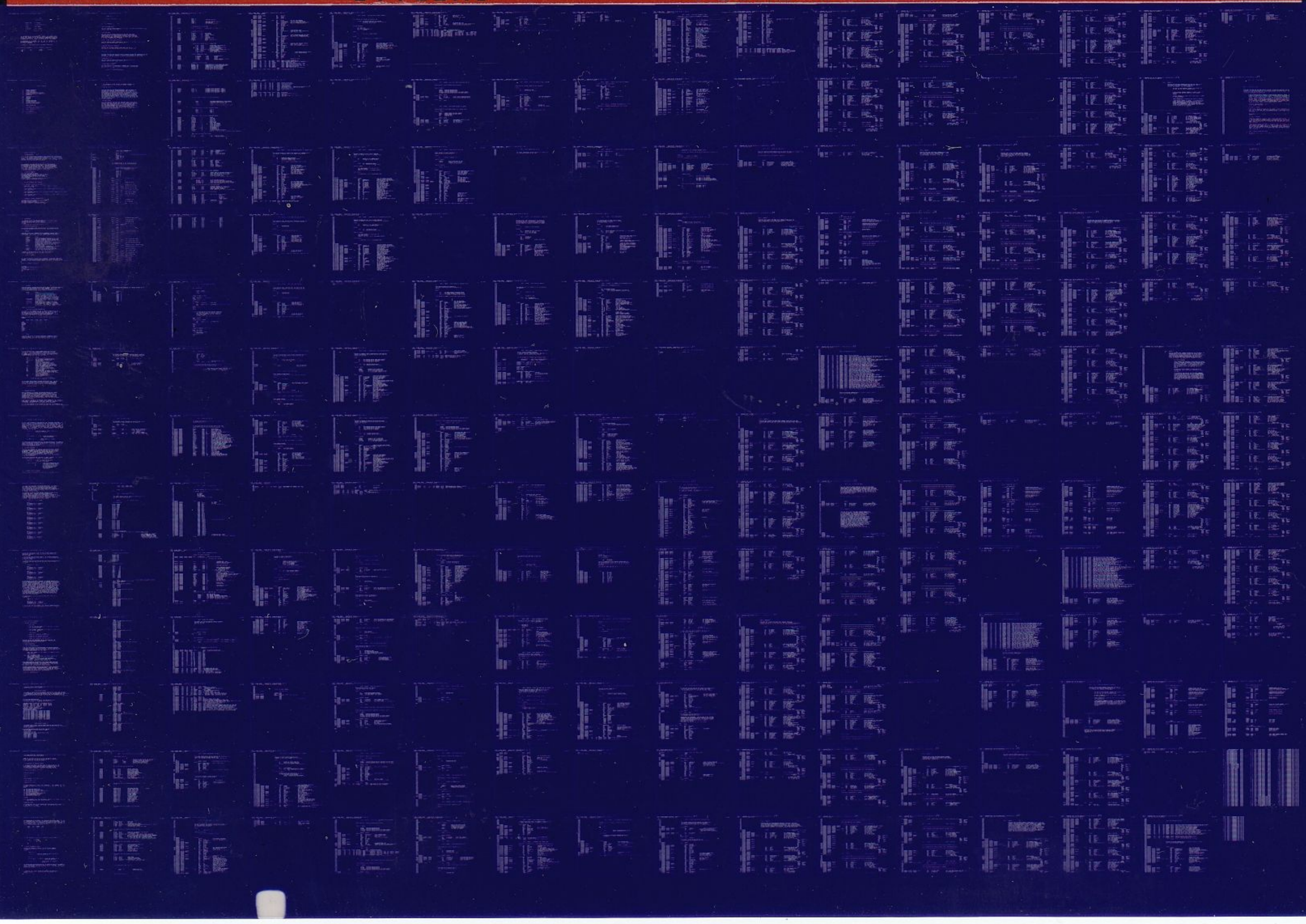
TSV05

TSV05 CTRL LT4
CVTSDA0

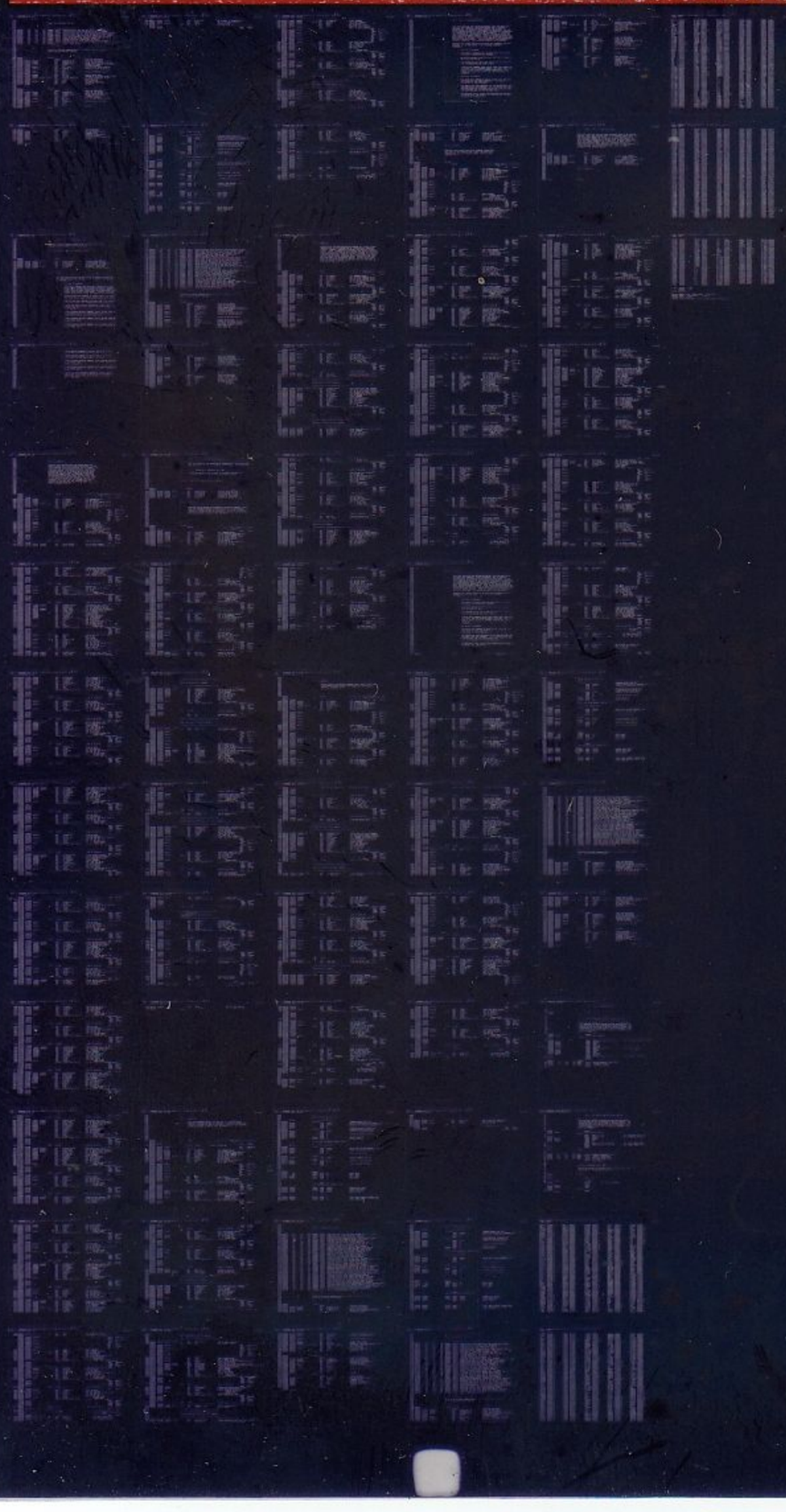
AH-T100A-MC
FICHE 1 OF 2



TSV05

TSV05 CTRL LT4
CVTSDA0

AH-T100A-MC
FICHE 2 OF 2



.REM_

IDENTIFICATION

PRODUCT ID: AC-T099A-MC
PRODUCT TITLE: CVTSDA0 TSV05 CTRL LT4
AUTHOR: DICK GORDON
MAINTAINER: SCOTT SNOWDON
DATE: MARCH 08, 1982

TABLE OF CONTENTS

1.0 GENERAL INFORMATION

1.1 PROGRAM ABSTRACT

THIS IS A PDP-11/23 RESIDENT DIAGNOSTIC WHICH CHECKS THE FUNCTIONALITY OF A TSV05 MAGTAPE SUBSYSTEM WHILE CONNECTED TO A PDP-11//23 SYSTEM (Q-BUS). THE PROGRAM PROVIDES ERROR MESSAGES WHICH IDENTIFY FAILING FUNCTIONS THAT AID IN THE REPAIR OF THE DEVICE. THIS DIAGNOSTIC CONSIST OF EIGHT TEST WHICH ARE EXECUTED IN SEQUENCE.

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

1.2 SYSTEM REQUIREMENTS

PDP-11/23 PROCESSOR AND MEMORY
CAUTION:DIAGNOSTIC REQUIRES 32K WORDS OF MEMORY
(28K USEABLE AND 4K RESERVED FOR I/O PAGE)
TSV05 MAGTAPE SUBSYSTEM (DRIVE AND CONTROLLER)
CONSOLE TERMINAL
PDP-11 DIAGNOSTIC SUPERVISOR (HSAAA.SYS VERSION 34 OR LATER)
PDP-11 DIAGNOSTIC LOADER/MONITOR (XXDP+)

1.3 RELATED DOCUMENTS AND STANDARDS

DIGITAL EQUIPMENT CORPORATION DOCUMENTS:

1. CHQUS XXDP+ USERS MANUAL; DOCUMENT NUMBER AC-F348E-MC
   DATE: 14 JULY 1980.

2. TSV05 TRANSPORT SUBSYSTEM USER'S GUIDE; DOCUMENT NUMBER EK-TSV05-UG-001
   DATE: AUGUST 1982

3. TSV05 TRANSPORT SUBSYSTEM TECHNICAL MANUAL; DOCUMENT NUMBER EK-TSV05-TM-001
   DATE: AUGUST 1982

4. TSV05 TRANSPORT SUBSYSTEM INSTALLATION MANUAL; DOCUMENT NUMBER EK-TSV05-IN-001
   DATE: AUGUST 1982

1.4 DIAGNOSTIC HIERARCY PREREQUISITES

FUNCTIONAL PDP-11/23 CENTRAL PROCESSOR AND MEMORY
FUNCTIONAL CONSOLE TERMINAL
FUNCTIONAL STANDALONE DIAGNOSTIC SUPERVISOR
FUNCTIONAL DIAGNOSTIC LOADER/MONITOR (XXDP+)

1.5 ASSUMPTIONS

ALL HARDWARE EXCEPT THE HARDWARE UNDER TEST IS ASSUMED TO WORK
PROPERLY OR FALSE ERRORS CAN BE REPORTED.
THE TAPE BEING USED ON THE TS05 TRANSPORT IS A KNOWN GOOD REEL
OF TAPE.
CVTSAA,CVTSBA AND CVTSCA HAVE SUCESSFULLY RUN.

2.0 OPERATING INSTRUCTIONS

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

2.1 COMMANDS

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

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

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

2.1.1 OPERATOR COMMANDS

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

BOOT THE DIAGNOSTIC XXDP MEDIA

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

2.2 SWITCHES

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

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

EXAMPLE OF SWITCH USAGE:

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

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

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

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

2.3 FLAGS

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

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

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

*ERROR MESSAGES ARE DESCRIBED IN SECTION 3.1

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

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

2.4 HARDWARE QUESTIONS

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

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

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

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


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

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

        UNIT 0

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

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

THE ADDRESS AND VECTOR QUESTIONS WILL BE ASKED FOR EACH OF THE NUMBER OF
UNITS  (CONTROLLERS) SPECIFIED IN THE "# UNITS?" QUESTION.  LOGICAL UNIT
NUMBERS ARE ASSIGNED IN ORDER, BEGINNING AT 0.  UP TO FOUR UNITS CAN BE
SELECTED FOR TESTING AS FOLLOWS:
UP TO 4 TSV05 CONTROLLERS PER 11/23 AND UP TO 2 DRIVES PER CONTROLLER

2.5  SOFTWARE QUESTIONS

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

THE FOLLOWING QUESTIONS ARE ASKED ON A START, RESTART, OR CONTINUE.
THEY ALLOW FLEXIBILITY IN THE WAY THE PROGRAM BEHAVES.

        CHANGE SW (L) ? <TYPE Y TO CAUSE THE FOLLOWING
                         QUESTIONS TO BE ASKED>

        INHIBIT ITERATIONS (L) N ?  <TYPE "Y" TO PREVENT MULTIPLE
                                     ITERATIONS OF CERTAIN TESTS.
                                     THIS CAUSES EACH TEST PASS TO
                                     RUN AS QUICKLY AS POSSIBLE.
                                     ONLY QUICK-RUNNING LOGIC
                                     TESTS USE MULTIPLE
                                     ITERATIONS.>

2.6  EXTENDED P-TABLE DIALOGUE

WHEN YOU ANSWER THE HARDWARE QUESTIONS, YOU ARE BUILDING ENTRIES
```

IN A TABLE THAT DESCRIBES THE DEVICES UNDER TEST. THE SIMPLEST WAY TO BUILD THIS TABLE IS TO ANSWER ALL QUESTIONS FOR EACH UNIT TO BE TESTED. IF YOU HAVE A MULTIPLEXED DEVICE SUCH AS A MASS STORAGE CONTROLLER WITH SEVERAL DRIVES OR A COMMUNICATION DEVICE WITH SEVERAL LINES, THIS BECOMES TEDIOUS SINCE MOST OF THE ANSWERS ARE REPETITIOUS.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

2.7 QUICK START-UP PROCEDURE (XXDP+)

TO START-UP THIS PROGRAM:

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

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

3.0 ERROR INFORMATION

3.1 TYPES OF ERROR MESSAGES

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

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

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

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

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

3.2 SPECIFIC ERROR MESSAGES

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

ERROR MESSAGE EXAMPLE 1

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

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

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

ERROR MESSAGE EXAMPLE 2

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

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

ERROR MESSAGE EXAMPLE 3

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

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

4.0 PERFORMANCE AND PROGRESS REPORTS

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

SUCCESSFUL RUN EXAMPLE (PDP-11/23)

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

 UNITS (D) ?  1

 UNIT 0

 DEVICE ADDRESS  (O) 172520 ? <CR>

 VECTOR (O) 224 ? <CR>

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

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

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

0 ERRORS
```

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

PROGRAM RUN TIMES

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

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

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

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

Q.V. 15 SECONDS
DEFAULT 16 SECONDS

5.0 DEVICE INFORMATION TABLES

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

```
CHANGE HW (L) ?

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

UNIT 0

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

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

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

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

CHANGE SW (L) ?

INHIBIT ITERATIONS (L) N ?

6.0 TEST SUMMARIES

TEST 1: WRITE TAPE MARK RETRY

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

TEST 2: SKIP TAPE MARKS

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

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

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

TEST 4: ERASE AND OPERATION INCOMPLETE

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

TEST 5: DATA PARITY TEST

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

TEST 6: OPERATIONS AT EOT

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

TEST 7: EXTENDED MODE FEATURES

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

REWIND WITH IMMEDIATE INTERRUPT

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

TEST 8: RECORD BUFFERING

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

TEST 9: FUNCTION TIMING

THIS TEST VERIFIES THAT THE TAPE TRANSPORT SEEMS TO BE WRITING RECORDS, GAPS, AND EXTENDED GAPS OF THE PROPER LENGTH. BOTH LOW AND HIGH SPEED MODES ARE TESTED. IT IS ALSO VERIFIED THAT A SKIP TAPE MARKS COMMAND WITH A COUNT OF 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

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

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

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

002000                          POINTER BGNSW,BGNSFT,BGNAU,BGNDU,BGNRPT
002000                          HEADER  CVTSD,A,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  101                     .ASCII  /A/
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  105556                  .WORD   L$HARD
002020                  L$SPCP::                ;POINTER TO S.W. QUES.
002020  105710                  .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
002042  000000                  L$PRIO::        ;DIAGNOSTIC RUN PRIORITY
                        .WORD   0
002044
002044  000000          L$ENVI::                ;FLAGS DESCRIBE HOW IT WAS SETUP
                        .WORD   0
002046
002046  000000          L$EXP1::                ;EXPANSION WORD
                        .WORD   0
002050
002050      003         L$MREV::                ;SVC REV AND EDIT #
                        .BYTE   C$REVISION
002051      003         .BYTE   C$EDIT
002052
002052  000000          L$EF::                  ;DIAG. EVENT FLAGS
                        .WORD   0
002054  000000          .WORD   0
002056
002056  000000          L$SPC::
                        .WORD   0
002060
002060  003374          L$DEVP::                ; POINTER TO DEVICE TYPE LIST
                        .WORD   L$DVTYP
002062
002062  022744          L$REPP::                ;PTR. TO REPORT CODE
                        .WORD   L$RPT
002064
002064  000000          L$EXP4::
                        .WORD   0
002066
002066  000000          L$EXP5::
                        .WORD   0
002070
002070  022432          L$AUT::                 ;PTR. TO ADD UNIT CODE
                        .WORD   L$AU
002072
002072  022530          L$DUT::                 ;PTR. TO DROP UNIT CODE
                        .WORD   L$DU
002074
002074  000000          L$LUN::                 ;LUN FOR EXERCISERS TO FILL
                        .WORD   0
002076
002076  003402          L$DESP::                ;POINTER TO DIAG. DESCRIPTION
                        .WORD   L$DESC
002100
002100  104035          L$LOAD::                ;GENERATE SPECIAL AUTOLOAD EMT
                        EMT     E$LOAD
002102
002102  000000          L$ETP::                 ;POINTER TO ERRTBL
                        .WORD   0
002104
002104  021636          L$ICP::                 ;PTR. TO INIT CODE
                        .WORD   L$INIT
002106
002106  022716          L$CCP::                 ;PTR. TO CLEAN-UP CODE
                        .WORD   L$CLEAN
002110
002110  022636          L$ACP::                 ;PTR. TO AUTO CODE
                        .WORD   L$AUTO
002112
002112  021626          L$PRT::                 ;PTR. TO PROTECT TABLE
                        .WORD   L$PROT
002114
002114  000000          L$TEST::                ;TEST NUMBER
                        .WORD   0
002116
002116  000000          L$DLY::                 ;DELAY COUNT
                        .WORD   0
002120
002120  000000          L$HIME::                ;PTR. TO HIGH MEM
                        .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  101132          .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:
```

```
                        .SBTTL  SOFTWARE P-TABLE


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

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

002170                          ENDMOD
```

```
                                .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
34
35 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                  XS0TMK= BIT15           ;TAPE MARK DETECTED
040000                  XS0RLS= BIT14           ;RECORD LENGTH SHORT
020000                  XS0LET= BIT13           ;LOGICAL END OF TAPE
010000                  XS0RLL= BIT12           ;RECORD LENGTH LONG
004000                  XS0WLE= BIT11           ;WRITE LOCK ERROR
002000                  XS0NEF= BIT10           ;NON EXECUTABLE FUNCTION
001000                  XS0ILC= BIT9            ;ILLEGAL COMMAND
000400                  XS0ILA= BIT8            ;ILLEGAL ADDRESS
000200                  XS0MOT= BIT7            ;TAPE IN MOTION
000100                  XS0ONL= BIT6            ;TRANSPORT ON LINE
000040                  XS0IE=  BIT5            ;INTERRUPT ENABLE
000020                  XS0VCK= BIT4            ;VOLUME CHECK BIT
000010                  XS0PED= BIT3            ;PHASE ENCODED DRIVE
000004                  XS0WLK= BIT2            ;WRITE LOCKED
000002                  XS0BOT= BIT1            ;BEGINNING OF TAPE
000001                  XS0EOT= BIT0            ;END OF TAPE


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

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

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

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

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


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

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

                        ;+
                        ;
                        ;DEVICE REGISTER OFFSETS
```

```
                        ;
                        ;-

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

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

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

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

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

                        ;+
                        ; 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
```

```
                        WC.I1TAD        = BIT5          ;ITAD1  - TRANSPORT ADDRESS BIT 1
                        WC.I5RESV       = BIT4          ;IRESV5 - RESERVED #5
                        WC.IREW         = BIT3          ;IREW   - REWIND
                        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
```

```
325          004000          S1.IIDENT       = BIT11         ;                   IIDENT H
326          002000          S1.ICER         = BIT10         ;                   ICER H
327          001000          S1.IFMK         = BIT9          ;                   IFMK H
328          000400          S1.IHER         = BIT8          ;                   IHER H
329          000200          S0.ISPEED       = BIT7          ;WORD #8 BYTE 0     ISPEED H
330          000100          S0.IRDY         = BIT6          ;                   IRDY L
331          000040          S0.IONL         = BIT5          ;                   IONL L
332          000020          S0.ILDP         = BIT4          ;                   ILDP L
333          000010          S0.IDBY         = BIT3          ;                   IDBY L
334          000004          S0.IRWD         = BIT2          ;                   IRWD L
335          000002          S0.IFBY         = BIT1          ;                   IFBY L
336          000001          S0.IFPT         = BIT0          ;                   IFPT L
337
338
```

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

```
                                .SBTTL  TSTBLK  - TEST DATA TABLE

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

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

```
                                        .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.
003370  000000                  ERTABE:         .WORD   0

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: %06/
004014     045     101     040  TSSX:     .ASCII  /%A  TSBA,TSSR EXP'D: %06%A,%06%N/
004054     045     101     040             .ASCIZ  /%A  TSBA,TSSR REC'D: %06%A,%06/
```

```
                045     116     045  FUSI:    .ASCII  /%N%A/
                040     040     125  USI:     .ASCIZ  /  UNEXPECTED INTERRUPT/
                040     040     111  NSI:     .ASCIZ  /  INTERRUPT EXPECTED, NOT RECEIVED/
                045     116     045  FNOINTR:         .ASCII  /%N%A/
                040     040     116  NOINTR:  .ASCIZ  /  NO INTERRUPT WAS GENERATED/
                040     040     111  IFAULT:  .ASCIZ  /  INTERRUPT FAULT/
                045     101     040  INTX:    .ASCIZ  /%A  CPU PC: %O6%A  TSBA: %O6/
                040     040     042  NOINIT:  .ASCIZ  /  "BUS-INIT" DIDN'T INITIALIZE CONTROLLER/
                040     040     042  NSINIT:  .ASCIZ  /  "SOFT-INIT" DIDN'T INITIALIZE THE DPU/
                040     040     042  BRINIT:  .ASCIZ  /  "BUS-RESET" DIDN'T INITIALIZE THE DPU/

                000              NUL:     .ASCIZ  //
                045     116     000  NULCR:   .ASCIZ  /%N/
                045     101     040  EXPGOT:  .ASCIZ  /%A EXP'D: %O6%A, REC'D: %O6/
                045     116     045  EXPGT2:  .ASCIZ  /%N%A EXP'D: %O6%A, %O6%N%A REC'D: %O%A, %O6/
                045     101     040  DUAD12:  .ASCIZ  /%A REG(W) WRITTEN TO: %O6%A REG(R) READ; EXP'D: %O6%A, REC'D: %O6/
                122     101     115  PKTRAM::         .ASCIZ  'RAM Contents Do Not Match Packet Sent'
                040     040     103  SCME:    .ASCIZ  /  CONFIG DOESN'T MATCH MFG. MASTER/
                127     122     111  WRTMSG:  .ASCIZ  'WRITE CHARACTERISTICS Failed'
                124     123     123  WRTERR:  .ASCIZ  'TSSR Incorrect After WRITE Command, More Bits Set Than SSR'
                124     123     123  RDERR:   .ASCIZ  'TSSR Incorrect After READ Command, More Bits Set Than SSR'
                106     101     124  SCHERR:  .ASCIZ  'FATAL ERROR IN SUBTEST - CHECK TAPE,CABLES,TRANSPORT etc.'
                105     122     122  RETERR:  .ASCIZ  'ERROR IN SUBTEST - WRITE DATA RETRY FIVE TIMES FAILED'
                045     116     045  NOMEM:   .ASCIZ  '%N%A ***** NO NXM ADDRESS--CANNOT TEST NXM TIMEOUT. *****%N'
                045     116     045  M8186:   .ASCIZ  '%N%A ****************** 11/23A SYSTEM ******************%N'
                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$:     PRINTX  #NULCR          ; PRINT A BLANK LINE
005776  012746  004524                  MOV     #NULCR,-(SP)
006002  012746  000001                  MOV     #1,-(SP)
006006  010600                          MOV     SP,R0
006010  104415                          TRAP    C$PNTX
006012  062706  000004                  ADD     #4,SP
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$PNTX
                006174  062706  000006                  ADD     #6,SP
          746
          747   006200  010403                  20$:    MOV     R4,R3           ;GET THE TSSR CONTENTS
          748   006202  042703  177761                  BIC     #^CTERCLS,R3    ;CLEAR ALL BUT TERMINATION
          749   006206  016303  006754                  MOV     TCOCOD(R3),R3   ;GET THE TERMINATION CODE MEANING
          750   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$PNTX
                006230  062706  000006                  ADD     #6,SP
          751   006234  010403                          MOV     R4,R3           ;TSSR CONTENTS AGAIN
          752   006236  042703  177717                  BIC     #^CFATERR,R3    ;CLEAR ALL BUT FATAL TERMINATION
          753   006242  001416                          BEQ     25$             ;DON'T PRINT IF ZERO
          754   006244  006203                          ASR     R3
          755   006246  006203                          ASR     R3
          756   006250  006203                          ASR     R3              ;ALINE TERMINATION CODE FOR INDEX
          757   006252  016303  007314                  MOV     TSFCOD(R3),R3   ;GET THE FATAL TERMINATION CODE
          758   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$PNTX
                006274  062706  000006                  ADD     #6,SP
          759   006300  042704  176377          25$:    BIC     #^CHIADDR,R4    ;CLEAR ALL BUT EXTENDED ADDRESS
          760   006304  001411                          BEQ     30$             ;DON'T PRINT IF ZERO
          761   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$PNTX
                006324  062706  000006                  ADD     #6,SP
          762   006330  013703  002172          30$:    MOV     EPRTSW,R3               ;PRINT MEAASGE BUFFER ADDRESS
          763   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$PNTX
                006346  062706  000004                  ADD     #4,SP
          764   006352  000207                          RTS     PC              ;RETURN TO CALLER
          765
          780   006354    045    116    045  EPRT1:  .ASCIZ  '%N%A *****CHECK TRANSPORT*****'
          781   006413    045    116    045  EPRT2:  .ASCIZ  '%N%A *****CHECK PARITY SWITCH IN TRANSPORT*****'
          783   006473    045    116    045  TSSRFOR:        .ASCIZ  '%N%A TSSR = %O6'
          784   006513    045    116    045  TEXASC:         .ASCIZ  '%N%A Extended Address Bits = %O6'
          785   006554    045    116    045  TCOASC:         .ASCIZ  '%N%A Termination Class Code = %T'
          786   006615    045    116    045  TFCASC:         .ASCIZ  '%N%A Fatal Termination Class Code = %T'
          787   006664    045    116    045  TSSDEF:         .ASCIZ  '%N%A TSSR Bits Set: %T'
          788   006713    045    116    045  AMBTSSR:        .ASCIZ  '%N%A TSSR Contents Are Ambiguous'
          789                                          .EVEN
          790   006754  006774  007017  007045  TCOCOD: .WORD   1$,2$,3$,4$,5$,6$,7$,8$
```

```
 791 006774  116  157  162  1$:     .ASCIZ  'Normal Termination'
 792 007017  124  145  162  2$:     .ASCIZ  'Termination Condition'
 793 007045  124  141  160  3$:     .ASCIZ  'Tape Status Alert'
 794 007067  106  165  156  4$:     .ASCIZ  'Function Reject'
 795 007107  122  145  143  5$:     .ASCIZ  'Recoverable Error - Tape Position One Record Down'
 796 007171  122  145  143  6$:     .ASCIZ  'Recoverable Error - Tape Was Not Moved'
 797 007240  125  156  162  7$:     .ASCIZ  'Unrecoverable Error'
 798 007264  106  141  164  8$:     .ASCIZ  'Fatal Controller Error'
 799                                 .EVEN
 800
 801 007314 007324 007360 007371  TSFCOD: .WORD   1$,2$,3$,4$
 802 007324  111  156  164  1$:     .ASCIZ  'Internal Diagnostic Failure'
 803 007360  122  145  163  2$:     .ASCIZ  'Reserved'
 804 007371  102  165  163  3$:     .ASCIZ  'Bus Interface or Sanity Check Error'
 805 007435  122  145  163  4$:     .ASCIZ  'Reserved'
 806                                 .EVEN
```

```
                        .SBTTL  PRIPKT  - PRINT THE ADDRESS/CONTENTS OF COMMAND PACKET

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

007446                  PRIPKT::
007446                          SAVREG                          ;SAVE THE REGISTERS
007452  010005                  MOV     R0,R5                   ;SAVE NO. OF WORDS IN PACKET
007454  005737  003126          TST     KTENABLE                ;ABOVE 28K UNDER TEST?
007460  001001                  BNE     10$                     ;BR IF YES
007462  005003                  CLR     R3                      ;SET HIGH ORDER ADDRESS TO 0
007464  010301          10$:    MOV     R3,R1                   ;COPY HIGH ORDER ADDRESS
007466  010400                  MOV     R4,R0                   ;GET LOWER ADDRESS
007470  006100                  ROL     R0                      ;SHIFT BIT 15 INTO C BIT
007472  006101                  ROL     R1                      ;AND INTO HIGH ORDER.
007474                          PRINTB  #PKTADD,R1,R4           ;PRINT PACKET ADDRESS
007474  010446                  MOV     R4,-(SP)
007476  010146                  MOV     R1,-(SP)
007500  012746  007632          MOV     #PKTADD,-(SP)
007504  012746  000003          MOV     #3,-(SP)
007510  010600                  MOV     SP,R0
007512  104414                  TRAP    C$PNTB
007514  062706  000010          ADD     #10,SP
007520  010300          15$:    MOV     R3,R0                   ;GET HIGH ORDER ADDRESS
007522  001404                  BEQ     20$                     ;BR IF NOT ABOVE 28K.
007524  010401                  MOV     R4,R1                   ;GET LOW ORDER ADDRESS
007526  004737  017376          JSR     PC,SETMAP               ;SETUP PAR6 MAPPING FOR 18 BIT ADDRESS
007532  010004                  MOV     R0,R4                   ;GET RETURNED PAR6 ADDRESS BIAS
007534  005001          20$:    CLR     R1                      ;SAVE WORD NUMBER
007536  012402          25$:    MOV     (R4)+,R2                ;GET PACKET CONTENTS
007540                          PRINTB  #PKTFRM,R1,R2           ;PRINT THE DATA
007540  010246                  MOV     R2,-(SP)
007542  010146                  MOV     R1,-(SP)
007544  012746  007574          MOV     #PKTFRM,-(SP)
007550  012746  000003          MOV     #3,-(SP)
007554  010600                  MOV     SP,R0
007556  104414                  TRAP    C$PNTB
007560  062706  000010          ADD     #10,SP
007564  005201                  INC     R1                      ;NEXT WORD NUMBER
007566  020105                  CMP     R1,R5                   ;DONE ALL PACKET WORDS?
007570  002762                  BLT     25$                     ;LOOP TILL ALL DONE
007572  000207                  RTS     PC                      ;RETURN

007574    045    116    045  PKTFRM: .ASCIZ  '%N%A Packet Word #%D1%A = %O6'
007632    045    116    045  PKTADD: .ASCIZ  '%N%A Packet Address = %O1%O5'
                                  .EVEN
```

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

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

007670          PRIBXOR::
007670                  SAVREG                          ;SAVE THE REGISTERS
007674  010203          MOV     R2,R3                   ;EXPECTED DATA
007676          XOR     R1,R3                   ;FORM THE EXCLUSIVE OR
007706  012700  177400  MOV     #^C<377>,R0             ;BYTE MASK
007712  040001          BIC     R0,R1                   ;SAVE LOW BYTE RECV
007714  040002          BIC     R0,R2                   ;SAVE LOW BYTE EXPD
007716  040003          BIC     R0,R3                   ;SAVE LOW BYTE XOR
007720          PRINTB  #XORBFOR,R2,R1,R3 ;PRINT THE MESSAGE
007720  010346          MOV     R3,-(SP)
007722  010146          MOV     R1,-(SP)
007724  010246          MOV     R2,-(SP)
007726  012746  007752  MOV     #XORBFOR,-(SP)
007732  012746  000004  MOV     #4,-(SP)
007736  010600          MOV     SP,R0
007740  104414          TRAP    C$PNTB
007742  062706  000012  ADD     #12,SP
007746  010300          MOV     R3,R0                   ;R0 HAS XOR ON RETURN
007750  000207          RTS     PC                      ;RETURN TO CALLER

007752      045     116     045  XORBFOR:       .ASCIZ  '%N%A EXPD: %03%A RECV: %03%A XOR: %03'
                                .EVEN
```

```
                        .SBTTL  PRIXOR  - PRINT EXPD, RECV AND XOR

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

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

010070      045     116     045  XORFOR: .ASCIZ  '%N%A EXPD: %06%A RECV: %06%A XOR: %06'
                                         .EVEN
```

```
                                .SBTTL  PRIEQU  - PRINT BIT NUMBERS AS ASCII EQUIVALENT

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

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



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

```
                                        ;
                                        ;-
                                        PRIADD:
                                                SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
010242  013700  002230                          MOV     ERRHI,R0        ;GET HIGH ADDRESSS
010246  013701  002232                          MOV     ERRLO,R1        ;GET LOW ADDRESS
010252  010102                                  MOV     R1,R2           ;COPY LOW ADDRESS
010254  006101                                  ROL     R1              ;SHIFT BIT 15 TO C BIT
010256  006100                                  ROL     R0              ;SHIFT INTO HIGH ORDER
010260                                          PRINTB  #PRIA0,R0,R2    ;PRINT MEMORY ADDRESS IN ERROR
010260  010246                                  MOV     R2,-(SP)
010262  010046                                  MOV     R0,-(SP)
010264  012746  010306                          MOV     #PRIA0,-(SP)
010270  012746  000003                          MOV     #3,-(SP)
010274  010600                                  MOV     SP,R0
010276  104414                                  TRAP    C$PNTB
010300  062706  000010                          ADD     #10,SP
010304  000207                                  RTS     PC              ;RETURN

