP                          ;LOOP IF SELECTED
      067302  104406                                                                    TRAP    C$CLP1
 4969 067304  005724                        TST     (R4)+                   ;BUMP TO NEXT ADDRESS
 4970 067306  160204                        SUB     R2,R4                   ;BACK TO RECORD SIZE
 4971 067310  000303                        SWAB    R3                      ;PUT R3 BACK INTO SHAPE
 4972 067312  020403                        CMP     R4,R3                   ;AT END OF RECORD YET
 4973 067314  001356                        BNE     285$                    ;BR, IF MORE DATA TO CHECK
 4974 067316  005723                        TST     (R3)+                   ;BUMP RECORD SIZE
 4975 067320  020327  000050                CMP     R3,#40.                 ;DONE YET
 4976 067324  001315                        BNE     265$                    ;BR, IF NOT DONE YET (MORE READS)
 4977 067326                        300$:   CKLOOP                          ;LOOP IF SELECTED
      067326  104406                                                                    TRAP    C$CLP1
 4978 067330                                ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      067330                                                                        L10067:
      067330  104403                                                                    TRAP    C$ESUB
 4979 067332  023727  002214  000017        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
 4980 067340  103402                        BLO     999$                            ;BR, IF LESS THAN 25
 4981 067342  004737  017262                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
 4982 067346                        999$:
 4983                               ;
 4984                               ;
 4985                               ;
 4986 067346  004737  016536                JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
 4987 067352  103002                        BCC     163$                    ;BR, IF NO LOOP REQUIRED
 4988 067354  000137  063444                JMP     T35LOOP                 ;EXECUTE AGAIN
 4989 067360                        163$:   EXIT    TST                     ;ALL DONE THIS TEST
      067360  104432                                                                    TRAP    C$EXIT
      067362  003760                                                                    .WORD   L10063-.
 4990                               ;+
 4991                               ;LOCAL STORAGE FOR THIS TEST
 4992                               ;-
 4994          067370                       .=<.+10>&177770
 4996 067370                        T35PACKET:                              ;COMMAND PACKET FOR TEST
 4997 067370  100004                        .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH . ACK
 4998 067372  067400                        .WORD   T35DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
 4999 067374  000000                        .WORD   0
 5000 067376  000012                        .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
 5001 067400                        T35DATA:                                ;CHARACTERISTICS DATA BLOCK
 5002 067400  067412                        .WORD   T35BFR                  ;ADDRESS OF MESSAGE BUFFER
 5003 067402  000000                        .WORD   0
 5004 067404  000024                        .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
 5005 067406  000000                        .WORD   0
 5006 067410  000000                T35DSW: .WORD   0                       ;SELECT DRIVE 0
 5007 067412                        T35BFR: .BLKW   25.                     ;MESSAGE BUFFER
 5008                               ;
```

```
                                        ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                        ;
                 067500                         .=<.+10>&177770
067500                                  T35PK2:
067500   100006                                 .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
067502   067520                                 .WORD   T35BF2          ;ADDRESS OF SELECT BLOCK DATA
067504   000000                                 .WORD   0
067506   000006                                 .WORD   6.              ;SIZE OF DATA PACKET

067510                                  T35PK3:
067510   100005                                 .WORD   100005          ;REREAD COMMAND, AND ACK
067512                                  T35RB:
067512   003116                         T35WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
067514   000000                                 .WORD   0
067516   000000                         T35SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
                                                .EVEN
                                        ;
                                        ;
                                        ;
067520                                  T35BF2:
067520      010                        T35BS0: .BYTE   10              ;BSEL0 AREA
067521      200                        T35BS1: .BYTE   200             ;BSEL1 AREA
067522   000000                        T35S2:  .WORD   0               ;SEL 2 AREA
067524   000000                        T35S3:  .WORD   0               ;DATA AREA
                                        ;
                                        ;
                                                .EVEN
                                        ;TAPE MOTION PACKET COMMAND VALUES

067526   100205                         T35RN:  .WORD   100205          ;REREAD DATA (NEXT)
067530   100605                         T35WDR: .WORD   100605          ;REREAD DATA RETRY
067532   102205                         T35CON: .WORD   102205          ;WRITE CONTINOUS
067534   177777                                 .WORD   177777          ;END OF DATA

                                        ;
067536   000000                        T35CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
067540   000000                        T35CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
067542   000000                        T35DLY: .WORD   0               ;DELAY COUNTER
                                        ;+
                                        ;LOCAL TEXT MESSAGES FOR TEST
                                        ;-

067544      124     141     160        T35WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
067632      124     123     123        T35RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
067701      122     105     122        T35RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
067776      120     117     123        T35SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
070060      122     111     102        T35LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
070130      124     123     123        T35WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
070205      111     154     154        T35LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
070266      124     123     123        T35WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA Command'
070340      124     141     160        T35BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XSTO)'
070433      127     122     111        T35TIM: .ASCIZ  'WRITE DATA RETRY''S Erase Tape Not Long Enough'
070510      122     105     122        T35EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
070567      124     123     123        T35TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
070644      122     145     167        T35RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
070713      122     101     115        T35RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
070766      124     123     123        T35AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
```

```
5071 071035  104  162  151  T35OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
5072 071110  124  123  123  T35WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
5073 071200  124  123  123  T35WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
5074 071253  103  126  103  T35VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
5075 071326  124  123  102  T35BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
5076 071401  127  122  111  T35WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
5077 071470  122  145  141  T35LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XST0'
5078 071552  122  145  141  T35LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XST0'
5079 071634  122  145  163  T35PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
5080 071722  122  145  141  T35TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
5081 072010  127  122  111  T35NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
5082 072106  124  123  123  T35SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
5083 072163  124  123  123  T35TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
5084 072245  124  123  123  T35WRF: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command'
5085 072325  104  141  164  T35DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
5086 072422  124  123  123  T35SSR: .ASCIZ  'TSSR Incorrect After WRITE MISCELLANEOUS Command'
5087 072503  115  117  124  T35MOT: .ASCIZ  'MOT Bit (XST0) Not Set During Rewind (Extended Features Mode)'
5088 072601  111  156  164  T35INT: .ASCIZ  'Interrupt Received After REWIND Command (IE Bit Not Set)'
5089 072672  117  120  115  T35OPM: .ASCIZ  'OPM Bit (XST2) Not Set During Rewind (Extended Features Mode)'
5090 072770  124  123  123  T35RWE: .ASCIZ  'TSSR Incorrect After Extended Features REWIND Command'
5091 073056  116  157  040  T35NIN: .ASCIZ  'No Interrupt Detected After REWIND IMMEDIATE'
5092 073133  105  170  164  TST35ID:        .ASCIZ  'Extended Mode Functions'
5093                              .EVEN
5094                         ;+
5095                         ;
5096                         ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
5097                         ;WRITE SUBSYSTEM MEMORY COMMAND
5098                         ;
5099                         ;-
5100
5101 073164                  T35REST:
5102 073164                  SAVREG                          ;SAVE THE REGISTERS
5103 073170  012701  067370  MOV     #T35PACKET,R1           ;START OF THE PACKET
5104 073174  012721  100004  MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
5105 073200  012721  067400  MOV     #T35DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
5106 073204  005021          CLR     (R1)+                   ;EXTENDED ADDRESS
5107 073206  012721  000012  MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
5108 073212  012721  067412  MOV     #T35BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
5109 073216  005021          CLR     (R1)+
5110 073220  012721  000024  MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
5111 073224  005021          CLR     (R1)+
5112 073226  012711  000000  MOV     #0,(R1)                 ;SELECT DRIVE ZERO
5113 073232  012702  000030  MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
5114 073236  012762  177777  067412  64$:    MOV     #177777,T35BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
5115 073244  005742          TST     -(R2)                   ;NEXT LOCATION
5116 073246  022702  000000  CMP     #0,R2                   ;AT END OF LOOP YET
5117 073252  001371          BNE     64$                     ;KEEP GOING UNTIL DONE
5118 073254  000207          RTS     PC                      ;RETURN
5119
5120 073256                  T35RT2:
5121 073256                  SAVREG                          ;SAVE THE REGISTERS
5122 073262  012701  067500  MOV     #T35PK2,R1              ;START OF THE PACKET
5123 073266  012721  100006  MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
5124 073272  012721  067520  MOV     #T35BF2,(R1)+           ;ADDRESS OF DATA BLOCK
5125 073276  005021          CLR     (R1)+                   ;EXTENDED ADDRESS
5126 073300  012721  000006  MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
5127 073304  005021          CLR     (R1)+
```

```
 5128 073306  012701  067520                 MOV     #T35BF2,R1              ;POINT TO DATA SEL AREA
 5129 073312  005021                         CLR     (R1)+
 5130 073314  005011                         CLR     (R1)
 5131 073316  000207                         RTS     PC                      ;RETURN
 5132 073320                        T35RT3:
 5133 073320                                 SAVREG                          ;SAVE REGISTERS
 5134 073324  012701  067510                 MOV     #T35PK3,R1              ;SET UP POINTER ADDRESS
 5135 073330  005021                         CLR     (R1)+                   ;COMMAND SPACE
 5136 073332  005021                         CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
 5137 073334  005021                         CLR     (R1)+                   ;EXTENDED ADDRESS
 5138 073336  005011                         CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
 5139 073340  000207                         RTS     PC                      ;RETURN
 5140 073342                                 ENDTST
      073342                                                         L10063:
      073342  104401                                                        TRAP    C$ETST
 5141                                        .SBTTL  TEST  8: RECORD BUFFERING
 5142                               ;+
 5143                               ;
 5144                               ;
 5145                               ;       THIS TEST VERIFIES THAT RECORD BUFFERING, USED FOR WRITE DATA
 5146                               ;       AND READ NEXT COMMANDS, OPERATES PROPERLY AND IS PROPERLY
 5147                               ;       CONTROLLED BY THE EXTENDED CHARACTERISTICS DATA WORD.  IF THE
 5148                               ;       M7196 CONTROLLER MODULE IS NOT ALREADY IN EXTENDED FEATURES MODE
 5149                               ;       (AS CONTROLLED BY THE DIP SWITCH ON THE MODULE), IT IS PLACED
 5150                               ;       INTO THAT MODE BY INVERTING THE SENSE OF THE SWITCH USING THE
 5151                               ;       WRITE SUBSYSTEM MEMORY COMMAND.  NOTE THAT RECORD BUFFERING HAS
 5152                               ;       BEEN ENABLED IN PREVIOUS TESTS OF READ AND WRITE AND SO HAS BEEN
 5153                               ;       PARTIALLY TESTED ALREADY.  THIS TEST VERIFIES THAT BUFFERING IS
 5154                               ;       ACTUALLY OPERATING.  THE FOLLOWING SUBTESTS ARE PERFORMED:
 5155                               ;
 5156                               ;       VERIFIES THAT NORMAL BUFFERING ON WRITE DATA COMMANDS OPERATES
 5157                               ;       PROPERLY AT LOW TAPE SPEED.  THE FOLLOWING SEQUENCE IS
 5158                               ;       PERFORMED:
 5159                               ;
 5160                               ;            1.  THE TAPE IS REWOUND.
 5161                               ;
 5162                               ;            2.  BUFFERING IS DISABLED AND LOW TAPE SPEED IS SELECTED
 5163                               ;                (VIA WRITE CHARACTERISTICS COMMAND).
 5164                               ;
 5165                               ;            3.  AN INITIAL RECORD IS WRITTEN ONTO THE TAPE IN ORDER TO
 5166                               ;                MOVE THE TAPE OFF BOT.
 5167                               ;
 5168                               ;            4.  THE PROGRAM DELAYS FOR A TIME SUFFICIENT TO ALLOW THE
 5169                               ;                TAPE TO REPOSITION AND COME TO REST.
 5170                               ;
 5171                               ;            5.  A WRITE DATA COMMAND, WITH A BYTE COUNT LESS THAN 3.5K,
 5172                               ;                IS ISSUED, AND THE PROGRAM COUNTS, IN A WAIT LOOP, THE
 5173                               ;                TIME IT TAKES TO RECEIVE COMMAND TERMINATION.  THIS
 5174                               ;                SHOULD BE A RELATIVELY LONG TIME SINCE BUFFERING IS
 5175                               ;                DISABLED.
 5176                               ;
 5177                               ;            6.  BUFFERING IS ENABLED.
 5178                               ;
 5179                               ;            7.  THE WRITE DATA COMMAND IS AGAIN ISSUED, WITH THE SAME
 5180                               ;                BYTE COUNT AS THAT USED PREVIOUSLY.  THE TIME TO
 5181                               ;                COMPLETION IS AGAIN MEASURED.
 5182                               ;
```

```
                                        ;            8.  THE COMPLETION TIMES MEASURED FOR THE NON-BUFFERED AND
                                        ;                BUFFERED CASES ARE COMPARED.  IT IS VERIFIED THAT THE
                                        ;                TIME MEASURED FOR THE NON-BUFFERED CASE IS MUCH LARGER
                                        ;                THAN THAT MEASURED FOR THE BUFFERED CASE.
                                        ;
                                        ;            9.  THE PREVIOUS STEPS, EXCEPT FOR REWINDING AND WRITING A
                                        ;                RECORD OFF BOT, ARE REPEATED FOR VARIOUS BYTE COUNTS IN
                                        ;                THE RANGE 20 THROUGH 3.5K.
                                        ;
                                        ;
                                        ;THE TEST CONSISTS OF THE FOLLOWING 2 SUBTESTS
                                        ;
                                        ;
                                        ;
                                        ;-
073344                                          BGNTST
073344                                                                                  T8::
073344  012737  006354  002172                  MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
073352  004737  017354                          JSR     PC,KTOFF                ;TURN OFF KT11
073356  012700  100717                          MOV     #TST36ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
073362  004737  016570                          JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
073366  012737  000005  002210                  MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
073374  005037  075726                          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:
073400                                          BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
073400                                                                                  T8.1:
073400  104402                                                                          TRAP    C$BSUB
073402  004737  100740                          JSR     PC,T36REST              ;SET COMMAND PACKET
073406  004737  101032                          JSR     PC,T36RT2               ;SET UP OTHER COMMAND PACKET
073412  004737  101074                          JSR     PC,T36RT3               ;SET UP OTHER COMMAND PACKET
073416  012737  176750  075732                  MOV     #65000.,T36DLY          ;SET UP DELAY COUNTER
073424  005037  075726                          CLR     T36CNT                  ;CLEAR COUNTER
073430  004737  016054          10$:            JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
073434  103426                                  BCS     20$                     ;BR IF INIT WAS OK
073436                                          DELAY   250                     ;DELAY ABOUT .25 SEC
073436  012727  000250                                                                  MOV     #250.,(PC)+
073442  000000                                                                          .WORD   0
073444  013727  002116                                                                  MOV     L$DLY,(PC)+
073450  000000                                                                          .WORD   0
073452  005367  177772                                                                  DEC     -6(PC)
073456  001375                                                                          BNE     .-4
073460  005367  177756                                                                  DEC     -22(PC)
073464  001367                                                                          BNE     .-20
073466  005337  075732                          DEC     T36DLY                  ;BUMP COUNTER
```