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


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

```
1004
1005 010434  045  116  045  PRIT0:  .ASCIZ  '%N%A MEMORY TEST ADDRESS LOW = %06'
1006 010477  045  116  045  PRIT1:  .ASCIZ  '%N%A MEMORY TEST ADDRESS HIGH = %06'
1007                                .EVEN
1008
1009
1010
```

```
                        .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:
                ;
                ;
                ;-

010544                  SPACE::
010544                          SAVREG                          ;SAVE THE GENERAL REGISTERS
010550  012737  000764  010740          MOV     #500.,SDELAY    ;SET UP DELAY
010556  012737  140010  010730          MOV     #140010,80$     ;SET UP COMMAND, SPACE FORWARD
010564  005703                          TST     R3              ;CHECK FOR DIRECTION
010566  100403                          BMI     5$              ;BR, IF REVERSE INDICATED
010570  010337  010732                  MOV     R3,90$          ;LOAD UP NUMBER OF RECORDS TO SPACE
010574  000407                          BR      10$             ;GO DO COMMAND
010576  042703  100000          5$:     BIC     #BIT15,R3       ;CLEAR DIRECTION BIT
010602  010337  010732                  MOV     R3,90$          ;LOAD UP NUMBER OF RECORDS TO SPACE
010606  052737  000400  010730          BIS     #BIT8,80$       ;SET REVERSE BIT IN COMMAND PACKET
010614  012704  010730          10$:    MOV     #80$,R4         ;SET UP R4 WITH PACKET ADDRESS
010620  010465  000000                  MOV     R4,TSDB(R5)     ;SEND OUT COMMAND
010624  004737  016330          15$:    JSR     PC,WAITF        ;WAIT FOR SSR
010630  103420                          BCS     20$             ;BR, IF SSR IS SET AND OK
010632                                  DELAY   250     ;DELAY ABOUT .25 SECONDS
010632  012727  000250                  MOV     #250,(PC)+
010636  000000                          .WORD   0
010640  013727  002116                  MOV     L$DLY,(PC)+
010644  000000                          .WORD   0
010646  005367  177772                  DEC     -6(PC)
010652  001375                          BNE     .-4
```

```
        010654  005367  177756                  DEC     -22(PC)
        010660  001367                          BNE     .-20
  1063  010662  005337  010740                  DEC     $DELAY          ;BUMP DELAY COUNTER DOWN
  1064  010666  001356                          BNE     15$             ;BR, IF MORE DELAY
  1065  010670  000411                          BR      60$             ;BR IF TROUBLE CARRY = CLEAR
  1066  010672  016501  000002          20$:    MOV     TSSR(R5),R1     ;READ TSSR
  1067  010676  012702  000200                  MOV     #SSR,R2         ;SET UP EXPECTED
  1068  010702  020201                  25$:    CMP     R2,R1           ;ARE THEY OK
  1069  010704  001401                          BEQ     40$             ;BR, IF EQUAL = OK
  1070  010706  000402                          BR      60$             ;TROUBLE EXIT
  1071  010710  000261                  40$:    SEC                     ;SET CARRY NO TROUBLE
  1072  010712  000401                          BR      70$             ;EXIT
  1073  010714  000241                  60$:    CLC                     ;CARRY CLEAR = ERROR
  1074  010716                          70$:
  1075  010716  010400                          MOV     R4,R0           ;PASS PACKET ADDRESS
  1076  010720  000207                          RTS     PC              ;RETURN
```

```
1078                                    ;
1079                                    ;
1080                                    ;
1081                                    ;PACKET FOR SPACE COMMAND
1082                                    ;
1084            010730                          .=<.+10>&177770
1086                                    ;
1087                                    ;COMMAND WORD
1088 010730    000000                  80$:    .WORD
1089                                    ;NUMBER OF RECORDS TO BE SPACED OVER WORD
1090 010732    000000                  90$:    .WORD
1091 010734    000000                          .WORD
1092 010736    000000                          .WORD
1093 010740    000000                  SDELAY: .WORD   0                       ;DELAY COUNTER
1094                                            .EVEN
```

```
                        .SBTTL  WRTCHR  - WRITE CHARACTERISTICS COMMAND

                ;+
                ;
                ;ROUTINE TO ISSUE A WRITE CHARACTERISTICS
                ;COMMAND SO THAT OTHER COMMANDS WILL BE ACCEPTED
                ;
                ;INPUT:
                ;
                ;       R4      ADDRESS OF PACKET FROM TEST
                ;       R5      FIRST DEVICE UNIBUS ADDRESS
                ;       REQUIRES A CALL TO SOFINIT BE DONE PREVIOUSLY
                ;
                ;OUTPUT:
                ;
                ;       R0      TSSR CONTENTS
                ;       CARRY   SET - WRITE CHARACTERISTICS COMMAND OK
                ;               CLR - WRITE CHARACTERISTICS FAILED
                ;
                ;IMPLICIT OUTPUT:
                ;
                ;       MESSAGE BUFFER AND OTHER BUFFERS ALL SET UP
                ;       SOFTWARE SWITCHES SET AS FOLLOWS:
                ;               EXTFEA = EXTENDED FEATURES PRESENT
                ;               BENBSW = BUFFER ENABLE SWITCH ON OR OFF
                ;
                ;SIDE EFFECTS:
                ;
                ;-

010742                  WRTCHR::
010742                          SAVREG                          ;SAVE THE GENERAL REGISTERS
010746  005037  002222          CLR     BENBSW          ;CLEAR BUFFER ENABLE SWITCH
010752  005037  002220          CLR     EXTFEA                  ;CLEAR EXTENDED FEATURES SW SWITCH
010756  010465  000000  10$:    MOV     R4,TSDB(R5)             ;SEND OUT COMMAND
010762  004737  016416          JSR     PC,CHKTSSR              ;WAIT FOR SSR
010766  103401                  BCS     20$                     ;BR, IF SSR IS SET AND OK
010770  000435                  BR      60$                     ;BR IF TROUBLE CARRY = CLEAR
010772  016501  000002  20$:    MOV     TSSR(R5),R1             ;READ TSSR
010776  012702  000200          MOV     #SSR,R2                 ;SET UP EXPECTED
011002  032701  000100          BIT     #OFL,R1                 ;WAS OFF LINE SET IN TSSR
011006  001402                  BEQ     25$                     ;BR, IF NO OFL SET
011010  052702  000100          BIS     #OFL,R2                 ;MAKE THEM LOOK ALIKE
011014  020201          25$:    CMP     R2,R1                   ;ARE THEY OK
011016  001401                  BEQ     40$                     ;BR, IF EQUAL = OK
011020  000421                  BR      60$                     ;TROUBLE EXIT
011022  062704  000010  40$:    ADD     #8.,R4                  ;POINT TO WRT CHARA DATA PACKET
011026  011403                  MOV     (R4),R3                 ;GET ADDRESS OF MESSAGE BUFFER
011030  032763  000200  000012  BIT     #X2.EXTF,XST2(R3)       ;EXTENDED FEATURES BIT SET?
011036  001402                  BEQ     45$                     ;BR IF NO
011040  005237  002220          INC     EXTFEA                  ;SET EXTENDED FEATURES SW SWITCH
011044                  45$:
011044  032763  000100  000012  BIT     #X2.BUFE,XST2(R3)                       ;BUFFER ENABLE SWITCH SET
011052  001402                  BEQ     50$                     ;BR, IF SWITCH NOT SET
011054  005237  002222          INC     BENBSW                  ;SET SOFTWARE SWITCH FOR ENABLED
```

```
1153 011060                          50$:
1154 011060  000261                         SEC                     ;SET CARRY NO TROUBLE
1155 011062  000401                         BR      70$             ;EXIT
1156 011064  000241                 60$:    CLC                     ;CARRY CLEAR = ERROR
1157 011066  016500  000002         70$:    MOV     TSSR(R5),R0     ;RETURN TSSR CONTENTS
1158 011072  000207                         RTS     PC              ;RETURN
1159
1160
```

```
                        .SBTTL  REWIND  - POSITION TAPE (REWIND) COMMAND

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


                        .=<.+10>&177770
011170          RWPACK:
011170  102010                  .WORD   102010          ;POSTION COMMAND (REWIND)
011172  000000                  .WORD   0               ;NOT USED
```

```
1213
1214
1215
```

```
                        .SBTTL  CKRAM   - COMPARE RAM TO I/O PACKET

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

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

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

```
1329 011436  000207                50$:    RTS     PC                      ;RETURN
1330
```

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

```
                                .SBTTL  CKMSG2  - COMPARE EXPD RECV MESSAGE BUFFERS
                        ;+
                        ;
                        ;ROUTINE TO COMPARE AN EXPECTED AND RECEIVED MESSAGE
                        ;BUFFER. THE EXPECTED AND RECEIVED BUFFERS ARE STORED FOR
                        ;ERROR PRINT ROUTINES.
                        ;
                        ;INPUT:
                        ;
                        ;       R0      RECV MESSAGE BUFFER HIGH ORDER ADDRESS
                        ;       R1      RECV MESSAGE BUFFER LOW ORDER ADDRESS
                        ;       R2      EXPD MESSAGE BUFFER ADDRESS
                        ;       R3      NUMBER OF BYTES TO COMPARE
                        ;
                        ;OUTPUT:
                        ;
                        ;       CARRY   SET - MESSAGE BUFFERS MATCH
                        ;               CLR - MESSAGE BUFFERS DON'T MATCH
                        ;
                        ;IMPLICIT OUTPUT:
                        ;
                        ;       EXPMSG          BUFFER IS SET TO EXPD DATA
                        ;       RECMSG          BUFFER IS SET TO RECV DATA
                        ;       RCVHIADD        SET TO HIGH ORDER ADDRESS OF RECV
                        ;       RCVLOADD        SET TO LOW ORDER ADDRESS OF RECV
                        ;
                        ;-
                        CKMSG2::
                                SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
                                CMP     R3,#RECMSG-EXPMSG;@@D IS COUNT ABOVE MAX ALLOWED?
                                BLE     5$                      ;@@D BR IF NO
                                MOV     #RECMSG-EXPMSG,R3;@@D
                                PRINTF  #DEBUGMSG               ;@@D
                                MOV     #DEBUGMSG,-(SP)
                                MOV     #1,-(SP)
                                MOV     SP,R0
                                TRAP    C$PNTF
                                ADD     #4,SP
                        5$:     MOV     R0,RCVHIADD             ;SAVE RECV HIGH ADDRESS
                                MOV     R1,RCVLOAD              ;SAVE RECV LOW ADDRESS
                                TST     KTENABLE                ;TESTING ABOVE 28K?
                                BEQ     10$                     ;BR IF NO
                                JSR     PC,SETMAP               ;RETURN ADDRESS BIASED TO PAR6 IN R0
                                MOV     R0,R1                   ;GET RETURNED ADDRESS BIASED TO PAR6
                        10$:    CLR     R4                      ;WORD IN BUFFER
                                CLR     R5                      ;CLEAR ERROR SEEN FLAG
                        15$:    MOVB    (R2),EXPMSG(R4) ;SAVE EXPD FOR ERROR REPORT
                                MOVB    (R1),RECMSG(R4) ;SAVE RECV FOR ERROR REPORT
                                CMPB    (R2)+,(R1)+             ;EXPD EQUAL RECV?
                                BEQ     25$                     ;BR IF YES
                                INC     R5                      ;SET ERROR SEEN FLAG
                        25$:    ADD     #1,R4                   ;POINT TO NEXT BYTE
                                CMP     R4,R3                   ;DONE ALL BYTES?
                                BGE     50$                     ;BR IF YES
                                BR      15$                     ;DO NEXT BYTE
                        50$:    TST     R5                      ;ANY ERRORS SEEN?
                                BEQ     55$                     ;BR IF NO
```

```
1440 011702  000241                        CLC                     ;SET FAILURE
1441 011704  000401                        BR      60$             ;
1442 011706  000261                55$:    SEC                     ;SET SUCCESS
1443 011710  000207                60$:    RTS     PC              ;RETURN
1444
1445 011712      120      122      117  DEBUGMSG:       .ASCIZ  'PROGRAM INTERNAL ERROR -CKMSG2 MESSAGE BUFFER EXCEEDED-';@@D
1446 012002      045      116      045  FERCM:  .ASCII  /%N%A  ***/
1447 012013      040      040      124  ERCM:   .ASCIZ  /  TSSR ERROR CODE REC'D = /
1448 012046      056      056      056  SIMSG:  .ASCIZ  /.... AFTER DOING SOFT INIT/
1449 012101      124      105      123  TINERR: .ASCIZ  /TEST: .../
1450                                    .EVEN
```

```
                                        ;+
                                        ;
                                        ;PRINT ROUTINE TO FATAL SOFT INIT ERRORS
                                        ;
                                        ;INPUT:
                                        ;
                                        ;       R1      CONTENTS OF TSSR AT ERROR
                                        ;
                                        ;SIDE EFFECTS:
                                        ;
                                        ;       EXECUTES DROP UNIT TO CEASE TESTING
                                        ;
                                        ;-

012114                                          BGNMSG  SFIMSG
012114                                  SFIMSG::
012114  004737  006020                          JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
012120  004737  017262                          JSR     PC,CKDROP       ;DROP UNIT, IF ALLOWED
012124                                          ENDMSG
012124                                  L10003:
012124  104423                                  TRAP    C$MSG

                                        ;+
                                        ;PRINT ROUTINE TO PRINT THE CONTENTS OF
                                        ;TSSR AND A COMMAND PACKET OTHER THAN GET STATUS COMMAND PACKET.
                                        ;
                                        ;INPUTS:
                                        ;
                                        ;       R1      TSSR CONTENTS
                                        ;       R4      ADDRESS OF COMMAND PACKET
                                        ;
                                        ;-

012126                                          BGNMSG  PKTSSR
012126                                  PKTSSR::
012126  004737  006020                          JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
012132  012700  000004                          MOV     #4,R0           ;NO. OF WORDS IN PACKET
012136  004737  007446                          JSR     PC,PRIPKT       ;PRINT THE CONTENTS OF COMMAND PACKET
012142                                          ENDMSG
012142                                  L10004:
012142  104423                                  TRAP    C$MSG

                                        ;+
                                        ;PRINT ROUTINE TO PRINT THE CONTENTS OF
                                        ;TSSR AND A GET STATUS COMMAND PACKET.
                                        ;
                                        ;INPUTS:
                                        ;
                                        ;       R1      TSSR CONTENTS
                                        ;       R4      ADDRESS OF COMMAND PACKET
                                        ;
                                        ;-

012144                                          BGNMSG  PKTGETS
012144                                  PKTGETS::
```

```
1502 012144  004737  006020                    JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
1503 012150  012700  000002                    MOV     #2,R0           ;NO. OF WORDS IN GET STATUS PACKET
1504 012154  004737  007446                    JSR     PC,PRIPKT       ;PRINT THE CONTENTS OF COMMAND PACKET
1505 012160                                    ENDMSG
     012160                              L10005:
     012160  104423                            TRAP    C$MSG
1506
1507
1508                                        ;+
1509                                        ;PRINT TSSR ERRORS FOR INITIALIZATION TESTS
1510                                        ;
1511                                        ;INPUTS:
1512                                        ;
1513                                        ;       R1      TSSR CONTENTS
1514                                        ;       R4      ADDRESS OF COMMAND PACKET
1515                                        ;-
1516
1517 012162                                    BGNMSG  SFFMSG
     012162                              SFFMSG::
1518 012162  004737  006020                    JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
1519 012166                                    ENDMSG
     012166                              L10006:
     012166  104423                            TRAP    C$MSG
1520
1521
1522                                            .SBTTL  PKTMES  - PRINT TSSR AND MESSAGE BUFFER
1523                                        ;+
1524                                        ;
1525                                        ;PRINT ROUTINE TO PRINT THE CONTENTS OF TSSR AND MESSAGE
1526                                        ;BUFFER FOR ERROR REPORTS
1527                                        ;
1528                                        ;INPUTS:
1529                                        ;
1530                                        ;       R1      CONTENTS OF TSSR
1531                                        ;       R2      LOW ORDER MESSAGE BUFFER
1532                                        ;       R3      HIGH ORDER MESSAGE BUFFER ADDRESS
1533                                        ;       NOTE: R3 IS IGNORED IF KTENABLE FLAG IS CLEAR
1534                                        ;-
1535 012170                                    BGNMSG  PKTMES
     012170                              PKTMES::
1536 012170  004737  006020                    JSR     PC,PRITSSR              ;PRINT CONTENTS OF TSSR
1537 012174  010200                            MOV     R2,R0                   ;LOW ORDER ADDRESS
1538 012176  010301                            MOV     R3,R1                   ;HIGH ORDER ADDRESS
1539 012200  004737  014322                    JSR     PC,PRMESS               ;PRINT THE MESSAGE BUFFER
1540 012204                                    ENDMSG
     012204                              L10007:
     012204  104423                            TRAP    C$MSG
1541
```

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

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

```
                        .SBTTL  FIFEXP  - PRINT FIFO EXP/RECV DATA
                ;+
                ;
                ;PRINT ROUTINE TO PRINT FIFO EXP/RECV DATA
                ;
                ;       R1      - BYTE COUNT
                ;
                ;IMPLICIT INPUTS:
                ;
                ;       EXPMSG  - EXPECTED MESSAGE BUFFER (CONTAINS FIFO DATA ONLY
                ;       RECMSG  - RECEIVED MESSAGE BUFFER (CONTAINS FIFO DATA ONLY)
                ;-
                        BGNMSG  FIFEXP
                FIFEXP::
012250                  PRINTX  #FIF1MSG,R1     ;PRINT BYTES TRANSFERRED
012250 010146           MOV     R1,-(SP)
012252 012746 012322    MOV     #FIF1MSG,-(SP)
012256 012746 000002    MOV     #2,-(SP)
012262 010600           MOV     SP,R0
012264 104415           TRAP    C$PNTX
012266 062706 000006    ADD     #6,SP
012272                  PRINTX  #FIF2MSG        ;PRINT HEADER MSG
012272 012746 012371    MOV     #FIF2MSG,-(SP)
012276 012746 000001    MOV     #1,-(SP)
012302 010600           MOV     SP,R0
012304 104415           TRAP    C$PNTX
012306 062706 000004    ADD     #4,SP
012312 010100           MOV     R1,R0           ;GET BYTE COUNT
012314 004737 015202    JSR     PC,PRBYTEXP     ;PRINT FIFO BYTES IN ERROR
012320                  ENDMSG
                L10012:
012320 104423           TRAP    C$MSG
012322   045   116   045 FIF1MSG:  .ASCIZ  '%N%A NUMBER OF BYTES TRANSFERRED = %D2'
012371   045   116   045 FIF2MSG:  .ASCIZ  '%N%A FIFO DATA BYTES IN ERROR:'
                        .EVEN
```

```
                                        .SBTTL  MSGSTAT - PRINT STATUS HEADER AND MESSAGE BUFFERS
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT MESSAGE BUFFER EXPD/RECV
                                ;
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                ;-
                                        BGNMSG  MSGSTAT
012430                          MSGSTAT::
012430  012701  012472                  MOV     #STATCOD,R1     ;ASCII ADDRESS TABLE
012434  012100                  10$:    MOV     (R1)+,R0        ;DONE ALL MSG LINES?
012436  001410                          BEQ     20$             ;BR IF YES
012440                                  PRINTX  R0              ;PRINT STATUS BIT NAMES
012440  010046                          MOV     R0,-(SP)
012442  012746  000001                  MOV     #1,-(SP)
012446  010600                          MOV     SP,R0
012450  104415                          TRAP    C$PNTX
012452  062706  000004                  ADD     #4,SP
012456  000766                          BR      10$             ;DO ANOTHER MSG LINE
012460  012700  000012          20$:    MOV     #10.,R0         ;NUMBER OF WORDS IN A READ STATUS BUFFER
012464  004737  014632                  JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
012470                                  ENDMSG
012470                          L10013:
012470  104423                          TRAP    C$MSG

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



                                        .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
013144                          MSGLOOP::
013144  012701  013206                  MOV     #LOOPCOD,R1     ;ASCII ADDRESS TABLE
```

```
1655 013150  012100                  10$:   MOV     (R1)+,R0        ;DONE ALL MSG LINES?
1656 013152  001410                         BEQ     20$             ;BR IF YES
1657 013154                                 PRINTX  R0              ;PRINT STATUS BIT NAMES
     013154  010046                         MOV     R0,-(SP)
     013156  012746  000001                 MOV     #1,-(SP)
     013162  010600                         MOV     SP,R0
     013164  104415                         TRAP    C$PNTX
     013166  062706  000004                 ADD     #4,SP
1658 013172  000766                         BR      10$             ;DO ANOTHER MSG LINE
1659 013174  012700  000012          20$:   MOV     #10.,R0         ;NUMBER OF WORDS IN A READ STATUS BUFFER
1660 013200  004737  014632                 JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
1661 013204                                 ENDMSG
     013204                          L10014:
     013204  104423                         TRAP    C$MSG
1662
1663 013206  013226  013301  013400  LOOPCOD:        .WORD   1$,2$,3$,4$,5$,6$,7$,0
1664 013226     045     116     045  1$:.ASCIZ  '%N%A Tape Bus Loopback Signals in Word #8:'
1665 013301     045     116     045  2$:.ASCIZ  '%N%A      PARERR<15>          IRESV2<14>          IRESV1<13>'
1666 013400     045     116     045  3$:.ASCIZ  '%N%A IHISP=>IEOT<12>    IWRT=>IIDENT<11>    IREV  =>ICER  <10>'
1667 013477     045     116     045  4$:.ASCIZ  '%N%A IWFM =>IFMK<09>    IEDIT=>IHER <08>    IFAD  =>ISPEED<07>'
1668 013576     045     116     045  5$:.ASCIZ  '%N%A ITAD0=>IRDY<06>    ITAD1=>IONL <05>    IERASE=>ILDP  <04>'
1669 013675     045     116     045  6$:.ASCIZ  '%N%A IREW =>IDBY<03>    IRWU =>IRWD <02>    IFEN  =>IFBY  <01>'
1670 013774     045     116     045  7$:.ASCIZ  '%N%A IGO  =>IFPT<00>'
1671                                        .EVEN
1672
```

```
                                        .SBTTL  MSGSUB - PRINT WRITE SUBSYSTEM MESSAGE BUFFER
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT MESSAGE BUFFER EXPD/RECV
                                ;
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                ;-
                                        BGNMSG  MSGSUB
                                MSGSUB::
                                        MOV     #10.,R0         ;SIZE OF WRITE SUBSYSTEM BUFFER
                                        JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
                                        ENDMSG
                                L10015:
                                        TRAP    C$MSG


                                        .SBTTL  MEMADD - PRINT MEMORY ADDRESS DATA ERROR
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT MEMORY ADDRESS DATA COMPARE ERROR
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       ERRHI   - MEMORY ERROR HIGH ORDER ADDRESS
                                ;       ERRLO   - MEMORY ERROR LOW ORDER ADDRESS
                                ;       EXP     - EXPECTED DATA
                                ;       RECV    - RECEIVED DATA
                                ;-
                                        BGNMSG  MEMADD
                                MEMADD::
                                        JSR     PC,PRIADD       ;PRINT MEMORY ADDRESS IN ERROR
                                        MOV     EXPD,R1         ;GET EXPD DATA
                                        MOV     RECV,R2         ;GET RECEIVED DATA
                                        JSR     PC,PRIXOR       ;PRINT EXPD/RECV
                                        ENDMSG
                                L10016:
                                        TRAP    C$MSG
```

```
                        .SBTTL  PRAMPKT - PRINT RAM AND PACKET DATA
                ;+
                ;
                ;PRINT ROUTINE TO DISPLAY RAM/PACKET DATA
                ;WHEN THE RAM DATA DOES NOT MATCH.
                ;
                ;INPUTS:
                ;
                ;       R4      POINTER TO COMMAND PACKET
                ;
                ;IMPLICIT INPUTS:
                ;
                ;       RAMDATA         DATA AS READ FROM THE RAM
                ;       RAMSIZ          NUMBER OF BYTES IN PACKET
                ;                       IF RAMSIZ=0 THEN DEFAULT TO 8.
                ;
                ;IMPLICIT OUTPUTS:
                ;
                ;       RAMSIZ  SET TO 0
                ;-
                PRAMPKT:
014056                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
014056 012701 002234    MOV     #RAMDATA,R1             ;DATA FROM THE RAM
014062 005002           CLR     R2                      ;INIT BYTE NUMBER
014064 122124   5$:     CMPB    (R1)+,(R4)+             ;COMPARE EXPECTED, RECEIVED
014066 001005           BNE     7$                      ;BR IF NO MATCH
014070                  FORCERROR       7$,NOTSSR
014072 000436           BR      10$                     ;aaD
014074 116105 177777 7$:MOVB    -1(R1),R5               ;GET RECV RAM DATA
014102 116403 177777    MOVB    -1(R4),R3               ;GET EXPD PACKET DATA
014106                  XOR     R5,R3                   ;XOR EXPD/RECV
014110 042703 177400    BIC     #177400,R3              ;LOW BYTE ONLY
014114 116137 177777 002226 MOVB -1(R1),RECV            ;GET RECEIVED RAM DATA
014122 116437 177777 002224 MOVB -1(R4),EXPD            ;GET EXPECTED RAM DATA
014130                  PRINTB  #RAMASC,R2,RECV,EXPD,R3
014130 010346           MOV     R3,-(SP)
014132 013746 002224    MOV     EXPD,-(SP)
014136 013746 002226    MOV     RECV,-(SP)
014142 010246           MOV     R2,-(SP)
014144 012746 014236    MOV     #RAMASC,-(SP)
014150 012746 000005    MOV     #5,-(SP)
014154 010600           MOV     SP,R0
014156 104414           TRAP    C$PNTB
014160 062706 000014    ADD     #14,SP
014164 005202   10$:    INC     R2                      ;UPDATE BYTE COUNT
014166 005737 002274    TST     RAMSIZ                  ;DEFAULT TO 8.?
014172 001404           BEQ     15$                     ;BR IF YES
014174 020237 002274    CMP     R2,RAMSIZ               ;DONE ALL BYTES?
014200 003724           BLE     5$                      ;BR IF NO
014202 000403           BR      25$                     ;
014204 020227 000010 15$:CMP    R2,#8.                  ;DONE DEFAULT NUMBER OF BYTES?
014210 002720   20$:    BLT     5$                      ;BR IF NO
014212 005037 002274 25$:CLR    RAMSIZ                  ;SET DEFAULT RAMSIZ
014216 000207           RTS     PC                      ;RETURN

014220 045 116 045 RAMASC: .ASCIZ  '%N%A  BYTE: %D2%A RAM: %03%A Packet: %03%A XOR:%03'
```

```
1764                                    .EVEN
1765
1766
```

```
                        .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:
014322                  SAVREG                          ;SAVE THE REGISTERS
014326  010005          MOV     R0,R5                   ;SAVE LOW ORDER ADDRESS
014330  005737  003126  TST     KTENABLE                ;ADDRESS ABOVE 28K?
014334  001001          BNE     10$                     ;BR IF YES
014336  005001          CLR     R1                      ;SET HIGH ORDER ADDRESS TO 0
014340  010103  10$:    MOV     R1,R3                   ;SAVE HIGH ORDER ADDRESS
014342  006100          ROL     R0                      ;SHIFT BIT15 TO C BIT
014344  006101          ROL     R1                      ;SHIFT TO HIGH ORDER FOR PRINTOUT
014346                  PRINTX  #PROASC,R1,R5           ;PRINT MESSAGE BUFFER ADDRESS
014346  010546          MOV     R5,-(SP)
014350  010146          MOV     R1,-(SP)
014352  012746  014500  MOV     #PROASC,-(SP)
014356  012746  000003  MOV     #3,-(SP)
014362  010600          MOV     SP,R0
014364  104415          TRAP    C$PNTX
014366  062706  000010  ADD     #10,SP
014372                  PRINTX  #PR1ASC                 ;PRINT HEADER FOR CONTENTS
014372  012746  014545  MOV     #PR1ASC,-(SP)
014376  012746  000001  MOV     #1,-(SP)
014402  010600          MOV     SP,R0
014404  104415          TRAP    C$PNTX
014406  062706  000004  ADD     #4,SP
014412  005004          CLR     R4                      ;NUMBER OF THE NEXT WORD
014414  010501          MOV     R5,R1                   ;COPY LOW ORDER ADDRESS
014416  010300          MOV     R3,R0                   ;COPY HIGH ORDER ADDRESS
014420  001403          BEQ     20$                     ;BR IF NOT ABOVE 28K
014422  004737  017376  JSR     PC,SETMAP               ;SETUP PAR ADDRESS IN R0
014426  010005          MOV     R0,R5                   ;GET PAR FORMAT ADDRESS ABOVE 28K
014430          20$:    PRINTX  #PRASC,R4,(R5)+         ;PRINT THE CONTENTS OF MEMORY BUFFER
014430  012546          MOV     (R5)+,-(SP)
014432  010446          MOV     R4,-(SP)
014434  012746  014603  MOV     #PRASC,-(SP)
014440  012746  000003  MOV     #3,-(SP)
014444  010600          MOV     SP,R0
014446  104415          TRAP    C$PNTX
014450  062706  000010  ADD     #10,SP
014454  005204          INC     R4                      ;NUMBER OF THE NEXT
014456  020427  000007  CMP     R4,#7                   ;DONE ALL YET ?
014462  003005          BGT     50$                     ;BRANCH IF ALL DONE
```

```
1806 014464  002761                        BLT     20$                 ;PRINT FIRST 7 WORDS
1807 014466  032763  000200  000012        BIT     #X2.EXTF,XST2(R3);EXTENDED FEATUTES ON ?
1808 014474  001355                        BNE     20$                 ;PRINT EXTENDED STATUS WORD
1809 014476  000207                 50$:    RTS     PC                  ;RETURN
1810
1811 014500     045     116     045  PR0ASC: .ASCIZ  '%N%A Message Buffer Address = %01%05'
1812 014545     045     116     045  PR1ASC: .ASCIZ  '%N%A Message Buffer Contents:'
1813 014603     045     116     045  PRASC:  .ASCIZ  '%N%A    Word%D1%A: %0'
1814                                        .EVEN
```

```
                        .SBTTL  PRMSGEXP - PRINT EXPD/RECV MESSAGE BUFFERS
                ;+
                ;
                ;ROUTINE TO PRINT EXPECTED AND RECEIVED MESSAGE BUFFERS
                ;
                ;       R0      - NUMBER OF WORDS IN BUFFER
                ;
                ;IMPLICIT INPUTS:
                ;
                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                ;-
014632          PRMSGEXP::
                        SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
014636 010005           MOV     R0,R5                   ;SAVE NUMBER OF WORDS
014640 013700 002300    MOV     RCVLOADD,R0             ;GET RECV LOW ADDRESS
014644 010004           MOV     R0,R4                   ;COPY LOW ADDRESS
014646 013701 002276    MOV     RCVHIADD,R1             ;GET RECV HIGH ADDRESS
014652 006100           ROL     R0                      ;SHIFT BIT15 TO C BIT
014654 006101           ROL     R1                      ;SHIFT TO HIGH ORDER FOR PRINTOUT
014656                  PRINTX  #PRMSG0,R1,R4           ;PRINT MESSAGE BUFFER ADDRESS
014656 010446           MOV     R4,-(SP)
014660 010146           MOV     R1,-(SP)
014662 012746 015012    MOV     #PRMSG0,-(SP)
014666 012746 000003    MOV     #3,-(SP)
014672 010600           MOV     SP,R0
014674 104415           TRAP    C$PNTX
014676 062706 000010    ADD     #10,SP
014702                  PRINTX  #PRMSG1                 ;PRINT HEADER FOR CONTENTS
014702 012746 015057    MOV     #PRMSG1,-(SP)
014706 012746 000001    MOV     #1,-(SP)
014712 010600           MOV     SP,R0
014714 104415           TRAP    C$PNTX
014716 062706 000004    ADD     #4,SP
014722 005004           CLR     R4                      ;NUMBER OF THE CURRENT WORD
014724 012701 002314    MOV     #EXPMSG,R1              ;GET EXPD BUFFER ADDRESS
014730 012702 002460    MOV     #RECMSG,R2              ;GET RECV BUFFER ADDRESS
014734 011100           20$:    MOV     (R1),R0         ;GET EXPD
014736 011203           MOV     (R2),R3                 ;GET RECV
014740                  XOR     R0,R3                   ;XOR EXPD/RECV
014750                  PRINTX  #PRMSG2,R4,(R1)+,(R2)+,R3
014750 010346           MOV     R3,-(SP)
014752 012246           MOV     (R2)+,-(SP)
014754 012146           MOV     (R1)+,-(SP)
014756 010446           MOV     R4,-(SP)
014760 012746 015115    MOV     #PRMSG2,-(SP)
014764 012746 000005    MOV     #5,-(SP)
014770 010600           MOV     SP,R0
014772 104415           TRAP    C$PNTX
014774 062706 000014    ADD     #14,SP
015000 005204           INC     R4                      ;NUMBER OF THE NEXT
015002 020405           CMP     R4,R5                   ;DONE ALL YET?
015004 002001           BGE     50$                     ;BR IF YES
015006 000752           BR      20$                     ;DO ANOTHER
015010 000207           50$:    RTS     PC              ;RETURN
```

```
 1852
 1853 015012  045  116  045  PRMSG0: .ASCIZ  '%N%A Message Buffer Address = %01%05'
 1854 015057  045  116  045  PRMSG1: .ASCIZ  '%N%A Message Buffer Contents:'
 1855 015115  045  116  045  PRMSG2: .ASCIZ  '%N%A   WORD #%D2%A  EXPD: %06%A  RECV: %06%A  XOR: %06'
 1856                                .EVEN
 1857
```

```
                        .SBTTL  PRBYTEXP - PRINT ERROR BYTES IN EXP/REC MESSAGE BUFFER
                ;+
                ;
                ;ROUTINE TO PRINT ERROR BYTES IN MESSAGE BUFFERS
                ;       ONLY THE FIRST 8 ERRORS ENCOUNTERED ARE PRINTED DUE TO SCREEN SPACE
                ;
                ;       R0      - NUMBER OF BYTES IN BUFFER
                ;
                ;IMPLICIT INPUTS:
                ;
                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                ;-
015202          PRBYTEXP::
015202                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
015206  010005          MOV     R0,R5                   ;SAVE NUMBER OF BYTES
015210  005037  002312  CLR     PRMNO                   ;INIT ERROR COUNT
015214  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$     ;aad
015346  000404          BR      35$             ;aad
015350          30$:
015350                  FORCERROR  27$,NOTSSR   ;aad
015360          35$:                            ;aad
015360  005204          INC     R4              ;NUMBER OF THE NEXT
015362  020405          CMP     R4,R5           ;DONE ALL YET?
015364  002001          BGE     50$             ;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
  1902  015414  000207                          RTS     PC              ;RETURN
  1903
  1904  015416     045     116     045  PRBMSG: .ASCIZ  '%N%A   BYTE #%D2%A  EXPD: %O3%A  RECV: %O3%A  XOR: %O3'
  1905  015503     045     116     045  PRBTOT: .ASCIZ  '%N%A NUMBER OF BYTES IN ERROR = %D2'
  1906                                          .EVEN
  1907  015550  000000                  PRBEXP: .WORD   0               ;EXPD
  1908  015552  000000                  PRBREC: .WORD   0               ;RECV
  1909
```

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

015554                          EXPREC::BGNMSG  EXPREC
015554
015554  004737  010020                  JSR     PC,PRIXOR               ;PRINT THE DATA
015560                                  ENDMSG
015560                          L10017:
015560  104423                          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::
015562  004737  007670                  JSR     PC,PRIBXOR              ;PRINT THE DATA
                                        ENDMSG
                                L10020:
015566  104423                          TRAP    C$MSG


                                        .SBTTL  RAMERR  - PRINT RAM AND PACKET DATA
                                ;+
                                ;
                                ;PRINT ROUTINE TO DISPLAY RAM/PACKET DATA
                                ;
                                ;INPUTS:
                                ;
                                ;       R4      POINTER TO COMMAND PACKET
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       RAMDATA         DATA AS READ FROM THE RAM
                                ;       RAMSIZ          NUMBER OF BYTES IN PACKET
                                ;                       IF RAMSIZ=0 THEN DEFAULT TO 8.
                                ;
                                ;IMPLICIT OUTPUTS:
                                ;
                                ;       RAMSIZ  SET TO 0
                                ;-
                                        BGNMSG  RAMERR
                                RAMERR::
015570  004737  014056                  JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
                                        ENDMSG
                                L10021:
015574  104423                          TRAP    C$MSG


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

```
                                ;
                                ;       R4      POINTER TO COMMAND PACKET
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       RAMDATA         DATA AS READ FROM THE RAM
                                ;       RAMSIZ          NUMBER OF BYTES IN PACKET
                                ;                       IF RAMSIZ=0 THEN DEFAULT TO 8.
                                ;       ERRHI           HIGH ORDER TEST ADDRESS
                                ;       ERRLO           LOW ORDER TEST ADDRESS
                                ;
                                ;IMPLICIT OUTPUTS:
                                ;
                                ;       RAMSIZ  SET TO 0
                                ;-
                                
                                        BGNMSG  RAMTADD
015576                          RAMTADD::
015576
015576  004737  010352                  JSR     PC,PRITADD      ;PRINT TEST ADDRESS
015602  004737  014056                  JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
015606                                  ENDMSG
015606                          L10022:
015606  104423                          TRAP    C$MSG
                                
                                        .SBTTL  RAMEXP  - PRINT RAM EXPD/RECV DATA
                                ;+
                                ;
                                ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
                                ;
                                ;INPUTS:
                                ;
                                ;       R1      RECEIVED DATA
                                ;       R2      EXPECTED DATA
                                ;       R4      CONTROLLER RAM ADDRESS
                                ;-
                                
                                        BGNMSG  RAMEXP
015610                          RAMEXP::
015610
015610  042701  177400                  BIC     #^C<377>,R1             ;SAVE EXPD RAM DATA BYTE
015614  042702  177400                  BIC     #^C<377>,R2             ;SAVE EXPD RAM DATA BYTE
015620  004737  010144                  JSR     PC,PRIRAM               ;PRINT THE RAM ADDRESS
015624  004737  010020                  JSR     PC,PRIXOR               ;PRINT THE DATA
015630                                  ENDMSG
015630                          L10023:
015630  104423                          TRAP    C$MSG
                                
                                        .SBTTL  TIMEXP  - PRINT TIMER A,B AND EXP/REC
                                ;+
                                ;
                                ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
                                ;AND TIMER A,B HEADER MESSAGE
                                ;
                                ;INPUTS:
                                ;
                                ;       R1      RECEIVED DATA
                                ;       R2      EXPECTED DATA
```

```
2031                                    ;-
2032
2033 015632                                     BGNMSG  TIMEXP
     015632                             TIMEXP::
2034 015632                                     PRINTX  #TIMSG0                 ;PRINT HEADER
     015632  012746  015660                     MOV     #TIMSG0,-(SP)
     015636  012746  000001                     MOV     #1,-(SP)
     015642  010600                             MOV     SP,R0
     015644  104415                             TRAP    C$PNTX
     015646  062706  000004                     ADD     #4,SP
2035 015652  004737  010020                     JSR     PC,PRIXOR               ;PRINT THE DATA
2036 015656                                     ENDMSG
     015656                             L10024:
     015656  104423                             TRAP    C$MSG
2037
2038
2039 015660    045    116    045  TIMSG0: .ASCIZ  '%N%A TIMER A STATUS IS IN BIT 3%N%A TIMER B STATUS IS IN BIT 2'
2040                                .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)
                ;
                ;-

015760                  BGNMSG  BADSSR
015760          BADSSR::
015760  010246          MOV     R2,-(SP)                ;SAVE DATA TRANSFERRED
015762  042702  177400  BIC     #177400,R2              ;GET JUST ONE BYTE
015766          PRINTB  #XFERASC,R2
015766  010246          MOV     R2,-(SP)
015770  012746  016020  MOV     #XFERASC,-(SP)
015774  012746  000002  MOV     #2,-(SP)
016000  010600          MOV     SP,R0
016002  104414          TRAP    C$PNTB
016004  062706  000006  ADD     #6,SP
016010  012602          MOV     (SP)+,R2                ;RESTORE R2
016012  004737  006020  JSR     PC,PRITSSR              ;DECODE TSSR CONTENTS
016016          ENDMSG
016016          L10025:
016016  104423          TRAP    C$MSG
016020    045   116   045 XFERASC:        .ASCIZ  '%N%A Data Transferred = %03'
```

```
                        .SBTTL  GLOBAL SUBROUTINES SECTION

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

```
                                .SBTTL  SOFINIT - SOFT INITIALIZE OF CONTROLLER

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

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

```
                        .SBTTL  CHKAMB  - CHECK TSSR FOR AMBIGUITY

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

016124          CHKAMB:
016124                  SAVREG                          ;SAVE THE GENERAL REGISTERS
016130  010004          MOV     R0,R4                   ;CONTENTS OF TSSR
016132  032700  100000  BIT     #SC,R0                  ;IS BIT 15 SET ?
016136  001004          BNE     5$                      ;BRANCH IF YES
016140  032700  174077  BIT     #^C<NBA!OFL!SSR!HIADDR>,R0      ;ANY OTHER BITS SET ?
016144  001023          BNE     40$                     ;MUST BE AN ERROR
016146  000424          BR      45$                     ;RETURN WITH SUCCESS
016150  032700  000200  5$:     BIT     #SSR,R0         ;IS READY BIT SET ?
016154  001011          BNE     10$                     ;BRANCH IF READY BIT IS SET.
016156  032700  000040          BIT     #BIT5,R0        ;IS FATAL ERROR BIT SET ?
016162  001414          BEQ     40$                     ;ERROR IF NOT
016164  042704  177761          BIC     #^CTERCLS,R4    ;CLEAR ALL BUT TERMINATION CODE
016170  020427  000016          CMP     R4,#16          ;ALL THREE BITS MUST BE SET
016174  001007          BNE     40$                     ;ERROR IF NOT SET
016176  000410          BR      45$                     ;OK IF ALL ARE SET
016200  032700  000040  10$:    BIT     #BIT5,R0        ;IS FATAL ERROR BIT SET ?
016204  001405          BEQ     45$                     ;ERROR IF BIT IS SET WITH SSR
016206  032700  000006          BIT     #BIT2!BIT1,R0   ;IS THIS A FUNCTION REJECT
016212  001002          BNE     45$                     ;BR, IF TSSR IS OK
016214  000241          40$:    CLC                     ;AMBIGUOUS CONTENTS
016216  000401          BR      50$
016220  000261          45$:    SEC                     ;SHOW SUCCESS - NO AMBIGUITY
016222  000207          50$:    RTS     PC              ;RETURN TO CALLER
```

```
                                        .SBTTL  ENAINT,DSBINT - ENABLE/DISABLE INTERRUPTS
                                ;
                                ; DEFAULT DISPLAY INTERRUPT HANDLERS.
                                ; IF DISPLAY TIME-OUT, REPORT DEV FATAL, AND ABORT PASS.
                                ; OTHERWISE, SAVE DPU REGISTERS AND DISMISS.
                                ;

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

                                                BGNSRV  INTR            ;DEFINE INTERRUPT ENTRY
                                        INTR::
                                                MOV     #1,INTRECV      ;SET FLAG TO SHOW INTERRUPT RECEIVED
                                                CLRB    INTFLAG         ;CLEAR FLAG TO SAY WE GOT INTERRUPT
                                                BITB    #IOKSTP,INTMASK ;EXPECTING STOP INTERRUPT?
                                                BNE     1$              ;BR IF YES
                                                BISB    #IOKSTP,INTFLAG ;NO. SET THE ERROR FLAG.

                                        ;SAVE REGISTERS, MSG BUFFER, ETC.
                                        1$:
                                                ENDSRV
                                        L10026:
                                                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$BRK
016334  012746  003000  1$:     MOV     #3000,-(SP)     ;300 MSEC TIMER
016340  016500  000002  2$:     MOV     TSSR(R5),R0     ;READ THE TSSR REGISTER
016344  105700                  TSTB    R0              ;TEST FOR READY BIT SET
                ;
016346  100420                  BMI     3$              ; EXIT ON STOP FLAG.
016350                          DELAY   1               ; WAIT 100 USEC
016350  012727  000001          MOV     #1,(PC)+
016354  000000                  .WORD   0
016356  013727  002116          MOV     L$DLY,(PC)+
016362  000000                  .WORD   0
016364  005367  177772          DEC     -6(PC)
016370  001375                  BNE     .-4
016372  005367  177756          DEC     -22(PC)
016376  001367                  BNE     .-20
016400  005316                  DEC     (SP)            ;REDUCE DELAY COUNT
016402  001356                  BNE     2$              ;RETRY UNTIL TIMER EXPIRES
016404  000241                  CLC                     ; C = 0, CONTROLLER STILL RUNNING...
016406  000401                  BR      4$              ;...OR HUNG-UP AFTER 300 MSEC.
016410  000261          3$:     SEC                     ; C = 1, CONTROLLER IS STOPPED.
016412  005326          4$:     DEC     (SP)+           ;RESTORE STACK WITHOUT CHANGING CARRY BIT
016414  000207                  RTS     PC
```

```
                        .SBTTL  CHKTSSR - CHECK TSSR FOR READY

                ;+
                ;
                ;THIS ROUTINE WAITS FOR READY IN THE TSSR
                ;AND TESTS FOR AMBIGUOUS BIT SETTINGS IN TSSR.
                ;
                ;INPUT:
                ;
                ;       R5      ADDRESS OF CSR REGISTERS
                ;
                ;OUTPUT:
                ;
                ;       R0      CONTENTS OF TSSR
                ;       CARRY   SET - OKAY
                ;               CLR - NOT READY AMBIGUOUS, OR SC SET
                ;
                ;-

016416          CHKTSSR:
016416  004737  016330          JSR     PC,WAITF                ;WAIT FOR READY
016422  103014                  BCC     20$                     ;BRANCH IF TIME OUT
016424  004737  016124          JSR     PC,CHKAMB               ;TSSR AMBIGOUS?
016430  103006                  BCC     10$                     ;BR IF YES
016432  032700  100000          BIT     #SC,R0                  ;SPECIAL CONDITION SET?
016436  001405                  BEQ     15$                     ;BR IF NO
016440  032700  074000          BIT     #<SCE!BIE!RMR!NXM>,R0   ;ANY ERROR BITS SET?
016444  001402                  BEQ     15$                     ;BR IF NO
016446  000241          10$:    CLC                             ;SET FAILURE
016450  000401                  BR      20$                     ;
016452  000261          15$:    SEC                             ;SET SUCCESS
016454  000207          20$:    RTS     PC                      ;RETURN TO CALLER
```

```
                                        .SBTTL  XNXM    - CHECK FOR NONEXISTENT MEMORY
                                ;+
                                ; ROUTINE TO TEST FOR A NEXM IN THE RANGE (R1) THRU (R2).
                                ; ON RETURN, IF "C" = 1, (R1) = NEXM ADDRESS.
                                ;               "C" = 0, ALL ADDRESSES OK.
                                ;
                                ;CALL:  MOV ADR1,R1
                                ;       MOV ADR2,R2
                                ;       JSR PC,NXM
                                ;       RETURN          ;TEST "C" AND PROCEED.
                                ;
016456  012737  016510  000004  XNXM:   MOV     #2$,@#4         ; SET BUSERR VECTOR.
016464  012737  000200  000006          MOV     #PRI04,@#6
016472  005003                          CLR     R3              ;FLAG.
016474  005711                  1$:     TST     (R1)            ;TEST THE ADDRESS(ES).
                                                                ;IF ANY TRAP, CONTINUE AT 2$.
016476  020102                          CMP     R1,R2           ;OTHERWISE, CONTINUE HERE.
016500  001407                          BEQ     3$              ;BR IF FINISHED (NO NEXM'S).
016502  062701  000002                  ADD     #2,R1           ;SET NEXT ADDRESS...
016506  000772                          BR      1$              ;...AND CONTINUE.

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



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

```
                        .SBTTL  TSTSETUP - PRINT TEST NAME AND INIT ERROR COUNTS
                ;+
                ; PRINT THE NUMBER AND NAME OF EACH TEST AS WE GO ALONG.
                ; INCREMENT "TESTK" TO INDICATE THE NUMBER OF TESTS
                ; IN THE CURRENT RUN SEQUENCE.
                ; CLEAR THE ERROR COUNTER AND SIGNATURE EXTENSION FLAGS.
                ;
                ;INPUT:
                ;
                ;       R0      POINTER TO TEST ID ASCIZ STRING
                ;
                ;OUTPUT:
                ;
                ;       R5      ADDRESS OF FIRST DEVICE REGISTER
                ;
                ;IMPLICIT OUTPUTS:
                ;
                ;       TSTCNT  UPDATED TO COUNT TESTS PERFORMED SINCE START OR RESTART
                ;
                ;SIDE EFFECTS:
                ;
                ;       INTERRUPT LEVEL IS RASIED TO LEVEL OF
                ;       THE DEVICE UNDER TEST
                ;
                ;-

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

```
                016702  104444                          TRAP    C$DCLN
2378            016704  000423                          BR      5$
2379
2380            016706                          4$:     RFLAGS  R0              ; GET THE OPERATOR FLAGS.
                016706  104421                          TRAP    C$RFLA
2381            016710  032700  001000                  BIT     #PNT,R0         ; PRINT THE TEST NUMBERS?
2382            016714  001412                          BEQ     1$              ; BR IF NO
2383            016716  011600                          MOV     (SP),R0         ;GET THE ID MESSAGE
2384            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$PNTF
                016736  062706  000006                  ADD     #6,SP
2385            016742  005237  002206          1$:     INC     TSTCNT          ; BUMP TEST COUNTER.
2386            016746                                  SETPRI  IPRI            ;PRIORITY THAT OF DEVICE
                016746  013700  002204                  MOV     IPRI,R0
                016752  104441                          TRAP    C$SPRI
2387            016754  005726                  5$:     TST     (SP)+           ;FIX UP THE STACK
2388            016756  013705  002200                  MOV     CSRADDR,R5      ; ADDRESS OF TSV REGISTERS ON UNIBUS
2389            016762  000207                          RTS     PC
2390            016764     045     123     045  TNAM:  .ASCIZ  '%S%T%A Test'
2391                                                    .EVEN
```

```
                                        .SBTTL  TSTEND  - PRINT ERRORS RECEIVED
                                ;
                                ; AT END OF EACH TEST, PRINT THE NUMBER OF ERRORS RECEIVED
                                ; IF NORMAL ERROR REPORTING IS DISABLED (FLA:IER).
                                ;
017000                          TSTEND: RFLAGS  R0
017000  104421                         TRAP    C$RFLA
017002  030027  020000                  BIT     R0,#IER
017006  001412                          BEQ     1$                      ; BR IF "IER" NOT SET.
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$PNTF
017030  062706  000006                  ADD     #6,SP
017034  000207                  1$:     RTS     PC

017036  000000                  ERRK:   0                               ; LOCAL ERROR COUNT.
017040     045     101     040  ESUM:   .ASCIZ  /%A %D%A ERRORS/
017057     105     122     122  EMAXDU: .ASCIZ  /ERROR LIMIT REACHED -- DROPPING UNIT/
                                        .EVEN

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

017162  010046                  CKEMAX: MOV     R0,-(SP)                ; SAVE R0
017164  013700  002174                  MOV     UNITN,R0                ; GET UNIT NUMBER
017170  006300                          ASL     R0                      ; ... AND MAKE IT A WORD OFFSET
017172  016000  003170                  MOV     ERTABL(R0),R0           ; GET ERROR TABLE ENTRY
017176  042700  170000                  BIC     #170000,R0              ; EXTRACT ERROR COUNT FIELD
017202  020037  002166                  CMP     R0,GERRMAX              ; IS GLOBAL LIMIT EXCEEDED FOR THIS UNIT?
017206  103004                          BHIS    1$                      ; BR IF YES
017210  023737  017036  002164          CMP     ERRK,LERRMAX            ; IS LOCAL LIMIT EXCEEDED FOR THIS TEST?
017216  103417                          BLO     2$                      ; BR IF NO
017220                          1$:     RFLAGS  R0                      ; GET OPERATOR FLAGS
017220  104421                          TRAP    C$RFLA
017222  032700  000040                  BIT     #IDU,R0                 ; IS DROPPING INHIBITED?
017226  001013                          BNE     2$                      ; BR IF YES.
017230  012737  177777  003104          MOV     #-1,DUFLG               ; NO -- DROP THE UNIT
017236                                  ERRDF   4,EMAXDU
017236  104455                          TRAP    C$ERDF
017240  000004                          .WORD   4
017242  017057                          .WORD   EMAXDU
```

```
        017244  000000                          .WORD   0
   2439 017246                                  DODU    UNITN
        017246  013700  002174                  MOV     UNITN,R0
        017252  104451                          TRAP    C$DODU
   2440 017254                                  DOCLN
        017254  104444                          TRAP    C$DCLN
   2441 017256  012600                  2$:     MOV     (SP)+,R0        ; RESTORE R0
   2442 017260  000207                          RTS     PC              ; RETURN TO CALLER
   2443
```

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


                                        .SBTTL  CONFIG  - DETERMINE CONFIGURATION OF SYSTEM
                                ;
                                ; SUBROUTINE - DETERMINE CONFIGURATION OF TSV05 SYSTEM.
                                ;
017330                          CONFIG:
017330  004737  016054                  JSR     PC,SOFINIT
017334  000207                          RTS     PC
```

```
                                        .SBTTL  KTON,KTOFF      - ENABLE/DISABLE MEMORY MANAGEMENT
                                ;
                                ; SUBROUTINE - ENABLE MEM MGT.
                                ;
017336  005737  003124        KTON:   TST     KTFLG           ; GOT KT?
017342  001403                        BEQ     1$              ; NO.
017344  012737  000001  177572        MOV     #1,SR0          ; YES. ENABLE KT11.
017352  000207                1$:     RTS     PC
                                ;
                                ; SUBROUTINE - DISABLE MEM MGT.
                                ;
017354  005737  003124        KTOFF:  TST     KTFLG           ; GOT KT11?
017360  001405                        BEQ     1$              ; NO.
017362  000240                        NOP
017364  000240                        NOP
017366  012737  000000  177572        MOV     #0,SR0          ; DISABLE KT.
017374  000207                1$:     RTS     PC
```

```
                        .SBTTL  SETMAP  - SETUP PAR6 MAPPING

                ;+
                ;
                ;THIS ROUTINE SETS UP KERNEL PAR6 TP HANDLE
                ;AN 18 BIT ADDRESS. THE OFFSET INTO THE PAGE
                ;IS RETURNED BIASED TO PAR6.
                ;
                ;INPUTS:
                ;
                ;       R0      HIGH ORDER ADDRESS BITS
                ;       R1      LOW ORDER ADDRESS BITS
                ;
                ;OUTPUTS:
                ;
                ;       R0      OFFSET INTO BLOCK WITH PAR6 BIAS (I.E. THE ADDRESS)
                ;       CARRY   SET IF SUCCESS
                ;               CLR IF ERROR
                ;-
017376          SETMAP:
017376                  SAVREG                          ;SAVE R1-R4 UNTIL NEXT RETURN
017402  005737  003124          TST     KTFLG           ;SYSTEM HAVE ABOVE 28K?
017406  001433                  BEQ     10$             ;BR IF NO
017410  010102                  MOV     R1,R2           ;SAVE LOW ORDER BITS
        000006                  .REPT   6
                                ASR     R0              ;CONVERT WORD ADDRESS TO 32W BLOCKS
                                ROR     R1              ;MAKE IT DOUBLE PRECISION
                                .ENDR
017442  042701  000177          BIC     #177,R1         ;ALINE FOR LOWER 4K BOUNDARY
017446  020137  003124          CMP     R1,KTFLG        ;HIGHER THAN EXISTING MEMORY?
017452  103011                  BHIS    10$             ;BR IF YES
017454  010137  172354          MOV     R1,@#KIPAR6     ;SETUP MAPPING REGISTER PAR6
017460  042702  160000          BIC     #160000,R2      ;SETUP DISPLACEMENT IN PAGE
017464  062702  140000          ADD     #140000,R2      ;ADD IN PAR6 BIAS
017470  010200                  MOV     R2,R0           ;RETURN IN R0
017472  000261                  SEC                     ;SET SUCCESS
017474  000401                  BR      15$             ;
017476  000241          10$:    CLC                     ;SET FAILURE
017500  000207          15$:    RTS     PC              ;RETURN
```

```
                        .SBTTL  FILLMEM - FILL MEMORY WITH BACKGROUND PATTERN
                ;+
                ; FILL MEMORY WITH A BACKGROUND PATTERN
                ;
                ; INPUTS:
                ;
                ;       R0 = BACKGROUND PATTERN
                ;       FREE    = FIRST LOCATION AVAILABLE TO DIAGNOSTIC
                ;       KTFLG   = SET TO HIGHEST MEMORY LOCATION IF > 28K.
                ;
                ; 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
```

```
2596
2597
```

```
                                        .SBTTL  CMPMEM  - COMPARE MEMORY TO BACKGROUND PATTERN
                                ;+
                                ; COMPARE MEMORY WITH A BACKGROUND PATTERN
                                ;
                                ; INPUTS:
                                ;
                                ;       R0 = BACKGROUND PATTERN
                                ;       FREE    = FIRST LOCATION AVAILABLE TO DIAGNOSTIC
                                ;       KTFLG   = SET TO HIGHEST MEMORY LOCATION IF > 28K.
                                ;
                                ; OUTPUTS:
                                ;
                                ;       CARRY   - SET IF NO ERROR
                                ;       CARRY   - CLR IF ERROR
                                ;
                                ; IMPLICIT OUTPUTS:
                                ;
                                ;       ERRHI   - ERROR HIGH ADDRESS
                                ;       ERRLO   - ERROR LOW ADDRESS
                                ;       EXPD    - EXPECTED DATA
                                ;       RECV    - RECEIVED DATA
                                ;-
017740                          CMPMEM:
017740                                  SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
017744  010003                          MOV     R0,R3           ;COPY TEST PATTERN
017746  004737  017354                  JSR     PC,KTOFF        ;DISABLE KT.
017752  013701  003116                  MOV     FREE,R1         ;GET FIRST FREE LOCATION
017756  013702  003120                  MOV     FRESIZ,R2       ;SIZE OF FREE SPACE BELOW 28K.
017762  020311                  10$:    CMP     R3,(R1)         ;FREE SPACE LOCATION EQUAL TO EXPD?
017764  001411                          BEQ     15$             ;BR IF YES
017766  010137  002232                  MOV     R1,ERRLO        ;SAVE ADDRESS IN ERROR
017772  005037  002230                  CLR     ERRHI           ;NO HIGH ADDRESS
017776  010337  002224                  MOV     R3,EXPD         ;SAVE EXPD FOR ERROR REPORT
020002  011137  002226                  MOV     (R1),RECV       ;SAVE RECV FOR ERROR REPORT
020006  000474                          BR      50$             ;
020010  005721                  15$:    TST     (R1)+           ;POINT TO NEXT ADDRESS
020012  005302                          DEC     R2              ;DONE ALL MEMORY IN FREE SPACE?
020014  003362                          BGT     10$             ;BR IF NO
020016  005737  003124                  TST     KTFLG           ; GOT KT?
020022  001472                          BEQ     55$             ; NO. GET OUT.
020024  004737  017336                  JSR     PC,KTON         ; YES. ENABLE KT.
020030  005000                          CLR     R0              ;HIGH ORDER ADDRESS START
020032  013701  003144                  MOV     PST32W,R1       ;GET >28K START ADDRESS (IN 32W BLOCKS)
                000006                  .REPT   6
                                        ROL     R1              ;CONVERT BLOCKS TO WORDS
                                        ROL     R0              ;MAKE IT DOUBLE PRECISION
                                        .ENDR
020066  042701  000177                  BIC     #177,R1         ;ALINE 4K BOUNDARY
020072  010046                          MOV     R0,-(SP)        ;SAVE HIGH ORDER
020074  010146                          MOV     R1,-(SP)        ;SAVE LOW ORDER
020076  004737  017376                  JSR     PC,SETMAP       ;SETUP PAR6 MAPPING REGISTER
020102  010004                          MOV     R0,R4           ;COPY ADDRESS BIASED TO PAR6
020104  012601                          MOV     (SP)+,R1        ;RESTORE LOW ORDER IN NON PAR6 FORMAT
020106  012600                          MOV     (SP)+,R0        ;RESTORE HIGH ORDER IN NON PAR6 FORMAT
020110  020314                  30$:    CMP     R3,(R4)         ;ABOVE 28K LOCATION EQUAL EXPD?
020112  001411                          BEQ     32$             ;BR IF YES
020114  010037  002230                  MOV     R0,ERRHI        ;SAVE HIGH ORDER IN ERROR
```

```
2656 020120  010137  002232                    MOV     R1,ERRLO        ;SAVE LOW ORDER IN ERROR
2657 020124  010337  002224                    MOV     R3,EXPD         ;SAVE EXPD FOR ERROR REPORT
2658 020130  011437  002226                    MOV     (R4),RECV       ;SAVE RECV FOR ERROR REPORT
2659 020134  000421                            BR      50$             ;
2660 020136  062701  000002            32$:    ADD     #2,R1           ;UPDATE NON PAR6 ADDRESS
2661 020142  005500                            ADC     R0              ;MAKE IT DOUBLE PRECISION ADD
2662 020144  062704  000002                    ADD     #2,R4           ;UPDATE PAR FORMAT ADDRESS
2663 020150  020427  160000                    CMP     R4,#160000      ;END OF PAR6 MAPPING AREA?
2664 020154  103755                            BLO     30$             ;BR IF NO
2665 020156  162704  020000                    SUB     #20000,R4       ;BACKUP INTO PAR6 MAPPING BEGIN
2666 020162  062737  000200  172354            ADD     #200,@#KIPAR6   ;POINT TO NEXT 4K BLOCK >28K.
2667 020170  023737  172354  003124            CMP     @#KIPAR6,KTFLG  ;END OF MEMORY?
2668 020176  101744                            BLOS    30$             ;BR IF NO
2669 020200  004737  017354            50$:    JSR     PC,KTOFF        ;TURN OFF MEMORY MAPPING
2670 020204  000241                            CLC                     ;SET FAILURE
2671 020206  000403                            BR      60$             ;
2672 020210  004737  017354            55$:    JSR     PC,KTOFF        ;TURN OFF MEMORY MAPPING
2673 020214  000261                            SEC                     ;SET SUCCESS
2674 020216  000207                    60$:    RTS     PC
2675
```

```
                                        .SBTTL  REGSAV  - SAVE R1-R5 ON STACK
                                ;+
                                ;
                                ;ROUTINE TO
                                ;SAVE R1 THROUGH R5 ON THE STACK
                                ;
                                ;CALLING SEQUENCE:
                                ;
                                ;       JSR     R5,REGSAV
                                ;
                                ;THIS IS A COOROUTINE WHICH TRANSFER CONTROL BACK TO
                                ;THE CALLING ROUTINE. AT THE END OF THE CALLING ROUTINE,
                                ;THE RTS PC RETURNS CONTROL TO THIS ROUTINE TO RESTORE
                                ;REGISTERS.
                                ;
                                ;THIS ROUTINE SHOULD ONLY BE CALLED FROM ROUTINES WHICH ARE
                                ;CALLED VIA A JSR PC INSTRUCTION
                                ;
                                ;-

020220                          REGSAV:
020220  010446                          MOV     R4,-(SP)
020222  010346                          MOV     R3,-(SP)
020224  010246                          MOV     R2,-(SP)
020226  010146                          MOV     R1,-(SP)
020230  010546                          MOV     R5,-(SP)
020232  016605  000012                  MOV     10.(SP),R5
020236  004736                          JSR     PC,@(SP)+
020240  012601                          MOV     (SP)+,R1
020242  012602                          MOV     (SP)+,R2
020244  012603                          MOV     (SP)+,R3
020246  012604                          MOV     (SP)+,R4
020250  012605                          MOV     (SP)+,R5
020252  000207                          RTS     PC
```

```
                        .SBTTL  GETPAT  - GET 8 BIT PATTERN FROM OPERATOR
                ;+
                ;
                ;ROUTINE TO REQUEST AN 8 BIT DATA PATTERN FROM THE OPERATOR
                ;
                ;INPUTS:
                ;
                ;       NONE.
                ;
                ;OUTPUTS:
                ;
                ;       R0      OCTAL NUMBER FROM THE OPERATOR
                ;
                ;CALLING SEQUENCE:
                ;
                ;       JSR     PC,GETPAT
                ;
                ;-
                GETPAT::
                        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  010002                          MOV     R0,R2                   ;SAVE THE MENU ADDRESS
020342  010203                  1$:     MOV     R2,R3                   ;START OF MENU STRING
020344  005713                  2$:     TST     (R3)                    ;END OF ASCII ?
020346  001412                          BEQ     3$                      ;BRANCH IF ALL LINES DISPLAYED
020350                                  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$PNTF
020370  062706  000006                  ADD     #6,SP
020374  000764                          BR      2$
020376                          3$:     GMANID  MENASC,MENRES,D,-1,0,-1,NO
020376  104443                          TRAP    C$GMAN
020400  000406                          BR      10001$
020402  020556                          .WORD   MENRES
020404  000042                          .WORD   T$CODE
020406  020527                          .WORD   MENASC
020410  177777                          .WORD   -1
020412  000000                          .WORD   T$LOLIM
020414  177777                          .WORD   T$HILIM
020416                          10001$:
020416                                  BNCOMPLETE      1$              ;RETRY IF ERROR
020416  103352                          BCC     1$
020420  013700  020556                  MOV     MENRES,R0               ;GET THE OPERATOR'S REPLY
020424  020001                          CMP     R0,R1                   ;COMPARE TO MAXIMUM ALLOWED
020426  101411                          BLOS    5$                      ;BRANCH IF OK
020430                                  PRINTF  #MENERR                 ;DISPLAY ERROR MESSAGE
020430  012746  020454                  MOV     #MENERR,-(SP)
020434  012746  000001                  MOV     #1,-(SP)
020440  010600                          MOV     SP,R0
020442  104417                          TRAP    C$PNTF
020444  062706  000004                  ADD     #4,SP
020450  000735                          BR      1$                      ;RETRY
020452  000207                  5$:     RTS     PC                      ;RETURN TO CALLER
020454    045     116     045   MENERR: .ASCIZ  '%N%A *** Menu Selection Too Large ***'
020522    045     116     045   SELASC: .ASCIZ  '%N%T'
020527    105     156     164   MENASC: .ASCIZ  'Enter Menu Selection: '
```

```
 2783                                    .EVEN
 2784 020556  000000            MENRES:         .WORD   0
```

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

020560          CHKMAN::
020560                  SAVREG                  ;SAVE THE REGISTERS
020564                  MANUAL                  ;SEE IF MANUAL INTERVENTION OK
020564  104450          TRAP    C$MANI
020566                  BCOMPLETE 1$            ;BRANCH IF ALLOWED
020566  103411          BCS     1$
020570                  PRINTF  #NOMAN          ;PRINT THE WARNING MESSAGE
020570  012746  020614          MOV     #NOMAN,-(SP)
020574  012746  000001          MOV     #1,-(SP)
020600  010600                  MOV     SP,R0
020602  104417                  TRAP    C$PNTF
020604  062706  000004          ADD     #4,SP
020610  000241                  CLC                     ;CLEAR CARRY FOR ERROR
020612  000207          1$:     RTS     PC              ;RETURN

020614  045  116  045  NOMAN:  .ASCIZ  '%N%A *** Manual Intervention not Allowed - Test Aborted ***'
                        .even
```

```
                                .SBTTL  ENVIRN  - SETUP FREE DIAGNOSTIC SPACE
                        ;
                        ; SUBROUTINE TO SET-UP VARIOUS ENVIRONMENTAL PARAMETERS.
                        ;
020710                  ENVIRN: MEMORY  R0
020710  104431                  TRAP    C$MEM
020712  010037  003116          MOV     R0,FREE         ; GET 1ST FREE ADDRESS...
020716  062737  000002  003116  ADD     #2,FREE
020724  011037  003120          MOV     (R0),FRESIZ     ;...AND WORD COUNT.
020730  162737  000004  003120  SUB     #4,FRESIZ
020736  013702  002012          MOV     L$UNIT,R2       ; GET NUMBER OF UNITS
020742  162737  000007  003120  10$:    SUB     #7,FRESIZ       ; TAKE AWAY 7 WORDS PER UNIT
020750  005302                  DEC     R2
020752  001372                  BNE     10$
020754  013700  003116          MOV     FREE,R0         ;GET FIRST FREE ADDRESS
020760  063700  003120          ADD     FRESIZ,R0       ;POINT TO LAST FREE ADDRESS
020764  162700  000002          SUB     #2,R0           ;BACKUP 1 WORD
020770  010037  003122          MOV     R0,FREEHI       ;STORE LAST FREE ADDRESS
020774  000240                  NOP                     ;*********************************************
020776  012701  177520          MOV     #BDVPCR,R1      ;GET BDV11 PCR ADDRESS
021002  010102                  MOV     R1,R2           ;COPY TO R2
021004  062702  000002          ADD     #2,R2           ;SET THE RANGE
021010  004737  016456          JSR     PC,XNXM         ;SEE IF WE HAVE ONE
021014  103001                  BCC     15$             ;OK TO SET FLAGS
021016  000445                  BR      40$             ;RETURN WITH FLAGS CLEAR
021020  013701  177520  15$:    MOV     BDVPCR,R1       ;SAVE PCR CONTENTS
021024  062701  000001          ADD     #1,R1           ;ADD ONE TO IT
021030  012702  177520          MOV     #BDVPCR,R2      ;GET BDV11 PCR ADDRESS
021034  005212                  INC     (R2)            ;TRY TO WRITE TO IT
021036  013703  177520          MOV     BDVPCR,R3       ;GET RESULTS
021042  020103                  CMP     R1,R3           ;DID IT CHANGE?
021044  001017                  BNE     20$             ;NO, MUST BE 11/23B
021046  005237  003136          INC     T23A            ;SET THE FLAG
021052  042737  170000  002120  BIC     #170000,L$HIME  ;SUPERVISOR COULD BE WRONG
021060  000240                  NOP                     ;BR 40$ FOR RELEASE
021062                          PRINTF  #M8186          ;TELL THE SYSTEM TYPE
021062  012746  005550          MOV     #M8186,-(SP)
021066  012746  000001          MOV     #1,-(SP)
021072  010600                  MOV     SP,R0
021074  104417                  TRAP    C$PNTF
021076  062706  000004          ADD     #4,SP
021102  000413                  BR      40$             ;RETURN
021104  005237  003140  20$:    INC     T23B            ;SET THE FLAG
021110  000240                  NOP                     ;BR 40$ FOR RELEASE
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$PNTF
021126  062706  000004          ADD     #4,SP
021132  000207  40$:    RTS     PC              ;RETURN
```

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

021134          KTINIT:
021134  005037  003124          CLR     KTFLG           ; INIT >28K MEMORY FLAG
021140  005037  003126          CLR     KTENABLE        ; INIT TEST >28K FLAG
021144  023727  002120  001577  CMP     L$HIME,#1577    ; GOT ENOUGH MEMORY (>28K)?
021152  101444                  BLOS    9$              ; NO.
021154  013700  000004          MOV     @#ERRVEC,R0     ; SAVE OLD ERR VEC PTR.
021160  012737  021252  000004  MOV     #2$,@#ERRVEC    ; SET ERR VEC PTR.
021166  005737  177572          TST     @#SR0           ; GOT KT11?
021172  000240                  NOP                     ;  (TRAP IF NO).
021174  013737  002120  003124  MOV     L$HIME,KTFLG    ; YES. SET KT FLAG.
021202  042737  000177  003124  BIC     #177,KTFLG      ;
021210  010037  000004          MOV     R0,@#ERRVEC     ; RESTORE OLD ERR VEC PTR.
021214  005000                  CLR     R0              ; R0 = AR DATA.
021216  012701  172340          MOV     #KIPAR0,R1      ; R1 = KI REGS PTR.
021222  012761  077406  177740  1$:     MOV     #77406,-40(R1)  ; SET DESCRIPTOR REG.
021230  010021                  MOV     R0,(R1)+        ; SET KIPAR REG.
021232  062700  000200          ADD     #200,R0         ; BUMP AR DATA BY "4K".
021236  020027  002000          CMP     R0,#2000        ; AT "I/O"?
021242  001367                  BNE     1$              ; NO.
021244  012741  177600          MOV     #177600,-(R1)   ; YES. SET KTPAR7 FOR I/O.
021250  000405                  BR      9$

021252  012716  021260  2$:     MOV     #6$,(SP)        ; SET UP RETURN
021256  000002                  RTI                     ; RTI TO NEXT LOCATION

021260  010037  000004  6$:     MOV     R0,@#ERRVEC     ; RESTORE OLD ERR VEC PTR.

021264  000207          9$:     RTS     PC
```

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

021266                          INVERT::

021266  005737  002220                  TST     EXTFEA                  ; IS SWITCH SET?
021272  001020                          BNE     1$                      ; YES,EXIT STAGE RIGHT!(or the next one outa town!)
021274  012737  100206  021340          MOV     #100206,CMDPKT          ; WRT SUB-SYS MEM CMD
021302  012737  021350  021342          MOV     #WSMBK,CMDPKT+2         ; MSG BUF ADDR
021310  012737  000006  021346          MOV     #6,CMDPKT+6             ; BYTE COUNT
021316  012737  100010  021350          MOV     #100010,WSMBK           ; INVERT THE SWITCH
021324  012704  021340                  MOV     #CMDPKT,R4              ; SET CMDPKT INTO R4
021330  004737  010742                  JSR     PC,WRTCHR               ; DO IT
021334  000207                  1$:     RTS     PC                      ; RETURN


                                ;       COMMAND PACKET.