```
5233 073472  001356                        BNE     10$                     ;BR, IF COUNTER NOT DONE
5234 073474  005237  002214                INC     FATFLG                          ;ERROR COUNT
5238 073500  010001                        MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
5239 073502                                ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     073502  104455                                                                TRAP    C$ERDF
     073504  001441                                                                .WORD   801
     073506  003646                                                                .WORD   SFIERR
     073510  012114                                                                .WORD   SFIMSG
5240 073512  013737  002174  075600  20$:   MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
5241 073520  012704  075560                MOV     #T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5242 073524  004737  010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5243 073530  103407                        BCS     25$                     ;BR, IF COMMAND ISSUED OK
5244 073532  005237  002214                INC     FATFLG                          ;ERROR COUNT
5248 073536  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5249 073540                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     073540  104456                                                                TRAP    C$ERHRD
     073542  001442                                                                .WORD   802
     073544  005052                                                                .WORD   WRTMSG
     073546  012114                                                                .WORD   SFIMSG
5250 073550                        25$:    CKLOOP                          ;LOOP IF SELECTED
     073550  104406                                                                TRAP    C$CLP1
5251 073552  004737  011074                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5252 073556  103407                        BCS     30$                     ;BR, IF NO PROBLEM
5253 073560  010004                        MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
5254 073562  005237  002214                INC     FATFLG                          ;ERROR COUNT
5258 073566                                ERRHRD  ERRNO,T36RWN,PKTSSR     ;REWIND NOT ACCEPTED
     073566  104456                                                                TRAP    C$ERHRD
     073570  001443                                                                .WORD   803
     073572  077141                                                                .WORD   T36RWN
     073574  012126                                                                .WORD   PKTSSR
5259 073576                        30$:    CKLOOP                          ;LOOP IF SELECTED
     073576  104406                                                                TRAP    C$CLP1
5260 073600  013701  075610                MOV     T36BFR+6,R1             ;PICK UP XSTO
5261 073604  010102                        MOV     R1,R2                   ;SET UP EXPECTED
5262 073606  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5263 073612  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
5264 073614  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
5265 073616  005237  002214                INC     FATFLG                          ;ERROR COUNT
5269 073622                                ERRHRD  ERRNO,T36BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     073622  104456                                                                TRAP    C$ERHRD
     073624  001444                                                                .WORD   804
     073626  076635                                                                .WORD   T36BOT
     073630  015554                                                                .WORD   EXPREC
5270 073632                        40$:    CKLOOP                          ;LOOP IF SELECTED
     073632  104406                                                                TRAP    C$CLP1
5271 073634  013737  002174  075600        MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
5272 073642  052737  000030  075600        BIS     #BIT3!BIT4,T36DSW       ;25-APR-83 REV B - TURN ON THE BUFFERING
5273 073650  012704  075560                MOV     #T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5274 073654  004737  010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5275 073660  103407                        BCS     50$                     ;BR, IF COMMAND ISSUED OK
5276 073662  005237  002214                INC     FATFLG                          ;ERROR COUNT
5280 073666  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5281 073670                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     073670  104456                                                                TRAP    C$ERHRD
     073672  001445                                                                .WORD   805
     073674  005052                                                                .WORD   WRTMSG
     073676  012114                                                                .WORD   SFIMSG
```

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5282 073700                          50$:   CKLOOP                          ;LOOP IF SELECTED
     073700 104406                                                                           TRAP    C$CLP1
5283 073702 012737 003720 075706            MOV     #2000.,T36SZ            ;SET UP RECORD SIZE
5284 073710 013737 003116 075702            MOV     FREE,T36WB              ;ADDRESS OF WRITE BUFFER
5285 073716 012737 140005 075700            MOV     #140005,T36PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
5286 073724 012704 075700                   MOV     #T36PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5287 073730 010465 000000                   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5288 073734 004737 016330                   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5289 073740 016501 000002                   MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5290 073744 012702 000200                   MOV     #SSR,R2                 ;SET UP EXPECTED
5291 073750 020102                          CMP     R1,R2                   ;ARE THEY EQUAL
5292 073752 001406                          BEQ     60$                     ;BR, IF OK
5293 073754 005237 002214                   INC     FATFLG                          ;ERROR COUNT
5297 073760                                 ERRHRD  ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     073760 104456                                                                           TRAP    C$ERHRD
     073762 001446                                                                           .WORD   806
     073764 005107                                                                           .WORD   WRTERR
     073766 012126                                                                           .WORD   PKTSSR
5298 073770                          60$:   CKLOOP                          ;LOOP IF SELECTED
     073770 104406                                                                           TRAP    C$CLP1
5299 073772 012737 000005 075732            MOV     #05.,T36DLY             ;25-APR-83 REV B - DELAY FOR TAPE TO STOP
5300 074000                          70$:   DELAY   1                       ;25-APR-83 REV B - DELAY ROUTINE CALL
     074000 012727 000001                                                                    MOV     #1,(PC)+
     074004 000000                                                                           .WORD   0
     074006 013727 002116                                                                    MOV     L$DLY,(PC)+
     074012 000000                                                                           .WORD   0
     074014 005367 177772                                                                    DEC     -6(PC)
     074020 001375                                                                           BNE     .-4
     074022 005367 177756                                                                    DEC     -22(PC)
     074026 001367                                                                           BNE     .-20
5301 074030 005337 075732                   DEC     T36DLY                  ;BUMP COUNTER DOWN
5302 074034 001361                          BNE     70$                     ;BR, IF MORE DELAY TO GO
5303 074036 012737 006642 075706            MOV     #3490.,T36SZ            ;SET SIZE OF TRANSFER
5304 074044 012737 140005 075700            MOV     #140005,T36PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
5305 074052 012704 075700                   MOV     #T36PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5306 074056 005037 075726                   CLR     T36CNT                  ;CLEAR COUNTER
5307 074062 012737 001750 075732            MOV     #1000.,T36DLY           ;SET DROP DEAD COUNTER VALUE
5308 074070 010465 000000                   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5309 074074 016501 000002        80$:       MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5310 074100 032701 000200                   BIT     #SSR,R1                 ;CHECK FOR SSR SET
5311 074104 001021                          BNE     90$                     ;BR, IF SSR IS SET
5312 074106 005237 075726                   INC     T36CNT                  ;BUMP CYCLE COUNTER
5313 074112                                 DELAY   1                       ;CUT NUMBER OF LOOPS DOWN
     074112 012727 000001                                                                    MOV     #1,(PC)+
     074116 000000                                                                           .WORD   0
     074120 013727 002116                                                                    MOV     L$DLY,(PC)+
     074124 000000                                                                           .WORD   0
     074126 005367 177772                                                                    DEC     -6(PC)
     074132 001375                                                                           BNE     .-4
     074134 005367 177756                                                                    DEC     -22(PC)
     074140 001367                                                                           BNE     .-20
5314 074142 005337 075732                   DEC     T36DLY                  ;BUMP DROP DEAD COUNTER
5315 074146 001352                          BNE     80$                     ;BR, IF THERE IS STILL TIME
5316 074150 012702 000200        90$:       MOV     #SSR,R2                 ;SET UP EXPECTED
5317 074154 020102                          CMP     R1,R2                   ;ARE THEY EQUAL
5318 074156 001406                          BEQ     100$                    ;BR, IF OK
5319 074160 005237 002214                   INC     FATFLG                          ;ERROR COUNT
```

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5323 074164                                ERRHRD  ERRNO,T36WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     074164 104456                                                                 TRAP    C$ERHRD
     074166 001447                                                                 .WORD   807
     074170 076563                                                                 .WORD   T36WDE
     074172 012126                                                                 .WORD   PKTSSR
5324 074174                          100$:  CKLOOP                          ;LOOP IF SELECTED
     074174 104406                                                                 TRAP    C$CLP1
5325 074176 013737 002174 075600     100$:  MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
5326 074204 052737 000010 075600     100$:  BIS     @BIT3,T36DSW            ;25-APR-83 REV B - TURN OFF BUFFERING
5327 074212 012704 075560            100$:  MOV     @T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5328 074216 004737 010742            100$:  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5329 074222 103407                   100$:  BCS     110$                    ;BR, IF COMMAND ISSUED OK
5330 074224 005237 002214            100$:  INC     FATFLG                          ;ERROR COUNT
5334 074230 010001                   100$:  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5335 074232                          100$:  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     074232 104456                                                                 TRAP    C$ERHRD
     074234 001450                                                                 .WORD   808
     074236 005052                                                                 .WORD   WRTMSG
     074240 012114                                                                 .WORD   SFIMSG
5336 074242                          110$:  CKLOOP                          ;LOOP IF SELECTED
     074242 104406                                                                 TRAP    C$CLP1
5337 074244 012737 006642 075706     110$:  MOV     @3490.,T36SZ            ;SET SIZE OF TRANSFER
5338 074252 012737 140005 075700     110$:  MOV     @140005,T36PK3          ;WRITE DATA,ACK,CYC=1 COMMAND
5339 074260 012704 075700            110$:  MOV     @T36PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5340 074264 005037 075730            110$:  CLR     T36CNU                  ;CLEAR COUNTER
5341 074270 012737 001750 075732     110$:  MOV     @1000.,T36DLY           ;SET DROP DEAD COUNTER VALUE
5342 074276 010465 000000            110$:  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5343 074302 016501 000002            120$:  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5344 074306 032701 000200            120$:  BIT     @SSR,R1                 ;CHECK FOR SSR SET
5345 074312 001021                   120$:  BNE     130$                    ;BR, IF SSR IS SET
5346 074314 005237 075730            120$:  INC     T36CNU                  ;BUMP CYCLE COUNTER
5347 074320                          120$:  DELAY   1                       ;CUT NUMBER OF LOOPS DOWN
     074320 012727 000001                                                          MOV     #1,(PC)+
     074324 000000                                                                 .WORD   0
     074326 013727 002116                                                          MOV     L$DLY,(PC)+
     074332 000000                                                                 .WORD   0
     074334 005367 177772                                                          DEC     -6(PC)
     074340 001375                                                                 BNE     .-4
     074342 005367 177756                                                          DEC     -22(PC)
     074346 001367                                                                 BNE     .-20
5348 074350 005337 075732            120$:  DEC     T36DLY                  ;BUMP DROP DEAD COUNTER
5349 074354 001352                   120$:  BNE     120$                    ;BR, IF THERE IS STILL TIME
5350 074356 012702 000200            130$:  MOV     @SSR,R2                 ;SET UP EXPECTED
5351 074362 020102                   130$:  CMP     R1,R2                   ;ARE THEY EQUAL
5352 074364 001406                   130$:  BEQ     140$                    ;BR, IF OK
5353 074366 005237 002214            130$:  INC     FATFLG                          ;ERROR COUNT
5357 074372                          130$:  ERRHRD  ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     074372 104456                                                                 TRAP    C$ERHRD
     074374 001451                                                                 .WORD   809
     074376 005107                                                                 .WORD   WRTERR
     074400 012126                                                                 .WORD   PKTSSR
5358 074402                          140$:  CKLOOP                          ;LOOP IF SELECTED
     074402 104406                                                                 TRAP    C$CLP1
5359 074404 013701 075726            140$:  MOV     T36CNT,R1               ;GET FIRST COUNTER
5360 074410 013702 075730            140$:  MOV     T36CNU,R2               ;GET SECOND COUNTER
5361 074414 020102                   140$:  CMP     R1,R2                   ;25-APR-83 REV B - COMPARE EM
5362 074416 003406                   140$:  BLE     300$                    ;BR, IF VALUES ARE CORRECT (OK)
```