021340                          .       =       <.+3>&177774    ;MUST BE ON MOD 4 BOUNDRY.

021340  000000                  CMDPKT:: 0                      ;1ST WORD IS TS05 COMMAND.
021342  000000                           0                      ;2ND WORD IS THE BUFFER LOW ADDRESS.
021344  000000                           0                      ;3RD WORD IS THE BUFFER HIGH ADDRESS.
021346  000000                           0                      ;4TH WORD IS THE BYTE/RECORD/FILE COUNT.


                                ;       WRITE SUB-SYSTEM MEMORY CHARACTERISTIC BLOCK.

021350  000000                  WSMBK::  0                      ;1ST WORD:: SEL 0
021352  000000                           0                      ;2ND WORD:: SEL 2
021354  000000                           0                      ;3RD WORD:: SEL 4
                                         .EVEN
```

```
                                ;+
                                ;       SUBROUTINE TO CHECK WETHER OR NOT WE'LL TEST NXM
                                ;
                                ;
                                ;INPUTS:
                                ;OUTPUTS:
                                ;       The NXMFLG is set if we can test.
                                ;       The NXMLO and NXMHI addresses are setup.
                                ;-

021356                          MEMCK::

021356                                  SAVREG                          ;SAVE THE REGISTERS
021362  005037  003130                  CLR     NXMFLG                  ;CLEAR THE FLAG
021366  005037  003132                  CLR     NXMLO                   ;CLEAR THE TEST ADDRESS LO
021372  005037  003134                  CLR     NXMHI                   ;CLEAR THE TEST ADDRESS HI
021376  005737  003140                  TST     T23B                    ;IS IT A 11/23B?
021402  001407                          BEQ     1$                      ;NO
021404  023727  002120  007777          CMP     L$HIME,#7777            ; GREATER THAN 128K
021412  103406                          BLO     2$                      ; NO
021414  004737  021532                  JSR     PC,NXMTST               ;SETUP THE ADDRESS
021420  000427                          BR      13$                     ;SET THE FLAG AND EXIT
021422  005737  003136          1$:     TST     T23A                    ;IS IT A 11/23A?
021426  001413                          BEQ     4$                      ;NO
021430  023727  002120  005777  2$:     CMP     L$HIME,#5777            ;GREATER THAN 96K
021436  101023                          BHI     14$                     ;YES,23A/23B WITH 128K MEMORY
021440  023727  002120  003777          CMP     L$HIME,#3777            ;GREATER THAN 64K BUT LESS THAN 92K?
021446  103403                          BLO     4$                      ;NO, CHECK 24K
021450  004737  021532                  JSR     PC,NXMTST               ;SETUP THE ADDRESS
021454  000411                          BR      13$                     ;SET THE FLAG AND EXIT
021456  023727  002120  001577  4$:     CMP     L$HIME,#1577            ;GREATER THAN 24K BUT LESS THAN 64K?
021464  103410                          BLO     14$                     ;NO, TELL THEM AND EXIT WITH FLAG CLEAR
021466  004737  021532                  JSR     PC,NXMTST               ;SETUP THE ADDRESS
021472  062737  000077  003134          ADD     #77,NXMHI               ;FOOL THE 11/02 & 11/03
021500  005237  003130          13$:    INC     NXMFLG                  ;SET THE FLAG
021504  000411                          BR      15$                     ;EXIT
021506  000410                  14$:    BR      15$                     ;NOP FOR PRINTOUT
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$PNTF
021524  062706  000004                  ADD     #4,SP
021530  000207                  15$:    RTS     PC                      ;RETURN


                                ;+
                                ;       SUBROUTINE TO SETUP THE NXM ADDRESS FOR TESTING
                                ;
                                ;OUTPUTS:NXMLO,NXMHI            ;SETUP WITH NXM ADDRESS
                                ;
                                ;-

021532  013701  002120          NXMTST: MOV     L$HIME,R1               ;GET TOP OF MEMORY
021536  062701  000200                  ADD     #200,R1                 ;MAKE IT I/O BLOCK OR OTHER NXM
021542  042701  000177                  BIC     #177,R1
021546  010102                          MOV     R1,R2                   ;RESAVE RESULTS
```

```
                000006                          .REPT   6
                                                ASL     R1              ;PUT IN PLACE FOR XFER
                                                .ENDR
021564  010137  003132                          MOV     R1,NXMLO        ;SAVE TEST ADDRESS LOW
                000012                          .REPT   10.
                                                ASR     R2              ;PUT IN PLACE FOR XFER
                                                .ENDR
021614  042702  177700                          BIC     #177700,R2      ;DON'T WANT ILA!
021620  010237  003134                          MOV     R2,NXMHI        ;SAVE TEST ADDRESS HIGH
021624  000207                                  RTS     PC              ;RETURN


021626                                          ENDMOD
```

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

```
                                        .SBTTL  PROTECTION TABLE
021626                                  BGNPROT
021626                          L$PROT::
021626  177777  177777  177777        .WORD   -1, -1, -1, -1          ;NO DEVICE PROTECTION REQUIRED.
021636                                  ENDPROT
```

```
                                                                I 9
                        .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
```

```
                                                ;
                                                ;NUMBER OF TESTS RUN IN PASS
                                                ;CLEAR FATAL ERROR COUNT
                                                ;CLEAR 11/23A FLAG
                                                ;CLEAR 11/23B FLAG
                                                ;
                                                ;RETURN TO DEBUGGER
                                                ;;@@ENTER THE DEBUGGER
                                                ;CLEAR THE SUBTEST "SKIPPER"
                                                ;
                                                ;...QUICK VERIFY...
                                                ;SET ENVIRONMENT.
                                                ;INITIALIZE KT MEMORY MANAGEMENT
                                                ;
                                                ;CLEAR THE ERROR TABLE
                                                ;
                                                ;
                                                ;GO REPORT THE STATUS
                                                ;
                                                ;INIT UNIT NUMBER...
                                                ;CLEAR COUNT OF DEVICES RUNNING
                                                ;
                                                ;...AND SET NEXT UNIT NUMBER.
                                                ;
                                                ;
                                                ;ABORT, NO MORE UNITS.
                                                ;
                                                ;HOW MANY UNITS SELECTED?
                                                ;BR IF ONLY 1
                                                ;ARE ANY STILL RUNNING?
                                                ;BR IF NO
                                                ;
                                                ;SHOULD WE PRINT STATISTICS
                                                ;BR IF NO
                                                ;
                                                ;
                                                ;
                                                ;GET UNIT N P-TABLE POINTER.
                                                ;
                                                ;BR IF UNIT NOT AVAILABLE.
                                                ;
                                                ;CLEAR "DROPPED" FLAG.
                                                ;
                                                ;GET 1ST REGISTER ADDRESS.
                                                ;ADDRESS OF REGISTERS OF UNIT UNDER TEST
```

```
                                                                    K 9
     115
     116 022214  012001                        MOV     (R0)+,R1            ;GET VECTOR ADDRESS.
     117                                       ;MOV    (R0),R2             ;GET INTERRUPT PRIORITY
     118                                       ;MOV    R2,IPRI             ;SET INTERRUPT PRIORITY.
     119 022216  010137  002202                MOV     R1,IVEC             ;SET INTERRUPT VECTOR POINTER...
     120 022222  012721  016276                MOV     #INTR,(R1)+         ;...VECTOR...
     121 022226  013721  002204                MOV     IPRI,(R1)+          ;...AND PRIORITY.
     122
     123 022232                          1$:
     124                                 ;     TST     QVP             ;1ST PASS ??
     125                                 ;     BEQ     5$              ;NO, SKIP THE PASS 1 STUFF.
     126
     127                                 ;
     128                                 ;1ST PASS, CHECK THAT DEVICE ADDRESSES ARE VALID, AND
     129                                 ;THAT THE DISPLAY STATUS IS PROPERLY INITIALIZED.
     130                                 ;
     131 022232  013701  002174                      MOV     UNITN,R1
     132 022236  006301                              ASL     R1
     133 022240  052761  100000  003170              BIS     #BIT15,ERTABL(R1)       ;SAY DEVICE RUNNING
     134 022246  005037  005766                      CLR     EXTA                    ;CLEAR ERROR EXTENSION FLAG.
     135 022252  023727  002012  000001              CMP     L$UNIT,#1               ;ARE WE TESTING MULTIPLE UNITS?
     136 022260  101416                            BLOS    10$                     ;BR IF NO.
     137 022262                                    RFLAGS  R0                      ;YES -- GET OPERATOR FLAGS.
         022262  104421                            TRAP    C$RFLA
     138 022264  032700  001000                    BIT     #PNT,R0                 ;SHOULD WE PRINT UNIT #?
     139 022270  001412                            BEQ     10$                     ;BR IF NOT.
     140 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$PNTF
         022312  062706  000006                    ADD     #6,SP
     141 022316                          10$:
     142 022316  005037  003106                    CLR     NODEV
     143 022322  013701  002200                    MOV     CSRADDR,R1              ;ADDRESS OF FIRST REGISTER
     144 022326  010102                            MOV     R1,R2                   ;START OF REGISTERS
     145 022330  062702  000002                    ADD     #TSSR,R2                ;ADDRESS OF TSSR REGISTER
     146 022334  004737  016456                    JSR     PC,XNXM                 ;TEST BOTH CONTROLLER REGISTERS...
     147 022340  103005                            BCC     2$                      ;...AND BR IF ALL OK.
     148 022342  010137  003106                    MOV     R1,NODEV                ;FLAG DEVICE AS NON-EXISTENT
     149 022346  012737  177777  003104            MOV     #-1,DUFLG               ;DROP THIS UNIT.
     150 022354                          2$:
     151                                 ;
     152                                 ;FINALLY, SET CPU PRIORITY AND WE'RE DONE.
     153                                 ;
     154 022354                          5$:     SETPRI  #PRI00          ;ENABLE INTERRUPTS.
         022354  012700  000000                    MOV     #PRI00,R0
         022360  104441                            TRAP    C$SPRI
     155 022362                                    ENDINIT
         022362                          L10030:
         022362  104411                            TRAP    C$INIT
     156
     157 022364      045      116      045  PUNIT: .ASCIZ  /%N%N%A***** TESTING UNIT %D2%A *****/
     158                                             .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

022526                                          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-.
```

```
                                1$:     .ASCIZ  /%N%A  UNIT %D%A DROPPED/
                                        .EVEN
                                        ENDDU
                                L10032:
                                        TRAP    C$DU
                                ;++
                                ; AUTO-DROP CODE SECTION.
                                ;--
                                        BGNAUTO
                                L$AUTO::
022636  013705  002200                  MOV     CSRADDR,R5              ;POINT TO DEVICE REGISTER
022642  012703  000550                  MOV     #360.,R3                ;ENOUGH TIME FOR 2400' REEL TO REWIND
022646  004737  016330          10$:    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
022652  103420                          BCS     20$                     ;LEAVE WHEN SSR IS SET
022654                                  DELAY   250.                    ;WAIT FOR .25 SECONDS
022654  012727  000372                  MOV     #250.,(PC)+
022660  000000                          .WORD   0
022662  013727  002116                  MOV     L$DLY,(PC)+
022666  000000                          .WORD   0
022670  005367  177772                  DEC     -6(PC)
022674  001375                          BNE     .-4
022676  005367  177756                  DEC     -22(PC)
022702  001367                          BNE     .-20
022704  005303                          DEC     R3                      ;BUMP COUNTER DOWN
022706  001357                          BNE     10$                     ;KEEP GOING
022710  004737  017262                  JSR     PC,CKDROP               ;TRY AND DROP UNIT
022714                          20$:
                                        ENDAUTO                 ; UNUSED.
                                L10033:
022714  104461                          TRAP    C$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$PNTS
                023072  062706  000006                  ADD     #6,SP
254             023076  000431                          BR      4$
255             023100  020227  160001          3$:     CMP     R2,#160001      ; WAS UNIT NOT READY AT STARTUP?
256             023104  001012                          BNE     30$             ; BR IF NO.
257             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$PNTS
                023124  062706  000006                  ADD     #6,SP
258             023130  000414                          BR      4$
259             023132  042702  170000          30$:    BIC     #^C7777,R2
260             023136                                  PRINTS  #DEVDRO,R3,R2
                023136  010246                          MOV     R2,-(SP)
                023140  010346                          MOV     R3,-(SP)
                023142  012746  023456                  MOV     #DEVDRO,-(SP)
                023146  012746  000003                  MOV     #3,-(SP)
                023152  010600                          MOV     SP,R0
                023154  104416                          TRAP    C$PNTS
                023156  062706  000010                  ADD     #10,SP
261             023162  062704  000002          4$:     ADD     #2,R4
262             023166  005203                          INC     R3
263             023170  020427  003370                  CMP     R4,#ERTABE
264             023174  103701                          BLO     1$
265             023176  012604                          MOV     (SP)+,R4
266             023200  012603                          MOV     (SP)+,R3
267             023202  012602                          MOV     (SP)+,R2
268             023204                                  ENDRPT          ; UNUSED.
                023204                          L10035:
                023204  104425                          TRAP    C$RPT
269
270
271             023206      045     116     045 DEVSUM: .ASCIZ  /%N%ADEVICE STATUS SUMMARY:%N/
272             023243      045     101     040 DEVONL: .ASCIZ  /%A  UNIT %D3%A   ONLINE,  ERRORS = %D%N/
273             023313      045     101     040 DEVNXR: .ASCIZ  /%A  UNIT %D3%A   DROPPED, NON-EXISTENT REGISTER%N/
274             023375      045     101     040 DEVNRD: .ASCIZ  /%A  UNIT %D3%A   DROPPED, NOT READY AT STARTUP%N/
275             023456      045     101     040 DEVDRO: .ASCIZ  /%A  UNIT %D3%A   DROPPED, ERRORS = %D%N/
276                                                 .EVEN
277
278             023526                              ENDMOD
279
280
```

```
                                .TITLE  TEST 1 - HARDWARE TEST 1-8 TESTS
                                BGNMOD  TSV7B
023526                  TSV7B::
```

```
                                .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     #EPRT1,EPRTSW           ;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,$OFINIT              ;DO INITIALIZE ON CONTROLLER
023606  103426                            BCS     20$                     ;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$ERDF
023656  000145                                                                  .WORD   101
023660  003646                                                                  .WORD   SFIERR
023662  012114                                                                  .WORD   SFIMSG
023664  013737  002174  026340  20$:       MOV     UNITN,T29DSW            ;SET UP UNIT NUMBER

023672  012704  026320                    MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
023676  004737  010742                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
023702  103407                            BCS     25$                     ;BR, IF COMMAND ISSUED OK
023704  005237  002214                    INC     FATFLG                          ;ERROR COUNT
023710  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
023712                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
023712  104456                                                                  TRAP    C$ERHRD
023714  000146                                                                  .WORD   102
023716  005052                                                                  .WORD   WRTMSG
023720  012114                                                                  .WORD   SFIMSG
023722                          25$:      CKLOOP                          ;LOOP IF SELECTED
023722  104406                                                                  TRAP    C$CLP1
023724  016501  000002                    MOV     TSSR(R5),R1             ;GET THE TSSR
023730  010102                            MOV     R1,R2                   ;SET UP EXPECTED
023732  042702  000100                    BIC     #OFL,R2                 ;OFF LINE SHOULD NOT BE SET
023736  020102                            CMP     R1,R2                   ;THEY SHOULD BE EQUAL
023740  001406                            BEQ     26$                     ;BR, IF OFL IS NOT SET
```

```
     98 023742                                ERRDF   ERRNO,T29OFL,EXPREC     ;DRIVE IS OFF LINE
        023742  104455                                                                TRAP    C$ERDF
        023744  000147                                                                .WORD   103
        023746  026502                                                                .WORD   T29OFL
        023750  015554                                                                .WORD   EXPREC
     99 023752  004737  017262                    JSR     PC,CKDROP               ;TRY AND DROP DRIVE
    100 023756  004737  011074        26$:        JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
    101 023762  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR
    102 023766  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
    103 023772  103407                            BCS     30$                     ;BR, IF NO PROBLEM
    104 023774  010004                            MOV     R0,R4                   ;PACKET ADDRESS SET UP
    105 023776  005237  002214                    INC     FATFLG                          ;ERROR COUNT
    109 024002                                    ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
        024002  104456                                                                TRAP    C$ERHRD
        024004  000150                                                                .WORD   104
        024006  030305                                                                .WORD   T29RWN
        024010  012126                                                                .WORD   PKTSSR
    110 024012                        30$:        CKLOOP                          ;LOOP IF SELECTED
        024012  104406                                                                TRAP    C$CLP1
    111 024014  013701  026350                    MOV     T29BFR+6,R1             ;PICK UP XSTO
    112 024020  010102                            MOV     R1,R2                   ;SET UP EXPECTED
    113 024022  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
    114 024026  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
    115 024030  001406                            BEQ     40$                     ;BR, IF EQUAL (OK)
    116 024032  005237  002214                    INC     FATFLG                          ;ERROR COUNT
    120 024036                                    ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        024036  104456                                                                TRAP    C$ERHRD
        024040  000151                                                                .WORD   105
        024042  027776                                                                .WORD   T29BOT
        024044  015554                                                                .WORD   EXPREC
    121 024046                        40$:        CKLOOP                          ;LOOP IF SELECTED
        024046  104406                                                                TRAP    C$CLP1
    122 024050  013737  003116  026442            MOV     FREE,T29RB              ;ADDRESS OF READ BUFFER
    123 024056  012737  141011  026440            MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,CVC=1,ACK COMMAND
    124 024064  012704  026440                    MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
    125 024070  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
    126 024074  004737  016330                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    127 024100  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
    128 024104  012702  100206                    MOV     #SSR!SC!BIT1!BIT2,R2    ;SET UP EXPECTED
    129 024110  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
    130 024112  001406                            BEQ     75$                     ;BR, IF OK
    131 024114  005237  002214                    INC     FATFLG                          ;ERROR COUNT
    135 024120                                    ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
        024120  104456                                                                TRAP    C$ERHRD
        024122  000152                                                                .WORD   106
        024124  027562                                                                .WORD   T29WDE
        024126  012126                                                                .WORD   PKTSSR
    136 024130                        75$:        CKLOOP                          ;LOOP IF SELECTED
        024130  104406                                                                TRAP    C$CLP1
    137 024132  013701  026350                    MOV     T29BFR+6,R1             ;GET XSTO STATUS WORD
    138 024136  010102                            MOV     R1,R2                   ;SET UP EXPECTED
    139 024140  052702  002000                    BIS     #BIT10,R2               ;SET THE NEF BIT
    140 024144  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
    141 024146  001406                            BEQ     170$                    ;BR, IF EQUAL (GOOD)
    142 024150  005237  002214                    INC     FATFLG                          ;ERROR COUNT
    146 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
            147 024164                          170$:
            148 024164  005103                          COM     R3              ;RESET THE SWITCH
            149 024166  001273                          BNE     26$             ;BR, IF FIRST TIME THROUGH HERE
            150 024170                          ENDSUB
                024170                                                                  L10037:
                024170  104403                                                          TRAP    C$ESUB
            151 024172  023727  002214  000017          CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
            152 024200  103402                          BLO     999$                    ;BR, IF LESS THAN 25
            153 024202  004737  017262                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
            154 024206                          999$:
```

```
                                        ;+
                                        ;
                                        ;TEST 1, SUBTEST 2
                                        ;
                                        ;VERIFIES THAT A WRITE TAPE MARK RETRY COMMAND ISSUED WHILE THE TAPE
                                        ;IS POSITIONED BEFORE THE FIRST RECORD ON TAPE (BUT NOT AT BOT) RESULTS IN
                                        ;TAPE STATUS ALERT TERMINATION, WITH THE REVERSE INTO BOT (RIB) STATUS BIT
                                        ;SET.
                                        ;
                                        ;
                                        ;
                                        ;-
168 024206                                      BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
    024206                                                                                      T1.2:
    024206  104402                                                                              TRAP    C$BSUB
169 024210  004737  032146                      JSR     PC,T29REST              ;SET COMMAND PACKET
170 024214  004737  032240                      JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
171 024220  004737  032302                      JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
172 024224  004737  016054                      JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
173 024230  103407                            BCS     20$                     ;BR IF INIT WAS OK
174 024232  005237  002214                      INC     FATFLG                          ;ERROR COUNT
178 024236  010001                            MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
179 024240                                      ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
    024240  104455                                                                              TRAP    C$ERDF
    024242  000154                                                                             .WORD   108
    024244  003646                                                                             .WORD   SFIERR
    024246  012114                                                                             .WORD   SFIMSG
180 024250  013737  002174  026340  20$:       MOV     UNITN,T29DSW            ;SET UP UNIT NUMBER
181
182 024256  012704  026320                      MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
183 024262  004737  010742                      JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
184 024266  103407                            BCS     25$                     ;BR, IF COMMAND ISSUED OK
185 024270  005237  002214                      INC     FATFLG                          ;ERROR COUNT
189 024274  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
190 024276                                      ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
    024276  104456                                                                              TRAP    C$ERHRD
    024300  000155                                                                             .WORD   109
    024302  005052                                                                             .WORD   WRTMSG
    024304  012114                                                                             .WORD   SFIMSG
191 024306                              25$:    CKLOOP                          ;LOOP IF SELECTED
    024306  104406                                                                              TRAP    C$CLP1
192 024310  004737  011074              26$:    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
193 024314  016501  000002                      MOV     TSSR(R5),R1             ;GET TSSR
194 024320  012702  000200                      MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
195 024324  103407                            BCS     30$                     ;BR, IF NO PROBLEM
196 024326  010004                            MOV     R0,R4                   ;PACKET ADDRESS SET UP
197 024330  005237  002214                      INC     FATFLG                          ;ERROR COUNT
201 024334                                      ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
    024334  104456                                                                              TRAP    C$ERHRD
    024336  000156                                                                             .WORD   110
    024340  030305                                                                             .WORD   T29RWN
    024342  012126                                                                             .WORD   PKTSSR
202 024344                              30$:    CKLOOP                          ;LOOP IF SELECTED
    024344  104406                                                                              TRAP    C$CLP1
203 024346  013701  026350                      MOV     T29BFR+6,R1             ;PICK UP XSTL
204 024352  010102                            MOV     R1,R2                   ;SET UP EXPECTED
205 024354  052702  000002                      BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
```

```
206 024360  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
207 024362  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
208 024364  005237  002214                  INC     FATFLG                          ;ERROR COUNT
212 024370                                  ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
    024370  104456                                                                     TRAP    C$ERHRD
    024372  000157                                                                     .WORD   111
    024374  027776                                                                     .WORD   T29BOT
    024376  015554                                                                     .WORD   EXPREC
213 024400  012737  000001  026442  40$:     MOV     #1,T29RB                ;NUMBER OF RECORDS TO SPACE OVER
214 024406  012737  000400  026446          MOV     #256.,T29SZ             ;SET UP RECORD SIZE
215 024414  012737  140005  026440          MOV     #140005,T29PK3          ;WRITE FORWARD,CVC=1,ACK COMMAND
216 024422  012704  026440                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
217 024426  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
218 024432  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
219 024436  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
220 024442  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
221 024446  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
222 024450  001420                          BEQ     75$                     ;BR, IF OK
223 024452  013703  026350                  MOV     T29BFR+6,R3             ;PICK UP XTSO
224 024456  032703  000004                  BIT     #4,R3                   ;IS UNIT WRITE-LOCKED?
225 024462  001405                          BEQ     41$                     ;NO,PROCEED WITH NORMAL ERROR
226 024464                                  ERRDF   ERRNO,T29WLK,SFIMSG     ;TAPE IS WRITE LOCKED
    024464  104455                                                                     TRAP    C$ERDF
    024466  000157                                                                     .WORD   111
    024470  027644                                                                     .WORD   T29WLK
    024472  012114                                                                     .WORD   SFIMSG
227 024474                                  DOCLN                           ;DROP IT
    024474  104444                                                                     TRAP    C$DCLN
228 024476  005237  002214          41$:     INC     FATFLG                          ;ERROR COUNT
232 024502                                  ERRHRD  ERRNO,T29WRT,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
    024502  104456                                                                     TRAP    C$ERHRD
    024504  000160                                                                     .WORD   112
    024506  027731                                                                     .WORD   T29WRT
    024510  012126                                                                     .WORD   PKTSSR
233 024512                          75$:     CKLOOP                          ;LOOP IF SELECTED
    024512  104406                                                                     TRAP    C$CLP1
234 024514  012737  000001  026442          MOV     #1,T29RB                ;NUMBER OF RECORDS TO SPACE OVER
235 024522  012737  140410  026440          MOV     #140410,T29PK3          ;SET UP COMMAND IN APCKET                       ;SET
236 024530  012704  026440                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
237 024534  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
238 024540  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
239 024544  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
240 024550  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
241 024554  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
242 024556  001406                          BEQ     175$                    ;BR, IF OK
243 024560  005237  002214                  INC     FATFLG                          ;ERROR COUNT
247 024564                                  ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
    024564  104456                                                                     TRAP    C$ERHRD
    024566  000161                                                                     .WORD   113
    024570  027562                                                                     .WORD   T29WDE
    024572  012126                                                                     .WORD   PKTSSR
248 024574                          175$:    CKLOOP                          ;LOOP IF SELECTED
    024574  104406                                                                     TRAP    C$CLP1
249 024576  013737  003116  026442          MOV     FREE,T29RB              ;ADDRESS OF BUFFER
250 024604  012737  141011  026440          MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMD.
251 024612  012704  026440                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
252 024616  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
```

```
    253 024622  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    254 024626  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
    255 024632  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
    256 024636  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
    257 024640  001406                          BEQ     180$                    ;BR, IF OK
    258 024642  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    262 024646                                  ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
        024646  104456                                                                  TRAP    C$ERHRD
        024650  000162                                                                  .WORD   114
        024652  027562                                                                  .WORD   T29WDE
        024654  012126                                                                  .WORD   PKTSSR
    263 024656                          180$:   CKLOOP                          ;LOOP IF SELECTED
        024656  104406                                                                  TRAP    C$CLP1
    264 024660  013701  026356                  MOV     T29BFR+14,R1            ;GET XST3 STATUS WORD
    265 024664  010102                          MOV     R1,R2                   ;SET UP EXPECTED
    266 024666  052702  000001                  BIS     #BIT0,R2                ;SET THE RIB BIT
    267 024672  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
    268 024674  001406                          BEQ     190$                    ;BR, IF EQUAL (GOOD)
    269 024676  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    273 024702                                  ERRHRD  ERRNO,T29RIB,EXPREC     ;NEF SHOULD BE SET
        024702  104456                                                                  TRAP    C$ERHRD
        024704  000163                                                                  .WORD   115
        024706  031724                                                                  .WORD   T29RIB
        024710  015554                                                                  .WORD   EXPREC
    274 024712                          190$:
    275 024712                                  ENDSUB                  ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
        024712                                                                      L10040:
        024712  104403                                                                  TRAP    C$ESUB
    276 024714  023727  002214  000017          CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
    277 024722  103402                          BLO     999$                    ;BR, IF LESS THAN 25
    278 024724  004737  017262                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
    279 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 >>>>>>>>>>>>
                                                                                                        T1.3:
024730                                                                                                          TRAP    C$BSUB
024730  104402
                                                JSR     PC,T29REST              ;SET COMMAND PACKET
                                                JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
                                                JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
                                                MOV     #10000.,T29DLY          ;SET UP DELAY ROUTINE
                                        10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
                                                BCS     20$                     ;BR IF INIT WAS OK
                                                DELAY   250                     ;DELAY ABOUT .25 SECONDS
024762                                                                                                          MOV     #250,(PC)+
024766  000000                                                                                                  .WORD   0
024770  013727  002116                                                                                          MOV     L$DLY,(PC)+
024774  000000                                                                                                  .WORD   0
024776  005367  177772                                                                                          DEC     -6(PC)
025002  001375                                                                                                  BNE     .-4
025004  005367  177756                                                                                          DEC     -22(PC)
025010  001367                                                                                                  BNE     .-20
                                                DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
                                                BNE     10$                     ;BR, IF MORE DELAY TIME LEFT
                                                INC     FATFLG                          ;ERROR COUNT
                                                MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
                                                ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
025026                                                                                                          TRAP    C$ERDF
025030  000164                                                                                                  .WORD   116
025032  003646                                                                                                  .WORD   SFIERR
025034  012114                                                                                                  .WORD   SFIMSG
                                        20$:    MOV     UNITN,T29DSW            ;SET UP DRIVE NUMBER
                                                MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
                                                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
                                                BCS     23$                     ;BR, IF COMMAND ISSUED OK
                                                INC     FATFLG                          ;ERROR COUNT
                                                MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
                                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
025064                                                                                                          TRAP    C$ERHRD
025066  000165                                                                                                  .WORD   117
025070  005052                                                                                                  .WORD   WRTMSG
025072  012114                                                                                                  .WORD   SFIMSG
                                        23$:    CKLOOP                          ;LOOP IF SELECTED
025074                                                                                                          TRAP    C$CLP1
025074  104406
                                                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
                                                BCS     30$                     ;BR, IF NO PROBLEM
                                                MOV     TSSR(R5),R1             ;GET TSSR
                                                MOV     R0,R4                   ;SAVE PACKET ADDRESS
                                                INC     FATFLG                          ;ERROR COUNT
                                                ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
025116                                                                                                          TRAP    C$ERHRD
025120  000166                                                                                                  .WORD   118
```

```
        025122  030305                                                          .WORD   T29RWN
        025124  012126                                                          .WORD   PKTSSR
   326  025126                          30$:    CKLOOP                          ;LOOP IF SELECTED
        025126  104406                                                          TRAP    C$CLP1
   327  025130  013701  026350                 MOV     T29BFR+6,R1             ;PICK UP XSTO
   328  025134  010102                         MOV     R1,R2                   ;SET UP EXPECTED
   329  025136  052702  000002                 BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
   330  025142  020102                         CMP     R1,R2                   ;DOES EXP = REC'D
   331  025144  001406                         BEQ     40$                     ;BR, IF EQUAL (OK)
   332  025146  005237  002214                 INC     FATFLG                          ;ERROR COUNT
   336  025152                                 ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        025152  104456                                                          TRAP    C$ERHRD
        025154  000167                                                          .WORD   119
        025156  027776                                                          .WORD   T29BOT
        025160  015554                                                          .WORD   EXPREC
   337  025162                          40$:    CKLOOP                          ;LOOP IF SELECTED
        025162  104406                                                          TRAP    C$CLP1
   338  025164  012737  140011  026440          MOV     #140011,T29PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
   339  025172  012704  026440                 MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
   340  025176  010465  000000                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
   341  025202  004737  016330                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
   342  025206  016501  000002                 MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
   343  025212  012702  000200                 MOV     #SSR,R2                 ;SET UP EXPECTED
   344  025216  020102                         CMP     R1,R2                   ;ARE THEY EQUAL
   345  025220  001406                         BEQ     70$                     ;BR, IF OK
   346  025222  005237  002214                 INC     FATFLG                          ;ERROR COUNT
   350  025226                                 ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE TAPE MARK
        025226  104456                                                          TRAP    C$ERHRD
        025230  000170                                                          .WORD   120
        025232  030677                                                          .WORD   T29WDC
        025234  012126                                                          .WORD   PKTSSR
   351  025236                          70$:    CKLOOP                          ;LOOP IF SELECTED
        025236  104406                                                          TRAP    C$CLP1
   352  025240  012703  000001          150$:   MOV     #1.,R3                  ;NUMBER OF RECORDS TO WRITE TM
   353  025244  012737  141011  026440          MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMMAND
   354  025252  012704  026440                 MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
   355  025256  010465  000000          155$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
   356  025262  004737  016330                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
   357  025266  016501  000002                 MOV     TSSR(R5),R1             ;PICK UP TSSR
   358  025272  012702  000200                 MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
   359  025276  020102                         CMP     R1,R2                   ;WAS STATUS GOOD
   360  025300  001406                         BEQ     165$                    ;BR, IF TERMINATION WAS GOOD
   361  025302  005237  002214                 INC     FATFLG                          ;ERROR COUNT
   365  025306                                 ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
        025306  104456                                                          TRAP    C$ERHRD
        025310  000171                                                          .WORD   121
        025312  030677                                                          .WORD   T29WDC
        025314  012126                                                          .WORD   PKTSSR
   366  025316                          165$:   CKLOOP                          ;LOOP IF SELECTED
        025316  104406                                                          TRAP    C$CLP1
   367  025320  012737  140401  026440          MOV     #140401,T29PK3          ;READ REVERSE,ACK, COMMAND
   368  025326  013737  003116  026442          MOV     FREE,T29RB              ;NUMBER OF RECORDS TO SPACE BACK
   369  025334  012704  026440                 MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
   370  025340  010465  000000                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
   371  025344  004737  016330                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
   372  025350  016501  000002                 MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
   373  025354  012702  100204                 MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
```

```
374 025360  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
375 025362  001406                          BEQ     222$                    ;BR, IF OK
376 025364  005237  002214                  INC     FATFLG                          ;ERROR COUNT
380 025370                                  ERRHRD  ERRNO,T29RDG,PKTSSR     ;TSSR INCORRECT AFTER SPACE CMD.
    025370  104456                                                                     TRAP    C$ERHRD
    025372  000172                                                                     .WORD   122
    025374  031643                                                                     .WORD   T29RDG
    025376  012126                                                                     .WORD   PKTSSR
381 025400                          222$:   CKLOOP                          ;LOOP IF SELECTED
    025400  104406                                                                     TRAP    C$CLP1
382 025402  013701  026350                  MOV     T29BFR+6,R1             ;PICK UP XSTO
383 025406  010102                          MOV     R1,R2                   ;SET UP EXPECTED
384 025410  052702  100000                  BIS     #BIT15,R2               ;TMK SHOULD BE SET
385 025414  020102                          CMP     R1,R2                   ;IS TMK SET
386 025416  001406                          BEQ     226$                    ;BR, IF TMK WAS SET (GOOD)
387 025420  005237  002214                  INC     FATFLG                          ;ERROR COUNT
391 025424                                  ERRHRD  ERRNO,T29RRN,EXPREC     ;TMK NOT SET AFTER READ REV
    025424  104456                                                                     TRAP    C$ERHRD
    025426  000173                                                                     .WORD   123
    025430  032024                                                                     .WORD   T29RRN
    025432  015554                                                                     .WORD   EXPREC
392 025434                          226$:   CKLOOP                          ;LOOP IF SELECTED
    025434  104406                                                                     TRAP    C$CLP1
393 025436                                  ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
    025436                                                                          L10041:
    025436  104403                                                                     TRAP    C$ESUB
394 025440  023727  002214  000017          CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
395 025446  103402                          BLO     999$                            ;BR, IF LESS THAN 25
396 025450  004737  017262                  JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
397 025454                          999$:
```

```
                                        ;+
                                        ;
                                        ;TEST 1, SUBTEST 4
                                        ;
                                        ;VERIFIES THAT THE SPACE-REVERSE PORTION OF THE WRITE TAPE MARK
                                        ;RETRY OPERATION IS PERFORMED BY REWINDING THE TAPE, ISSUING SEVERAL
                                        ;WRITE TAPE MARK RETRY COMMANDS IN SUCCESSION, THEN ISSUING TWO SPACE
                                        ;RECORDS REVERSE COMMANDS IN SUCCESSION.  THE SECOND SPACE RECORDS REVERSE
                                        ;COMMAND SHOULD TERMINATE WITH REVERSE INTO BOT (RIB) STATUS SET.
                                        ;
                                        ;-
410 025454                                      BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
    025454                                                                                      T1.4:
    025454  104402                                                                             TRAP    C$BSUB
411 025456  004737  032146                      JSR     PC,T29REST              ;SET COMMAND PACKET
412 025462  004737  032240                      JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
413 025466  004737  032302                      JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
414 025472  012737  023420  026500              MOV     #10000.,T29DLY          ;SET UP DELAY ROUTINE
415 025500  004737  016054          10$:        JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
416 025504  103426                              BCS     20$                     ;BR IF INIT WAS OK
417 025506                                      DELAY   250                     ;DELAY ABOUT .25 SECONDS
    025506  012727  000250                                                             MOV     #250,(PC)+
    025512  000000                                                                      .WORD   0
    025514  013727  002116                                                              MOV     L$DLY,(PC)+
    025520  000000                                                                      .WORD   0
    025522  005367  177772                                                              DEC     -6(PC)
    025526  001375                                                                      BNE     .-4
    025530  005367  177756                                                              DEC     -22(PC)
    025534  001367                                                                      BNE     .-20
418 025536  005337  026500                      DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
419 025542  001356                              BNE     10$                     ;BR, IF MORE DELAY TIME LEFT
420 025544  005237  002214                      INC     FATFLG                          ;ERROR COUNT
424 025550  010001                              MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
425 025552                                      ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
    025552  104455                                                                     TRAP    C$ERDF
    025554  000174                                                                      .WORD   124
    025556  003646                                                                      .WORD   SFIERR
    025560  012114                                                                      .WORD   SFIMSG
426 025562  013737  002174  026340  20$:        MOV     UNITN,T29DSW            ;SET UP DRIVE NUMBER
427 025570  012704  026320                      MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
428 025574  004737  010742                      JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
429 025600  103407                              BCS     23$                     ;BR, IF COMMAND ISSUED OK
430 025602  005237  002214                      INC     FATFLG                          ;ERROR COUNT
434 025606  010001                              MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
435 025610                                      ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
    025610  104456                                                                     TRAP    C$ERHRD
    025612  000175                                                                      .WORD   125
    025614  005052                                                                      .WORD   WRTMSG
    025616  012114                                                                      .WORD   SFIMSG
436 025620                          23$:        CKLOOP                          ;LOOP IF SELECTED
    025620  104406                                                                     TRAP    C$CLP1
437 025622  004737  011074                      JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
438 025626  103411                              BCS     30$                     ;BR, IF NO PROBLEM
439 025630  016501  000002                      MOV     TSSR(R5),R1             ;GET TSSR
440 025634  010004                              MOV     R0,R4                   ;SAVE PACKET ADDRESS
441 025636  005237  002214                      INC     FATFLG                          ;ERROR COUNT
445 025642                                      ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
```

```
        025642  104456                                                          TRAP    C$ERHRD
        025644  000176                                                          .WORD   126
        025646  030305                                                          .WORD   T29RWN
        025650  012126                                                          .WORD   PKTSSR
446     025652                          30$:    CKLOOP                          ;LOOP IF SELECTED
        025652  104406                                                          TRAP    C$CLP1
447     025654  013701  026350                  MOV     T29BFR+6,R1             ;PICK UP XST0
448     025660  010102                          MOV     R1,R2                   ;SET UP EXPECTED
449     025662  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
450     025666  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
451     025670  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
452     025672  005237  002214                  INC     FATFLG                          ;ERROR COUNT
456     025676                                  ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        025676  104456                                                          TRAP    C$ERHRD
        025700  000177                                                          .WORD   127
        025702  027776                                                          .WORD   T29BOT
        025704  015554                                                          .WORD   EXPREC
457     025706                          40$:    CKLOOP                          ;LOOP IF SELECTED
        025706  104406                                                          TRAP    C$CLP1
458     025710  012737  140011  026440          MOV     #140011,T29PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
459     025716  012704  026440                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
460     025722  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
461     025726  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
462     025732  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
463     025736  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
464     025742  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
465     025744  001406                          BEQ     70$                     ;BR, IF OK
466     025746  005237  002214                  INC     FATFLG                          ;ERROR COUNT
470     025752                                  ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE TAPE MARK
        025752  104456                                                          TRAP    C$ERHRD
        025754  000200                                                          .WORD   128
        025756  030677                                                          .WORD   T29WDC
        025760  012126                                                          .WORD   PKTSSR
471     025762                          70$:    CKLOOP                          ;LOOP IF SELECTED
        025762  104406                                                          TRAP    C$CLP1
472     025764  012703  000012          150$:   MOV     #10.,R3                 ;NUMBER OF RECORDS TO WRITE TM
473     025770  012737  000001  026442          MOV     #1,T29RB                ;SET UP PACKET
474     025776  012737  141011  026440          MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMMAND
475     026004  012704  026440                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
476     026010  010465  000000          155$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
477     026014  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
478     026020  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
479     026024  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
480     026030  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
481     026032  001406                          BEQ     165$                    ;BR, IF TERMINATION WAS GOOD
482     026034  005237  002214                  INC     FATFLG                          ;ERROR COUNT
486     026040                                  ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
        026040  104456                                                          TRAP    C$ERHRD
        026042  000201                                                          .WORD   129
        026044  030677                                                          .WORD   T29WDC
        026046  012126                                                          .WORD   PKTSSR
487     026050                          165$:   CKLOOP                          ;LOOP IF SELECTED
        026050  104406                                                          TRAP    C$CLP1
488     026052  005303                          DEC     R3                      ;BUMP COUNTER DOWN
489     026054  001355                          BNE     155$                    ;BR, IF LESS THAN 10 TAPE MARKS
490     026056  012737  140410  026440          MOV     #140410,T29PK3          ;SPACE REVERSE,ACK,CVC=1, COMMAND
491     026064  012737  000001  026442          MOV     #1,T29RB                ;NUMBER OF RECORDS TO SPACE BACK
```

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    492 026072  012704  026440                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
    493 026076  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
    494 026102  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    495 026106  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
    496 026112  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
    497 026116  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
    498 026120  001406                          BEQ     222$                    ;BR, IF OK
    499 026122  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    503 026126                                  ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER SPACE CMD.
        026126  104456                                                                  TRAP    C$ERHRD
        026130  000202                                                                  .WORD   130
        026132  027562                                                                  .WORD   T29WDE
        026134  012126                                                                  .WORD   PKTSSR
    504 026136                          222$:   CKLOOP                          ;LOOP IF SELECTED
        026136  104406                                                                  TRAP    C$CLP1
    505 026140  012737  100410  026440          MOV     #100410,T29PK3          ;SPACE REVERSE,ACK, COMMAND
    506 026146  012737  000005  026442          MOV     #5,T29RB                ;NUMBER OF RECORDS TO SPACE BACK
    507 026154  012704  026440                  MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
    508 026160  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
    509 026164  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    510 026170  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
    511 026174  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
    512 026200  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
    513 026202  001406                          BEQ     260$                    ;BR, IF OK
    514 026204  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    518 026210                                  ERRHRD  ERRNO,T29RDG,PKTSSR     ;TSSR INCORRECT AFTER SPACE REV CMD.
        026210  104456                                                                 TRAP    C$ERHRD
        026212  000203                                                                 .WORD   131
        026214  031643                                                                 .WORD   T29RDG
        026216  012126                                                                 .WORD   PKTSSR
    519 026220                          260$:   CKLOOP                          ;LOOP IF SELECTED
        026220  104406                                                                 TRAP    C$CLP1
    520 026222  013701  026356                  MOV     T29BFR+14,R1            ;PICK UP XST3
    521 026226  010102                          MOV     R1,R2                   ;SET UP EXPECTED
    522 026230  052702  000001                  BIS     #BIT0,R2                ;RIB SHOULD BE SET
    523 026234  020102                          CMP     R1,R2                   ;IS RIB SET
    524 026236  001406                          BEQ     270$                    ;BR, IF RIB WAS SET (GOOD)
    525 026240  005237  002214                  INC     FATFLG                          ;ERROR COUNT
    529 026244                                  ERRHRD  ERRNO,T29RIB,EXPREC     ;TMK NOT SET AFTER READ REV
        026244  104456                                                                 TRAP    C$ERHRD
        026246  000204                                                                 .WORD   132
        026250  031724                                                                 .WORD   T29RIB
        026252  015554                                                                 .WORD   EXPREC
    530 026254                          270$:   CKLOOP                          ;LOOP IF SELECTED
        026254  104406                                                                 TRAP    C$CLP1
    531 026256                          330$:   CKLOOP                          ;LOOP IF SELECTED
        026256  104406                                                                 TRAP    C$CLP1
    532 026260                                  ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
        026260                                                                          L10042:
        026260  104403                                                                  TRAP    C$ESUB
    533 026262  023727  002214  000017              CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
    534 026270  103402                              BLO     999$                            ;BR, IF LESS THAN 25
    535 026272  004737  017262                      JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
    536 026276                          999$:
```

```
538
539                                     ;
540                                     ;
541                                     ;
542 026276  004737  016536                  JSR     PC,TSTLOOP          ;DO WE NEED TO ITERATE TEST
543 026302  103002                          BCC     163$                ;BR, IF NO LOOP REQUIRED
544 026304  000137  023556                  JMP     T29LOOP             ;EXECUTE AGAIN
545 026310                          163$:   EXIT    TST                 ;ALL DONE THIS TEST
    026310  104432                                                              TRAP    C$EXIT
    026312  004020                                                              .WORD   L10036-.
```

```
                                ;+
                                ;LOCAL STORAGE FOR THIS TEST
                                ;-
                        026320          .=<.+10>&177770
                        026320  T29PACKET:
                        026320  014004          .WORD   14004           ;COMMAND PACKET FOR TEST
                        026322  026330          .WORD   T29DATA         ;WRITE CHARACTERISTICS COMMAND, WITH CVC=1, ACK
                        026324  000000          .WORD   0               ;ADDRESS OF CHARACTERISTICS BLOCK
                        026326  000012          .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
                        026330  T29DATA:                                ;CHARACTERISTICS DATA BLOCK
                        026330  026342          .WORD   T29BFR          ;ADDRESS OF MESSAGE BUFFER
                        026332  000000          .WORD   0
                        026334  000024          .WORD   20.             ;LENGTH OF MESSAGE BUFFER
                        026336  000000          .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
```

```
    611 026476  000000                T29RSZ: .WORD   0                       ;RECORD STORAGE SIZE  AREA
    612 026500  000000                T29DLY: .WORD                   ;DELAY COUNTER STORAGE AREA
    613
```

```
                                        ;+
                                        ;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'
027301  122  111  102  T29LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
027351  124  123  123  T29WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
027426  111  154  154  T29LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
027507  127  122  111  T29SSR: .ASCIZ  'WRITE TAPE MARK RETRY COMMAND Not Accepted'
027562  124  123  123  T29WDE: .ASCIZ  'TSSR Not Correct After SPACE REVERSE DATA Command'
027644  052  052  052  T29WLK: .ASCIZ  '*****TAPE IS WRITE-LOCKED AND WILL CAUSE ERRORS*****'
027731  124  123  123  T29WRT: .ASCIZ  'TSSR Not Correct After WRITE Command'
027776  124  141  160  T29BOT: .ASCIZ  'Tape Not At BOT After REWIND Command'
030043  104  141  164  T29DTA: .ASCIZ  'Data Written To Tape Not Equal To Data Read From Tape'
030131  127  122  111  T29EOT: .ASCIZ  'WRITE TAPE MARK RETRY DATA OVER EOT GAVE NO TAPE STATUS ALERT'
030227  124  123  123  T29TM:  .ASCIZ  'TSSR Not Correct After SPACE REVERSE Into BOT'
030305  122  145  167  T29RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
030354  122  101  115  T29RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
030427  124  123  123  T29AM3: .ASCIZ  'TSSR Init. Failed After WRITE TAPE MARK RETRY COMMAND'
030515  104  162  151  T29OF7: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
030570  124  123  123  T29WDD: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK RETRY DATA Command, SWB Bit Set'
030677  124  123  123  T29WDC: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK RETRY DATA Command'
030771  103  126  103  T29VCK: .ASCIZ  'CVC Set, Didn't Reset VCK In Message Buffer'
031044  124  123  102  T29BA:  .ASCIZ  'TSBA Not Correct After WRITE TAPE MARK RETRY DATA Command'
031136  127  122  111  T29WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
031225  122  145  141  T29LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XSTO'
031307  122  145  141  T29LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
031371  122  145  163  T29PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
031457  122  145  141  T29TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
031545  104  141  164  T29NEQ: .ASCIZ  'Data WRITE TAPE MARK RETRY From Tape Not Correct, After SWB=1'
031643  124  123  123  T29RDG: .ASCIZ  'TSSR Incorrect After READ REVERSE Into Tape Mark'
031724  127  122  111  T29RIB: .ASCIZ  'WRITE TAPE MARK RETRY At First Record, Failed To Set RIB (XST3)'
032024  124  115  113  T29RRN: .ASCIZ  'TMK (XSTO) Failed To Set After READ REVERSE Into Tape Mark'
032117  127  162  151  TST29ID:        .ASCIZ  'Write Tape Mark Retry'
                              .EVEN
                        ;+
                        ;
                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                        ;WRITE SUBSYSTEM MEMORY COMMAND
                        ;
                        ;-

032146                  T29REST:
032146                        SAVREG                          ;SAVE THE REGISTERS
032152  012701  026320        MOV     #T29PACKET,R1           ;START OF THE PACKET
032156  012721  140004        MOV     #140004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK, CVC=1
032162  012721  026330        MOV     #T29DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
032166  005021                CLR     (R1)+                   ;EXTENDED ADDRESS
032170  012721  000012        MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
```

```
672 032174  012721  026342              MOV     #T29BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
673 032200  005021                      CLR     (R1)+
674 032202  012721  000024              MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
675 032206  005021                      CLR     (R1)+
676 032210  012711  000000              MOV     #0,(R1)                 ;SELECT DRIVE ZERO (0)
677 032214  012702  000030              MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
678 032220  012762  177777  026342  64$: MOV     #177777,T29BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
679 032226  005742                      TST     -(R2)                   ;NEXT LOCATION
680 032230  020227  000000              CMP     R2,#0                   ;CHECK FOR END OF LOOP
681 032234  001371                      BNE     64$                     ;KEEP GOING UNTIL DONE
682 032236  000207                      RTS     PC                      ;RETURN
683
684
685 032240                          T29RT2:
686 032240                              SAVREG                          ;SAVE THE REGISTERS
687 032244  012701  026430              MOV     #T29PK2,R1              ;START OF THE PACKET
688 032250  012721  140006              MOV     #140006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,CVC=1,
689 032254  012721  026450              MOV     #T29BF2,(R1)+           ;ADDRESS OF DATA BLOCK
690 032260  005021                      CLR     (R1)+                   ;EXTENDED ADDRESS
691 032262  012721  000006              MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
692 032266  005021                      CLR     (R1)+
693 032270  012701  026450              MOV     #T29BF2,R1              ;POINT TO DATA SEL AREA
694 032274  005021                      CLR     (R1)+
695 032276  005011                      CLR     (R1)
696 032300  000207                      RTS     PC                      ;RETURN
697 032302                          T29RT3:
698 032302                              SAVREG                          ;SAVE THE REGISTERS
699 032306  012701  026440              MOV     #T29PK3,R1              ;START OF THE PACKET
700 032312  012721  000000              MOV     #0,(R1)+                ;WRITE SUBSYSTEM MEM. WITH ACK,
701 032316  012721  000000              MOV     #0,(R1)+                ;ADDRESS OF DATA BLOCK
702 032322  005021                      CLR     (R1)+                   ;EXTENDED ADDRESS
703 032324  012711  000000              MOV     #0,(R1)         ;SIZE OF DATA BLOCK IN BYTES
704 032330  000207                      RTS     PC                      ;RETURN
705 032332                              ENDTST
    032332                                                          L10036:
    032332  104401                                                         TRAP    C$ETST
```

```
                                        .SBTTL  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. THE TEST CONSISTS OF THE
                                ;FOLLOWING SUBTESTS (FOR EACH SUBTEST, THE TAPE IS FIRST WRITTEN
                                ;WITH AN APPROPRIATE SERIES OF DATA RECORDS AND/OR TAPE MARKS
                                ;AND/OR DOUBLE TAPE MARKS.
                                ;
                                ;
                                ;THE TEST CONSISTS OF THE FOLLOWING 11 SUBTESTS
                                ;
                                ;
                                ;
                                ;-
032334                                  BGNTST
032334                                                                  T2::
032334  012737  006354  002172        MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
032342  012700  041231                MOV     #TST30ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
032346  004737  016570                JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
032352  012737  000005  002210        MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
                                ;+
                                ;
                                ;TEST 2, SUBTEST 1
                                ;
                                ;
                                ;VERIFIES THAT A SKIP TAPE MARKS FORWARD COMMAND WITH
                                ;A TAPE MARK COUNT OF 1 OPERATES OPERATES PROPERLY. THE TAPE
                                ;IS FIRST REWOUND, THEN WRITTEN WITH SEVERAL 'FILES';
                                ;EACH FILE CONSISTS OF A NUMBER OF DATA RECORDS
                                ;FOLLOWED BY A TAPE MARK. THE FINAL FILE IS
                                ;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.
                                ;
                                ;
                                ;-

                                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
```

```
                                        JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
                                        JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
                                        MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
                                10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
                                        BCS     20$                     ;BR IF INIT WAS OK
                                        DELAY   250                     ;DELAY ROUTINE CALL
032416  012727  000250                                                            MOV     #250,(PC)+
032422  000000                                                                    .WORD   0
032424  013727  002116                                                            MOV     L$DLY,(PC)+
032430  000000                                                                    .WORD   0
032432  005367  177772                                                            DEC     -6(PC)
032436  001375                                                                    BNE     .-4
032440  005367  177756                                                            DEC     -22(PC)
032444  001367                                                                    BNE     .-20
                                        DEC     T30DLY                  ;BUMP COUNTER
                                        BNE     10$                     ;BR, IF MORE COUNTING TO DO
                                        INC     FATFLG                          ;ERROR COUNT
                                        MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
                                        ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
032462  104455                                                                    TRAP    C$ERDF
032464  000311                                                                    .WORD   201
032466  003646                                                                    .WORD   SFIERR
032470  012114                                                                    .WORD   SFIMSG
                                20$:
                                        MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
                                        MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

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

                                        JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
                                        BCS     23$                     ;BR, IF COMMAND ISSUED OK
                                        INC     FATFLG                          ;ERROR COUNT
                                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
                                        ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
032520  104456                                                                    TRAP    C$ERHRD
032522  000312                                                                    .WORD   202
032524  005052                                                                    .WORD   WRTMSG
032526  012114                                                                    .WORD   SFIMSG
                                23$:    CKLOOP                          ;LOOP IF SELECTED
032530  104406                                                                    TRAP    C$CLP1

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

                                        JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
                                        BCS     30$                     ;BR, IF NO PROBLEM
                                        MOV     R0,R4                   ;GET PACKET ADDRESS
                                        MOV     TSSR(R5),R1             ;GET STATUS REGISTER
                                        INC     FATFLG                          ;ERROR COUNT
                                        ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
```

```
 032552  104456                                                                  TRAP    C$ERHRD
 032554  000313                                                                  .WORD   203
 032556  040240                                                                  .WORD   T30RWN
 032560  012126                                                                  .WORD   PKTSSR
815 032562                      30$:    CKLOOP                          ;LOOP IF SELECTED
 032562  104406                                                                  TRAP    C$CLP1
816
817                             ;***************************************************************
818                             ;
819                             ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
820                             ;
821                             ;***************************************************************
822
823 032564  013701  036530              MOV     T30BFR+6,R1             ;PICK UP XST0
824 032570  010102                      MOV     R1,R2                   ;SET UP EXPECTED
825 032572  052702  000002              BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
826 032576  020102                      CMP     R1,R2                   ;DOES EXP = REC'D
827 032600  001406                      BEQ     40$                     ;BR, IF EQUAL (OK)
828 032602  005237  002214                      INC     FATFLG                          ;ERROR COUNT
832 032606                              ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
 032606  104456                                                                  TRAP    C$ERHRD
 032610  000314                                                                  .WORD   204
 032612  040041                                                                  .WORD   T30BOT
 032614  015554                                                                  .WORD   EXPREC
833 032616                      40$:    CKLOOP                          ;LOOP IF SELECTED
 032616  104406                                                                  TRAP    C$CLP1
834 032620  012737  000001  036654          MOV     #1.,T30FCN              ;SET "FILE" COUNTER AT 1 DECIMAL
835 032626  012703  000001          64$:    MOV     #1,R3                   ;ONE RECORD  PER "FILE"
836 032632  013737  003116  036622  65$:    MOV     FREE,T30WB              ;SET UP PACKETS'S WRITE BUFFER
837 032640  012737  003720  036626          MOV     #2000.,T30SZ            ;SET RECORD SIZE AT 2000 BYTES
838
839                             ;***************************************************************
840                             ;
841                             ;WRITE DATA,ACK,CVC=1 COMMAND
842                             ;
843                             ;***************************************************************
844
845 032646  012737  140005  036620          MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
846 032654  012704  036620                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
847 032660  013702  036654                  MOV     T30FCN,R2               ;GET FILE COUNTER
848 032664  000302                          SWAB    R2                      ;MOVE TO UPPER BYTE
849 032666  010301                          MOV     R3,R1                   ;GET RECORD COUNTER
850 032670  060201                          ADD     R2,R1                   ;FILE COUNTER IN UPPER, RECORD # LOW
851 032672  010177  150220                  MOV     R1,@FREE                ;MOV TO OUT PUT BUFFER
852 032676  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
853 032702  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
854 032706  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
855 032712  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
856 032716  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
857 032720  001406                          BEQ     70$                     ;BR, IF OK
858 032722  005237  002214                      INC     FATFLG                          ;ERROR COUNT
862 032726                              ERRHRD  ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
 032726  104456                                                                  TRAP    C$ERHRD
 032730  000315                                                                  .WORD   205
 032732  037170                                                                  .WORD   T30WDD
 032734  012126                                                                  .WORD   PKTSSR
863 032736                      70$:    CKLOOP                          ;LOOP IF SELECTED
```

```
     032736  104406                                                                  TRAP    C$CLP1
864  032740  005203                    INC     R3                  ;COUNT THE RECORD COUNTER DOWN
865  032742  020327  000021            CMP     R3,#21              ;AT 20 YET
866  032746  001331                    BNE     65$                 ;BR, IF NOT AT 20 RECORDS WRITTEN
867
868                                 ;*************************************************************
869                                 ;
870                                 ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
871                                 ;
872                                 ;*************************************************************
873
874  032750  012737  141011  036620        MOV     #141011,T30PK3      ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
875  032756  012704  036620              MOV     #T30PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
876  032762  010465  000000              MOV     R4,TSDB(R5)         ;ISSUE COMMAND
877  032766  004737  016330              JSR     PC,WAITF            ;WAIT FOR SSR TO SET
878  032772  016501  000002              MOV     TSSR(R5),R1         ;PICK UP TSSR
879  032776  012702  000200              MOV     #SSR,R2             ;SET UP EXPECTED (SSR ONLY)
880  033002  020102                      CMP     R1,R2               ;WAS STATUS GOOD
881  033004  001406                      BEQ     160$                ;BR, IF TERMINATION WAS GOOD
882  033006  005237  002214                      INC     FATFLG                  ;ERROR COUNT
886  033012                              ERRHRD  ERRNO,T30WDC,PKTSSR ;TSSR NOT CORRECT AFTER WRT TAPE M.
     033012  104456                                                                  TRAP    C$ERHRD
     033014  000316                                                                  .WORD   206
     033016  040362                                                                  .WORD   T30WDC
     033020  012126                                                                  .WORD   PKTSSR
887  033022                      160$:   CKLOOP                      ;LOOP IF SELECTED
     033022  104406                                                                  TRAP    C$CLP1
888  033024  005237  036654              INC     T30FCN              ;COUNT THE "FILE" COUNTER DOWN
889  033030  023727  036654  000006      CMP     T30FCN,#6           ;WRITE 5 FILE TO TAPE
890  033036  001273                      BNE     64$                 ;BR, IF NOT AT 5 FILES WRITTEN
891
892                                 ;*************************************************************
893                                 ;
894                                 ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
895                                 ;
896                                 ;*************************************************************
897
898  033040  012737  141011  036620        MOV     #141011,T30PK3      ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
899  033046  012704  036620              MOV     #T30PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
900  033052  010465  000000              MOV     R4,TSDB(R5)         ;ISSUE COMMAND
901  033056  004737  016330              JSR     PC,WAITF            ;WAIT FOR SSR TO SET
902  033062  016501  000002              MOV     TSSR(R5),R1         ;PICK UP TSSR
903  033066  012702  000200              MOV     #SSR,R2             ;SET UP EXPECTED (SSR ONLY)
904  033072  020102                      CMP     R1,R2               ;WAS STATUS GOOD
905  033074  001406                      BEQ     165$                ;BR, IF TERMINATION WAS GOOD
906  033076  005237  002214                      INC     FATFLG                  ;ERROR COUNT
910  033102                              ERRHRD  ERRNO,T30WDC,PKTSSR ;TSSR NOT CORRECT AFTER WRT TAPE M.
     033102  104456                                                                  TRAP    C$ERHRD
     033104  000317                                                                  .WORD   207
     033106  040362                                                                  .WORD   T30WDC
     033110  012126                                                                  .WORD   PKTSSR
911  033112                      165$:   CKLOOP                      ;LOOP IF SELECTED
     033112  104406                                                                  TRAP    C$CLP1
912
913                                 ;*************************************************************
914                                 ;
915                                 ;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$ERHRD
033136  000320                                                                          .WORD   208
033140  040240                                                                          .WORD   T30RWN
033142  012126                                                                          .WORD   PKTSSR
033144                                  170$:   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$ERHRD
033172  000321                                                                          .WORD   209
033174  040041                                                                          .WORD   T30BOT
033176  015554                                                                          .WORD   EXPREC
033200                                  180$:   CKLOOP                          ;LOOP IF SELECTED
033200  104406                                                                          TRAP    C$CLP1
033202  012703  036636                          MOV     #T30IMV,R3              ;SET UP POINTER TO COMMAND TABLE
033206  013737  002174  036520                  MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
033214  011337  036516                  182$:   MOV     (R3),T30ETM             ;GET NEXT COMMAND
033220  012704  036500                          MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
                                        ;
                                        ;*************************************************************
                                        ;
                                        ;ISSUE WRITE CHARACTERISTICS COMMAND
                                        ;
                                        ;*************************************************************
                                        ;
033224  004737  010742                          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
033230  103407                                  BCS     188$                    ;BR, IF COMMAND ISSUED OK
033232  005237  002214                          INC     FATFLG                          ;ERROR COUNT
033236  010001                                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
033240                                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTICS FAILED
033240  104456                                                                          TRAP    C$ERHRD
033242  000322                                                                          .WORD   210
033244  005052                                                                          .WORD   WRTMSG
033246  012114                                                                          .WORD   SFIMSG
033250                                  188$:   CKLOOP                          ;LOOP IF SELECTED
033250  104406                                                                          TRAP    C$CLP1
```

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

033252  012737  141010  036620        MOV     #141010,T30PK3          ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
033260  012737  000001  036622        MOV     #1,T30RB                ;SET UP NUMBER TO SKIP
033266  012704  036620                MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
033272  010465  000000        189$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
033276  012737  176750  036656        MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
033304  004737  016330        190$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
033310  016501  000002                MOV     TSSR(R5),R1             ;PICK UP TSSR
033314  032701  000200                BIT     #SSR,R1                 ;IS SSR SET YET
033320  001017                        BNE     191$                    ;BR, IF SSR IS SET
033322                                DELAY   250                     ;CALL DELAY ROUTINE
033322  012727  000250                                                        MOV     #250,(PC)+
033326  000000                                                                .WORD   0
033330  013727  002116                                                        MOV     L$DLY,(PC)+
033334  000000                                                                .WORD   0
033336  005367  177772                                                        DEC     -6(PC)
033342  001375                                                                BNE     .-4
033344  005367  177756                                                        DEC     -22(PC)
033350  001367                                                                BNE     .-20
033352  005337  036656                DEC     T30DLY                  ;BUMP DELAY ROUTINE
033356  001352                        BNE     190$                    ;BR, IF MORE DELAY TO GO
033360  012702  000200        191$:   MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
033364  020102                        CMP     R1,R2                   ;WAS STATUS GOOD
033366  001406                        BEQ     192$                    ;BR, IF TERMINATION WAS GOOD
033370  005237  002214                INC     FATFLG                          ;ERROR COUNT
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 (XST0) FROM MESSAGE BUFFER
                                ;
                                ;*****************************************************************

033406  013701  036530                MOV     T30BFR+6,R1             ;PICK UP XST0
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
```

```
                                                                                    TRAP    C$CLP1
 1013 033442  012700  177777                MOV     #177777,R0                ;VALUE TO WRITTEN TO MEMORY
 1014 033446  004737  017502                JSR     PC,FILLMEM                ;FILL MEM WITH ALL ONES
 1015 033452  013737  003116  036622        MOV     FREE,T30RB                ;STARTING READ BUFFER ADDRESS
 1016
 1017                                      ;*************************************************************
 1018                                      ;
 1019                                      ;READ FORWARD,ACK,CVC=1 COMMAND
 1020                                      ;
 1021                                      ;*************************************************************
 1022
 1023 033460  012737  140001  036620        MOV     #140001,T30PK3            ;READ FORWARD,ACK,CVC=1 COMMAND
 1024 033466  012704  036620                MOV     #T30PK3,R4                ;SET UP R4 WITH PACKET ADDRESS
 1025 033472  012737  003720  036626        MOV     #2000.,T30SZ              ;SET UP RECORD SIZE IN PACKET
 1026 033500  010465  000000                MOV     R4,TSDB(R5)               ;ISSUE COMMAND
 1027 033504  004737  016330                JSR     PC,WAITF                  ;WAIT FOR SSR TO SET
 1028 033510  016501  000002                MOV     TSSR(R5),R1               ;GET TSSR CONTENTS
 1029 033514  012702  000200                MOV     #SSR,R2                   ;SET UP EXPECTED
 1030 033520  020102                        CMP     R1,R2                     ;ARE THEY EQUAL
 1031 033522  001406                        BEQ     200$                      ;BR, IF OK
 1032 033524  005237  002214                INC     FATFLG                          ;ERROR COUNT
 1036 033530                                ERRHRD  ERRNO,T30RDF,PKTSSR       ;TSSR INCORRECT AFTER WRITE DATA
      033530  104456                                                               TRAP    C$ERHRD
      033532  000325                                                               .WORD   213
      033534  037413                                                               .WORD   T30RDF
      033536  012126                                                               .WORD   PKTSSR
 1037 033540                        200$:   CKLOOP                            ;LOOP IF SELECTED
      033540  104406                                                               TRAP    C$CLP1
 1038 033542  017701  147350                MOV     @FREE,R1                  ;FIRST LOC IN READ BUFFER
 1039 033546  012702  177777                MOV     #177777,R2                ;EXPECTED IF NO DATA TRANS.
 1040 033552  020102                        CMP     R1,R2                     ;DID ANY DATA GET TRANSFERRED
 1041 033554  001006                        BNE     220$                      ;BR, IF NO DATA TRANS (GOOD)
 1042 033556  005237  002214                INC     FATFLG                          ;ERROR COUNT
 1046 033562                                ERRHRD  ERRNO,T30DTR,EXPREC       ;DATA TRANSFERRED ON READ TAPE MARK
      033562  104456                                                               TRAP    C$ERHRD
      033564  000326                                                               .WORD   214
      033566  041070                                                               .WORD   T30DTR
      033570  015554                                                               .WORD   EXPREC
 1047 033572                        220$:   CKLOOP                            ;LOOP IF SELECTED
      033572  104406                                                               TRAP    C$CLP1
 1048 033574  012702  001001                MOV     #1001,R2                  ;SET UP RECORD NUMBER EXPECTED (FILE 2)
 1049 033600  017701  147312                MOV     @FREE,R1                  ;GET INFO FROM BUFFER
 1050 033604  020201                        CMP     R2,R1                     ;ARE THEY EQUAL
 1051 033606  001406                        BEQ     228$                      ;BR, IF EQUAL (OK)
 1052 033610  005237  002214                INC     FATFLG                          ;ERROR COUNT
 1056 033614                                ERRHRD  ERRNO,T30PTB,EXPREC       ;RECORD POSITION WAS NOT CORRECT
      033614  104456                                                               TRAP    C$ERHRD
      033616  000327                                                               .WORD   215
      033620  037242                                                               .WORD   T30PTB
      033622  015554                                                               .WORD   EXPREC
 1057 033624                        228$:   CKLOOP                            ;LOOP IF SELECTED
      033624  104406                                                               TRAP    C$CLP1
 1058
 1059                                      ;*************************************************************
 1060                                      ;
 1061                                      ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
 1062                                      ;
```

```
1063
1064                                    ;*************************************************************
1065 033626  004737  011074                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
1066 033632  103411                            BCS     230$                    ;BR, IF NO PROBLEM
1067 033634  010004                            MOV     R0,R4                   ;SAVE PACKET ADDRESS
1068 033636  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR STATUS
1069 033642  005237  002214                    INC     FATFLG                          ;ERROR COUNT
1073 033646                                    ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     033646  104456                                                                    TRAP    C$ERHRD
     033650  000330                                                                    .WORD   216
     033652  040240                                                                    .WORD   T30RWN
     033654  012126                                                                    .WORD   PKTSSR
1074 033656                            230$:   CKLOOP                          ;LOOP IF SELECTED
     033656  104406                                                                    TRAP    C$CLP1
1075
1076                                    ;*************************************************************
1077                                    ;
1078                                    ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
1079                                    ;
1080                                    ;*************************************************************
1081
1082 033660  013701  036530                    MOV     T30BFR+6,R1             ;PICK UP XST0
1083 033664  010102                            MOV     R1,R2                   ;SET UP EXPECTED
1084 033666  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
1085 033672  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
1086 033674  001406                            BEQ     240$                    ;BR, IF EQUAL (OK)
1087 033676  005237  002214                    INC     FATFLG                          ;ERROR COUNT
1091 033702                                    ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     033702  104456                                                                    TRAP    C$ERHRD
     033704  000331                                                                    .WORD   217
     033706  040041                                                                    .WORD   T30BOT
     033710  015554                                                                    .WORD   EXPREC
1092 033712                            240$:   CKLOOP                          ;LOOP IF SELECTED
     033712  104406                                                                    TRAP    C$CLP1
1093 033714  005723                            TST     (R3)+                   ;POINT TO NEXT POSITION
1094 033716  011301                            MOV     (R3),R1                 ;GET NEXT COMMAND ETC.
1095 033720  020127  177777                    CMP     R1,#177777              ;END OF TABLE MARKER
1096 033724  001402                            BEQ     330$                    ;BR, IF AT END OF TABLE
1097 033726  000137  033214                    JMP     182$                    ;JUMP TO MORE COMMANDS TO DO
1098 033732                            330$:   CKLOOP                          ;LOOP IF SELECTED
     033732  104406                                                                    TRAP    C$CLP1
1099 033734                                    ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     033734                                                                         L10044:
     033734  104403                                                                    TRAP    C$ESUB
1100 033736  023727  002214  000017                CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
1101 033744  103402                                BLO     999$                            ;BR, IF LESS THAN 25
1102 033746  004737  017262                        JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
1103 033752                            999$:
```

```
                                        ;+
                                        ;
                                        ;TEST 2, SUBTEST 2
                                        ;
                                        ;VERIFIES THAT SKIP TAPE MARKS COMMANDS WITH A TAPE
                                        ;MARK COUNT GREATER THAN 1 OPERATE PROPERLY. COUNTS
                                        ;OF 2,3,8,64,256, AND 512 ARE TESTED. THE
                                        ;TESTING SEQUENCE IS SIMILAR TO THAT USED IN SUBTEST 1.
                                        ;
                                        ;
                                        ;
                                        ;-