```
5363 074420  005237  002214                INC     FATFLG                          ;ERROR COUNT
5367 074424                                ERRHRD  ERRNO,T36NAS,EXPREC     ;TAPE NOT AT CORRECT SPEED
     074424  104456                                                                TRAP    C$ERHRD
     074426  001452                                                                .WORD   810
     074430  075734                                                                .WORD   T36NAS
     074432  015554                                                                .WORD   EXPREC
5368 074434                        300$:   CKLOOP                          ;LOOP IF SELECTED
     074434  104406                                                                TRAP    C$CLP1
5369 074436                                ENDSUB
     074436                                                                  L10071:
     074436  104403                                                                TRAP    C$ESUB
5370 074440  023727  002214  000017        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
5371 074446  103402                        BLO     999$                            ;BR, IF LESS THAN 25
5372 074450  004737  017262                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
5373 074454                        999$:
5374                               ;+
5375                               ;
5376                               ;TEST 8, SUBTEST 2
5377                               ;
5378                               ;
5379                               ;       THIS TEST VERIFIES THAT RECORD BUFFERING, USED FOR WRITE DATA
5380                               ;       AND READ NEXT COMMANDS, OPERATES PROPERLY AND IS PROPERLY
5381                               ;       CONTROLLED BY THE EXTENDED CHARACTERISTICS DATA WORD.  IF THE
5382                               ;       M7196 CONTROLLER MODULE IS NOT ALREADY IN EXTENDED FEATURES MODE
5383                               ;       (AS CONTROLLED BY THE DIP SWITCH ON THE MODULE), IT IS PLACED
5384                               ;       INTO THAT MODE BY INVERTING THE SENSE OF THE SWITCH USING THE
5385                               ;       WRITE SUBSYSTEM MEMORY COMMAND.  NOTE THAT RECORD BUFFERING HAS
5386                               ;       BEEN ENABLED IN PREVIOUS TESTS OF READ AND WRITE AND SO HAS BEEN
5387                               ;       PARTIALLY TESTED ALREADY.  THIS TEST VERIFIES THAT BUFFERING IS
5388                               ;       ACTUALLY OPERATING.  THE FOLLOWING SUBTESTS ARE PERFORMED:
5389                               ;
5390                               ;       VERIFIES THAT NORMAL BUFFERING ON WRITE DATA COMMANDS OPERATES
5391                               ;       PROPERLY AT LOW TAPE SPEED.  THE FOLLOWING SEQUENCE IS
5392                               ;       PERFORMED:
5393                               ;
5394                               ;           1.  THE TAPE IS REWOUND.
5395                               ;
5396                               ;           2.  BUFFERING IS DISABLED AND LOW TAPE SPEED IS SELECTED
5397                               ;               (VIA WRITE CHARACTERISTICS COMMAND).
5398                               ;
5399                               ;           3.  AN INITIAL RECORD IS WRITTEN ONTO THE TAPE IN ORDER TO
5400                               ;               MOVE THE TAPE OFF BOT.
5401                               ;
5402                               ;           4.  THE PROGRAM DELAYS FOR A TIME SUFFICIENT TO ALLOW THE
5403                               ;               TAPE TO REPOSITION AND COME TO REST.
5404                               ;
5405                               ;           5.  A WRITE DATA COMMAND, WITH A BYTE COUNT LESS THAN 3.5K,
5406                               ;               IS ISSUED, AND THE PROGRAM COUNTS, IN A WAIT LOOP, THE
5407                               ;               TIME IT TAKES TO RECEIVE COMMAND TERMINATION.  THIS
5408                               ;               SHOULD BE A RELATIVELY LONG TIME SINCE BUFFERING IS
5409                               ;               DISABLED.
5410                               ;
5411                               ;           6.  BUFFERING IS ENABLED.
5412                               ;
5413                               ;           7.  THE WRITE DATA COMMAND IS AGAIN ISSUED, WITH THE SAME
5414                               ;               BYTE COUNT AS THAT USED PREVIOUSLY.  THE TIME TO
5415                               ;               COMPLETION IS AGAIN MEASURED.
```

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                                        ;
                                        ;       8.  THE COMPLETION TIMES MEASURED FOR THE NON-BUFFERED AND
                                        ;           BUFFERED CASES ARE COMPARED.  IT IS VERIFIED THAT THE
                                        ;           TIME MEASURED FOR THE NON-BUFFERED CASE IS MUCH LARGER
                                        ;           THAN THAT MEASURED FOR THE BUFFERED CASE.
                                        ;
                                        ;       9.  THE PREVIOUS STEPS, EXCEPT FOR REWINDING AND WRITING A
                                        ;           RECORD OFF BOT, ARE REPEATED FOR VARIOUS BYTE COUNTS IN
                                        ;           THE RANGE 20 THROUGH 3.5K.
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-
074454                                      BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
                                                                                        T8.2:
074454  104402                                                                              TRAP    C$BSUB
074456  004737  100740                    JSR     PC,T36REST              ;SET COMMAND PACKET
074462  004737  101032                    JSR     PC,T36RT2               ;SET UP OTHER COMMAND PACKET
074466  004737  101074                    JSR     PC,T36RT3               ;SET UP OTHER COMMAND PACKET
074472  012737  176750  075732            MOV     #65000.,T36DLY          ;SET UP DELAY COUNTER
074500  005037  075726                    CLR     T36CNT                  ;CLEAR COUNTER
074504  004737  016054          10$:      JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
074510  103426                    BCS     20$                             ;BR IF INIT WAS OK
074512                            DELAY   250                             ;DELAY ABOUT .25 SEC
074512  012727  000250                                                              MOV     #250.,(PC)+
074516  000000                                                                      .WORD   0
074520  013727  002116                                                              MOV     L$DLY,(PC)+
074524  000000                                                                      .WORD   0
074526  005367  177772                                                              DEC     -6(PC)
074532  001375                                                                      BNE     .-4
074534  005367  177756                                                              DEC     -22(PC)
074540  001367                                                                      BNE     .-20
074542  005337  075732                    DEC     T36DLY                  ;BUMP COUNTER
074546  001356                    BNE     10$                             ;BR, IF COUNTER NOT DONE
074550  005237  002214                    INC     FATFLG                          ;ERROR COUNT
074554  010001                    MOV     R0,R1                           ;CONTENTS OF TSSR REGISTER
074556                            ERRDF   ERRNO,SFIERR,SFIMSG             ;FATAL ERROR TSSR WAS NOT OK
074556  104455                                                                      TRAP    C$ERDF
074560  001453                                                                      .WORD   811
074562  003646                                                                      .WORD   SFIERR
074564  012114                                                                      .WORD   SFIMSG
074566  013737  002174  075600  20$:      MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
074574  052737  000040  075600            BIS     #BIT5,T36DSW            ;TURN ON HIGH SPEED
074602  012704  075560                    MOV     #T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
074606  004737  010742                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
074612  103407                    BCS     25$                             ;BR, IF COMMAND ISSUED OK
074614  005237  002214                    INC     FATFLG                          ;ERROR COUNT
074620  010001                    MOV     R0,R1                           ;SAVE CONTENTS OF TSSR
074622                            ERRHRD  ERRNO,WRTMSG,SFIMSG             ;WRITE CHARACTERISTISC FAILED
074622  104456                                                                      TRAP    C$ERHRD
074624  001454                                                                      .WORD   812
074626  005052                                                                      .WORD   WRTMSG
074630  012114                                                                      .WORD   SFIMSG
074632                    25$:    CKLOOP                                  ;LOOP IF SELECTED
074632  104406                                                                      TRAP    C$CLP1
074634  004737  011074                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
074640  103407                    BCS     30$                             ;BR, IF NO PROBLEM
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 201
TEST  8: RECORD BUFFERING

5460 074642  010004                        MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
5461 074644  005237  002214                INC     FATFLG                          ;ERROR COUNT
5465 074650                                ERRHRD  ERRNO,T36RWN,PKTSSR     ;REWIND NOT ACCEPTED
     074650  104456                                                                TRAP    C$ERHRD
     074652  001455                                                                .WORD   813
     074654  077141                                                                .WORD   T36RWN
     074656  012126                                                                .WORD   PKTSSR
5466 074660                         30$:   CKLOOP                          ;LOOP IF SELECTED
     074660  104406                                                                TRAP    C$CLP1
5467 074662  013701  075610                MOV     T36BFR+6,R1             ;PICK UP XSTO
5468 074666  010102                        MOV     R1,R2                   ;SET UP EXPECTED
5469 074670  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5470 074674  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
5471 074676  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
5472 074700  005237  002214                INC     FATFLG                          ;ERROR COUNT
5476 074704                                ERRHRD  ERRNO,T36BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     074704  104456                                                                TRAP    C$ERHRD
     074706  001456                                                                .WORD   814
     074710  076635                                                                .WORD   T36BOT
     074712  015554                                                                .WORD   EXPREC
5477 074714                         40$:   CKLOOP                          ;LOOP IF SELECTED
     074714  104406                                                                TRAP    C$CLP1
5478 074716  013737  002174  075600        MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
5479 074724  052737  000030  075600        BIS     #BIT3!BIT4,T36DSW       ;25-APR-83 REV B - TURN ON THE BUFFERING
5480 074732  012704  075560                MOV     #T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5481 074736  004737  010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5482 074742  103407                        BCS     50$                     ;BR, IF COMMAND ISSUED OK
5483 074744  005237  002214                INC     FATFLG                          ;ERROR COUNT
5487 074750  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5488 074752                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     074752  104456                                                                TRAP    C$ERHRD
     074754  001457                                                                .WORD   815
     074756  005052                                                                .WORD   WRTMSG
     074760  012114                                                                .WORD   SFIMSG
5489 074762                         50$:   CKLOOP                          ;LOOP IF SELECTED
     074762  104406                                                                TRAP    C$CLP1
5490 074764  012737  003720  075706        MOV     #2000.,T36SZ            ;SET UP RECORD SIZE
5491 074772  013737  003116  075702        MOV     FREE,T36WB              ;ADDRESS OF WRITE BUFFER
5492 075000  012737  140005  075700        MOV     #140005,T36PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
5493 075006  012704  075700                MOV     #T36PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5494 075012  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5495 075016  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5496 075022  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5497 075026  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
5498 075032  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
5499 075034  001406                        BEQ     60$                     ;BR, IF OK
5500 075036  005237  002214                INC     FATFLG                          ;ERROR COUNT
5504 075042                                ERRHRD  ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     075042  104456                                                                TRAP    C$ERHRD
     075044  001460                                                                .WORD   816
     075046  005107                                                                .WORD   WRTERR
     075050  012126                                                                .WORD   PKTSSR
5505 075052                         60$:   CKLOOP                          ;LOOP IF SELECTED
     075052  104406                                                                TRAP    C$CLP1
5506 075054  012737  000005  075732        MOV     #05.,T36DLY             ;25-APR-83 REV B - DELAY FOR TAPE TO STOP
5507 075062                         70$:   DELAY   1                       ;25-APR-83 REV B - DELAY ROUTINE CALL
     075062  012727  000001                                                        MOV     #1,(PC)+
```

```
        075066  000000                                                          .WORD   0
        075070  013727  002116                                                  MOV     L$DLY,(PC)+
        075074  000000                                                          .WORD   0
        075076  005367  177772                                                  DEC     -6(PC)
        075102  001375                                                          BNE     .-4
        075104  005367  177756                                                  DEC     -22(PC)
        075110  001367                                                          BNE     .-20
  5508  075112  005337  075732          DEC     T36DLY          ;BUMP COUNTER DOWN
  5509  075116  001361                  BNE     70$             ;BR, IF MORE DELAY TO GO
  5510  075120  012737  006642  075706  MOV     #3490.,T36SZ    ;SET SIZE OF TRANSFER
  5511  075126  012737  140005  075700  MOV     #140005,T36PK3  ;WRITE DATA,ACK,CVC=1 COMMAND
  5512  075134  012704  075700          MOV     #T36PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
  5513  075140  005037  075726          CLR     T36CNT          ;CLEAR COUNTER
  5514  075144  012737  001750  075732  MOV     #1000.,T36DLY   ;SET DROP DEAD COUNTER VALUE
  5515  075152  010465  000000          MOV     R4,TSDB(R5)     ;ISSUE COMMAND
  5516  075156  016501  000002  80$:    MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
  5517  075162  032701  000200          BIT     #SSR,R1         ;CHECK FOR SSR SET
  5518  075166  001021                  BNE     90$             ;BR, IF SSR IS SET
  5519  075170  005237  075726          INC     T36CNT          ;BUMP CYCLE COUNTER
  5520  075174                          DELAY   1               ;CUT NUMBER OF LOOPS DOWN
        075174  012727  000001                                                  MOV     #1,(PC)+
        075200  000000                                                          .WORD   0
        075202  013727  002116                                                  MOV     L$DLY,(PC)+
        075206  000000                                                          .WORD   0
        075210  005367  177772                                                  DEC     -6(PC)
        075214  001375                                                          BNE     .-4
        075216  005367  177756                                                  DEC     -22(PC)
        075222  001367                                                          BNE     .-20
  5521  075224  005337  075732          DEC     T36DLY          ;BUMP DROP DEAD COUNTER
  5522  075230  001352                  BNE     80$             ;BR, IF THERE IS STILL TIME
  5523  075232  012702  000200  90$:    MOV     #SSR,R2         ;SET UP EXPECTED
  5524  075236  020102                  CMP     R1,R2           ;ARE THEY EQUAL
  5525  075240  001406                  BEQ     100$            ;BR, IF OK
  5526  075242  005237  002214          INC     FATFLG                  ;ERROR COUNT
  5530  075246                          ERRHRD  ERRNO,T36WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
        075246  104456                                                          TRAP    C$ERHRD
        075250  001461                                                          .WORD   817
        075252  076563                                                          .WORD   T36WDE
        075254  012126                                                          .WORD   PKTSSR
  5531  075256                  100$:   CKLOOP                  ;LOOP IF SELECTED
        075256  104406                                                          TRAP    C$CLP1
  5532  075260  013737  002174  075600  MOV     UNITN,T36DSW    ;SET UP DRIVE NUMBER
  5533  075266  052737  000010  075600  BIS     #BIT3,T36DSW    ;25-APR-83 REV B - TURN OFF BUFFERING
  5534  075274  012704  075560          MOV     #T36PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
  5535  075300  004737  010742          JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
  5536  075304  103407                  BCS     110$            ;BR, IF COMMAND ISSUED OK
  5537  075306  005237  002214          INC     FATFLG                  ;ERROR COUNT
  5541  075312  010001                  MOV     R0,R1           ;SAVE CONTENTS OF TSSR
  5542  075314                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        075314  104456                                                          TRAP    C$ERHRD
        075316  001462                                                          .WORD   818
        075320  005052                                                          .WORD   WRTMSG
        075322  012114                                                          .WORD   SFIMSG
  5543  075324                  110$:   CKLOOP                  ;LOOP IF SELECTED
        075324  104406                                                          TRAP    C$CLP1
  5544  075326  012737  006642  075706  MOV     #3490.,T36SZ    ;SET SIZE OF TRANSFER
  5545  075334  012737  140005  075700  MOV     #140005,T36PK3  ;WRITE DATA,ACK,CVC=1 COMMAND
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 203
TEST  8: RECORD BUFFERING

 5546 075342  012704  075700                MOV     #T36PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
 5547 075346  005037  075730                CLR     T36CNU              ;CLEAR COUNTER
 5548 075352  012737  001750  075732        MOV     #1000.,T36DLY       ;SET DROP DEAD COUNTER VALUE
 5549 075360  010465  000000                MOV     R4,TSDB(R5)         ;ISSUE COMMAND
 5550 075364  016501  000002        120$:   MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
 5551 075370  032701  000200                BIT     #SSR,R1             ;CHECK FOR SSR SET
 5552 075374  001021                        BNE     130$                ;BR, IF SSR IS SET
 5553 075376  005237  075730                INC     T36CNU              ;BUMP CYCLE COUNTER
 5554 075402                                DELAY   1                   ;CUT NUMBER OF LOOPS DOWN
      075402  012727  000001                                                    MOV     #1,(PC)+
      075406  000000                                                            .WORD   0
      075410  013727  002116                                                    MOV     L$DLY,(PC)+
      075414  000000                                                            .WORD   0
      075416  005367  177772                                                    DEC     -6(PC)
      075422  001375                                                            BNE     .-4
      075424  005367  177756                                                    DEC     -22(PC)
      075430  001367                                                            BNE     .-20
 5555 075432  005337  075732                DEC     T36DLY              ;BUMP DROP DEAD COUNTER
 5556 075436  001352                        BNE     120$                ;BR, IF THERE IS STILL TIME
 5557 075440  012702  000200        130$:   MOV     #SSR,R2             ;SET UP EXPECTED
 5558 075444  020102                        CMP     R1,R2               ;ARE THEY EQUAL
 5559 075446  001406                        BEQ     140$                ;BR, IF OK
 5560 075450  005237  002214                INC     FATFLG                      ;ERROR COUNT
 5564 075454                                ERRHRD  ERRNO,WRTERR,PKTSSR ;TSSR INCORRECT AFTER WRITE DATA
      075454  104456                                                            TRAP    C$ERHRD
      075456  001463                                                            .WORD   819
      075460  005107                                                            .WORD   WRTERR
      075462  012126                                                            .WORD   PKTSSR
 5565 075464                        140$:   CKLOOP                      ;LOOP IF SELECTED
      075464  104406                                                            TRAP    C$CLP1
 5566 075466  013701  075726                MOV     T36CNT,R1           ;GET FIRST COUNTER
 5567 075472  013702  075730                MOV     T36CNU,R2           ;GET SECOND COUNTER
 5568 075476  020102                        CMP     R1,R2               ;25-APR-83 REV B - COMPARE EM
 5569 075500  003406                        BLE     300$                ;BR, IF VALUES ARE CORRECT (OK)
 5570 075502  005237  002214                INC     FATFLG                      ;ERROR COUNT
 5574 075506                                ERRHRD  ERRNO,T36NAS,EXPREC ;TAPE NOT AT CORRECT SPEED
      075506  104456                                                            TRAP    C$ERHRD
      075510  001464                                                            .WORD   820
      075512  075734                                                            .WORD   T36NAS
      075514  015554                                                            .WORD   EXPREC
 5575 075516                        300$:   CKLOOP                      ;LOOP IF SELECTED
      075516  104406                                                            TRAP    C$CLP1
 5576 075520                                ENDSUB
      075520                                                                L10072:
      075520  104403                                                            TRAP    C$ESUB
 5577 075522  023727  002214  000017        CMP     FATFLG,#15.                 ;IS ERROR COUNT AT 25
 5578 075530  103402                        BLO     999$                        ;BR, IF LESS THAN 25
 5579 075532  004737  017262                JSR     PC,CKDROP                   ;TRY TO DROP THE UNIT
 5580 075536                        999$:
 5581                               ;
 5582                               ;
 5583                               ;
 5584 075536  004737  016536                JSR     PC,TSTLOOP          ;DO WE NEED TO ITERATE TEST
 5585 075542  103002                        BCC     163$                ;BR, IF NO LOOP REQUIRED
 5586 075544  000137  073400                JMP     T36LOOP             ;EXECUTE AGAIN
 5587 075550                        163$:
 5588 075550                                EXIT    TST                 ;ALL DONE THIS TEST
```

```
075550  104432                                                          TRAP    C$EXIT
075552  003344                                                          .WORD   L10070-.
5589                            ;+
5590                            ;LOCAL STORAGE FOR THIS TEST
5591                            ;-
5593            075560                  .=<.+10>&177770
5595 075560                     T36PACKET:                      ;COMMAND PACKET FOR TEST
5596 075560  100004                     .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
5597 075562  075570                     .WORD   T36DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
5598 075564  000000                     .WORD   0
5599 075566  000012                     .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
5600 075570                     T36DATA:                        ;CHARACTERISTICS DATA BLOCK
5601 075570  075602                     .WORD   T36BFR          ;ADDRESS OF MESSAGE BUFFER
5602 075572  000000                     .WORD   0
5603 075574  000024                     .WORD   20.             ;LENGTH OF MESSAGE BUFFER
5604 075576  000000                     .WORD   0
5605 075600  000000             T36DSW: .WORD   0               ;SELECT DRIVE 0
5606 075602                     T36BFR: .BLKW   25.             ;MESSAGE BUFFER
5607                            ;
5608                            ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
5609                            ;
5611            075670                  .=<.+10>&177770
5613 075670                     T36PK2:
5614 075670  100006                     .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
5615 075672  075710                     .WORD   T36BF2          ;ADDRESS OF SELECT BLOCK DATA
5616 075674  000000                     .WORD   0
5617 075676  000006                     .WORD   6.              ;SIZE OF DATA PACKET
5618
5622 075700                     T36PK3:
5623 075700  100005                     .WORD   100005          ;REREAD COMMAND, AND ACK
5624 075702                     T36RB:
5625 075702  003116             T36WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
5626 075704  000000                     .WORD   0
5627 075706  000000             T36SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
5628                                    .EVEN
5629                            ;
5630                            ;
5631                            ;
5632 075710                     T36BF2:
5633 075710     010             T36BS0: .BYTE   10              ;BSEL0 AREA
5634 075711     200             T36BS1: .BYTE   200             ;BSEL1 AREA
5635 075712  000000             T36S2:  .WORD   0               ;SEL 2 AREA
5636 075714  000000             T36S3:  .WORD   0               ;DATA AREA
5637                            ;
5638                            ;
5639                                    .EVEN
5640                            ;TAPE MOTION PACKET COMMAND VALUES
5641
5642 075716  100205             T36RN:  .WORD   100205          ;REREAD DATA (NEXT)
5643 075720  100605             T36WDR: .WORD   100605          ;REREAD DATA RETRY
5644 075722  102205             T36CON: .WORD   102205          ;WRITE CONTINOUS
5645 075724  177777                     .WORD   177777          ;END OF DATA
5646
5647                            ;
5648 075726  000000             T36CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
5649 075730  000000             T36CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
5650 075732  000000             T36DLY: .WORD   0               ;DELAY COUNTER
```

```
                                        ;+
                                        ;LOCAL TEXT MESSAGES FOR TEST
                                        ;-
                                        
075734  111  155  160  T36NAS: .ASCIZ  'Improper Tape Controller Buffering Speed'
076005  124  141  160  T36WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
076073  124  123  123  T36RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
076142  122  105  122  T36RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
076237  120  117  123  T36SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
076321  122  111  102  T36LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
076371  124  123  123  T36WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
076446  111  154  154  T36LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
076527  122  105  122  T36SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
076563  124  123  123  T36WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA Command'
076635  124  141  160  T36BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
076730  127  122  111  T36TIM: .ASCIZ  'WRITE DATA RETRY''S Erase Tape Not Long Enough'
077005  122  105  122  T36EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
077064  124  123  123  T36TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
077141  122  145  167  T36RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
077210  122  101  115  T36RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
077263  124  123  123  T36AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
077332  104  162  151  T36OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
077405  124  123  123  T36WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
077475  124  123  123  T36WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
077550  103  126  103  T36VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
077623  124  123  102  T36BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
077676  127  122  111  T36WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
077765  122  145  141  T36LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XST0'
100047  122  145  141  T36LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XST0'
100131  122  145  163  T36PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
100217  122  145  141  T36TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
100305  127  122  111  T36NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
100403  124  123  123  T36SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
100460  124  123  123  T36TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
100542  124  123  123  T36WRF: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command'
100622  104  141  164  T36DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
100717  122  145  143  TST36ID:        .ASCIZ  'Record Buffering'
                                        .EVEN
                                        ;+
                                        ;
                                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                        ;WRITE SUBSYSTEM MEMORY COMMAND
                                        ;
                                        ;-
                                        
100740                                  T36REST:
100740                                          SAVREG                          ;SAVE THE REGISTERS
100744  012701  075560                        MOV     #T36PACKET,R1           ;START OF THE PACKET
100750  012721  100004                        MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
100754  012721  075570                        MOV     #T36DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
100760  005021                              CLR     (R1)+                   ;EXTENDED ADDRESS
100762  012721  000012                        MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
100766  012721  075602                        MOV     #T36BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
100772  005021                              CLR     (R1)+
100774  012721  000024                        MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
101000  005021                              CLR     (R1)+
101002  012711  000000                        MOV     #0,(R1)                 ;SELECT DRIVE ZERO
```