033752                                          BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
033752                                                                                  T2.2:
033752  104402                                                                                  TRAP    C$BSUB
033754  004737  041252                        JSR     PC,T30REST      ;SET COMMAND PACKET
033760  005037  036654                        CLR     T30FCN          ;CLEAR FILE COUNTER
033764  004737  041344                        JSR     PC,T30RT2       ;SET UP OTHER COMMAND PACKET
033770  004737  041406                        JSR     PC,T30RT3       ;SET UP OTHER COMMAND PACKET
033774  012737  176750  036656                MOV     #65000.,T30DLY  ;SET UP DELAY COUNTER
034002  004737  016054              10$:      JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
034006  103426                              BCS     20$             ;BR IF INIT WAS OK
034010                                      DELAY   250             ;DELAY ROUTINE CALL
034010  012727  000250                                                          MOV     #250,(PC)+
034014  000000                                                                  .WORD   0
034016  013727  002116                                                          MOV     L$DLY,(PC)+
034022  000000                                                                  .WORD   0
034024  005367  177772                                                          DEC     -6(PC)
034030  001375                                                                  BNE     .-4
034032  005367  177756                                                          DEC     -22(PC)
034036  001367                                                                  BNE     .-20
034040  005337  036656                        DEC     T30DLY          ;BUMP COUNTER
034044  001356                              BNE     10$             ;BR, IF MORE COUNTING TO DO
034046  005237  002214                        INC     FATFLG                  ;ERROR COUNT
034052  010001                              MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
034054                                      ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
034054  104455                                                                  TRAP    C$ERDF
034056  000332                                                                  .WORD   218
034060  003646                                                                  .WORD   SFIERR
034062  012114                                                                  .WORD   SFIMSG
034064                          20$:
034064  013737  002174  036520                MOV     UNITN,T30DSW    ;SET UP UNIT NUMBER
034072  012704  036500                      MOV     #T30PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS

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

034076  004737  010742                        JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
034102  103407                              BCS     23$             ;BR, IF COMMAND ISSUED OK
034104  005237  002214                        INC     FATFLG                  ;ERROR COUNT
034110  010001                              MOV     R0,R1           ;SAVE CONTENTS OF TSSR
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
1153            034122                  23$:    CKLOOP                  ;LOOP IF SELECTED
                034122  104406                                                          TRAP    C$CLP1
1154
1155                                    ;***************************************************************
1156                                    ;
1157                                    ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
1158                                    ;
1159                                    ;***************************************************************
1160
1161            034124  004737  011074          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
1162            034130  103411                  BCS     30$                     ;BR, IF NO PROBLEM
1163            034132  010004                  MOV     R0,R4                   ;GET PACKET ADDRESS
1164            034134  016501  000002          MOV     TSSR(R5),R1             ;GET STATUS REGISTER
1165            034140  005237  002214          INC     FATFLG                          ;ERROR COUNT
1169            034144                  ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
                034144  104456                                                          TRAP    C$ERHRD
                034146  000334                                                          .WORD   220
                034150  040240                                                          .WORD   T30RWN
                034152  012126                                                          .WORD   PKTSSR
1170            034154                  30$:    CKLOOP                  ;LOOP IF SELECTED
                034154  104406                                                          TRAP    C$CLP1
1171
1172                                    ;***************************************************************
1173                                    ;
1174                                    ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
1175                                    ;
1176                                    ;***************************************************************
1177
1178            034156  013701  036530          MOV     T30BFR+6,R1             ;PICK UP XST0
1179            034162  010102                  MOV     R1,R2                   ;SET UP EXPECTED
1180            034164  052702  000002          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
1181            034170  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
1182            034172  001406                  BEQ     40$                     ;BR, IF EQUAL (OK)
1183            034174  005237  002214          INC     FATFLG                          ;ERROR COUNT
1187            034200                  ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                034200  104456                                                          TRAP    C$ERHRD
                034202  000335                                                          .WORD   221
                034204  040041                                                          .WORD   T30BOT
                034206  015554                                                          .WORD   EXPREC
1188            034210                  40$:    CKLOOP                  ;LOOP IF SELECTED
                034210  104406                                                          TRAP    C$CLP1
1189            034212  012737  000001  036654          MOV     #1.,T30FCN              ;SET "FILE" COUNTER AT 1 DECIMAL
1190            034220  012703  000001          64$:    MOV     #1,R3                   ;ONE RECORD  PER "FILE"
1191            034224  013737  003116  036622  65$:    MOV     FREE,T30WB              ;SET UP PACKETS'S WRITE BUFFER
1192            034232  012737  000024  036626          MOV     #20.,T30SZ              ;SET RECORD SIZE AT 2000 BYTES
1193
1194                                    ;***************************************************************
1195                                    ;
1196                                    ;WRITE DATA,ACK,CVC=1 COMMAND
1197                                    ;
1198                                    ;***************************************************************
1199
1200            034240  012737  140005  036620          MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
1201            034246  012704  036620                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
```

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1202 034252  013702  036654              MOV     T30FCN,R2               ;GET FILE COUNTER
1203 034256  000302                      SWAB    R2                      ;MOVE TO UPPER BYTE
1204 034260  010301                      MOV     R3,R1                   ;GET RECORD COUNTER
1205 034262  060201                      ADD     R2,R1                   ;FILE COUNTER IN UPPER, RECORD # LOW
1206 034264  010177  146626              MOV     R1,@FREE                ;MOV TO OUT PUT BUFFER
1207 034270  010465  000000              MOV     R4,TSDB(R5)             ;ISSUE COMMAND
1208 034274  004737  016330              JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1209 034300  016501  000002              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
1210 034304  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED
1211 034310  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
1212 034312  001406                      BEQ     70$                     ;BR, IF OK
1213 034314  005237  002214              INC     FATFLG                          ;ERROR COUNT
1217 034320                              ERRHRD  ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     034320  104456                                                              TRAP    C$ERHRD
     034322  000336                                                              .WORD   222
     034324  037170                                                              .WORD   T30WDD
     034326  012126                                                              .WORD   PKTSSR
1218 034330                      70$:    CKLOOP                          ;LOOP IF SELECTED
     034330  104406                                                              TRAP    C$CLP1
1219 034332  005203                      INC     R3                      ;COUNT THE RECORD COUNTER DOWN
1220 034334  020327  000021              CMP     R3,#21                  ;AT 20 YET
1221 034340  001331                      BNE     65$                     ;BR, IF NOT AT 20 RECORDS WRITTEN
1222
1223                             ;*************************************************************
1224                             ;
1225                             ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
1226                             ;
1227                             ;*************************************************************
1228
1229 034342  012737  141011  036620          MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
1230 034350  012704  036620              MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
1231 034354  010465  000000              MOV     R4,TSDB(R5)             ;ISSUE COMMAND
1232 034360  004737  016330              JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1233 034364  016501  000002              MOV     TSSR(R5),R1             ;PICK UP TSSR
1234 034370  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
1235 034374  020102                      CMP     R1,R2                   ;WAS STATUS GOOD
1236 034376  001406                      BEQ     160$                    ;BR, IF TERMINATION WAS GOOD
1237 034400  005237  002214              INC     FATFLG                          ;ERROR COUNT
1241 034404                              ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     034404  104456                                                              TRAP    C$ERHRD
     034406  000337                                                              .WORD   223
     034410  040362                                                              .WORD   T30WDC
     034412  012126                                                              .WORD   PKTSSR
1242 034414                      160$:   CKLOOP                          ;LOOP IF SELECTED
     034414  104406                                                              TRAP    C$CLP1
1243 034416  005237  036654              INC     T30FCN                  ;COUNT THE "FILE" COUNTER DOWN
1244 034422  023727  036654  000031      CMP     T30FCN,#25.             ;WRITE 25 FILES TO TAPE
1245 034430  001273                      BNE     64$                     ;BR, IF NOT AT 25 FILES WRITTEN
1246
1247                             ;*************************************************************
1248                             ;
1249                             ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
1250                             ;
1251                             ;*************************************************************
1252
1253 034432  012737  141011  036620          MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
1254 034440  012704  036620              MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
```

```
1255 034444  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
1256 034450  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1257 034454  016501  000002                MOV     TSSR(R5),R1             ;PICK UP TSSR
1258 034460  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
1259 034464  020102                        CMP     R1,R2                   ;WAS STATUS GOOD
1260 034466  001406                        BEQ     165$                    ;BR, IF TERMINATION WAS GOOD
1261 034470  005237  002214                INC     FATFLG                          ;ERROR COUNT
1265 034474                                ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     034474  104456                                                               TRAP    C$ERHRD
     034476  000340                                                               .WORD   224
     034500  040362                                                               .WORD   T30WDC
     034502  012126                                                               .WORD   PKTSSR
1266 034504                        165$:   CKLOOP                          ;LOOP IF SELECTED
     034504  104406                                                               TRAP    C$CLP1
1267
1268                               ;*****************************************************************
1269                               ;
1270                               ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
1271                               ;
1272                               ;*****************************************************************
1273
1274 034506  004737  011074                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
1275 034512  103411                        BCS     170$                    ;BR, IF NO PROBLEM
1276 034514  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
1277 034516  016501  000002                MOV     TSSR(R5),R1             ;GET STATUS REGISTER
1278 034522  005237  002214                INC     FATFLG                          ;ERROR COUNT
1282 034526                                ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     034526  104456                                                               TRAP    C$ERHRD
     034530  000341                                                               .WORD   225
     034532  040240                                                               .WORD   T30RWN
     034534  012126                                                               .WORD   PKTSSR
1283 034536                        170$:   CKLOOP                          ;LOOP IF SELECTED
     034536  104406                                                               TRAP    C$CLP1
1284
1285                               ;*****************************************************************
1286                               ;
1287                               ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
1288                               ;
1289                               ;*****************************************************************
1290
1291 034540  013701  036530                MOV     T30BFR+6,R1             ;PICK UP XST0
1292 034544  010102                        MOV     R1,R2                   ;SET UP EXPECTED
1293 034546  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
1294 034552  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
1295 034554  001406                        BEQ     180$                    ;BR, IF EQUAL (OK)
1296 034556  005237  002214                INC     FATFLG                          ;ERROR COUNT
1300 034562                                ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     034562  104456                                                               TRAP    C$ERHRD
     034564  000342                                                               .WORD   226
     034566  040041                                                               .WORD   T30BOT
     034570  015554                                                               .WORD   EXPREC
1301 034572                        180$:   CKLOOP                          ;LOOP IF SELECTED
     034572  104406                                                               TRAP    C$CLP1
1302 034574  012737  000002  036654        MOV     #2,T30FCN               ;SET TO NUMBER OF SKIP "FILES"
1303 034602  012703  036636                MOV     #T30IMV,R3              ;SET UP POINTER TO COMMAND TABLE
1304 034606  013737  002174  036520        MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
1305 034614  011337  036516        182$:   MOV     (R3),T30ETM             ;GET NEXT COMMAND
```

```
1306 034620  012704  036500                MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
1307
1308                                ;*************************************************************
1309                                ;
1310                                ;ISSUE WRITE CHARACTERISTICS COMMAND
1311                                ;
1312                                ;*************************************************************
1313
1314 034624  004737  010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
1315 034630  103407                       BCS     188$                    ;BR, IF COMMAND ISSUED OK
1316 034632  005237  002214                INC     FATFLG                          ;ERROR COUNT
1320 034636  010001                       MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
1321 034640                               ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      034640  104456                                                               TRAP    C$ERHRD
      034642  000343                                                               .WORD   227
      034644  005052                                                               .WORD   WRTMSG
      034646  012114                                                               .WORD   SFIMSG
1322 034650                         188$:   CKLOOP                          ;LOOP IF SELECTED
      034650  104406                                                               TRAP    C$CLP1
1323
1324                                ;*************************************************************
1325                                ;
1326                                ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
1327                                ;
1328                                ;*************************************************************
1329
1330 034652  012737  141010  036620          MOV     #141010,T30PK3          ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
1331 034660  013737  036654  036622          MOV     T30FCN,T30RB            ;SET UP NUMBER TO SKIP
1332 034666  012704  036620                 MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
1333 034672  010465  000000          189$:  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
1334 034676  012737  176750  036656          MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
1335 034704  004737  016330          190$:  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1336 034710  016501  000002                 MOV     TSSR(R5),R1             ;PICK UP TSSR
1337 034714  032701  000200                 BIT     #SSR,R1                 ;IS SSR SET YET
1338 034720  001017                         BNE     191$                    ;BR, IF SSR IS SET
1339 034722                                 DELAY   250                     ;CALL DELAY ROUTINE
      034722  012727  000250                                                       MOV     #250,(PC)+
      034726  000000                                                               .WORD   0
      034730  013727  002116                                                       MOV     L$DLY,(PC)+
      034734  000000                                                               .WORD   0
      034736  005367  177772                                                       DEC     -6(PC)
      034742  001375                                                               BNE     .-4
      034744  005367  177756                                                       DEC     -22(PC)
      034750  001367                                                               BNE     .-20
1340 034752  005337  036656                 DEC     T30DLY                  ;BUMP DELAY ROUTINE
1341 034756  001352                         BNE     190$                    ;BR, IF MORE DELAY TO GO
1342 034760  012702  000200          191$:  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
1343 034764  020102                         CMP     R1,R2                   ;WAS STATUS GOOD
1344 034766  001406                         BEQ     192$                    ;BR, IF TERMINATION WAS GOOD
1345 034770  005237  002214                INC     FATFLG                          ;ERROR COUNT
1349 034774                                 ERRHRD  ERRNO,T30SKM,PKTSSR     ;TSSR NOT CORRECT AFTER SKIP TAPE M.
      034774  104456                                                               TRAP    C$ERHRD
      034776  000344                                                               .WORD   228
      035000  037114                                                               .WORD   T30SKM
      035002  012126                                                               .WORD   PKTSSR
1350 035004                         192$:   CKLOOP                          ;LOOP IF SELECTED
      035004  104406                                                               TRAP    C$CLP1
```

```
1351
1352                                    ;*************************************************************
1353                                    ;
1354                                    ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
1355                                    ;
1356                                    ;*************************************************************
1357
1358 035006  013701  036530                    MOV     T30BFR+6,R1             ;PICK UP XST0
1359 035012  010102                            MOV     R1,R2                   ;SET UP EXPECTED
1360 035014  052702  100000                    BIS     #BIT15,R2               ;SET TMK BIT IN EXPECTED
1361 035020  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
1362 035022  001406                            BEQ     195$                    ;BR, IF EQUAL (OK)
1363 035024  005237  002214                    INC     FATFLG                          ;ERROR COUNT
1367 035030                                    ERRHRD  ERRNO,T30TMK,EXPREC     ;TMK NOT SET AFTER WRT TAPE MARK
     035030  104456                                                                    TRAP    C$ERHRD
     035032  000345                                                                    .WORD   229
     035034  040514                                                                    .WORD   T30TMK
     035036  015554                                                                    .WORD   EXPREC
1368 035040                            195$:   CKLOOP                          ;LOOP IF SELECTED
     035040  104406                                                                    TRAP    C$CLP1
1369 035042  012700  177777                    MOV     #177777,R0              ;VALUE TO WRITTEN TO MEMORY
1370 035046  004737  017502                    JSR     PC,FILLMEM              ;FILL MEM WITH ALL ONES
1371 035052  013737  003116  036622            MOV     FREE,T30RB              ;STARTING READ BUFFER ADDRESS
1372
1373                                    ;*************************************************************
1374                                    ;
1375                                    ;READ FORWARD,ACK,CVC=1 COMMAND
1376                                    ;
1377                                    ;*************************************************************
1378
1379 035060  012737  140001  036620            MOV     #140001,T30PK3          ;READ FORWARD,ACK,CVC=1 COMMAND
1380 035066  012704  036620                    MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
1381 035072  012737  000024  036626            MOV     #20.,T30SZ              ;SET UP RECORD SIZE IN PACKET
1382 035100  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
1383 035104  004737  016330                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1384 035110  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
1385 035114  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
1386 035120  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
1387 035122  001406                            BEQ     200$                    ;BR, IF OK
1388 035124  005237  002214                    INC     FATFLG                          ;ERROR COUNT
1392 035130                                    ERRHRD  ERRNO,T30RDF,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     035130  104456                                                                    TRAP    C$ERHRD
     035132  000346                                                                    .WORD   230
     035134  037413                                                                    .WORD   T30RDF
     035136  012126                                                                    .WORD   PKTSSR
1393 035140                            200$:   CKLOOP                          ;LOOP IF SELECTED
     035140  104406                                                                    TRAP    C$CLP1
1394 035142  017701  145750                    MOV     @FREE,R1                ;FIRST LOC IN READ BUFFER
1395 035146  012702  177777                    MOV     #177777,R2              ;EXPECTED IF NO DATA TRANS.
1396 035152  020102                            CMP     R1,R2                   ;DID ANY DATA GET TRANSFERRED
1397 035154  001006                            BNE     220$                    ;BR, IF NO DATA TRANS (GOOD)
1398 035156  005237  002214                    INC     FATFLG                          ;ERROR COUNT
1402 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
```

```
1403 035172                          220$:   CKLOOP                          ;LOOP IF SELECTED
     035172  104406                                                                  TRAP    C$CLP1
1404 035174  013702  036654                  MOV     T30FCN,R2               ;GET NUMBER OF SKIPS
1405 035200  005202                          INC     R2                      ;SET TO CORRECT FILE VALUE
1406 035202  000302                          SWAB    R2                      ;SWAP BYTE HALVES
1407 035204  052702  000001                  BIS     #BIT0,R2                ;SET FOR RECORD #1
1408 035210  017701  145702                  MOV     @FREE,R1                ;GET INFO FROM BUFFER
1409 035214  020201                          CMP     R2,R1                   ;ARE THEY EQUAL
1410 035216  001406                          BEQ     228$                    ;BR, IF EQUAL (OK)
1411 035220  005237  002214                  INC     FATFLG                          ;ERROR COUNT
1415 035224                                  ERRHRD  ERRNO,T30PTB,EXPREC     ;RECORD POSITION WAS NOT CORRECT
     035224  104456                                                                  TRAP    C$ERHRD
     035226  000350                                                                  .WORD   232
     035230  037242                                                                  .WORD   T30PTB
     035232  015554                                                                  .WORD   EXPREC
1416 035234                          228$:   CKLOOP                          ;LOOP IF SELECTED
     035234  104406                                                                  TRAP    C$CLP1
1417
1418                                 ;*****************************************************************
1419                                 ;
1420                                 ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
1421                                 ;
1422                                 ;*****************************************************************
1423
1424 035236  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
1425 035242  103411                          BCS     230$                    ;BR, IF NO PROBLEM
1426 035244  010004                          MOV     R0,R4                   ;SAVE PACKET ADDRESS
1427 035246  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR STATUS
1428 035252  005237  002214                  INC     FATFLG                          ;ERROR COUNT
1432 035256                                  ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     035256  104456                                                                  TRAP    C$ERHRD
     035260  000351                                                                  .WORD   233
     035262  040240                                                                  .WORD   T30RWN
     035264  012126                                                                  .WORD   PKTSSR
1433 035266                          230$:   CKLOOP                          ;LOOP IF SELECTED
     035266  104406                                                                  TRAP    C$CLP1
1434
1435                                 ;*****************************************************************
1436                                 ;
1437                                 ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
1438                                 ;
1439                                 ;*****************************************************************
1440
1441 035270  013701  036530                  MOV     T30BFR+6,R1             ;PICK UP XST0
1442 035274  010102                          MOV     R1,R2                   ;SET UP EXPECTED
1443 035276  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
1444 035302  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
1445 035304  001406                          BEQ     240$                    ;BR, IF EQUAL (OK)
1446 035306  005237  002214                  INC     FATFLG                          ;ERROR COUNT
1450 035312                                  ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     035312  104456                                                                  TRAP    C$ERHRD
     035314  000352                                                                  .WORD   234
     035316  040041                                                                  .WORD   T30BOT
     035320  015554                                                                  .WORD   EXPREC
1451 035322                          240$:   CKLOOP                          ;LOOP IF SELECTED
     035322  104406                                                                  TRAP    C$CLP1
1452 035324  005723                          TST     (R3)+                   ;POINT TO NEXT POSITION
```

```
1453 035326  011301                          MOV     (R3),R1          ;GET NEXT COMMAND ETC.
1454 035330  020127  177777                  CMP     R1,#177777       ;END OF TABLE MARKER
1455 035334  001410                          BEQ     330$             ;BR, IF AT END OF TABLE
1456 035336  013701  036654                  MOV     T30FCN,R1        ;GET NUMBER OF SKIPS
1457 035342  000241                          CLC                      ;CLEAR THE CARRY BIT
1458 035344  006101                          ROL     R1               ;PUSH OVER ONE POSITION
1459 035346  010137  036654                  MOV     R1,T30FCN        ;PUT BACK IN COUNTER
1460 035352  000137  034614                  JMP     182$             ;JUMP TO MORE COMMANDS TO DO
1461 035356                          330$:   CKLOOP                   ;LOOP IF SELECTED
     035356  104406                                                           TRAP    C$CLP1
1462 035360                                  ENDSUB                   ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     035360                                                                L10045:
     035360  104403                                                           TRAP    C$ESUB
1463 035362  023727  002214  000017          CMP     FATFLG,#15.              ;IS ERROR COUNT AT 25
1464 035370  103402                          BLO     999$                     ;BR, IF LESS THAN 25
1465 035372  004737  017262                  JSR     PC,CKDROP                ;TRY TO DROP THE UNIT
1466 035376                          999$:
```

SEQ 0154

```
1469
```

```
                                        ;+
                                        ;
                                        ;TEST 2, SUBTEST 3
                                        ;
                                        ;
                                        ;VERIFIES THAT A SKIP TAPE MARKS REVERSE COMMAND
                                        ;ISSUED WHILE THE TAPE IS POSITIONED AT BOT CAUSES
                                        ;FUNCTION REJECT TERMINATION, WITH THE NON-EXECUTABLE
                                        ;FUNCTION (NEF) ERROR BIT SET.
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-
035376                                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
035376                                                                                  T2.3:
035376  104402                                                                          TRAP    C$BSUB
035400  004737  041252                          JSR     PC,T30REST              ;SET COMMAND PACKET
035404  005037  036654                          CLR     T30FCN                  ;CLEAR FILE COUNTER
035410  004737  041344                          JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
035414  004737  041406                          JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
035420  012737  176750  036656                  MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
035426  004737  016054                  10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
035432  103426                                  BCS     20$                     ;BR IF INIT WAS OK
035434                                          DELAY   250                     ;DELAY ROUTINE CALL
035434  012727  000250                                                                  MOV     #250,(PC)+
035440  000000                                                                          .WORD   0
035442  013727  002116                                                                  MOV     L$DLY,(PC)+
035446  000000                                                                          .WORD   0
035450  005367  177772                                                                  DEC     -6(PC)
035454  001375                                                                          BNE     .-4
035456  005367  177756                                                                  DEC     -22(PC)
035462  001367                                                                          BNE     .-20
035464  005337  036656                          DEC     T30DLY                  ;BUMP COUNTER
035470  001356                                  BNE     10$                     ;BR, IF MORE COUNTING TO DO
035472  005237  002214                          INC     FATFLG                          ;ERROR COUNT
035476  010001                                  MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
035500                                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
035500  104455                                                                          TRAP    C$ERDF
035502  000353                                                                          .WORD   235
035504  003646                                                                          .WORD   SFIERR
035506  012114                                                                          .WORD   SFIMSG
035510                                  20$:
035510  013737  002174  036520                  MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
035516  012704  036500                          MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
                                        ;
                                        ;**************************************************************
                                        ;
                                        ;ISSUE WRITE CHARACTERISTICS COMMAND
                                        ;
                                        ;**************************************************************
                                        ;
035522  004737  010742                          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
035526  103407                                  BCS     23$                     ;BR, IF COMMAND ISSUED OK
035530  005237  002214                          INC     FATFLG                          ;ERROR COUNT
035534  010001                                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
```

```
1520 035536                             ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     035536  104456                                                             TRAP    C$ERHRD
     035540  000354                                                             .WORD   236
     035542  005052                                                             .WORD   WRTMSG
     035544  012114                                                             .WORD   SFIMSG
1521 035546                         23$:    CKLOOP                          ;LOOP IF SELECTED
     035546  104406                                                             TRAP    C$CLP1
1522
1523                                ;***************************************************************
1524                                ;
1525                                ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
1526                                ;
1527                                ;***************************************************************
1528
1529 035550  004737  011074                 JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
1530 035554  103411                       BCS     30$                     ;BR, IF NO PROBLEM
1531 035556  010004                       MOV     R0,R4                   ;GET PACKET ADDRESS
1532 035560  016501  000002               MOV     TSSR(R5),R1             ;GET STATUS REGISTER
1533 035564  005237  002214               INC     FATFLG                          ;ERROR COUNT
1537 035570                             ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     035570  104456                                                             TRAP    C$ERHRD
     035572  000355                                                             .WORD   237
     035574  040240                                                             .WORD   T30RWN
     035576  012126                                                             .WORD   PKTSSR
1538 035600                         30$:    CKLOOP                          ;LOOP IF SELECTED
     035600  104406                                                             TRAP    C$CLP1
1539
1540                                ;***************************************************************
1541                                ;
1542                                ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
1543                                ;
1544                                ;***************************************************************
1545
1546 035602  013701  036530                 MOV     T30BFR+6,R1             ;PICK UP XST0
1547 035606  010102                       MOV     R1,R2                   ;SET UP EXPECTED
1548 035610  052702  000002               BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
1549 035614  020102                       CMP     R1,R2                   ;DOES EXP = REC'D
1550 035616  001406                       BEQ     40$                     ;BR, IF EQUAL (OK)
1551 035620  005237  002214               INC     FATFLG                          ;ERROR COUNT
1555 035624                             ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     035624  104456                                                             TRAP    C$ERHRD
     035626  000356                                                             .WORD   238
     035630  040041                                                             .WORD   T30BOT
     035632  015554                                                             .WORD   EXPREC
1556 035634                         40$:    CKLOOP                          ;LOOP IF SELECTED
     035634  104406                                                             TRAP    C$CLP1
1557 035636  012737  000001  036622         MOV     #1,T30WB                ;SET # OF TM TO SKIP
1558
1559                                ;***************************************************************
1560                                ;
1561                                ;SKIP TAPE MARK REVERSE,ACK,CVC=1 COMMAND
1562                                ;
1563                                ;***************************************************************
1564
1565 035644  012737  141410  036620         MOV     #141410,T30PK3          ;SKIP TAPE MARK REVERSE,ACK,CVC=1 CMD
1566 035652  012704  036620               MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
1567 035656  010465  000000               MOV     R4,TSDB(R5)             ;ISSUE COMMAND
```

```
1568 035662  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1569 035666  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
1570 035672  012702  100206                  MOV     #SSR!SC!BIT1!BIT2,R2    ;SET UP EXPECTED
1571 035676  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
1572 035700  001406                          BEQ     70$                     ;BR, IF OK
1573 035702  005237  002214                  INC     FATFLG                          ;ERROR COUNT
1577 035706                                  ERRHRD  ERRNO,T30IBT,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     035706  104456                                                                  TRAP    C$ERHRD
     035710  000357                                                                  .WORD   239
     035712  037031                                                                  .WORD   T30IBT
     035714  012126                                                                  .WORD   PKTSSR
1578 035716                          70$:    CKLOOP                          ;LOOP IF SELECTED
     035716  104406                                                                  TRAP    C$CLP1
1579
1580                                 ;*****************************************************************
1581                                 ;
1582                                 ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
1583                                 ;
1584                                 ;*****************************************************************
1585
1586 035720  013701  036530                  MOV     T30BFR+6,R1             ;PICK UP XST0
1587 035724  010102                          MOV     R1,R2                   ;SET UP EXPECTED
1588 035726  052702  002000                  BIS     #BIT10,R2               ;SET NEF BIT IN EXPECTED
1589 035732  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
1590 035734  001406                          BEQ     180$                    ;BR, IF EQUAL (OK)
1591 035736  005237  002214                  INC     FATFLG                          ;ERROR COUNT
1595 035742                                  ERRHRD  ERRNO,T30NEF,EXPREC     ;TAPE NOT AT NEF
     035742  104456                                                                  TRAP    C$ERHRD
     035744  000360                                                                  .WORD   240
     035746  040576                                                                  .WORD   T30NEF
     035750  015554                                                                  .WORD   EXPREC
1596 035752                          180$:   CKLOOP                          ;LOOP IF SELECTED
     035752  104406                                                                  TRAP    C$CLP1
1597 035754                                  ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     035754                                                                  L10046:
     035754  104403                                                                  TRAP    C$ESUB
1598 035756  023727  002214  000017                  CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
1599 035764  103402                          BLO     999$                    ;BR, IF LESS THAN 25
1600 035766  004737  017262                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
1601 035772                          999$:
```

SEQ 0158

```
1603
```

```
                                        ;+
                                        ;
                                        ;TEST 2, SUBTEST 4
                                        ;
                                        ;
                                        ;VERIFIES THAT A SKIP TAPE MARKS REVERSE COMMAND
                                        ;ISSUED WHILE THE TAPE IS POSITIONED JUST BEFORE THE
                                        ;FIRST RECORD ON ON TAPE (BUT NOT AT BOT) CAUSES TAPE
                                        ;STATUS ALERT TERMINATION, WITH THE REVERSE INTO BOT
                                        ;(RIB) STATUS BIT SET.
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-
035772                                          BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
035772                                                                                  T2.4:
035772  104402                                                                                  TRAP    C$BSUB
035774  004737  041252                        JSR     PC,T30REST      ;SET COMMAND PACKET
036000  005037  036654                        CLR     T30FCN          ;CLEAR FILE COUNTER
036004  004737  041344                        JSR     PC,T30RT2       ;SET UP OTHER COMMAND PACKET
036010  004737  041406                        JSR     PC,T30RT3       ;SET UP OTHER COMMAND PACKET
036014  012737  176750  036656                MOV     #65000.,T30DLY  ;SET UP DELAY COUNTER
036022  004737  016054          10$:          JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
036026  103426                                BCS     20$             ;BR IF INIT WAS OK
036030                                        DELAY   250             ;DELAY ROUTINE CALL
036030  012727  000250                                                                    MOV     #250,(PC)+
036034  000000                                                                            .WORD   0
036036  013727  002116                                                                    MOV     L$DLY,(PC)+
036042  000000                                                                            .WORD   0
036044  005367  177772                                                                    DEC     -6(PC)
036050  001375                                                                            BNE     .-4
036052  005367  177756                                                                    DEC     -22(PC)
036056  001367                                                                            BNE     .-20
036060  005337  036656                        DEC     T30DLY          ;BUMP COUNTER
036064  001356                                BNE     10$             ;BR, IF MORE COUNTING TO DO
036066  005237  002214                        INC     FATFLG                  ;ERROR COUNT
036072  010001                                MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
036074                                        ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
036074  104455                                                                                  TRAP    C$ERDF
036076  000361                                                                                  .WORD   241
036100  003646                                                                                  .WORD   SFIERR
036102  012114                                                                                  .WORD   SFIMSG
036104                          20$:
036104  013737  002174  036520                MOV     UNITN,T30DSW    ;SET UP UNIT NUMBER
036112  012704  036500                        MOV     #T30PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS

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

036116  004737  010742                        JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
036122  103407                                BCS     23$             ;BR, IF COMMAND ISSUED OK
036124  005237  002214                        INC     FATFLG                  ;ERROR COUNT
```

```
1654 036130  010001                    MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
1655 036132                            ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     036132  104456                                                            TRAP    C$ERHRD
     036134  000362                                                            .WORD   242
     036136  005052                                                            .WORD   WRTMSG
     036140  012114                                                            .WORD   SFIMSG
1656 036142                    23$:    CKLOOP                          ;LOOP IF SELECTED
     036142  104406                                                            TRAP    C$CLP1
1657
1658                           ;***************************************************************
1659                           ;
1660                           ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
1661                           ;
1662                           ;***************************************************************
1663
1664 036144  004737  011074            JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
1665 036150  103411                    BCS     30$                     ;BR, IF NO PROBLEM
1666 036152  010004                    MOV     R0,R4                   ;GET PACKET ADDRESS
1667 036154  016501  000002            MOV     TSSR(R5),R1             ;GET STATUS REGISTER
1668 036160  005237  002214            INC     FATFLG                          ;ERROR COUNT
1672 036164                            ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     036164  104456                                                            TRAP    C$ERHRD
     036166  000363                                                            .WORD   243
     036170  040240                                                            .WORD   T30RWN
     036172  012126                                                            .WORD   PKTSSR
1673 036174                    30$:    CKLOOP                          ;LOOP IF SELECTED
     036174  104406                                                            TRAP    C$CLP1
1674
1675                           ;***************************************************************
1676                           ;
1677                           ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
1678                           ;
1679                           ;***************************************************************
1680
1681 036176  013701  036530            MOV     T30BFR+6,R1             ;PICK UP XST0
1682 036202  010102                    MOV     R1,R2                   ;SET UP EXPECTED
1683 036204  052702  000002            BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
1684 036210  020102                    CMP     R1,R2                   ;DOES EXP = REC'D
1685 036212  001406                    BEQ     40$                     ;BR, IF EQUAL (OK)
1686 036214  005237  002214            INC     FATFLG                          ;ERROR COUNT
1690 036220                            ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     036220  104456                                                            TRAP    C$ERHRD
     036222  000364                                                            .WORD   244
     036224  040041                                                            .WORD   T30BOT
     036226  015554                                                            .WORD   EXPREC
1691 036230                    40$:    CKLOOP                          ;LOOP IF SELECTED
     036230  104406                                                            TRAP    C$CLP1
1692 036232  013737  003116  036622        MOV     FREE,T30WB              ;SET UP GOOD WRITE BUFFER
1693 036240  012737  000400  036626        MOV     #256.,T30SZ             ;SET UP SIZE
1694
1695                           ;***************************************************************
1696                           ;
1697                           ;WRITE DATA,ACK,CVC=1 COMMAND
1698                           ;
1699                           ;***************************************************************
1700
1701 036246  012737  140005  036620        MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
```

```
1702 036254  012704  036620                MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
1703 036260  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
1704 036264  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1705 036270  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
1706 036274  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
1707 036300  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
1708 036302  001406                        BEQ     70$                     ;BR, IF OK
1709 036304  005237  002214                INC     FATFLG                          ;ERROR COUNT
1713 036310                                ERRHRD  ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     036310  104456                                                                TRAP    C$ERHRD
     036312  000365                                                                .WORD   245
     036314  037170                                                                .WORD   T30WDD
     036316  012126                                                                .WORD   PKTSSR
1714 036320                        70$:    CKLOOP                          ;LOOP IF SELECTED
     036320  104406                                                                TRAP    C$CLP1
1715
1716                               ;*****************************************************************
1717                               ;
1718                               ;SKIP TAPE MARK REVERSE,ACK,CVC=1 COMMAND
1719                               ;
1720                               ;*****************************************************************
1721
1722 036322  012737  000001  036622        MOV     #1,T30WB                ;# OF TM TO SKIP
1723 036330  012737  141410  036620        MOV     #141410,T30PK3          ;SKIP TAPE MARK REVERSE,ACK,CVC=1 CMD
1724 036336  012704  036620                MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
1725 036342  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
1726 036346  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1727 036352  016501  000002                MOV     TSSR(R5),R1             ;PICK UP TSSR
1728 036356  012702  100204                MOV     #SSR!BIT2!SC,R2         ;SET UP EXPECTED (SSR AND SC ONLY)
1729 036362  020102                        CMP     R1,R2                   ;WAS STATUS GOOD
1730 036364  001406                        BEQ     160$                    ;BR, IF TERMINATION WAS GOOD
1731 036366  005237  002214                INC     FATFLG                          ;ERROR COUNT
1735 036372                                ERRHRD  ERRNO,T30IBU,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     036372  104456                                                                TRAP    C$ERHRD
     036374  000366                                                                .WORD   246
     036376  036660                                                                .WORD   T30IBU
     036400  012126                                                                .WORD   PKTSSR
1736 036402                        160$:   CKLOOP                          ;LOOP IF SELECTED
     036402  104406                                                                TRAP    C$CLP1
1737
1738                               ;*****************************************************************
1739                               ;
1740                               ;GET EXTENDED STATUS REGISTER ZERO (XST3) FROM MESSAGE BUFFER
1741                               ;
1742                               ;*****************************************************************
1743
1744 036404  013701  036536                MOV     T30BFR+14,R1            ;PICK UP XST3
1745 036410  010102                        MOV     R1,R2                   ;SET UP EXPECTED
1746 036412  052702  000001                BIS     #BIT0,R2                ;SET RIB BIT IN EXPECTED
1747 036416  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
1748 036420  001406                        BEQ     170$                    ;BR, IF EQUAL (OK)
1749 036422  005237  002214                INC     FATFLG                          ;ERROR COUNT
1753 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
```

```
 1754 036436                          170$:   CKLOOP                          ;LOOP IF SELECTED
      036436  104406                                                                  TRAP    C$CLP1
 1755 036440                                  ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
      036440                                                                        L10047:
      036440  104403                                                                  TRAP    C$ESUB
 1756 036442  023727  002214  000017         CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
 1757 036450  103402                         BLO     999$                            ;BR, IF LESS THAN 25
 1758 036452  004737  017262                 JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
 1759 036456                          999$:
```

```
 1761
 1762                                   ;SUBTEST END
 1763                                   ;
 1764                                   ;
 1765 036456  004737  016536                    JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
 1766 036462  103002                            BCC     400$                    ;BR, IF NO LOOP REQUIRED
 1767 036464  000137  032360                    JMP     T30LOOP                 ;EXECUTE AGAIN
 1768 036470                            400$:   EXIT    TST                     ;ALL DONE THIS TEST
      036470  104432                                                                    TRAP    C$EXIT
      036472  002736                                                                    .WORD   L10043-.
```

```
1770                                    ;+
1771                                    ;LOCAL STORAGE FOR THIS TEST
1772                                    ;-
1774            036500                          .=<.+10>&177770
1776 036500                             T30PACKET:                      ;COMMAND PACKET FOR TEST
1777 036500     100004                          .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
1778 036502     036510                          .WORD   T30DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
1779 036504     000000                          .WORD   0
1780 036506     000012                          .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
1781 036510                             T30DATA:                        ;CHARACTERISTICS DATA BLOCK
1782 036510     036522                          .WORD   T30BFR          ;ADDRESS OF MESSAGE BUFFER
1783 036512     000000                          .WORD   0
1784 036514     000024                          .WORD   20.             ;LENGTH OF MESSAGE BUFFER
1785 036516     000000                  T30ETM: .WORD   0               ;SKIP TAPE MARK CONTROL
1786 036520     000000                  T30DSW: .WORD   0               ;SELECT DRIVE 0
1787 036522                             T30BFR: .BLKW   25.             ;MESSAGE BUFFER
1788                                    ;
1789                                    ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
1790                                    ;
1792            036610                          .=<.+10>&177770
1794 036610                             T30PK2:
1795 036610     100006                          .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
1796 036612     036630                          .WORD   T30BF2          ;ADDRESS OF SELECT BLOCK DATA
1797 036614     000000                          .WORD   0
1798 036616     000006                          .WORD   6.              ;SIZE OF DATA PACKET
1799
1803 036620                             T30PK3:
1804 036620     100205                          .WORD   100205          ;REREAD COMMAND, IE AND ACK
1805 036622                             T30RB:
1806 036622     003116                  T30WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
1807 036624     000000                          .WORD   0
1808 036626     000000                  T30SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
1809                                            .EVEN
1810                                    ;
1811                                    ;
1812                                    ;
1813 036630                             T30BF2:
1814 036630        010                  T30BS0: .BYTE   10              ;BSEL0 AREA
1815 036631        200                  T30BS1: .BYTE   200             ;BSEL1 AREA
1816 036632     000000                  T30S2:  .WORD   0               ;SEL 2 AREA
1817 036634     000000                  T30S3:  .WORD   0               ;DATA AREA
1818                                    ;
1819                                    ;
1820                                            .EVEN
1821                                    ;TAPE MOTION PACKET COMMAND VALUES
1822
1823 036636                             T30IMV:
1824 036636                             T30RN:
1825 036636     000000                          .WORD   000000          ;NEITHER EWB NOR ESS
1826 036640     000100                          .WORD   000100          ;EWB SET
1827 036642     000200                          .WORD   000200          ;ESS SET
1828 036644     000300                          .WORD   000300          ;BOTH EWB AND ESS SET
1829 036646     177777                          .WORD   177777          ;END OF DATA
1830
1831                                    ;
1832 036650     000000                  T30CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
1833 036652     000000                  T30CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
```

```
   1834 036654  000000                T30FCN: .WORD   0                       ;FILE NUMBER COUNTER
   1835 036656  000000                T30DLY: .WORD   0                       ;DELAY COUNTER STORAGE
```