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5708 101006  012702  000030                   MOV     #24.,R2                  ;NUMBER OF LOCATIONS TO BE CLEARED
5709 101012  012762  177777  075602  64$:     MOV     #177777,T36BFR(R2)       ;ALL ONES TC MESSAGE BUFFER
5710 101020  005742                           TST     -(R2)                    ;NEXT LOCATION
5711 101022  022702  000000                   CMP     #0,R2                    ;AT END OF LOOP YET
5712 101026  001371                           BNE     64$                      ;KEEP GOING UNTIL DONE
5713 101030  000207                           RTS     PC                       ;RETURN
5714
5715 101032                         T36RT2:
5716 101032                                  SAVREG                           ;SAVE THE REGISTERS
5717 101036  012701  075670                   MOV     #T36PK2,R1               ;START OF THE PACKET
5718 101042  012721  100006                   MOV     #100006,(R1)+            ;WRITE SUBSYSTEM MEM. WITH ACK,
5719 101046  012721  075710                   MOV     #T36BF2,(R1)+            ;ADDRESS OF DATA BLOCK
5720 101052  005021                           CLR     (R1)+                    ;EXTENDED ADDRESS
5721 101054  012721  000006                   MOV     #6.,(R1)+                ;SIZE OF DATA BLOCK IN BYTES
5722 101060  005021                           CLR     (R1)+
5723 101062  012701  075710                   MOV     #T36BF2,R1               ;POINT TO DATA SEL AREA
5724 101066  005021                           CLR     (R1)+
5725 101070  005011                           CLR     (R1)
5726 101072  000207                           RTS     PC                       ;RETURN
5727 101074                         T36RT3:
5728 101074                                  SAVREG                           ;SAVE REGISTERS
5729 101100  012701  075700                   MOV     #T36PK3,R1               ;SET UP POINTER ADDRESS
5730 101104  005021                           CLR     (R1)+                    ;COMMAND SPACE
5731 101106  005021                           CLR     (R1)+                    ;ADDRESS OF DATA BLOCK
5732 101110  005021                           CLR     (R1)+                    ;EXTENDED ADDRESS
5733 101112  005011                           CLR     (R1)                     ;SIZE OF DATA TRANSFER BLOCK
5734 101114  000207                           RTS     PC                       ;RETURN
5735 101116                                  ENDTST
     101116                                                                    L10070:
     101116  104401                                                                    TRAP    C$ETST
5736                                         .SBTTL  TEST  9: FUNCTION TIMING
5737                                ;+
5738                                ;
5739                                ;THIS TEST VERIFIES THAT THE TAPE TRANSPORT SEEMS TO BE WRITING
5740                                ;RECORDS, GAPS, AND EXTENDED GAPS OF THE PROPER LENGTH. BOTH LOW
5741                                ;AND HIGH SPEED MODES ARE TESTED. IT IS ALSO VERIFIED THAT A
5742                                ;SPACE RECORDS COMMAND WITH A RECORD COUNT OF 80 OR MORE, AND A
5743                                ;SKIP TAPE MARKS COMMAND WITH A COUNT OF 2 OF MORE, OPERATE THE
5744                                ;TAPE IN HIGH-SPEED MODE. THIS TEST CAN ONLY BE RUN IF A
5745                                ;REAL-TIME CLOCK IS AVAILIABLE ON THE SYSTEM. THE TEST OPERATES BY
5746                                ;TIMING VARIOUS TAPE-MOTION OPERATIONS, USING A NUMBER OF
5747                                ;DIFFERENT TEST RECORD LENGTHS.
5748                                ;
5749                                ;
5750                                ;-
5751 101120                                  BGNTST
     101120                                                                    T9::
5752 101120  012737  006354  002172           MOV     #EPRT1,EPRTSW            ;PRIMARY ERROR MESSAGE
5753 101126  004737  017354                   JSR     PC,KTOFF                         ;TURN KT OFF
5758 101132  012700  105343                   MOV     #TST37ID,R0              ;ASCII MESSAGE TO IDENTIFY TEST
5759 101136  004737  016570                   JSR     PC,TSTSETUP              ;DO INITIAL TEST SETUP
5760 101142  012737  000005  002210           MOV     #5,LOOPCNT               ;PERFORM 5 ITERATIONS
5761 101150  005037  102406                   CLR     T37CNT                   ;CLEAR TAPE RECORD COUNTER
5762                                ;+
5763                                ;
5764                                ;TEST 9, SUBTEST 1
5765                                ;
```

```
 5766                                   ;
 5767                                   ;
 5768                                   ;
 5769                                   ;-
 5770
 5771 101154                            T37LOOP:
 5772 101154                                    BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
      101154                                                                                  T9.1:
      101154  104402                                                                            TRAP    C$BSUB
 5773 101156  005037  002216                    CLR     INTRECV                 ;INTERRUPT INDICATOR
 5774 101162  005037  102406                    CLR     T37CNT                  ;TIMER FOR WRITE DATA SPACING
 5775 101166  005037  102410                    CLR     T37CNU                  ;TIMER FOR WRITE DATA RETRY SPACING
 5776 101172  004737  105364                    JSR     PC,T37REST              ;SET COMMAND PACKET
 5777 101176  004737  105456                    JSR     PC,T37RT2               ;SET UP OTHER COMMAND PACKET
 5778 101202  004737  105520                    JSR     PC,T37RT3               ;SET UP OTHER COMMAND PACKET
 5779 101206  012737  176750  102412            MOV     #65000.,T37DLY          ;SET UP DELAY COUNTER
 5780 101214  004737  016054          10$:      JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 5781 101220  103426                    BCS     20$                             ;BR IF INIT WAS OK
 5782 101222                            DELAY   250                             ;DELAY ABOUT .25 SEC
      101222  012727  000250                                                            MOV     #250.,(PC)+
      101226  000000                                                                    .WORD   0
      101230  013727  002116                                                            MOV     L$DLY,(PC)+
      101234  000000                                                                    .WORD   0
      101236  005367  177772                                                            DEC     -6(PC)
      101242  001375                                                                    BNE     .-4
      101244  005367  177756                                                            DEC     -22(PC)
      101250  001367                                                                    BNE     .-20
 5783 101252  005337  102412                    DEC     T37DLY                  ;BUMP COUNTER
 5784 101256  001356                    BNE     10$                             ;BR, IF COUNTER NOT DONE
 5785 101260  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 5789 101264  010001                    MOV     R0,R1                           ;CONTENTS OF TSSR REGISTER
 5790 101266                            ERRDF   ERRNO,SFIERR,SFIMSG             ;FATAL ERROR TSSR WAS NOT OK
      101266  104455                                                                    TRAP    C$ERDF
      101270  001605                                                                    .WORD   901
      101272  003646                                                                    .WORD   SFIERR
      101274  012114                                                                    .WORD   SFIMSG
 5791 101276  013737  002174  102260  20$:      MOV     UNITN,T37DSW            ;SET UP UNIT NUMBER
 5792
 5793 101304  012704  102240                    MOV     #T37PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 5794 101310  004737  010742                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 5795 101314  103407                    BCS     23$                             ;BR, IF COMMAND ISSUED OK
 5796 101316  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 5800 101322  010001                    MOV     R0,R1                           ;SAVE CONTENTS OF TSSR
 5801 101324                            ERRHRD  ERRNO,WRTMSG,SFIMSG             ;WRITE CHARACTERISTISC FAILED
      101324  104456                                                                    TRAP    C$ERHRD
      101326  001606                                                                    .WORD   902
      101330  005052                                                                    .WORD   WRTMSG
      101332  012114                                                                    .WORD   SFIMSG
 5802 101334                            23$:    CKLOOP                          ;LOOP IF SELECTED
      101334  104406                                                                    TRAP    C$CLP1
 5803 101336  004737  011074                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 5804 101342  103411                    BCS     30$                             ;BR, IF NO PROBLEM
 5805 101344  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 5806 101350  010004                    MOV     R0,R4                           ;GET PACKET ADDRESS
 5807 101352  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 5811 101356                            ERRHRD  ERRNO,T37RWN,PKTSSR             ;REWIND NOT ACCEPTED
      101356  104456                                                                    TRAP    C$ERHRD
```

```
        101360  001607                                                          .WORD   903
        101362  103565                                                          .WORD   T37RWN
        101364  012126                                                          .WORD   PKTSSR
  5812  101366                          30$:    CKLOOP                  ;LOOP IF SELECTED
        101366  104406                                                          TRAP    C$CLP1
  5813  101370  013701  102270                  MOV     T37BFR+6,R1     ;PICK UP XSTO
  5814  101374  010102                          MOV     R1,R2           ;SET UP EXPECTED
  5815  101378  052702  000002                  BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
  5816  101402  020102                          CMP     R1,R2           ;DOES EXP = REC'D
  5817  101404  001406                          BEQ     40$             ;BR, IF EQUAL (OK)
  5818  101406  005237  002214                  INC     FATFLG                  ;ERROR COUNT
  5822  101412                                  ERRHRD  ERRNO,T37BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        101412  104456                                                          TRAP    C$ERHRD
        101414  001610                                                          .WORD   904
        101416  103261                                                          .WORD   T37BOT
        101420  015554                                                          .WORD   EXPREC
  5823  101422                          40$:    CKLOOP                  ;LOOP IF SELECTED
        101422  104406                                                          TRAP    C$CLP1
  5824  101424  012703  000144                  MOV     #100.,R3        ;NUMBER OF RECORDS TO BE WRITTEN
  5825  101430  013737  003116  102362          MOV     FREE,T37WB      ;STARTING WRITE BUFFER ADDRESS
  5826  101436  012737  140005  102360  65$:    MOV     #140005,T37PK3  ;WRITE DATA,ACK,CYC=1 COMMAND
  5827  101444  012704  102360                  MOV     #T37PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
  5828  101450  012737  001130  102366          MOV     #600.,T37SZ     ;SET UP RECORD SIZE IN PACKET
  5829  101456  010465  000000                  MOV     R4,TSDB(R5)     ;ISSUE COMMAND
  5830  101462  004737  016330                  JSR     PC,WAITF        ;WAIT FOR SSR TO SET
  5831  101466  016501  000002                  MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
  5832  101472  012702  000200                  MOV     #SSR,R2         ;SET UP EXPECTED
  5833  101476  020102                          CMP     R1,R2           ;ARE THEY EQUAL
  5834  101500  001406                          BEQ     70$             ;BR, IF OK
  5835  101502  005237  002214                  INC     FATFLG                  ;ERROR COUNT
  5839  101506                                  ERRHRD  ERRNO,T37WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        101506  104456                                                          TRAP    C$ERHRD
        101510  001611                                                          .WORD   905
        101512  104121                                                          .WORD   T37WDC
        101514  012126                                                          .WORD   PKTSSR
  5840  101516                          70$:    CKLOOP                  ;LOOP IF SELECTED
        101516  104406                                                          TRAP    C$CLP1
  5841  101520  005303                          DEC     R3              ;DEC RECORD COUNTER
  5842  101522  001345                          BNE     65$             ;BR, IF MORE RECORDS TO WRITE
  5843  101524  004737  011074                  JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
  5844  101530  103411                          BCS     130$            ;BR, IF NO PROBLEM
  5845  101532  016501  000002                  MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
  5846  101536  010004                          MOV     R0,R4           ;GET PACKET ADDRESS
  5847  101540  005237  002214                  INC     FATFLG                  ;ERROR COUNT
  5851  101544                                  ERRHRD  ERRNO,T37RWN,PKTSSR     ;REWIND NOT ACCEPTED
        101544  104456                                                          TRAP    C$ERHRD
        101546  001612                                                          .WORD   906
        101550  103565                                                          .WORD   T37RWN
        101552  012126                                                          .WORD   PKTSSR
  5852  101554                          130$:   CKLOOP                  ;LOOP IF SELECTED
        101554  104406                                                          TRAP    C$CLP1
  5853  101556  013701  102270                  MOV     T37BFR+6,R1     ;PICK UP XSTO
  5854  101562  010102                          MOV     R1,R2           ;SET UP EXPECTED
  5855  101564  052702  000002                  BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
  5856  101570  020102                          CMP     R1,R2           ;DOES EXP = REC'D
  5857  101572  001406                          BEQ     140$            ;BR, IF EQUAL (OK)
  5858  101574  005237  002214                  INC     FATFLG                  ;ERROR COUNT
```

```
5862 101600                          ERRHRD  ERRNO,T37BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     101600 104456                                                                TRAP    C$ERHRD
     101602 001613                                                                .WORD   907
     101604 103261                                                                .WORD   T37BOT
     101606 015554                                                                .WORD   EXPREC
5863 101610                    140$: CKLOOP                          ;LOOP IF SELECTED
     101610 104406                                                                TRAP    C$CLP1
5864 101612 012704 102360            MOV     #T37PK3,R4              ;SET UP PACKET ADDRESS
5865 101616 012737 000037 102362     MOV     #31.,T37RB              ;SET UP RECORDS TO SPACE OVER
5866 101624 012737 140010 102360     MOV     #140010,T37PK3          ;ACK,CVC=1,SPACE FORWARD COMMAND
5867 101632 010465 000000      150$: MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5868 101636 005237 102406      152$: INC     T37CNT                  ;BUMP TIMER
5869 101642                          DELAY   1                       :DELAY ABOUT 100US
     101642 012727 000001                                                         MOV     #1,(PC)+
     101646 000000                                                                .WORD   0
     101650 013727 002116                                                         MOV     L$DLY,(PC)+
     101654 000000                                                                .WORD   0
     101656 005367 177772                                                         DEC     -6(PC)
     101662 001375                                                                BNE     .-4
     101664 005367 177756                                                         DEC     -22(PC)
     101670 001367                                                                BNE     .-20
5870 101672 016501 000002            MOV     TSSR(R5),R1             ;GET TSSR
5871 101676 032701 000200            BIT     #SSR,R1                 ;CHECK FOR TSSR'S SSR SET
5872 101702 001755                   BEQ     152$                    ;KEEP COUNTING UNTIL SET
5873 101704 012702 000200            MOV     #SSR,R2                 ;SET UP EXPECTED
5874 101710 020201                   CMP     R2,R1                   ;WAS EVERYTHING OK
5875 101712 001406                   BEQ     160$                    ;BR, IF ALL IS WELL
5876 101714 005237 002214            INC     FATFLG                          ;ERROR COUNT
5880 101720                          ERRHRD  ERRNO,T37SCF,PKTSSR     ;SPACE FORWARD DIDN'T WORK OUT
     101720 104456                                                                TRAP    C$ERHRD
     101722 001614                                                                .WORD   908
     101724 105027                                                                .WORD   T37SCF
     101726 012126                                                                .WORD   PKTSSR
5881 101730                    160$: CKLOOP                          ;LOOP IF SELECTED
     101730 104406                                                                TRAP    C$CLP1
5882 101732 004737 011074            JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5883 101736 103411                   BCS     170$                    ;BR, IF NO PROBLEM
5884 101740 010004                   MOV     R0,R4                   ;GET PACKET ADDRESS
5885 101742 016501 000002            MOV     TSSR(R5),R1             ;GET STATUS FROM TSSR
5886 101746 005237 002214            INC     FATFLG                          ;ERROR COUNT
5890 101752                          ERRHRD  ERRNO,T37RWN,PKTSSR     :REWIND NOT ACCEPTED
     101752 104456                                                                TRAP    C$ERHRD
     101754 001615                                                                .WORD   909
     101756 103565                                                                .WORD   T37RWN
     101760 012126                                                                .WORD   PKTSSR
5891 101762                    170$: CKLOOP                          ;LOOP IF SELECTED
     101762 104406                                                                TRAP    C$CLP1
5892 101764 013701 102270            MOV     T37BFR+6,R1             ;PICK UP XSTO
5893 101770 010102                   MOV     R1,R2                   ;SET UP EXPECTED
5894 101772 052702 000002            BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5895 101776 020102                   CMP     R1,R2                   ;DOES EXP = REC'D
5896 102000 001406                   BEQ     175$                    ;BR, IF EQUAL (OK)
5897 102002 005237 002214            INC     FATFLG                          ;ERROR COUNT
5901 102006                          ERRHRD  ERRNO,T37BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     102006 104456                                                                TRAP    C$ERHRD
     102010 001616                                                                .WORD   910
     102012 103261                                                                .WORD   T37BOT
```

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                102014  015554                                                          .WORD   EXPREC
5902            102016                  175$:   CKLOOP                          ;LOOP IF SELECTED
                102016  104406                                                          TRAP    C$CLP1
5903            102020  012704  102360          MOV     #T37PK3,R4              ;SET UP PACKET ADDRESS
5904            102024  012737  000121  102362  MOV     #81.,T37RB              ;SET UP RECORDS TO SPACE OVER
5905            102032  012737  140010  102360  MOV     #140010,T37PK3          ;ACK,CVC=1,SPACE FORWARD COMMAND
5906            102040  010465  000000          250$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5907            102044  005237  102410          252$:   INC     T37CNU                  ;BUMP TIMER
5908            102050                          DELAY   1                       ;DELAY ABOUT 100US
                102050  012727  000001                                                  MOV     #1,(PC)+
                102054  000000                                                          .WORD   0
                102056  013727  002116                                                  MOV     L$DLY,(PC)+
                102062  000000                                                          .WORD   0
                102064  005367  177772                                                  DEC     -6(PC)
                102070  001375                                                          BNE     .-4
                102072  005367  177756                                                  DEC     -22(PC)
                102076  001367                                                          BNE     .-20
5909            102100  016501  000002          MOV     TSSR(R5),R1             ;GET TSSR
5910            102104  032701  000200          BIT     #SSR,R1                 ;CHECK FOR TSSR'S SSR SET
5911            102110  001755                  BEQ     252$                    ;KEEP COUNTING UNTIL SET
5912            102112  012702  000200          MOV     #SSR,R2                 ;SET UP EXPECTED
5913            102116  020201                  CMP     R2,R1                   ;WAS EVERYTHING OK
5914            102120  001406                  BEQ     260$                    ;BR, IF ALL IS WELL
5915            102122  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5919            102126                          ERRHRD  ERRNO,T37SCF,PKTSSR     ;SPACE FORWARD DIDN'T WORK OUT
                102126  104456                                                          TRAP    C$ERHRD
                102130  001617                                                          .WORD   911
                102132  105027                                                          .WORD   T37SCF
                102134  012126                                                          .WORD   PKTSSR
5920            102136                  260$:   CKLOOP                          ;LOOP IF SELECTED
                102136  104406                                                          TRAP    C$CLP1
5921            102140  013701  102406          MOV     T37CNT,R1               ;TIME FOR WRITE SPACING
5922            102144  013702  102410          MOV     T37CNU,R2               ;TIME FOR WRITE RETRY SPACING
5923            102150  042701  000077          BIC     #000077,R1              ;SETTING UP CONSTANTS
5924            102154  042702  000077          BIC     #000077,R2              ;SETTING UP CONSTANTS
5925            102160  020102                  CMP     R1,R2                   ;CHECK FOR DIFFERENCE
5926            102162  003406                  BLE     300$                    ;BR, IF GOOD @@@@ CHECK @@@@
5927            102164  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5931            102170                          ERRHRD  ERRNO,T37TIM,EXPREC     ;TIME WAS NOT DIFFERENT ENOUGH
                102170  104456                                                          TRAP    C$ERHRD
                102172  001620                                                          .WORD   912
                102174  103354                                                          .WORD   T37TIM
                102176  015554                                                          .WORD   EXPREC
5932            102200                  300$:   CKLOOP                          ;LOOP IF SELECTED
                102200  104406                                                          TRAP    C$CLP1
5933            102202                          ENDSUB                          ;<<<<<<<<<<<<< END SUBTEST >>>>>>>>>>>>
                102202                                                                  L10074:
                102202  104403                                                          TRAP    C$ESUB
5934            102204  023727  002214  000017          CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
5935            102212  103402                          BLO     999$                    ;BR, IF LESS THAN 25
5936            102214  004737  017262                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
5937            102220                  999$:
5938                                    ;
5939                                    ;
5940                                    ;
5941            102220  004737  016536          JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
5942            102224  103002                  BCC     163$                    ;BR, IF NO LOOP REQUIRED
```