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


036660      124     123     123   T30IBU: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE Into BOT'
036745      122     111     102   T30RIB: .ASCIZ  'RIB Bit (XST3) Failed To Set After Reverse Into BOT'
037031      124     123     123   T30IBT: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE At BOT'
037114      124     123     123   T30SKM: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK Command'
037170      124     123     123   T30WDD: .ASCIZ  'TSSR Not Correct After WRITE DATA Command'
037242      124     141     160   T30PTB: .ASCIZ  'Tape Not Positioned On Correct Record After READ REVERSE'
037333      124     141     160   T30TPB: .ASCIZ  'Tape Not Positioned On Second File First Record'
037413      124     123     123   T30RDF: .ASCIZ  'TSSR Incorrect After READ FORWARD Into "File"'
037471      124     123     123   T30RDG: .ASCIZ  'TSSR Incorrect After SPACE Command Into TAPE MARK'
037553      124     123     123   T30WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
037630      111     154     154   T30LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
037711      127     122     111   T30SSR: .ASCIZ  'WRITE MISCELLANEOUS Command Not Accepted'
037762      124     123     123   T30WDE: .ASCIZ  'TSSR Not Correct After SKIP TAPE MARKS, At BOT'
040041      124     141     160   T30BOT: .ASCIZ  'Tape Not At BOT After REWIND Command'
040106      124     123     123   T30TM:  .ASCIZ  'TSSR Not Correct After SPACE FORWARD Command'
040163      124     123     123   T30TM2: .ASCIZ  'TSSR Not Correct After SPACE REVERSE Command'
040240      122     145     167   T30RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
040307      104     162     151   T30OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
040362      124     123     123   T30WDC: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK Command'
040441      103     126     103   T30VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
040514      124     115     113   T30TMK: .ASCIZ  'TMK Not Set After WRITE TAPE MARK (RETRY) Command'
040576      123     113     111   T30NEF: .ASCIZ  'SKIP TAPE MARKS, At BOT, Failed To Set NEF Bit'
040655      124     115     113   T30RRM: .ASCIZ  'TMK Not Set After READ REVERSE Into TAPE MARK'
040733      124     115     113   T30RRN: .ASCIZ  'TMK Not Set After SPACE REVERSE Into TAPE MARK'
041012      124     115     113   T30RRP: .ASCIZ  'TMK Not Set After READ FORWARD Into TAPE MARK'
041070      116     117     040   T30DTR: .ASCIZ  'NO Data Transferred On READ FORWARD'
041134      104     141     164   T30DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
041231      123     153     151   TST30ID:        .ASCIZ  'Skip Tape Marks'
                                            .EVEN
                                        ;+
                                        ;
                                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                        ;WRITE SUBSYSTEM MEMORY COMMAND
                                        ;
                                        ;-

041252                                  T30REST:
041252                                          SAVREG                          ;SAVE THE REGISTERS
041256  012701  036500                          MOV     #T30PACKET,R1           ;START OF THE PACKET
041262  012721  100004                          MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
041266  012721  036510                          MOV     #T30DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
041272  005021                                  CLR     (R1)+                   ;EXTENDED ADDRESS
041274  012721  000012                          MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
041300  012721  036522                          MOV     #T30BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
041304  005021                                  CLR     (R1)+
041306  012721  000024                          MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
041312  005021                                  CLR     (R1)+
041314  012711  000000                          MOV     #0,(R1)                 ;SELECT DRIVE ZERO
041320  012702  000030                          MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
041324  012762  177777  036522  64$:           MOV     #177777,T30BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
041332  005742                                  TST     -(R2)                   ;NEXT LOCATION
```

```
 1894 041334  022702  000000            CMP     #0.,R2                  ;CHECK R2 FOR DONE
 1895 041340  001371                    BNE     64$                     ;KEEP GOING UNTIL DONE
 1896 041342  000207                    RTS     PC                      ;RETURN
 1897
 1898
 1899 041344                    T30RT2:
 1900 041344                            SAVREG                          ;SAVE THE REGISTERS
 1901 041350  012701  036610            MOV     #T30PK2,R1              ;START OF THE PACKET
 1902 041354  012721  100006            MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
 1903 041360  012721  036630            MOV     #T30BF2,(R1)+           ;ADDRESS OF DATA BLOCK
 1904 041364  005021                    CLR     (R1)+                   ;EXTENDED ADDRESS
 1905 041366  012721  000006            MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
 1906 041372  005021                    CLR     (R1)+
 1907 041374  012701  036630            MOV     #T30BF2,R1              ;POINT TO DATA SEL AREA
 1908 041400  005021                    CLR     (R1)+
 1909 041402  005011                    CLR     (R1)
 1910 041404  000207                    RTS     PC                      ;RETURN
 1911 041406                    T30RT3:
 1912 041406                            SAVREG                          ;SAVE REGISTERS
 1913 041412  012701  036620            MOV     #T30PK3,R1              ;SET UP POINTER ADDRESS
 1914 041416  005021                    CLR     (R1)+                   ;COMMAND SPACE
 1915 041420  005021                    CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
 1916 041422  005021                    CLR     (R1)+                   ;EXTENDED ADDRESS
 1917 041424  005011                    CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
 1918 041426  000207                    RTS     PC                      ;RETURN
 1919 041430                            ENDTST
      041430
      041430  104401                                            L10043:
                                                                        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
                                ;
                                ;-
                                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.
                                        ;
                                        ;-
                                                BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
                                                                                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
041522  013727  002116                                                  MOV     L$DLY,(PC)+
041526  000000                                                          .WORD   0
041530  005367  177772                                                  DEC     -6(PC)
041534  001375                                                          BNE     .-4
041536  005367  177756                                                  DEC     -22(PC)
041542  001367                                                          BNE     .-20
041544  005337  043342                      DEC     T31DLY          ;BUMP COUNTER
041550  001356                      BNE     10$             ;BR, IF COUNTER NOT DONE
041552  005237  002214                      INC     FATFLG                  ;ERROR COUNT
041556  010001                      MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
041560                              ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
041560  104455                                                          TRAP    C$ERDF
041562  000455                                                          .WORD   301
041564  003646                                                          .WORD   SFIERR
041566  012114                                                          .WORD   SFIMSG
041570  013737  002174  043210      20$:    MOV     UNITN,T31DSW    ;SET UP UNIT NUMBER IN PACKET
041576  012704  043170                      MOV     #T31PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
041602  004737  010742                      JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
041606  103407                      BCS     23$             ;BR, IF COMMAND ISSUED OK
041610  005237  002214                      INC     FATFLG                  ;ERROR COUNT
041614  010001                      MOV     R0,R1           ;SAVE CONTENTS OF TSSR
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
     1995       041626                  23$:    CKLOOP                  ;LOOP IF SELECTED
                041626  104406                                                          TRAP    C$CLP1
     1996       041630  004737  011074          JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
     1997       041634  103407          BCS     30$                     ;BR, IF NO PROBLEM
     1998       041636  010004          MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
     1999       041640  005237  002214          INC     FATFLG                  ;ERROR COUNT
     2003       041644                  ERRHRD  ERRNO,T31RWN,PKTSSR     ;REWIND NOT ACCEPTED
                041644  104456                                                          TRAP    C$ERHRD
                041646  000457                                                          .WORD   303
                041650  044674                                                          .WORD   T31RWN
                041652  012126                                                          .WORD   PKTSSR
     2004       041654                  30$:    CKLOOP                  ;LOOP IF SELECTED
                041654  104406                                                          TRAP    C$CLP1
     2005       041656  013701  043220          MOV     T31BFR+6,R1             ;PICK UP XSTO
     2006       041662  010102          MOV     R1,R2                   ;SET UP EXPECTED
     2007       041664  052702  000002          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
     2008       041670  020102          CMP     R1,R2                   ;DOES EXP = REC'D
     2009       041672  001406          BEQ     40$                     ;BR, IF EQUAL (OK)
     2010       041674  005237  002214          INC     FATFLG                  ;ERROR COUNT
     2014       041700                  ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                041700  104456                                                          TRAP    C$ERHRD
                041702  000460                                                          .WORD   304
                041704  044345                                                          .WORD   T31BOT
                041706  015554                                                          .WORD   EXPREC
     2015       041710                  40$:    CKLOOP                  ;LOOP IF SELECTED
                041710  104406                                                          TRAP    C$CLP1
     2016       041712  013737  003116  043312  MOV     FREE,T31WB              ;STARTING WRITE BUFFER ADDRESS
     2017       041720  012737  140005  043310  65$:    MOV     #140005,T31PK3          ;WRITE DATA,CVC=1,ACK COMMAND
     2018       041726  012704  043310          MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
     2019       041732  012700  000144          MOV     #100.,R0                ;SET PATTERN IN CORRECT REGISTER
     2020       041736  004737  017502          JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
     2021       041742  012737  000144  043316  MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
     2022       041750  010465  000000          MOV     R4,TSDB(R5)             ;ISSUE COMMAND
     2023       041754  004737  016330          JSR     PC,WAITF                ;WAIT FOR SSR TO SET
     2024       041760  016501  000002          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
     2025       041764  012702  000200          MOV     #SSR,R2                 ;SET UP EXPECTED
     2026       041770  020102          CMP     R1,R2                   ;ARE THEY EQUAL
     2027       041772  001406          BEQ     80$                     ;BR, IF OK
     2028       041774  005237  002214          INC     FATFLG                  ;ERROR COUNT
     2032       042000                  ERRHRD  ERRNO,T31WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
                042000  104456                                                          TRAP    C$ERHRD
                042002  000461                                                          .WORD   305
                042004  045230                                                          .WORD   T31WDC
                042006  012126                                                          .WORD   PKTSSR
     2033       042010                  80$:    CKLOOP                  ;LOOP IF SELECTED
                042010  104406                                                          TRAP    C$CLP1
     2034       042012  004737  011074          JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
     2035       042016  103407          BCS     230$                    ;BR, IF NO PROBLEM
     2036       042020  010001          MOV     R0,R1                   ;SAVE TSSR
     2037       042022  005237  002214          INC     FATFLG                  ;ERROR COUNT
     2041       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
```

```
2042 042036                          230$:  CKLOOP                          ;LOOP IF SELECTED
     042036 104406                                                                TRAP    C$CLP1
2043 042040 013701 043220                   MOV     T31BFR+6,R1             ;PICK UP XSTO
2044 042044 010102                          MOV     R1,R2                   ;SET UP EXPECTED
2045 042046 052702 000002                   BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2046 042052 020102                          CMP     R1,R2                   ;DOES EXP = REC'D
2047 042054 001406                          BEQ     240$                    ;BR, IF EQUAL (OK)
2048 042056 005237 002214                   INC     FATFLG                          ;ERROR COUNT
2052 042062                                 ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     042062 104456                                                                TRAP    C$ERHRD
     042064 000463                                                                .WORD   307
     042066 044345                                                                .WORD   T31BOT
     042070 015554                                                                .WORD   EXPREC
2053 042072                          240$:  CKLOOP                          ;LOOP IF SELECTED
     042072 104406                                                                TRAP    C$CLP1
2054 042074 012737 041012 043310     265$:  MOV     #041012,T31PK3          ;NO-OP,CVC=1 COMMAND
2055 042102 012704 043310                   MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2056 042106 010337 043316                   MOV     R3,T31SZ                ;SET UP RECORD SIZE IN PACKET
2057 042112 010465 000000                   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2058 042116 004737 016330                   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2059 042122 016501 000002                   MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2060 042126 012702 000200                   MOV     #SSR,R2                 ;SET UP EXPECTED
2061 042132 020102                          CMP     R1,R2                   ;ARE THEY EQUAL
2062 042134 001406                          BEQ     280$                    ;BR, IF OK
2063 042136 005237 002214                   INC     FATFLG                          ;ERROR COUNT
2067 042142                                 ERRHRD  ERRNO,T31RDF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     042142 104456                                                                TRAP    C$ERHRD
     042144 000464                                                                .WORD   308
     042146 043543                                                                .WORD   T31RDF
     042150 012126                                                                .WORD   PKTSSR
2068 042152                          280$:  CKLOOP                          ;LOOP IF SELECTED
     042152 104406                                                                TRAP    C$CLP1
2069 042154 013701 043220                   MOV     T31BFR+6,R1             ;PICK UP XSTO
2070 042160 010102                          MOV     R1,R2                   ;SET UP EXPECTED
2071 042162 052702 000002                   BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2072 042166 020102                          CMP     R1,R2                   ;DOES EXP = REC'D
2073 042170 001406                          BEQ     285$                    ;BR, IF EQUAL (OK)
2074 042172 005237 002214                   INC     FATFLG                          ;ERROR COUNT
2078 042176                                 ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     042176 104456                                                                TRAP    C$ERHRD
     042200 000465                                                                .WORD   309
     042202 044345                                                                .WORD   T31BOT
     042204 015554                                                                .WORD   EXPREC
2079 042206                          285$:  CKLOOP                          ;LOOP IF SELECTED
     042206 104406                                                                TRAP    C$CLP1
2080 042210 012737 140001 043310            MOV     #140001,T31PK3          ;READ,ACK,CVC=1 COMMAND
2081 042216 012704 043310                   MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2082 042222 012737 000144 043316            MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
2083 042230 010465 000000                   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2084 042234 004737 016330                   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2085 042240 016501 000002                   MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2086 042244 012702 000200                   MOV     #SSR,R2                 ;SET UP EXPECTED
2087 042250 020102                          CMP     R1,R2                   ;ARE THEY EQUAL
2088 042252 001406                          BEQ     290$                    ;BR, IF OK
2089 042254 005237 002214                   INC     FATFLG                          ;ERROR COUNT
2093 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
  2094  042270                          290$:   CKLOOP                  ;LOOP IF SELECTED
        042270  104406                                                          TRAP    C$CLP1
  2095  042272  017701  140620                MOV     @FREE,R1        ;GET DATA READ
  2096  042276  012702  000144                MOV     #100.,R2        ;READ EXPECTED
  2097  042302  020102                        CMP     R1,R2           ;DID TAPE STAY POSITIONED
  2098  042304  001406                        BEQ     330$            ;BR, IF EXPD = RECD
  2099  042306  005237  002214                INC     FATFLG                  ;ERROR COUNT
  2103  042312                                ERRHRD  ERRNO,T31WNG,EXPREC     ;TAPE DATA NOT CORRECT
        042312  104456                                                          TRAP    C$ERHRD
        042314  000467                                                          .WORD   311
        042316  043471                                                          .WORD   T31WNG
        042320  015554                                                          .WORD   EXPREC
  2104  042322                          330$:
  2105  042322                                ENDSUB                  ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
        042322                                                                  L10051:
        042322  104403                                                          TRAP    C$ESUB
  2106  042324  023727  002214  000017        CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
  2107  042332  103402                        BLO     999$                    ;BR, IF LESS THAN 25
  2108  042334  004737  017262                JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
  2109  042340                          999$:
```

```
                                        ;+
                                        ;
                                        ;TEST 3, SUBTEST 2
                                        ;
                                        ;       VERIFIES THAT THE INITIALIZE COMMAND OPERATES AS A NO-OP,
                                        ;       ASSUMING NO MICRODIAGNOSTIC ERRORS ARE PRESENT (THEY WOULD
                                        ;       ALREADY HAVE BEEN DETECTED IN PREVIOUS TESTS).  THE TEST
                                        ;       SEQUENCE IS SIMILAR TO THAT USED IN SUBTEST 1.
                                        ;
                                        ;-
                        BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
                                                                        T3.2:
                                                                TRAP    C$BSUB
                        JSR     PC,T31REST              ;SET COMMAND PACKET
                        JSR     PC,T31RT2               ;SET UP OTHER COMMAND PACKET
                        JSR     PC,T31RT3               ;SET UP OTHER COMMAND PACKET
                        JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
                        BCS     20$                     ;BR IF INIT WAS OK
                        INC     FATFLG                          ;ERROR COUNT
                        MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
                        ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
                                                                TRAP    C$ERDF
                                                                .WORD   312
                                                                .WORD   SFIERR
                                                                .WORD   SFIMSG
043210  20$:    MOV     UNITN,T31DSW            ;SET UP UNIT NUMBER IN PACKET
                MOV     #T31PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
                BCS     23$                     ;BR, IF COMMAND ISSUED OK
                INC     FATFLG                          ;ERROR COUNT
                MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
                                                                TRAP    C$ERHRD
                                                                .WORD   313
                                                                .WORD   WRTMSG
                                                                .WORD   SFIMSG
        23$:    CKLOOP                          ;LOOP IF SELECTED
                                                                TRAP    C$CLP1
                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
                BCS     30$                     ;BR, IF NO PROBLEM
                MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
                INC     FATFLG                          ;ERROR COUNT
                ERRHRD  ERRNO,T31RWN,PKTSSR     ;REWIND NOT ACCEPTED
                                                                TRAP    C$ERHRD
                                                                .WORD   314
                                                                .WORD   T31RWN
                                                                .WORD   PKTSSR
        30$:    CKLOOP                          ;LOOP IF SELECTED
                                                                TRAP    C$CLP1
                MOV     T31BFR+6,R1             ;PICK UP XST0
                MOV     R1,R2                   ;SET UP EXPECTED
                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
                CMP     R1,R2                   ;DOES EXP = REC'D
                BEQ     40$                     ;BR, IF EQUAL (OK)
```

```
2161 042506  005237  002214                    INC     FATFLG                          ;ERROR COUNT
2165 042512                                    ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     042512  104456                                                                    TRAP    C$ERHRD
     042514  000473                                                                    .WORD   315
     042516  044345                                                                    .WORD   T31BOT
     042520  015554                                                                    .WORD   EXPREC
2166 042522                            40$:    CKLOOP                          ;LOOP IF SELECTED
     042522  104406                                                                    TRAP    C$CLP1
2167 042524  013737  003116  043312            MOV     FREE,T31WB              ;STARTING WRITE BUFFER ADDRESS
2168 042532  012737  140005  043310  65$:     MOV     #140005,T31PK3          ;WRITE DATA,CVC=1,ACK COMMAND
2169 042540  012704  043310                    MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2170 042544  012700  000144                    MOV     #100.,R0                        ;SET PATTERN IN CORRECT REGISTER
2171 042550  004737  017502                    JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
2172 042554  012737  000144  043316            MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
2173 042562  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2174 042566  004737  016330                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2175 042572  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2176 042576  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
2177 042602  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
2178 042604  001406                            BEQ     80$                     ;BR, IF OK
2179 042606  005237  002214                    INC     FATFLG                          ;ERROR COUNT
2183 042612                                    ERRHRD  ERRNO,T31WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     042612  104456                                                                    TRAP    C$ERHRD
     042614  000474                                                                    .WORD   316
     042616  045230                                                                    .WORD   T31WDC
     042620  012126                                                                    .WORD   PKTSSR
2184 042622                            80$:    CKLOOP                          ;LOOP IF SELECTED
     042622  104406                                                                    TRAP    C$CLP1
2185 042624  004737  011074                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
2186 042630  103407                            BCS     230$                    ;BR, IF NO PROBLEM
2187 042632  010001                            MOV     R0,R1                   ;SAVE TSSR
2188 042634  005237  002214                    INC     FATFLG                          ;ERROR COUNT
2192 042640                                    ERRHRD  ERRNO,T31RWN,EXPREC     ;REWIND NOT ACCEPTED
     042640  104456                                                                    TRAP    C$ERHRD
     042642  000475                                                                    .WORD   317
     042644  044674                                                                    .WORD   T31RWN
     042646  015554                                                                    .WORD   EXPREC
2193 042650                            230$:   CKLOOP                          ;LOOP IF SELECTED
     042650  104406                                                                    TRAP    C$CLP1
2194 042652  013701  043220                    MOV     T31BFR+6,R1             ;PICK UP XSTO
2195 042656  010102                            MOV     R1,R2                   ;SET UP EXPECTED
2196 042660  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2197 042664  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
2198 042666  001406                            BEQ     240$                    ;BR, IF EQUAL (OK)
2199 042670  005237  002214                    INC     FATFLG                          ;ERROR COUNT
2203 042674                                    ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     042674  104456                                                                    TRAP    C$ERHRD
     042676  000476                                                                    .WORD   318
     042700  044345                                                                    .WORD   T31BOT
     042702  015554                                                                    .WORD   EXPREC
2204 042704                            240$:   CKLOOP                          ;LOOP IF SELECTED
     042704  104406                                                                    TRAP    C$CLP1
2205 042706  012737  041012  043310  265$:     MOV     #041012,T31PK3          ;INITIALIZE,CVC=1 COMMAND
2206 042714  012704  043310                    MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2207 042720  010337  043316                    MOV     R3,T31SZ                ;SET UP RECORD SIZE IN PACKET
2208 042724  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2209 042730  004737  016330                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
```

```
2210 042734  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2211 042740  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
2212 042744  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
2213 042746  001406                          BEQ     280$                    ;BR, IF OK
2214 042750  005237  002214                  INC     FATFLG                          ;ERROR COUNT
2218 042754                                  ERRHRD  ERRNO,T31RDF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     042754  104456                                                                  TRAP    C$ERHRD
     042756  000477                                                                  .WORD   319
     042760  043543                                                                  .WORD   T31RDF
     042762  012126                                                                  .WORD   PKTSSR
2219 042764                          280$:   CKLOOP                          ;LOOP IF SELECTED
     042764  104406                                                                  TRAP    C$CLP1
2220 042766  013701  043220                  MOV     T31BFR+6,R1             ;PICK UP XSTO
2221 042772  010102                          MOV     R1,R2                   ;SET UP EXPECTED
2222 042774  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2223 043000  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
2224 043002  001406                          BEQ     285$                    ;BR, IF EQUAL (OK)
2225 043004  005237  002214                  INC     FATFLG                          ;ERROR COUNT
2229 043010                                  ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     043010  104456                                                                  TRAP    C$ERHRD
     043012  000500                                                                  .WORD   320
     043014  044345                                                                  .WORD   T31BOT
     043016  015554                                                                  .WORD   EXPREC
2230 043020                          285$:   CKLOOP                          ;LOOP IF SELECTED
     043020  104406                                                                  TRAP    C$CLP1
2231 043022  012737  140001  043310          MOV     #140001,T31PK3          ;READ,ACK,CVC=1 COMMAND
2232 043030  012704  043310                  MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2233 043034  012737  000144  043316          MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
2234 043042  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2235 043046  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2236 043052  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2237 043056  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
2238 043062  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
2239 043064  001406                          BEQ     290$                    ;BR, IF OK
2240 043066  005237  002214                  INC     FATFLG                          ;ERROR COUNT
2244 043072                                  ERRHRD  ERRNO,T31RDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     043072  104456                                                                  TRAP    C$ERHRD
     043074  000501                                                                  .WORD   321
     043076  043344                                                                  .WORD   T31RDE
     043100  012126                                                                  .WORD   PKTSSR
2245 043102                          290$:   CKLOOP                          ;LOOP IF SELECTED
     043102  104406                                                                  TRAP    C$CLP1
2246 043104  017701  140006                  MOV     @FREE,R1                ;GET DATA READ
2247 043110  012702  000144                  MOV     #100.,R2                ;READ EXPECTED
2248 043114  020102                          CMP     R1,R2                   ;DID TAPE STAY POSITIONED
2249 043116  001406                          BEQ     330$                    ;BR, IF EXPD = RECD
2250 043120  005237  002214                  INC     FATFLG                          ;ERROR COUNT
2254 043124                                  ERRHRD  ERRNO,T31WNH,EXPREC     ;TAPE POSITION NOT CORRECT AFTER INIT
     043124  104456                                                                  TRAP    C$ERHRD
     043126  000502                                                                  .WORD   322
     043130  043410                                                                  .WORD   T31WNH
     043132  015554                                                                  .WORD   EXPREC
2255 043134                          330$:
2256 043134                                  ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     043134                                                                       L10052:
     043134  104403                                                                  TRAP    C$ESUB
2257 043136  023727  002214  000017          CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
```

```
2258 043144  103402                    BLO     999$                    ;BR, IF LESS THAN 25
2259 043146  004737  017262            JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
2260 043152                    999$:
2261                                   ;
2262                                   ;
2263                                   ;
2264 043152  004737  016536            JSR     PC,TSTLOOP      ;DO WE NEED TO ITERATE TEST
2265 043156  103002                    BCC     163$            ;BR, IF NO LOOP REQUIRED
2266 043160  000137  041462            JMP     T31LOOP         ;EXECUTE AGAIN
2267 043164                    163$:   EXIT    TST             ;ALL DONE THIS TEST
     043164  104432                                                    TRAP    C$EXIT
     043166  003600                                                    .WORD   L10050-.
```

```
                                ;+
                                ;LOCAL STORAGE FOR THIS TEST
                                ;-
043170                          T31PACKET:                      ;COMMAND PACKET FOR TEST
043170  100004                          .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
043172  043200                          .WORD   T31DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
043174  000000                          .WORD   0
043176  000012                          .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
043200                          T31DATA:                        ;CHARACTERISTICS DATA BLOCK
043200  043212                          .WORD   T31BFR          ;ADDRESS OF MESSAGE BUFFER
043202  000000                          .WORD   0
043204  000024                          .WORD   20.             ;LENGTH OF MESSAGE BUFFER
043206  000000                          .WORD   0
043210  000000                  T31DSW: .WORD   0               ;SELECT DRIVE 0
043212                          T31BFR: .BLKW   25.             ;MESSAGE BUFFER
                                ;
                                ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                ;
        043300                          .=<.+10>&177770
043300                          T31PK2:
043300  100006                          .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
043302  043320                          .WORD   T31BF2          ;ADDRESS OF SELECT BLOCK DATA
043304  000000                          .WORD   0
043306  000006                          .WORD   6.              ;SIZE OF DATA PACKET

043310                          T31PK3:
043310  100005                          .WORD   100005          ;REREAD COMMAND, AND ACK
043312                          T31RB:
043312  003116                  T31WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
043314  000000                          .WORD   0
043316  000000                  T31SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
                                        .EVEN
                                ;
                                ;
                                ;
043320                          T31BF2:
043320      010                 T31BS0: .BYTE   10              ;BSEL0 AREA
043321      200                 T31BS1: .BYTE   200             ;BSEL1 AREA
043322  000000                  T31S2:  .WORD   0               ;SEL 2 AREA
043324  000000                  T31S3:  .WORD   0               ;DATA AREA
                                ;
                                ;
                                        .EVEN
                                ;TAPE MOTION PACKET COMMAND VALUES

043326  100205                  T31RN:  .WORD   100205          ;REREAD DATA (NEXT)
043330  100605                  T31WDR: .WORD   100605          ;REREAD DATA RETRY
043332  102205                  T31CON: .WORD   102205          ;WRITE CONTINOUS
043334  177777                          .WORD   177777          ;END OF DATA

                                ;
043336  000000                  T31CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
043340  000000                  T31CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
043342  000000                  T31DLY: .WORD   0               ;DELAY COUNTER
```

```
                                        ;+
                                        ;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
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
```

```
2390 046642  005021                          CLR     (R1)+
2391 046644  012721  000024                  MOV     #20.,(R1)+          ;LENGTH OF MESSAGE BUFFER
2392 046650  005021                          CLR     (R1)+
2393 046652  012711  000000                  MOV     #0,(R1)             ;SELECT DRIVE ZERO
2394 046656  012702  000030                  MOV     #24.,R2             ;NUMBER OF LOCATIONS TO BE CLEARED
2395 046662  012762  177777  043212  64$:    MOV     #177777,T31BFR(R2)  ;ALL ONES TO MESSAGE BUFFER
2396 046670  005742                          TST     -(R2)               ;NEXT LOCATION
2397 046672  022702  000000                  CMP     #0,R2               ;AT END OF LOOP YET
2398 046676  001371                          BNE     64$                 ;KEEP GOING UNTIL DONE
2399 046700  000207                          RTS     PC                  ;RETURN
2400
2401
2402 046702                          T31RT2:
2403 046702                                  SAVREG                      ;SAVE THE REGISTERS
2404 046706  012701  043300                  MOV     #T31PK2,R1          ;START OF THE PACKET
2405 046712  012721  100006                  MOV     #100006,(R1)+       ;WRITE SUBSYSTEM MEM. WITH ACK,
2406 046716  012721  043320                  MOV     #T31BF2,(R1)+       ;ADDRESS OF DATA BLOCK
2407 046722  005021                          CLR     (R1)+               ;EXTENDED ADDRESS
2408 046724  012721  000006                  MOV     #6.,(R1)+           ;SIZE OF DATA BLOCK IN BYTES
2409 046730  005021                          CLR     (R1)+
2410 046732  012701  043320                  MOV     #T31BF2,R1          ;POINT TO DATA SEL AREA
2411 046736  005021                          CLR     (R1)+
2412 046740  005011                          CLR     (R1)
2413 046742  000207                          RTS     PC                  ;RETURN
2414 046744                          T31RT3:
2415 046744                                  SAVREG                      ;SAVE REGISTERS
2416 046750  012701  043310                  MOV     #T31PK3,R1          ;SET UP POINTER ADDRESS
2417 046754  005021                          CLR     (R1)+               ;COMMAND SPACE
2418 046756  005021                          CLR     (R1)+               ;ADDRESS OF DATA BLOCK
2419 046760  005021                          CLR     (R1)+               ;EXTENDED ADDRESS
2420 046762  005011                          CLR     (R1)                ;SIZE OF DATA TRANSFER BLOCK
2421 046764  000207                          RTS     PC                  ;RETURN
2422 046766                                  ENDTST
     046766
     046766  104401                                              L10050:
                                                                         TRAP    C$ETST
```

```
                                .SBTTL  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.
                        ;       THE FOLLOWING TEST SEQUENCE IS PERFORMED:
                        ;
                        ;
                        ;           1.  THE TAPE IS FIRST REWOUND, SEVERAL TEST RECORDS ARE
                        ;               WRITTEN, AND THE TAPE IS REWOUND AGAIN.
                        ;
                        ;           2.  AN ERASE COMMAND IS ISSUED, WHICH SHOULD ERASE A NUMBER
                        ;               OF THE TEST RECORDS.
                        ;
                        ;           3.  NORMAL TERMINATION IS VERIFIED AND STATUS IS CHECKED
                        ;               (BOT SHOULD BE 0).
                        ;
                        ;           4.  A READ REVERSE COMMAND IS ISSUED.  IT IS VERIFIED THAT
                        ;               THE COMMAND TERMINATES WITH TAPE STATUS ALERT, THAT THE
                        ;               REVERSE INTO BOT (RIB) STATUS BIT IS SET, AND THAT NO
                        ;               DATA IS TRANSFERRED.  THIS DEMONSTRATES THAT NO DATA
                        ;               WAS ENCOUNTERED IN THE AREA ERASED BY THE ERASE
                        ;               COMMAND.
                        ;
                        ;
                        ;
                        ;
                        ;
                        ;
                        ;
                        ;
                        ;
                        ;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:
```