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5943 102226  000137  101154                    JMP     T37LOOP                 ;EXECUTE AGAIN
5944 102232                            163$:
5945 102232                                    EXIT    TST                     ;ALL DONE THIS TEST
     102232  104432                                                                    TRAP    C$EXIT
     102234  003306                                                                    .WORD   L10073-.
5946                                   ;+
5947                                   ;LOCAL STORAGE FOR THIS TEST
5948                                   ;-
5950          102240                           .=<.+10>&177770
5952 102240                            T37PACKET:                              ;COMMAND PACKET FOR TEST
5953 102240  100004                              .WORD   100004                ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
5954 102242  102250                              .WORD   T37DATA               ;ADDRESS OF CHARACTERISTICS BLOCK
5955 102244  000000                              .WORD   0
5956 102246  000012                              .WORD   10.                   ;STARTING VALUE OF BLOCK SIZE
5957 102250                            T37DATA:                                ;CHARACTERISTICS DATA BLOCK
5958 102250  102262                              .WORD   T37BFR                ;ADDRESS OF MESSAGE BUFFER
5959 102252  000000                              .WORD   0
5960 102254  000024                              .WORD   20.                   ;LENGTH OF MESSAGE BUFFER
5961 102256  000000                              .WORD   0
5962 102260  000000                    T37DSW:   .WORD   0                     ;SELECT DRIVE 0
5963 102262                            T37BFR:   .BLKW   25.                   ;MESSAGE BUFFER
5964                                   ;
5965                                   ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
5966                                   ;
5968          102350                           .=<.+10>&177770
5970 102350                            T37PK2:
5971 102350  100006                              .WORD   100006                ;WRITE SUB SYS MEM COMMAND,  AND ACK
5972 102352  102370                              .WORD   T37BF2                ;ADDRESS OF SELECT BLOCK DATA
5973 102354  000000                              .WORD   0
5974 102356  000006                              .WORD   6.                    ;SIZE OF DATA PACKET
5975
5979 102360                            T37PK3:
5980 102360  100005                              .WORD   100005                ;REREAD COMMAND, AND ACK
5981 102362                            T37RB:
5982 102362  003116                    T37WB:    .WORD   FREE                  ;ADDRESS OF WRITE BUFFER
5983 102364  000000                              .WORD   0
5984 102366  000000                    T37SZ:    .WORD   0                     ;SIZE OF BUFFER (EXTENT)
5985                                             .EVEN
5986                                   ;
5987                                   ;
5988                                   ;
5989 102370                            T37BF2:
5990 102370     010                    T37BS0:   .BYTE   10                    ;BSEL0 AREA
5991 102371     200                    T37BS1:   .BYTE   200                   ;BSEL1 AREA
5992 102372  000000                    T37S2:    .WORD   0                     ;SEL 2 AREA
5993 102374  000000                    T37S3:    .WORD   0                     ;DATA AREA
5994                                   ;
5995                                   ;
5996                                             .EVEN
5997                                   ;TAPE MOTION PACKET COMMAND VALUES
5998
5999 102376  100205                    T37RN:    .WORD   100205                ;REREAD DATA (NEXT)
6000 102400  100605                    T37WDR:   .WORD   100605                ;REREAD DATA RETRY
6001 102402  102205                    T37CON:   .WORD   102205                ;WRITE CONTINOUS
6002 102404  177777                              .WORD   177777                ;END OF DATA
6003
6004                                   ;
```

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TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  06-FEB-84 18:04                    SEQ 212
TEST  9: FUNCTION TIMING

 6005 102406  000000                T37CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
 6006 102410  000000                T37CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
 6007 102412  000000                T37DLY: .WORD   0                       ;DELAY COUNTER
 6008                               ;+
 6009                               ;LOCAL TEXT MESSAGES FOR TEST
 6010                               ;-
 6011
 6012 102414      124      141      160  T37WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
 6013 102502      124      123      123  T37RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
 6014 102551      122      105      122  T37RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
 6015 102646      120      117      123  T37SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
 6016 102730      122      111      102  T37LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
 6017 103000      124      123      123  T37WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
 6018 103055      111      154      154  T37LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
 6019 103136      122      105      122  T37SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
 6020 103172      124      123      123  T37WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command,At BOT'
 6021 103261      124      141      160  T37BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XSTO)'
 6022 103354      127      122      111  T37TIM: .ASCIZ  'WRITE DATA RETRY''S Erase Tape Not Long Enough'
 6023 103431      122      105      122  T37EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
 6024 103510      124      123      123  T37TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
 6025 103565      122      145      167  T37RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
 6026 103634      122      101      115  T37RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
 6027 103707      124      123      123  T37AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
 6028 103756      104      162      151  T37OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
 6029 104031      124      123      123  T37WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
 6030 104121      124      123      123  T37WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
 6031 104174      103      126      103  T37VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
 6032 104247      124      123      102  T37BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
 6033 104322      127      122      111  T37WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
 6034 104411      122      145      141  T37LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XSTO'
 6035 104473      122      145      141  T37LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
 6036 104555      122      145      163  T37PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
 6037 104643      122      145      141  T37TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
 6038 104731      127      122      111  T37NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
 6039 105027      124      123      123  T37SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
 6040 105104      124      123      123  T37TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
 6041 105166      124      123      123  T37WRF: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command'
 6042 105246      104      141      164  T37DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
 6043 105343      106      165      156  TST37ID:        .ASCIZ  'Function Timing'
 6044                                    .EVEN
 6045                               ;+
 6046                               ;
 6047                               ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
 6048                               ;WRITE SUBSYSTEM MEMORY COMMAND
 6049                               ;
 6050                               ;-
 6051
 6052 105364                        T37REST:
 6053 105364                                SAVREG                          ;SAVE THE REGISTERS
 6054 105370  012701  102240                MOV     #T37PACKET,R1           ;START OF THE PACKET
 6055 105374  012721  100004                MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
 6056 105400  012721  102250                MOV     #T37DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
 6057 105404  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
 6058 105406  012721  000012                MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
 6059 105412  012721  102262                MOV     #T37BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
 6060 105416  005021                        CLR     (R1)+
 6061 105420  012721  000024                MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
```

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6062 105424  005021                          CLR     (R1)+
6063 105426  012711  000000                  MOV     #0,(R1)          ;SELECT DRIVE ZERO
6064 105432  012702  000030                  MOV     #24.,R2          ;NUMBER OF LOCATIONS TO BE CLEARED
6065 105436  012762  177777  102262  64$:    MOV     #177777,T37BFR(R2) ;ALL ONES TO MESSAGE BUFFER
6066 105444  005742                          TST     -(R2)            ;NEXT LOCATION
6067 105446  022702  000000                  CMP     #0,R2            ;AT END OF LOOP YET
6068 105452  001371                          BNE     64$              ;KEEP GOING UNTIL DONE
6069 105454  000207                          RTS     PC               ;RETURN
6070
6071 105456                          T37RT2:
6072 105456                                  SAVREG                   ;SAVE THE REGISTERS
6073 105462  012701  102350                  MOV     #T37PK2,R1       ;START OF THE PACKET
6074 105466  012721  100006                  MOV     #100006,(R1)+    ;WRITE SUBSYSTEM MEM. WITH ACK.
6075 105472  012721  102370                  MOV     #T37BF2,(R1)+    ;ADDRESS OF DATA BLOCK
6076 105476  005021                          CLR     (R1)+            ;EXTENDED ADDRESS
6077 105500  012721  000006                  MOV     #6.,(R1)+        ;SIZE OF DATA BLOCK IN BYTES
6078 105504  005021                          CLR     (R1)+
6079 105506  012701  102370                  MOV     #T37BF2,R1       ;POINT TO DATA SEL AREA
6080 105512  005021                          CLR     (R1)+
6081 105514  005011                          CLR     (R1)
6082 105516  000207                          RTS     PC               ;RETURN
6083 105520                          T37RT3:
6084 105520                                  SAVREG                   ;SAVE REGISTERS
6085 105524  012701  102360                  MOV     #T37PK3,R1       ;SET UP POINTER ADDRESS
6086 105530  005021                          CLR     (R1)+            ;COMMAND SPACE
6087 105532  005021                          CLR     (R1)+            ;ADDRESS OF DATA BLOCK
6088 105534  005021                          CLR     (R1)+            ;EXTENDED ADDRESS
6089 105536  005011                          CLR     (R1)             ;SIZE OF DATA TRANSFER BLOCK
6090 105540  000207                          RTS     PC               ;RETURN
6091 105542                                  ENDTST
     105542                          L10073:
     105542  104401                          TRAP    C$ETST
6092 105544                                  ENDMOD
```

```
TSV6 - PARAMETER CODING MACRO M1113  06-FEB-84 18:04                    SEQ 214
TEST  9: FUNCTION TIMING

      1                                         .TITLE  TSV6 - PARAMETER CODING
      7
     12
     18
     19 105544                                  BGNMOD  TSV6
        105544                          TSV6::
     20
     21                                         .SBTTL  HARDWARE PARAMETER CODING SECTION
     22
     23                                 ;++
     24                                 ; THE HARDWARE PARAMETER CODING SECTION CONTAINS MACROS
     25                                 ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
     26                                 ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
     27                                 ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
     28                                 ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
     29                                 ; WITH THE OPERATOR.
     30                                 ;--
     31 105544                                  BGNHRD
        105544  000010                          .WORD L10075-L$HARD/2
        105546                          L$HARD::
     32
     33 105546                                  GPRMA   HPM1,0,0,160010,177776,YES      ;GET TSBA/TSDB REGISTER ADDRESS.
        105546  000031                          .WORD   T$CODE
        105550  105566                          .WORD   HPM1
        105552  160010                          .WORD   T$LOLIM
        105554  177776                          .WORD   T$HILIM
     34 105556                                  GPRMA   HPM2,2,0,0,776,YES              ;GET VECTOR ADDRESS.
        105556  001031                          .WORD   T$CODE
        105560  105622                          .WORD   HPM2
        105562  000000                          .WORD   T$LOLIM
        105564  000776                          .WORD   T$HILIM
     35                                         ;GPRMD  HPM3,4,0,340,0,7,YES            ;GET INTERRUPT PRIORITY.
     36 105566                                  ENDHRD
                                                .EVEN
        105566                          L10075:
     37 105566      104     105     126 HPM1:   .ASCIZ  'DEVICE ADDRESS (TSBA/TSDB) '
     38 105622      111     116     124 HPM2:   .ASCIZ  'INTERRUPT VECTOR    '
     39 105646      111     116     124 HPM3:   .ASCIZ  'INTERRUPT PRIORITY      '
     40                                         .EVEN
```

```
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.
                                ;--
105676                                  BGNSFT
105676  000003                          .WORD L10076-L$SOFT/2
105700                          L$SOFT::
                                ;       GPRML   SPM1,0,-1,YES                   ; GET TRANSPORT TEST FLAG.
105700                                  GPRML   SPM4,2,-1,YES                   ; GET ITERATION CONTROL.
105700  001130                          .WORD   T$CODE
105702  105736                          .WORD   SPM4
105704  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
105706                                  ENDSFT
                                        .EVEN
105706                          L10076:

105706  105  116  101  SPM1:   .ASCIZ  'ENABLE TRANSPORT TESTS '
105736  111  116  110  SPM4:   .ASCIZ  'INHIBIT ITERATIONS     '
105766  120  105  122  SPM6:   .ASCIZ  'PER TEST ERROR LIMIT   '
106016  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).
                                ;

106046                          PATCH::

106046                                  .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
```

TSV6 - PARAMETER CODING MACRO M1113 06-FEB-84 18:04 SEQ 216
SYMBOL TABLE

```
ADDSSR  012206 G    C$AU  = 000052    DEVDRO  023456    FRESIZ  003120 G    INTFLA  016225
ADR     = 000020 G   C$AUTO= 000061    DEVNRD  023375    FUSI    004113      INTMAS  016224
AMBTSS  006713       C$BRK = 000022    DEVNXR  023313    F$AU    = 000015    INTR    016276 G
ASSEMB= 000010       C$BSEG= 000004    DEVONL  023243    F$AUTO= 000020      INTREC  002216 G
A1716 = 000003       C$BSUB= 000002    DEVSUM  023206    F$BGN = 000040      INTVEC  016226
BADDAT  003150 G     C$CEFG= 000045    DFPTBL  002150 G  F$CLEA= 000007      INTX    004274
BADSSR  015760 G     C$CLCK= 000062    DIAGMC= 000000    F$DU  = 000016      INVERT  021266 G
BDVPCR= 177520 G     C$CLEA= 000012    DICED = 000001    F$END = 000041      IOKCKI= 000200
BENBSW  002222 G     C$CLOS= 000035    DSBINT  016264    F$HARD= 000004      IOKSTP= 000001
BIE   = 040000       C$CLP1= 000006    DUAD12  004637    F$HW  = 000013      IPRI    002204 G
BIT0  = 000001 G     C$CVEC= 000036    DUFLG   003104 G  F$INIT= 000006     ISR     = 000100 G
BIT00 = 000001 G     C$DCLN= 000044    DUMMY   003054    F$JMP = 000050      IVEC    002202 G
BIT01 = 000002 G     C$DODU= 000051    EF.CON= 000036 G  F$MOD = 000000     IXE     = 004000 G
BIT02 = 000004 G     C$DRPT= 000024    EF.NEW= 000035 G  F$MSG = 000011     I$AU    = 000041
BIT03 = 000010 G     C$DU  = 000053    EF.PWR= 000034 G  F$PROT= 000021     I$AUTO= 000041
BIT04 = 000020 G     C$EDIT= 000003    EF.RES= 000037 G  F$PWR = 000017     I$CLN = 000041
BIT05 = 000040 G     C$ERDF= 000055    EF.STA= 000040 G  F$RPT = 000012     I$DU  = 000041
BIT06 = 000100 G     C$ERHR= 000056    EMAXDU  017057    F$SEG = 000003     I$HRD = 000041
BIT07 = 000200 G     C$ERRO= 000060    EN    = 000000    F$SOFT= 000005     I$INIT= 000041
BIT08 = 000400 G     C$ERSF= 000054    ENAINT  016232    F$SRV = 000010     I$MOD = 000041
BIT09 = 001000 G     C$ERSO= 000057    ENVIRN  020710    F$SUB = 000002     I$MSG = 000041
BIT1  = 000002 G     C$ESCA= 000010    EPRTSW  002172 G  F$SW  = 000014     I$PROT= 000040
BIT10 = 002000 G     C$ESEG= 000005    EPRT1   006354    F$TEST= 000001     I$PTAB= 000041
BIT11 = 004000 G     C$ESUB= 000003    EPRT2   006413    GDDAT   003152 G    I$PWR = 000041
BIT12 = 010000 G     C$ETST= 000001    ERCM    012013    GERRMA  002166 G    I$RPT = 000041
BIT13 = 020000 G     C$EXIT= 000032    ERRHI   002230 G  GETPAT  020254 G    I$SEG = 000041
BIT14 = 040000 G     C$GETB= 000026    ERRK    017036    GETSEL  020336 G    I$SETU= 000041
BIT15 = 100000 G     C$GETW= 000027    ERRLO   002232 G  G$CNTO= 000200     I$SFT = 000041
BIT2  = 000004 G     C$GMAN= 000043    ERRNO = 001620    G$DELM= 000372     I$SRV = 000041
BIT3  = 000010 G     C$GPHR= 000042    ERRVEC= 000004 G  G$DISP= 000003     I$SUB = 000041
BIT4  = 000020 G     C$GPLO= 000030    ERTABE  003370    G$EXCP= 000400     I$TST = 000041
BIT5  = 000040 G     C$GPRI= 000040    ERTABL  003170    G$HILI= 000002     J$JMP = 000167
BIT6  = 000100 G     C$INIT= 000011    ESUM    017040    G$LOLI= 000001     KIPAR0= 172340
BIT7  = 000200 G     C$INLP= 000020    EVL   = 000004 G  G$NO  = 000000     KIPAR1= 172342
BIT8  = 000400 G     C$MANI= 000050    EXBCNT= 000010    G$OFFS= 000400     KIPAR2= 172344
BIT9  = 001000 G     C$MEM = 000031    EXPBRE  015562 G  G$OFSI= 000376     KIPAR3= 172346
BOE   = 000400 G     C$MSG = 000023    EXPD    002224 G  G$PRMA= 000001     KIPAR4= 172350
BRINIT  004453       C$OPEN= 000034    EXPGOT  004527    G$PRMD= 000002     KIPAR5= 172352
BSEL0 = 000000       C$PNTB= 000014    EXPGT2  004563    G$PRML= 000000     KIPAR6= 172354
BSEL1 = 000001       C$PNTF= 000017    EXPMSG  002314 G  G$RADA= 000140     KIPAR7= 172356
CHKAMB  016124       C$PNTS= 000016    EXPREC  015554 G  G$RADB= 000000     KIPDR0= 172300
CHKMAN  020560 G     C$PNTX= 000015    EXTA    005766    G$RADD= 000040     KIPDR1= 172302
CHKTSS  016416       C$QIO = 000377    EXTEND  005764    G$RADL= 000120     KIPDR2= 172304
CKDROP  017262       C$RDBU= 000007    EXTFEA  002220 G  G$RADO= 000020     KIPDR3= 172306
CKEMAX  017162       C$REFG= 000047    E$END = 002100    G$XFER= 000004     KIPDR4= 172310
CKMSG   011440 G     C$RESE= 000033    E$LOAD= 000035    G$YES = 000010     KIPDR5= 172312
CKMSG2  011560 G     C$REVI= 000003    FATERR= 000060    HIADDR= 001400     KIPDR6= 172314
CKRAM   011174 G     C$RFLA= 000021    FATFLG  002214 G  HOE   = 100000 G   KIPDR7= 172316
CKRAM2  011304 G     C$RPT = 000025    FERCM   012002    HPM1    105566     KTENAB  003126 G
CMDPKT  021340 G     C$SEFG= 000046    FIFEXP  012250 G  HPM2    105622     KTFLG   003124 G
CMPMEM  017740       C$SPRI= 000041    FIF1MS  012322    HPM3    105646     KTINIT  021134
CONFIG  017330       C$SVEC= 000037    FIF2MS  012371    IBE   = 010000 G   KTOFF   017354
COUNT   002302 G     C$TPRI= 000013    FILLME  017502    IDU   = 000040 G   KTON    017336
CSRADD  002200 G     DATA    002304 G  FNOINT  004211    IER   = 020000 G   LERRMA  002164 G
CTAB    003156 G     DATASC  020312    FORCER  002170 G  IFAULT  004252     LISTAL= 000001
CTABE   003170 G     DEBUGM  011712    FREE    003116 G  INCERK  017124     LOE   = 040000 G
CTABM   003156 G     DEVCNT  002212 G  FREEHI  003122    INTCPC  016230     LOOPCN  002210 G
```

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SYMBOL TABLE

```
LOOPCO  013206          L10001  002170          L10073  105542          O$ERRT= 000000          PST32W  003144 G
LOOPFL  003154 G        L10002  005762          L10074  102202          O$GNSW= 000001          PUNIT   022364
LOT   = 000010 G        L10003  012124          L10075  105566          O$POIN= 000001          PW.D11= 000021
L$ACP   002110 G        L10004  012142          L10076  105706          O$SETU= 000000          PW.D13= 000022
L$APT   002036 G        L10005  012160          MEMADD  014034 G        PASRPT  022134          PW.D22= 000020
L$AU    022432 G        L10006  012166          MEMCK   021356 G        PATCH   106046 G        PW.NOP= 000000
L$AUT   002070 G        L10007  012204          MENASC  020527          PATDAT  020310          PW.NO1= 000023
L$AUTO  022636 G        L10010  012222          MENERR  020454          PC.ERA= 002400          PW.RDE= 000024
L$CCP   002106 G        L10011  012246          MENRES  020556          PC.IER= 002000          PW.RDR= 000001
L$CLEA  022716 G        L10012  012320          MMVEC = 000250          PC.NOO= 001000          PW.RDS= 000005
L$CO    002032 G        L10013  012470          MSA.FR= 000006          PC.REL= 000000          PW.RFI= 000003
L$DEPO  002011 G        L10014  013204          MSA.NO= 000000          PC.REW= 000400          PW.WCT= 000006
L$DESC  003402 G        L10015  014032          MSA.NR= 000004          PKBCNT= 000006          PW.WFI= 000004
L$DESP  002076 G        L10016  014054          MSA.VO= 000002          PKHI  = 000004          PW.WFM= 000007
L$DEVP  002060 G        L10017  015560          MSGEXP  012224 G        PKLOW = 000002          PW.WMI= 000010
L$DISP  002124 G        L10020  015566          MSGLOO  013144 G        PKTADD  007632          PW.WNP= 000011
L$DLY   002116 G        L10021  015574          MSGSTA  012430 G        PKTFRM  007574          PW.WTR= 000002
L$DTP   002040 G        L10022  015606          MSGSUB  014022 G        PKTGET  012144 G        P.ACK = 100000
L$DTYP  002034 G        L10023  015630          MS.ATT= 000006          PKTMES  012170 G        P.CMD = 000037
L$DU    022530 G        L10024  015656          MS.EXT= 000200          PKTRAM  004741 G        P.CONT= 000012
L$DUT   002072 G        L10025  016016          MS.RSD= 000001          PKTSSR  012126 G        P.CVC = 040000
L$DVTY  003374 G        L10026  016326          MS.RSF= 000020          PNT   = 001000 G        P.FMT = 000140
L$EF    002052 G        L10030  022362          MS.RST= 000010          PRAMPK  014056          P.FORM= 000011
L$ENVI  002044 G        L10031  022526          M8186   005550          PRASC   014603          P.GETS= 000017
L$ETP   002102 G        L10032  022634          M8189   005641          PRBEXP  015550          P.IE  = 000200
L$EXP1  002046 G        L10033  022714          NBA   = 002000          PRBMSG  015416          P.INIT= 000013
L$EXP4  002064 G        L10034  022742          NEWPAS  022070          PRBREC  015552          P.MODE= 007400
L$EXP5  002066 G        L10035  023204          NODEV   003106 G        PRBTOT  015503          P.OPP = 020000
L$HARD  105546 G        L10036  032332          NOINIT  004331          PRBYTE  015202 G        P.POSI= 000010
L$HIME  002120 G        L10037  024170          NOINTR  004215          PRI   = 002000 G        P.READ= 000001
L$HPCP  002016 G        L10040  024712          NOITS   002162 G        PRIADD  010236          P.SWB = 010000
L$HPTP  002022 G        L10041  025436          NOMAN   020614          PRIAO   010306          P.WRIT= 000005
L$HW    002150 G        L10042  026260          NOMEM   005454          PRIBXO  007670 G        P.WRTC= 000004
L$ICP   002104 G        L10043  041430          NP.IR = 000200          PRIEQU  010136          P.WRTS= 000006
L$INIT  021636 G        L10044  033734          NP.LOO= 000040          PRIPKT  007446 G        QVP     002176 G
L$LADP  002026 G        L10045  035360          NP.OUT= 000100          PRIRAM  010144          RAMASC  014236
L$LAST  106404 G        L10046  035754          NP.WRP= 000020          PRITAD  010352          RAMDAT  002234 G
L$LOAD  002100 G        L10047  036440          NSI     004146          PRITSS  006020          RAMERR  015570 G
L$LUN   002074 G        L10050  046766          NSINIT  004403          PRITO   010434          RAMEXP  015610 G
L$MREV  002050 G        L10051  042322          NUL     004523          PRIT1   010477          RAMFOR  010174
L$NAME  002000 G        L10052  043134          NULCR   004524          PRIXOR  010020 G        RAMSIZ  002274 G
L$PRIO  002042 G        L10053  053044          NXM   = 004000          PRIO0 = 000000 G        RAMTAD  015576 G
L$PROT  021626 G        L10054  047642          NXMFLG  003130 G        PRIO1 = 000040 G        RCVHIA  002276 G
L$PRT   002112 G        L10055  050452          NXMHI   003134 G        PRIO2 = 000100 G        RCVLOA  002300 G
L$REPP  002062 G        L10056  051266          NXMLO   003132 G        PRIO3 = 000140 G        RDERR   005202
L$REV   002010 G        L10057  056040          NXMTST  021532          PRIO4 = 000200 G        RECMSG  002460 G
L$RPT   022744 G        L10060  054506          NXR     003734          PRIO5 = 000240 G        RECV    002226 G
L$SOFT  105700 G        L10061  063412          NXRERR  005732 G        PRIO6 = 000300 G        REGSAV  020220
L$SPC   002056 G        L10062  060476          NXRX    003773          PRIO7 = 000340 G        RETERR  005366
L$SPCP  002020 G        L10063  073342          NXTU    022102          PRMESS  014322          REWIND  011074 G
L$SPTP  002024 G        L10064  064504          OFL   = 000100          PRMNO   002312 G        RMCHBE= 000167
L$STA   002030 G        L10065  065564          ONEFIL= 000000          PRMSGE  014632 G        RMCHEN= 000200
L$SW    002160 G        L10066  066426          O$APTS= 000000          PRMSG0  015012          RMMSGB= 000215
L$TEST  002114 G        L10067  067330          O$AU  = 000001          PRMSG1  015057          RMMSGE= 000234
L$TIML  002014 G        L10070  101116          O$BGNR= 000001          PRMSG2  015115          RMPKTB= 000201
L$UNIT  002012 G        L10071  074436          O$BGNS= 000001          PROASC  014500          RMPKTE= 000210
L10000  002156          L10072  075520          O$DU  = 000001          PR1ASC  014545          RMR   = 010000
```

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SYMBOL TABLE

```
RWPACK  011170
SC    = 100000
SCE   = 020000
SCHERR  005274
SCME    005007
SDELAY  010740
SELASC  020522
SELDAT= 000004
SEL2  = 000002
SETMAP  017376
SETU    022166
SFFMSG  012162 G
SFHERR  003701
SFIERR  003646
SFIMSG  012114 G
SFPTBL  002160 G
SIFLAG  003146 G
SIMSG   012046
SKIPT   003372
SOFINI  016054 G
SPACE   010544 G
SPM1    105706
SPM4    105736
SPM6    105766
SPM7    106016
SR0   = 177572
SR1   = 177574
SR2   = 177576
SR3   = 172516
SSR   = 000200
STATCO  012472
SVCGBL= 000000
SVCINS= 000000
SVCSUB= 000001
SVCTAG= 000000
SVCTST= 000001
S$LSYM= 010000
S0.IDB= 000010
S0.IFB= 000002
S0.IFP= 000001
S0.ILD= 000020
S0.ION= 000040
S0.IRD= 000100
S0.IRW= 000004
S0.ISP= 000200
S1.ICE= 002000
S1.IEO= 010000
S1.IFM= 001000
S1.IHE= 000400
S1.IID= 004000
S1.I1R= 020000
S1.I2R= 040000
S1.PAR= 100000
S2.ATI= 000010
S2.BTI= 000004
S2.DIM= 000200
S2.ILW= 000100
S2.INR= 000020
S2.OUT= 000040
S2.UND= 000003
TBLEND= 003054 G
TCOASC  006554
TCOCOD  006754
TEMP1   003110 G
TEMP2   003112 G
TERCLS= 000016
TESTNO= 000011
TEXASC  006513
TFCASC  006615
TIMEXP  015632 G
TIMSGO  015660
TINERR  012101
TMPBFR  002624 G
TNAM    016764
TRANST  002160 G
TSBA  = 000000 G
TSBAH = 000001 G
TSDB  = 000000 G
TSDBH = 000001 G
TSFCOD  007314
TSREJ = 000006
TSSDEF  006664
TSSR  = 000002 G
TSSRBI  003476 G
TSSRFO  006473
TSSRH = 000003 G
TSSX    004014
TSTBLK  002744 G
TSTCNT  002206 G
TSTEND  017000
TSTFLA  002306 G
TSTLOO  016536 G
TSTPTR  002310 G
TSTSET  016570 G
TST29I  032117
TST30I  041231
TST31I  046543
TST32I  052640
TST33I  055645
TST34I  063207
TST35I  073133
TST36I  100717
TST37I  105343
TSV2    002000 G
TSV3    002170 G
TSV4    021626 G
TSV6    105544 G
TSV7B   023526 G
TTIBFR= 177562 G
TTICSR= 177560 G
TTIVEC= 000060 G
T$ARGC= 000003
T$CODE= 001130
T$ERRN= 001620
T$EXCP= 000000
T$FLAG= 000040
T$GMAN= 000000
T$HILI= 000776
T$LAST= 000001
T$LOLI= 000000
T$LSYM= 010000
T$LTNO= 000011
T$NEST= 177777
T$NS0 = 000000
T$NS1 = 000005
T$NS2 = 000002
T$PTNU= 000000
T$SAVL= 177777
T$SEGL= 177777
T$SUBN= 000001
T$TAGL= 177777
T$TAGN= 010077
T$TEMP= 000000
T$TEST= 000011
T$TSTM= 177777
T$TSTS= 000001
T$$AU = 010031
T$$AUT= 010033
T$$CLE= 010034
T$$DU = 010032
T$$HAR= 010075
T$$HW = 010000
T$$INI= 010030
T$$MSG= 010025
T$$PRO= 010027
T$$RPT= 010035
T$$SOF= 010076
T$$SRV= 010026
T$$SUB= 010074
T$$SW = 010001
T$$TES= 010073
T1      023526 G
T1.1    023556
T1.2    024206
T1.3    024730
T1.4    025454
T2      032334 G
T2.1    032360
T2.2    033752
T2.3    035376
T2.4    035772
T23A    003136 G
T23B    003140 G
T29AM3  030427
T29BA   031044
T29BFR  026342
T29BF2  026450
T29BOT  027776
T29BS0  026450
T29BS1  026451
T29CNT  026474
T29CON  026462
T29DAT  026330
T29DLY  026500
T29DSW  026340
T29DTA  030043
T29EOT  030131
T29LON  031225
T29LOO  023556
T29LOP  031307
T29LOQ  027426
T29LOR  027301
T29NEF  026630
T29NEQ  031545
T29OFL  026502
T29OF7  030515
T29PAC  026320
T29PBP  031371
T29PK2  026430
T29PK3  026440
T29RB   026442
T29RDF  026720
T29RDG  031643
T29RES  032146
T29RIB  031724
T29RN   026456
T29RNC  030354
T29RRF  026767
T29RRG  027103
T29RRN  032024
T29RSZ  026476
T29RT2  032240
T29RT3  032302
T29RWN  030305
T29SC   027217
T29SSR  027507
T29SZ   026446
T29S2   026452
T29S3   026454
T29TM   030227
T29TRL  031457
T29VCK  030771
T29WB   026442
T29WDC  030677
T29WDD  030570
T29WDE  027562
T29WDF  027351
T29WDR  026460
T29WLK  027644
T29WNG  026523
T29WRT  027731
T29WSS  031136
T3      041432 G
T3BFLG  003142 G
T3.1    041462
T3.2    042340
T30BFR  036522
T30BF2  036630
T30BOT  040041
T30BS0  036630
T30BS1  036631
T30CNT  036650
T30CNU  036652
T30DAT  036510
T30DLY  036656
T30DSW  036520
T30DTA  041134
T30DTR  041070
T30ETM  036516
T30FCN  036654
T30IBT  037031
T30IBU  036660
T30IMV  036636
T30LOO  032360
T30LOQ  037630
T30NEF  040576
T30OFL  040307
T30PAC  036500
T30PK2  036610
T30PK3  036620
T30PTB  037242
T30RB   036622
T30RDF  037413
T30RDG  037471
T30RES  041252
T30RIB  036745
T30RN   036636
T30RRM  040655
T30RRN  040733
T30RRP  041012
T30RT2  041344
T30RT3  041406
T30RWN  040240
T30SKM  037114
T30SSR  037711
T30SZ   036626
T30S2   036632
T30S3   036634
T30TM   040106
T30TMK  040514
T30TM2  040163
T30TPB  037333
T30VCK  040441
T30WB   036622
T30WDC  040362
T30WDD  037170
T30WDE  037762
T30WDF  037553
T31AM3  045016
T31BA   045356
T31BFR  043212
T31BF2  043320
T31BOT  044345
T31BS0  043320
T31BS1  043321
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SYMBOL TABLE

T31CNT 043336
T31CNU 043340
T31CON 043332
T31DAT 043200
T31DLY 043342
T31DSW 043210
T31DTA 046446
T31EOT 044540
T31LON 045520
T31LOO 041462
T31LOP 045602
T31LOQ 044116
T31LOR 043771
T31NEF 046040
T31OFL 045065
T31PAC 043170
T31PBP 045664
T31PK2 043300
T31PK3 043310
T31RB 043312
T31RDE 043344
T31RDF 043543
T31RES 046610
T31RN 043326
T31RNC 044743
T31RRF 043612
T31RT2 046702
T31RT3 046744
T31RWN 044674
T31SC 043707
T31SCF 046161
T31SSR 044177
T31SZ 043316
T31S2 043322
T31S3 043324
T31TIM 044440
T31TM 044617
T31TRL 045752
T31TSA 046236
T31VCK 045303
T31WB 043312
T31WDC 045230
T31WDD 045140
T31WDE 044233
T31WDF 044041
T31WDR 043330
T31WNG 043471
T31WNH 043410
T31WRF 046343
T31WSS 045431
T32AM3 051747
T32BA 052063
T32BFR 051352
T32BOE 052366
T32BOT 051516
T32CMD 051460
T32CNT 051510
T32CNU 051512
T32DAT 051340
T32DLY 051514
T32DSW 051350
T32ECF 052455
T32EOT 051611
T32ERA 052016
T32LOO 047020
T32OPI 052603
T32PAC 051330
T32PK2 051440
T32PK3 051450
T32RB 051452
T32RES 052700
T32RIB 052136
T32RT2 052772
T32RT3 053022
T32RWN 051700
T32SCF 052234
T32SZ 051456
T32TSA 052311
T32WB 051452
T32WDC 052536
T33BFR 054572
T33BF2 054700
T33BOT 055325
T33BSO 054700
T33BS1 054701
T33CNT 054716
T33CNU 054720
T33CON 054712
T33DAT 054560
T33DLY 054722
T33DSW 054570
T33DTA 055550
T33LOO 053076
T33PAC 054550
T33PK2 054660
T33PK3 054670
T33RB 054672
T33RBP 054724
T33RES 055662
T33RN 054706
T33RT2 055754
T33RT3 056016
T33RWN 055420
T33SSR 055241
T33SZ 054676
T33S2 054702
T33S3 054704
T33UNC 055062
T33UND 055152
T33WB 054672
T33WDC 055467
T33WDR 054710
T33WPW 055002
T34AM3 062461
T34BA 063046
T34BFR 060562
T34BF2 060676
T34BOT 061234
T34BSO 060676
T34BS1 060677
T34CNT 060672
T34CON 060710
T34DAT 060550
T34DLY 060674
T34DSW 060560
T34EOT 062205
T34ET 062116
T34ETC 061157
T34ETN 061451
T34ETO 061002
T34ETS 061530
T34ETZ 061622
T34ET2 061367
T34LOO 056072
T34OFL 062527
T34PAC 060540
T34PK2 060650
T34PK3 060660
T34POS 060714
T34RB 060662
T34RES 063232
T34RNC 062406
T34RRE 061066
T34RSZ 060670
T34RT2 063324
T34RT3 063366
T34RWN 062337
T34SSR 062063
T34STM 061700
T34SZ 060666
T34S2 060700
T34S3 060702
T34TM 062263
T34TMK 061763
T34VCK 062773
T34WB 060662
T34WD 060704
T34WDC 062671
T34WDD 062602
T34WDR 060706
T34WSS 063120
T34WTM 061300
T35AM3 070766
T35BA 071326
T35BFR 067412
T35BF2 067520
T35BOT 070340
T35BSO 067520
T35BS1 067521
T35CNT 067536
T35CNU 067540
T35CON 067532
T35DAT 067400
T35DLY 067542
T35DSW 067410
T35DTA 072325
T35EOT 070510
T35INT 072601
T35LON 071470
T35LOO 063444
T35LOP 071552
T35LOQ 070205
T35LOR 070060
T35MOT 072503
T35NEF 072010
T35NIN 073056
T35OFL 071035
T35OPM 072672
T35PAC 067370
T35PBP 071634
T35PK2 067500
T35PK3 067510
T35RB 067512
T35RDF 067632
T35RES 073164
T35RN 067526
T35RNC 070713
T35RRF 067701
T35RT2 073256
T35RT3 073320
T35RWE 072770
T35RWN 070644
T35SC 067776
T35SCF 072106
T35SSR 072422
T35SZ 067516
T35S2 067522
T35S3 067524
T35TIM 070433
T35TM 070567
T35TRL 071722
T35TSA 072163
T35VCK 071253
T35WB 067512
T35WDC 071200
T35WDD 071110
T35WDE 070266
T35WDF 070130
T35WDR 067530
T35WNG 067544
T35WRF 072245
T35WSS 071401
T36AM3 077263
T36BA 077623
T36BFR 075602
T36BF2 075710
T36BOT 076635
T36BSO 075710
T36BS1 075711
T36CNT 075726
T36CNU 075730
T36CON 075722
T36DAT 075570
T36DLY 075732
T36DSW 075600
T36DTA 100622
T36EOT 077005
T36LON 077765
T36LOO 073400
T36LOP 100047
T36LOQ 076446
T36LOR 076321
T36NAS 075734
T36NEF 100305
T36OFL 077332
T36PAC 075560
T36PBP 100131
T36PK2 075670
T36PK3 075700
T36RB 075702
T36RDF 076073
T36RES 100740
T36RN 075716
T36RNC 077210
T36RRF 076142
T36RT2 101032
T36RT3 101074
T36RWN 077141
T36SC 076237
T36SCF 100403
T36SSR 076527
T36SZ 075706
T36S2 075712
T36S3 075714
T36TIM 076730
T36TM 077064
T36TRL 100217
T36TSA 100460
T36VCK 077550
T36WB 075702
T36WDC 077475
T36WDD 077405
T36WDE 076563
T36WDF 076371
T36WDR 075720
T36WNG 076005
T36WRF 100542
T36WSS 077676
T37AM3 103707
T37BA 104247
T37BFR 102262
T37BF2 102370
T37BOT 103261
T37BSO 102370
T37BS1 102371

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TSV6 - PARAMETER CODING MACRO M1113  06-FEB-84 18:04                    SEQ 220
SYMBOL TABLE

T37CNT  102406          T37SSR  103136          T7.4    066444          WSMBK   021350 G        X$OFFS= 000400
T37CNU  102410          T37SZ   102366          T8      073344 G        XFERAS  016020          X$TRUE= 000020
T37CON  102402          T37S2   102372          T8.1    073400          XNXM    016456          X1.COR= 020000
T37DAT  102250          T37S3   102374          T8.2    074454          XORBFO  007752          X1.DLT= 100000
T37DLY  102412          T37TIM  103354          T9      101120 G        XORFOR  010070          X1.MBZ= 017375
T37DSW  102260          T37TM   103510          T9.1    101154          XST0  = 000006 G        X1.RBP= 000400
T37DTA  105246          T37TRL  104643          UAM   = 000200 G        XST1  = 000010 G        X1.SPA= 040000
T37EOT  103431          T37TSA  105104          UNITN   002174 G        XST2  = 000012 G        X1.UNC= 000002
T37LON  104411          T37VCK  104174          UNREC = 000006          XST3  = 000014 G        X2.BUF= 000100
T37LOO  101154          T37WB   102362          USI     004117          XST4  = 000016 G        X2.EXT= 000200
T37LOP  104473          T37WDC  104121          WAITF   016330 G        XSOBOT= 000002          X2.OPM= 100000
T37LOQ  103055          T37WDD  104031          WC.IFA= 000200          XSOEOT= 000001          X2.RCE= 040000
T37LOR  102730          T37WDE  103172          WC.IFE= 000002          XSOIE = 000040          X2.REV= 000077
T37NEF  104731          T37WDF  103000          WC.IGO= 000001          XSOILA= 000400          X2.SPA= 035400
T37OFL  103756          T37WDR  102400          WC.IRE= 000010          XSOILC= 001000          X2.UNI= 000007
T37PAC  102240          T37WNG  102414          WC.IRW= 000004          XSOLET= 020000          X2.WCF= 002000
T37PBP  104555          T37WRF  105166          WC.IOT= 000100          XSOMOT= 000200          X3.DCK= 000010
T37PK2  102350          T37WSS  104322          WC.I1T= 000040          XSONEF= 002000          X3.MBZ= 000006
T37PK3  102360          T4      046770 G        WC.ISR= 000020          XSOONL= 000100          X3.MDE= 177400
T37RB   102362          T4.1    047020          WF.IED= 000010          XSOPED= 000010          X3.OPI= 000100
T37RDF  102502          T4.2    047660          WF.IER= 000004          XSORLL= 010000          X3.REV= 000040
T37RES  105364          T4.3    050470          WF.IMI= 000200          XSORLS= 040000          X3.RIB= 000001
T37RN   102376          T5      053046 G        WF.IRE= 000040          XSOTMK= 100000          X3.SPA= 000200
T37RNC  103634          T5.1    053076          WF.IWF= 000020          XSOVCK= 000020          X3.TRF= 000020
T37RRF  102551          T6      056042 G        WF.IWR= 000100          XSOWLE= 004000          X4.HSP= 100000
T37RT2  105456          T6.1    056072          WF.I3R= 000002          XSOWLK= 000004          X4.MBZ= 017400
T37RT3  105520          T7      063414 G        WF.I4R= 000001          XXCOMM  003114 G        X4.RCE= 040000
T37RWN  103565          T7.1    063444          WRTCHR  010742 G        X$ALWA= 000000          X4.TSM= 020000
T37SC   102646          T7.2    064522          WRTERR  005107          X$FALS= 000040          X4.WRC= 000377
T37SCF  105027          T7.3    065602          WRTMSG  005052

. ABS.  106404      000
        000000      001
ERRORS DETECTED:  0

VIRTUAL MEMORY USED:  30328 WORDS  ( 119 PAGES)
DYNAMIC MEMORY:  20614 WORDS  ( 79 PAGES)
ELAPSED TIME:  00:45:58
CVTSDB,CVTSDB.SEQ/-SP=SVC/ML,TSV1D,TSV22D,TSV3B,TSV4,TSV7B,TSV6
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