```
2485                                    ;
2486                                    ;
2487                                    ;-
2488 047020                             BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     047020                                                                     T4.1:
     047020  104402                                                             TRAP    C$BSUB
2489 047022  004737  052700             JSR     PC,T32REST              ;SET COMMAND PACKET
2490 047026  004737  052772             JSR     PC,T32RT2               ;SET UP OTHER COMMAND PACKET
2491 047032  004737  053022             JSR     PC,T32RT3               ;SET UP OTHER COMMAND PACKET
2492 047036  012737  176750  051514     MOV     #65000.,T32DLY          ;SET UP DELAY COUNTER
2493 047044  004737  016054       10$:  JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
2494 047050  103426                     BCS     20$                     ;BR IF INIT WAS OK
2495 047052                             DELAY   250                     ;DELAY ABOUT .25 SEC
     047052  012727  000250                                                     MOV     #250,(PC)+
     047056  000000                                                             .WORD   0
     047060  013727  002116                                                     MOV     L$DLY,(PC)+
     047064  000000                                                             .WORD   0
     047066  005367  177772                                                     DEC     -6(PC)
     047072  001375                                                             BNE     .-4
     047074  005367  177756                                                     DEC     -22(PC)
     047100  001367                                                             BNE     .-20
2496 047102  005337  051514             DEC     T32DLY                  ;BUMP COUNTER
2497 047106  001356                     BNE     10$                     ;BR, IF COUNTER NOT DONE
2498 047110  005237  002214             INC     FATFLG                          ;ERROR COUNT
2502 047114  010001                     MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
2503 047116                             ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     047116  104455                                                             TRAP    C$ERDF
     047120  000621                                                             .WORD   401
     047122  003646                                                             .WORD   SFIERR
     047124  012114                                                             .WORD   SFIMSG
2504 047126  013737  002174  051350 20$:  MOV     UNITN,T32DSW            ;SET UP DRIVE NUMBER
2505 047134  012704  051330             MOV     #T32PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
2506 047140  004737  010742             JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
2507 047144  103407                     BCS     25$                     ;BR, IF COMMAND ISSUED OK
2508 047146  005237  002214             INC     FATFLG                          ;ERROR COUNT
2512 047152  010001                     MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
2513 047154                             ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     047154  104456                                                             TRAP    C$ERHRD
     047156  000622                                                             .WORD   402
     047160  005052                                                             .WORD   WRTMSG
     047162  012114                                                             .WORD   SFIMSG
2514 047164                       25$:  CKLOOP                          ;LOOP IF SELECTED
     047164  104406                                                             TRAP    C$CLP1
2515 047166  004737  011074             JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
2516 047172  103411                     BCS     26$                     ;BR, IF NO PROBLEM
2517 047174  010004                     MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
2518 047176  016501  000002             MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2519 047202  005237  002214             INC     FATFLG                          ;ERROR COUNT
2523 047206                             ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
     047206  104456                                                             TRAP    C$ERHRD
     047210  000623                                                             .WORD   403
     047212  051700                                                             .WORD   T32RWN
     047214  012126                                                             .WORD   PKTSSR
2524 047216                       26$:  CKLOOP                          ;LOOP IF SELECTED
     047216  104406                                                             TRAP    C$CLP1
2525 047220  012703  000400             MOV     #256.,R3                ;STARTING RECORD SIZE
2526 047224  013737  003116  051452     MOV     FREE,T32WB              ;STARTING WRITE BUFFER ADDRESS
```

```
                                                    ;WRITE DATA,CVC=1,ACK COMMAND
                                                    ;SET UP R4 WITH PACKET ADDRESS
                                                    ;SET UP RECORD SIZE IN PACKET
                                                    ;ISSUE COMMAND
                                                    ;WAIT FOR SSR TO SET
                                                    ;GET TSSR CONTENTS
                                                    ;SET UP EXPECTED
                                                    ;ARE THEY EQUAL
                                                    ;BR, IF OK
                                                    ;ERROR COUNT
                                                    ;TSSR INCORRECT AFTER WRITE DATA
                                                    ;LOOP IF SELECTED
                                                    ;BUMP RECORD COUNTER
                                                    ;AT MAX SIZE YET
                                                    ;BR, IF NOT AT END OF LOOP
                                                    ;CALL TAPE REWIND COMMAND
                                                    ;BR, IF NO PROBLEM
                                                    ;GET TSSR CONTENTS
                                                    ;SET UP REWIND PACKET ADDRESS
                                                    ;ERROR COUNT
                                                    ;REWIND NOT ACCEPTED
                                                    ;LOOP IF SELECTED
                                                    ;PICK UP XSTO
                                                    ;SET UP EXPECTED
                                                    ;SET BOT BIT IN EXPECTED
                                                    ;DOES EXP = REC'D
                                                    ;BR, IF EQUAL (OK)
                                                    ;ERROR COUNT
                                                    ;TAPE AT BOT AFTER ERASE
                                                    ;LOOP IF SELECTED
                                                    ;ERASE TAPE,CVC=1,ACK COMMAND
                                                    ;SET UP R4 WITH PACKET ADDRESS
                                                    ;ISSUE COMMAND
                                                    ;WAIT FOR SSR TO SET
                                                    ;GET TSSR CONTENTS
                                                    ;SET UP EXPECTED
                                                    ;ARE THEY EQUAL
                                                    ;BR, IF OK
                                                    ;ERROR COUNT
                                                    ;TSSR INCORRECT AFTER ERASE DATA
```

```
                047456  052016                                                          .WORD   T32ERA
                047460  012126                                                          .WORD   PKTSSR
2579            047462                          50$:    CKLOOP                  ;LOOP IF SELECTED
                047462  104406                                                          TRAP    C$CLP1
2580            047464  013701  051360                  MOV     T32BFR+6,R1     ;PICK UP XST0
2581            047470  010102                          MOV     R1,R2           ;SET UP EXPECTED
2582            047472  042702  000002                  BIC     #BIT1,R2        ;SET BOT BIT IN EXPECTED
2583            047476  020102                          CMP     R1,R2           ;DOES EXP = REC'D
2584            047500  001406                          BEQ     55$             ;BR, IF EQUAL (OK)
2585            047502  005237  002214                  INC     FATFLG                  ;ERROR COUNT
2589            047506                                  ERRHRD  ERRNO,T32BOE,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                047506  104456                                                          TRAP    C$ERHRD
                047510  000630                                                          .WORD   408
                047512  052366                                                          .WORD   T32BOE
                047514  015554                                                          .WORD   EXPREC
2590            047516                          55$:    CKLOOP                  ;LOOP IF SELECTED
                047516  104406                                                          TRAP    C$CLP1
2591            047520  013737  003116  051452          MOV     FREE,T32RB      ;ADDRESS OF BUFFER
2592            047526  012737  140401  051450          MOV     #140401,T32PK3  ;READ REVERSE,ACK,CVC=1 COMMAND
2593            047534  012737  000400  051456          MOV     #256.,T32SZ     ;SET UP THE SIZE OF RECORD
2594            047542  012704  051450                  MOV     #T32PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
2595            047546  010465  000000                  MOV     R4,TSDB(R5)     ;ISSUE COMMAND
2596            047552  004737  016330                  JSR     PC,WAITF        ;WAIT FOR SSR TO SET
2597            047556  016501  000002                  MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
2598            047562  012702  100204                  MOV     #SSR!SC!BIT2,R2 ;SET UP EXPECTED TAPE STATUS ALERT
2599            047566  020102                          CMP     R1,R2           ;ARE THEY EQUAL
2600            047570  001406                          BEQ     180$            ;BR, IF OK
2601            047572  005237  002214                  INC     FATFLG                  ;ERROR COUNT
2605            047576                                  ERRHRD  ERRNO,T32TSA,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
                047576  104456                                                          TRAP    C$ERHRD
                047600  000631                                                          .WORD   409
                047602  052311                                                          .WORD   T32TSA
                047604  012126                                                          .WORD   PKTSSR
2606            047606                          180$:   CKLOOP                  ;LOOP IF SELECTED
                047606  104406                                                          TRAP    C$CLP1
2607            047610  013701  051366                  MOV     T32BFR+14,R1    ;GET XST3 STATUS WORD
2608            047614  010102                          MOV     R1,R2           ;SET UP EXPECTED
2609            047616  052702  000001                  BIS     #BIT0,R2        ;SET THE RIB BIT
2610            047622  020102                          CMP     R1,R2           ;ARE THEY EQUAL
2611            047624  001406                          BEQ     190$            ;BR, IF EQUAL (GOOD)
2612            047626  005237  002214                  INC     FATFLG                  ;ERROR COUNT
2616            047632                                  ERRHRD  ERRNO,T32RIB,EXPREC     ;RIB SHOULD BE SET
                047632  104456                                                          TRAP    C$ERHRD
                047634  000632                                                          .WORD   410
                047636  052136                                                          .WORD   T32RIB
                047640  015554                                                          .WORD   EXPREC
2617            047642                          190$:
2618            047642                          ENDSUB                  ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
                047642                                                          L10054:
                047642  104403                                                          TRAP    C$ESUB
2619            047644  023727  002214  000017          CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
2620            047652  103402                          BLO     999$                    ;BR, IF LESS THAN 25
2621            047654  004737  017262                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
2622            047660                          999$:
```

```
2624                            ;+
2625                            ;
2626                            ;TEST 4, SUBTEST 2
2627                            ;
2628                            ;       VERIFIES THAT AN ERASE COMMAND EXECUTED WHEN THE TAPE IS NOT
2629                            ;       POSITIONED AT BOT OPERATES PROPERLY AND DOES NOT CORRUPT
2630                            ;       PREVIOUS TAPE RECORDS.  THE TEST SEQUENCE IS:
2631                            ;
2632                            ;            1.  THE TAPE IS FIRST REWOUND, SEVERAL TEST RECORDS ARE
2633                            ;                WRITTEN, AND THE TAPE IS REWOUND AGAIN.
2634                            ;
2635                            ;
2636                            ;            2.  A SPACE RECORDS FORWARD COMMAND IS ISSUED TO MOVE THE
2637                            ;                TAPE OFF OF BOT AND SKIP OVER THE FIRST SEVERAL
2638                            ;                RECORDS.
2639                            ;
2640                            ;            3.  AN ERASE COMMAND IS ISSUED, WHICH SHOULD ERASE A NUMBER
2641                            ;                OF THE TEST RECORDS.
2642                            ;
2643                            ;            4.  NORMAL TERMINATION IS VERIFIED AND STATUS IS CHECKED.
2644                            ;
2645                            ;            5.  A READ REVERSE COMMAND IS ISSUED.  IT IS VERIFIED THAT
2646                            ;                NORMAL TERMINATION IS ACCOMPLISHED AND THAT THE DATA
2647                            ;                TRANSFERRED CORRESPONDS TO THAT FOR THE EXPECTED
2648                            ;                RECORD.  THIS DEMONSTRATES THAT NO DATA WAS ENCOUNTERED
2649                            ;                IN THE AREA ERASED BY THE ERASE COMMAND, AND THAT THE
2650                            ;                PREVIOUS RECORD WAS NOT CORRUPTED.
2651                            ;
2652                            ;
2653                            ;
2654                            ;
2655                            ;
2656                            ;
2657                            ;-
2658 047660                                        BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      047660                                                                                    T4.2:
      047660  104402                                                                              TRAP    C$BSUB
2659 047662  004737  052700                       JSR     PC,T32REST      ;SET COMMAND PACKET
2660 047666  004737  052772                       JSR     PC,T32RT2       ;SET UP OTHER COMMAND PACKET
2661 047672  004737  053022                       JSR     PC,T32RT3       ;SET UP OTHER COMMAND PACKET
2662 047676  004737  016054                       JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
2663 047702  103407                               BCS     20$             ;BR IF INIT WAS OK
2664 047704  005237  002214                       INC     FATFLG                  ;ERROR COUNT
2668 047710  010001                               MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
2669 047712                                        ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      047712  104455                                                                           TRAP    C$ERDF
      047714  000633                                                                           .WORD   411
      047716  003646                                                                           .WORD   SFIERR
      047720  012114                                                                           .WORD   SFIMSG
2670 047722  013737  002174  051350  20$:         MOV     UNITN,T32DSW    ;SET UP UNIT NUMBER IN PACKET
2671 047730  012704  051330                       MOV     #T32PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
2672 047734  004737  010742                       JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
2673 047740  103407                               BCS     23$             ;BR, IF COMMAND ISSUED OK
2674 047742  005237  002214                       INC     FATFLG                  ;ERROR COUNT
2678 047746  010001                               MOV     R0,R1           ;SAVE CONTENTS OF TSSR
2679 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
2680            047760                  23$:    CKLOOP                  ;LOOP IF SELECTED
                047760  104406                                                          TRAP    C$CLP1
2681            047762  004737  011074          JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
2682            047766  103407          BCS     30$                     ;BR, IF NO PROBLEM
2683            047770  010004          MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
2684            047772  005237  002214          INC     FATFLG                          ;ERROR COUNT
2688            047776                  ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
                047776  104456                                                          TRAP    C$ERHRD
                050000  000635                                                          .WORD   413
                050002  051700                                                          .WORD   T32RWN
                050004  012126                                                          .WORD   PKTSSR
2689            050006                  30$:    CKLOOP                  ;LOOP IF SELECTED
                050006  104406                                                          TRAP    C$CLP1
2690            050010  013701  051360          MOV     T32BFR+6,R1     ;PICK UP XST0
2691            050014  010102          MOV     R1,R2                   ;SET UP EXPECTED
2692            050016  052702  000002          BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
2693            050022  020102          CMP     R1,R2                   ;DOES EXP = REC'D
2694            050024  001406          BEQ     40$                     ;BR, IF EQUAL (OK)
2695            050026  005237  002214          INC     FATFLG                          ;ERROR COUNT
2699            050032                  ERRHRD  ERRNO,T32BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                050032  104456                                                          TRAP    C$ERHRD
                050034  000636                                                          .WORD   414
                050036  051516                                                          .WORD   T32BOT
                050040  015554                                                          .WORD   EXPREC
2700            050042                  40$:    CKLOOP                  ;LOOP IF SELECTED
                050042  104406                                                          TRAP    C$CLP1
2701            050044  012703  000144          MOV     #100.,R3        ;STARTING RECORD SIZE
2702            050050  010300          MOV     R3,R0                   ;SET UP MEMORY FILL
2703            050052  004737  017502          JSR     PC,FILLMEM      ;CALL MEMORY FILLER
2704            050056  013737  003116  051452  MOV     FREE,T32WB      ;STARTING WRITE BUFFER ADDRESS
2705            050064  012737  140005  051450  65$:    MOV     #140005,T32PK3  ;WRITE DATA,CVC=1,ACK COMMAND
2706            050072  012704  051450          MOV     #T32PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
2707            050076  010300          MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
2708            050100  004737  017502          JSR     PC,FILLMEM      ;FILL MEMORY WITH RECORD SIZE
2709            050104  010337  051456          MOV     R3,T32SZ        ;SET UP RECORD SIZE IN PACKET
2710            050110  010465  000000          MOV     R4,TSDB(R5)     ;ISSUE COMMAND
2711            050114  004737  016330          JSR     PC,WAITF        ;WAIT FOR SSR TO SET
2712            050120  016501  000002          MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
2713            050124  012702  000200          MOV     #SSR,R2         ;SET UP EXPECTED
2714            050130  020102          CMP     R1,R2                   ;ARE THEY EQUAL
2715            050132  001406          BEQ     80$                     ;BR, IF OK
2716            050134  005237  002214          INC     FATFLG                          ;ERROR COUNT
2720            050140                  ERRHRD  ERRNO,T32WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
                050140  104456                                                          TRAP    C$ERHRD
                050142  000637                                                          .WORD   415
                050144  052536                                                          .WORD   T32WDC
                050146  012126                                                          .WORD   PKTSSR
2721            050150                  80$:    CKLOOP                  ;LOOP IF SELECTED
                050150  104406                                                          TRAP    C$CLP1
2722            050152  005723          TST     (R3)+                   ;BUMP RECORD SIZE COUNTER
2723            050154  020327  000156          CMP     R3,#110.        ;AT 160 SIZE YET
2724            050160  001341          BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
2725            050162  004737  011074          JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
2726            050166  103407          BCS     230$                    ;BR, IF NO PROBLEM
```

```
2727 050170 010001                      MOV     R0,R1                   ;SAVE TSSR
2728 050172 005237 002214               INC     FATFLG                          ;ERROR COUNT
2732 050176                             ERRHRD  ERRNO,T32RWN,EXPREC     ;REWIND NOT ACCEPTED
     050176 104456                                                              TRAP    C$ERHRD
     050200 000640                                                              .WORD   416
     050202 051700                                                              .WORD   T32RWN
     050204 015554                                                              .WORD   EXPREC
2733 050206                     230$:   CKLOOP                          ;LOOP IF SELECTED
     050206 104406                                                              TRAP    C$CLP1
2734 050210 013701 051360               MOV     T32BFR+6,R1             ;PICK UP XSTO
2735 050214 010102                      MOV     R1,R2                   ;SET UP EXPECTED
2736 050216 052702 000002               BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2737 050222 020102                      CMP     R1,R2                   ;DOES EXP = REC'D
2738 050224 001406                      BEQ     240$                    ;BR, IF EQUAL (OK)
2739 050226 005237 002214               INC     FATFLG                          ;ERROR COUNT
2743 050232                             ERRHRD  ERRNO,T32BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     050232 104456                                                              TRAP    C$ERHRD
     050234 000641                                                              .WORD   417
     050236 051516                                                              .WORD   T32BOT
     050240 015554                                                              .WORD   EXPREC
2744 050242                     240$:   CKLOOP                          ;LOOP IF SELECTED
     050242 104406                                                              TRAP    C$CLP1
2745 050244 012703 000001               MOV     #1,R3                   ;SET UP FOR SPACE COMMAND
2746 050250 004737 010544               JSR     PC,SPACE                ;ISSUE SPACE COMMAND 1 FORWARD
2747 050254 012737 140411 051450 265$:  MOV     #140411,T32PK3          ;ERASE DATA,ACK COMMAND
2748 050262 012704 051450               MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2749 050266 010465 000000               MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2750 050272 004737 016330               JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2751 050276 016501 000002               MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2752 050302 012702 000200               MOV     #SSR,R2                 ;SET UP EXPECTED
2753 050306 020102                      CMP     R1,R2                   ;ARE THEY EQUAL
2754 050310 001406                      BEQ     280$                    ;BR, IF OK
2755 050312 005237 002214               INC     FATFLG                          ;ERROR COUNT
2759 050316                             ERRHRD  ERRNO,T32ERA,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     050316 104456                                                              TRAP    C$ERHRD
     050320 000642                                                              .WORD   418
     050322 052016                                                              .WORD   T32ERA
     050324 012126                                                              .WORD   PKTSSR
2760 050326                     280$:   CKLOOP                          ;LOOP IF SELECTED
     050326 104406                                                              TRAP    C$CLP1
2761 050330 013737 003116 051452        MOV     FREE,T32RB              ;ADDRESS OF BUFFER
2762 050336 012737 140401 051450        MOV     #140401,T32PK3          ;READ REVERSE,ACK,CVC=1 COMMAND
2763 050344 012737 000144 051456        MOV     #100.,T32SZ             ;SET UP THE SIZE OF RECORD
2764 050352 012704 051450               MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2765 050356 010465 000000               MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2766 050362 004737 016330               JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2767 050366 016501 000002               MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2768 050372 012702 000200               MOV     #SSR,R2                 ;SET UP EXPECTED TAPE STATUS ALERT
2769 050376 020102                      CMP     R1,R2                   ;ARE THEY EQUAL
2770 050400 001406                      BEQ     290$                    ;BR, IF OK
2771 050402 005237 002214               INC     FATFLG                          ;ERROR COUNT
2775 050406                             ERRHRD  ERRNO,T32TSA,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     050406 104456                                                              TRAP    C$ERHRD
     050410 000643                                                              .WORD   419
     050412 052311                                                              .WORD   T32TSA
     050414 012126                                                              .WORD   PKTSSR
2776. 050416                    290$:   CKLOOP                          ;LOOP IF SELECTED
```

```
     050416  104406                                                          TRAP    C$CLP1
2777 050420  017701  132472                MOV     @FREE,R1          ;GET DATA READ
2778 050424  012702  000144                MOV     #100.,R2          ;SHOULD BE 100
2779 050430  020102                        CMP     R1,R2             ;CHECK'EM OUT
2780 050432  001406                        BEQ     300$              ;BR, IF OK
2781 050434  005237  002214                INC     FATFLG                    ;ERROR COUNT
2785 050440                                ERRHRD  ERRNO,T32ECF,EXPREC ;ERASE COMMAND DIDN'T WORK
     050440  104456                                                          TRAP    C$ERHRD
     050442  000644                                                          .WORD   420
     050444  052455                                                          .WORD   T32ECF
     050446  015554                                                          .WORD   EXPREC
2786 050450                        300$:   CKLOOP                   ;LOOP IF SELECTED
     050450  104406                                                          TRAP    C$CLP1
2787 050452                        330$:
2788 050452                                ENDSUB                   ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     050452                                                                L10055:
     050452  104403                                                          TRAP    C$ESUB
2789 050454  023727  002214  000017        CMP     FATFLG,#15.               ;IS ERROR COUNT AT 25
2790 050462  103402                        BLO     999$                      ;BR, IF LESS THAN 25
2791 050464  004737  017262                JSR     PC,CKDROP                 ;TRY TO DROP THE UNIT
2792 050470                        999$:
```

```
2794                    ;+
2795                    ;
2796                    ;TEST 4, SUBTEST 3
2797                    ;
2798                    ;       VERIFIES THAT AN ERASE COMMAND ENCOUNTERING THE EOT MARKER, OR
2799                    ;       EXECUTED BEYOND THE EOT MARKER, CAUSES TAPE STATUS ALERT
2800                    ;       TERMINATION WITH THE EOT STATUS BIT SET.  ALSO VERIFIES THAT THE
2801                    ;       OTHER TAPE MOTION COMMANDS EXECUTED WHEN THE TAPE IS BLANK
2802                    ;       RESULT IN UNRECOVERABLE ERROR TERMINATION AND OPERATION
2803                    ;       INCOMPLETE STATUS.  THE FOLLOWING TEST SEQUENCE IS EXECUTED:
2804                    ;
2805                    ;            1.  THE TAPE IS REWOUND.
2806                    ;
2807                    ;            2.  ERASE COMMANDS ARE REPEATEDLY ISSUED UNTIL EOT STATUS
2808                    ;                IS SEEN.  AN ERROR IS REPORTED IF ANY TERMINATION OTHER
2809                    ;                THAN NORMAL (WITH EOT=0) OR TAPE STATUS ALERT (WITH
2810                    ;                EOT=1) IS ENCOUNTERED.  IF THE CONTROLLER OR TRANSPORT
2811                    ;                DOES NOT DETECT THE EOT, THE TRANSPORT WILL FAULT.
2812                    ;                THIS IS REPORTED AS A FATAL ERROR AND THE TEST IS
2813                    ;                ABORTED.
2814                    ;
2815                    ;            3.  AN ADDITIONAL ERASE COMMAND IS ISSUED AND IT IS
2816                    ;                VERIFIED THAT TAPE STATUS ALERT TERMINATION RESULTS,
2817                    ;                WITH EOT=1.
2818                    ;
2819                    ;            4.  IT IS VERIFIED THAT EACH OF THE FOLLOWING COMMANDS
2820                    ;                (ISSUED IN THE ORDER GIVEN) RESULTS IN UNRECOVERABLE
2821                    ;                ERROR TERMINATION WITH OPI=1:  SPACE RECORDS REVERSE
2822                    ;                SKIP TAPE MARKS REVERSE READ REVERSE REREAD PREVIOUS
2823                    ;                (OPP=0) REREAD PREVIOUS (OPP=1) REREAD NEXT (OPP=1)
2824                    ;                REREAD NEXT (OPP=0) READ NEXT SKIP TAPE MARKS REVERSE
2825                    ;                SKIP TAPE MARKS FORWARD SPACE RECORDS FORWARD WRITE
2826                    ;                DATA RETRY
2827                    ;
2828                    ;
2829                    ;
2830                    ;
2831                    ;-
2832 050470                                    BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
    050470                                                                      T4.3:
    050470  104402                                                                 TRAP    C$BSUB
2833 050472  004737  052700                    JSR     PC,T32REST      ;SET COMMAND PACKET
2834 050476  004737  052772                    JSR     PC,T32RT2       ;SET UP OTHER COMMAND PACKET
2835 050502  004737  053022                    JSR     PC,T32RT3       ;SET UP OTHER COMMAND PACKET
2836 050506  012737  176750  051514            MOV     #65000.,T32DLY  ;SET UP DELAY COUNTER
2837 050514  004737  016054          10$:      JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
2838 050520  103426                            BCS     20$             ;BR IF INIT WAS OK
2839 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
2840 050552  005337  051514                    DEC     T32DLY          ;BUMP COUNTER
```

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2841 050556 001356                          BNE     10$                     ;BR, IF COUNTER NOT DONE
2842 050560 005237 002214                   INC     FATFLG                          ;ERROR COUNT
2846 050564 010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
2847 050566                                 ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     050566 104455                                                                      TRAP    C$ERDF
     050570 000645                                                                      .WORD   421
     050572 003646                                                                      .WORD   SFIERR
     050574 012114                                                                      .WORD   SFIMSG
2848 050576 013737 002174 051350 20$:       MOV     UNITN,T32DSW            ;SET UP UNIT (DRIVE) NUMBER
2849 050604 052737 000040 051350            BIS     #BIT5,T32DSW            ;TURN ON HIGH SPEED TO SAVE TIME
2850 050612 012704 051330                   MOV     #T32PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
2851 050616 004737 010742                   JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
2852 050622 103407                          BCS     23$                     ;BR, IF COMMAND ISSUED OK
2853 050624 005237 002214                   INC     FATFLG                          ;ERROR COUNT
2857 050630 010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
2858 050632                                 ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     050632 104456                                                                      TRAP    C$ERHRD
     050634 000646                                                                      .WORD   422
     050636 005052                                                                      .WORD   WRTMSG
     050640 012114                                                                      .WORD   SFIMSG
2859 050642                         23$:    CKLOOP                          ;LOOP IF SELECTED
     050642 104406                                                                      TRAP    C$CLP1
2860 050644 004737 011074                   JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
2861 050650 103411                          BCS     30$                     ;BR, IF NO PROBLEM
2862 050652 016501 000002                   MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2863 050656 010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
2864 050660 005237 002214                   INC     FATFLG                          ;ERROR COUNT
2868 050664                                 ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
     050664 104456                                                                      TRAP    C$ERHRD
     050666 000647                                                                      .WORD   423
     050670 051700                                                                      .WORD   T32RWN
     050672 012126                                                                      .WORD   PKTSSR
2869 050674                         30$:    CKLOOP                          ;LOOP IF SELECTED
     050674 104406                                                                      TRAP    C$CLP1
2870 050676 013701 051360                   MOV     T32BFR+6,R1             ;PICK UP XSTO
2871 050702 010102                          MOV     R1,R2                   ;SET UP EXPECTED
2872 050704 052702 000002                   BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2873 050710 020102                          CMP     R1,R2                   ;DOES EXP = REC'D
2874 050712 001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
2875 050714 005237 002214                   INC     FATFLG                          ;ERROR COUNT
2879 050720                                 ERRHRD  ERRNO,T32BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     050720 104456                                                                      TRAP    C$ERHRD
     050722 000650                                                                      .WORD   424
     050724 051516                                                                      .WORD   T32BOT
     050726 015554                                                                      .WORD   EXPREC
2880 050730                         40$:    CKLOOP                          ;LOOP IF SELECTED
     050730 104406                                                                      TRAP    C$CLP1
2881 050732 012737 140411 051450 65$:       MOV     #140411,T32PK3          ;ERASE DATA,CVC=1,ACK COMMAND
2882 050740 012704 051450                   MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2883 050744 010337 051456                   MOV     R3,T32SZ                ;SET UP RECORD SIZE IN PACKET
2884 050750 010465 000000                   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2885 050754 004737 016330                   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2886 050760 016501 000002                   MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2887 050764 012702 000200                   MOV     #SSR,R2                 ;SET UP EXPECTED
2888 050770 020102                          CMP     R1,R2                   ;ARE THEY EQUAL
2889 050772 001757                          BEQ     65$                     ;BR, IF OK
2890 050774 032701 000004                   BIT     #BIT2,R1                ;CHECK FOR TAPE STATUS ALERT
```

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2891 051000 001006                      BNE     80$                     ;BR, IF TAPE STATUS ALERT SET
2892 051002 005237 002214               INC     FATFLG                          ;ERROR COUNT
2896 051006                             ERRHRD  ERRNO,T32WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     051006 104456                                                              TRAP    C$ERHRD
     051010 000651                                                              .WORD   425
     051012 052536                                                              .WORD   T32WDC
     051014 012126                                                              .WORD   PKTSSR
2897 051016                     80$:    CKLOOP                          ;LOOP IF SELECTED
     051016 104406                                                              TRAP    C$CLP1
2898 051020 013701 051360               MOV     T32BFR+6,R1             ;PICK UP XST0
2899 051024 010102                      MOV     R1,R2                   ;SET UP EXPECTED
2900 051026 052702 000001               BIS     #BIT0,R2                ;SET EOT BIT IN EXPECTED
2901 051032 020102                      CMP     R1,R2                   ;DOES EXP = REC'D
2902 051034 001406                      BEQ     240$                    ;BR, IF EQUAL (OK)
2903 051036 005237 002214               INC     FATFLG                          ;ERROR COUNT
2907 051042                             ERRHRD  ERRNO,T32EOT,EXPREC     ;TAPE NOT AT EOT AFTER ERASE COMMANDS
     051042 104456                                                              TRAP    C$ERHRD
     051044 000652                                                              .WORD   426
     051046 051611                                                              .WORD   T32EOT
     051050 015554                                                              .WORD   EXPREC
2908 051052                     240$:   CKLOOP                          ;LOOP IF SELECTED
     051052 104406                                                              TRAP    C$CLP1
2909 051054 012703 051460               MOV     #T32CMD,R3              ;STARTING RECORD SIZE
2910 051060 013737 003116 051452        MOV     FREE,T32RB              ;STARTING READ BUFFER ADDRESS
2911 051066 011337 051450       265$:   MOV     (R3),T32PK3             ;READ DATA,ACK COMMAND
2912 051072 012704 051450               MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2913 051076 012700 177777               MOV     #177777,R0              ;SET PATTERN IN CORRECT REGISTER
2914 051102 004737 017502               JSR     PC,FILLMEM              ;FILL MEMORY WITH ALL ONES
2915 051106 012737 000144 051456        MOV     #100.,T32SZ             ;SET UP RECORD SIZE IN PACKET
2916 051114 010465 000000               MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2917 051120 012737 000062 051514        MOV     #50.,T32DLY             ;SET UP DELAY COUNTER
2918 051126 004737 016330       270$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2919 051132 016501 000002               MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2920 051136 012702 100214               MOV     #SSR!SC!BIT2!BIT3,R2    ;SET UP EXPECTED
2921 051142 020102                      CMP     R1,R2                   ;ARE THEY EQUAL
2922 051144 001425                      BEQ     280$                    ;BR, IF OK
2923 051146                             DELAY   250                     ;DELAY FOR SSR TO BE SET
     051146 012727 000250                                                       MOV     #250,(PC)+
     051152 000000                                                              .WORD   0
     051154 013727 002116                                                       MOV     L$DLY,(PC)+
     051160 000000                                                              .WORD   0
     051162 005367 177772                                                       DEC     -6(PC)
     051166 001375                                                              BNE     .-4
     051170 005367 177756                                                       DEC     -22(PC)
     051174 001367                                                              BNE     .-20
2924 051176 005337 051514               DEC     T32DLY                  ;COUNT DELAY ROUTINE DOWN
2925 051202 001351                      BNE     270$                    ;BR, IF DELAY HAS NOT ENDED
2926 051204 005237 002214               INC     FATFLG                          ;ERROR COUNT
2930 051210                             ERRHRD  ERRNO,T32ECF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     051210 104456                                                              TRAP    C$ERHRD
     051212 000653                                                              .WORD   427
     051214 052455                                                              .WORD   T32ECF
     051216 012126                                                              .WORD   PKTSSR
2931 051220                     280$:   CKLOOP                          ;LOOP IF SELECTED
     051220 104406                                                              TRAP    C$CLP1
2932 051222 013701 051366               MOV     T32BFR+14,R1            ;PICK UP XST3
2933 051226 010102                      MOV     R1,R2                   ;SET UP EXPECTED
```

```
2934 051230  052702  000100            BIS     #BIT6,R2                ;SET OPI BIT IN EXPECTED
2935 051234  020102                    CMP     R1,R2                   ;IS OPI BIT SET
2936 051236  001406                    BEQ     290$                    ;BR, IF BIT IS SET
2937 051240  005237  002214                    INC     FATFLG                          ;ERROR COUNT
2941 051244                            ERRHRD  ERRNO,T32OPI,EXPREC     ;OPI BIT NOT SET
     051244  104456                                                            TRAP    C$ERHRD
     051246  000654                                                            .WORD   428
     051250  052603                                                            .WORD   T32OPI
     051252  015554                                                            .WORD   EXPREC
2942 051254                    290$:   CKLOOP                          ;LOOP IF SELECTED
     051254  104406                                                            TRAP    C$CLP1
2943 051256  005723                    TST     (R3)+                   ;BUMP COMMAND POINTER
2944 051260  021327  177777            CMP     (R3),#177777            ;AT END OF TABLE YET
2945 051264  001300                    BNE     265$                    ;BR, KEEP TRYING COMMANDS
2946 051266                            ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     051266                                                                    L10056:
     051266  104403                                                            TRAP    C$ESUB
2947 051270  023727  002214  000017        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
2948 051276  103402                        BLO     999$                            ;BR, IF LESS THAN 25
2949 051300  004737  017262                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
2950 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
                        100004          .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
                        051340          .WORD   T32DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
                        000000          .WORD   0
                        000012          .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
                        051340  T32DATA:                        ;CHARACTERISTICS DATA BLOCK
                        051352          .WORD   T32BFR          ;ADDRESS OF MESSAGE BUFFER
                        000000          .WORD   0
                        000024          .WORD   20.             ;LENGTH OF MESSAGE BUFFER
                        000000          .WORD   0
                        000000  T32DSW: .WORD   0               ;SELECT DRIVE 0
                        051352  T32BFR: .BLKW   25.             ;MESSAGE BUFFER
                                ;
                                ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                ;
                        051440          .=<.+10>&177770
                        051440  T32PK2:
                        100006          .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
                        000000          .WORD   0               ;ADDRESS OF SELECT BLOCK DATA
                        000000          .WORD   0
                        000006          .WORD   6.              ;SIZE OF DATA PACKET

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

                        051460  T32CMD:
                        140410          .WORD   140410          ;SPACE RECORDS REVERSE
                        141410          .WORD   141410          ;SKIP TAPE MARKS REVERSE
                        140401          .WORD   140401          ;READ REVERSE
                        141001          .WORD   141001          ;REREAD PREVIOUS (OPP=0)
                        161401          .WORD   161401          ;REREAD NEXT (OPP=1)
                        161001          .WORD   161001          ;REREAD PREVIOUS (OPP=1)
                        141401          .WORD   141401          ;REREAD NEXT (OPP=0)
                        140001          .WORD   140001          ;READ NEXT
                        141410          .WORD   141410          ;SKIP TAPE MARKS REVERSE
                        141010          .WORD   141010          ;SKIP RECORDS FORWARD
                        141005          .WORD   141005          ;WRITE DATA RETRY
                        177777          .WORD   177777          ;END OF DATA

                        000000  T32CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
```

```
3024 051512  000000                T32CNU: .WORD   0                ;TAPE TIMER COUNTER STORAGE AREA
3025 051514  000000                T32DLY: .WORD   0                ;DELAY COUNTER
3026
```

```
                                        ;+
                                        ;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
                                        ;
                                        ;-

052700                                  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)+
052734  012721  000024                          MOV     #20.,(R1)+      ;LENGTH OF MESSAGE BUFFER
052740  005021                                  CLR     (R1)+
052742  012711  000000                          MOV     #0,(R1)         ;SELECT DRIVE ZERO
052746  012702  000030                          MOV     #24.,R2         ;NUMBER OF LOCATIONS TO BE CLEARED
052752  012762  177777  051352  64$:     MOV     #177777,T32BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
052760  005742                                  TST     -(R2)           ;NEXT LOCATION
052762  022702  000000                          CMP     #0,R2           ;AT END OF LOOP YET
052766  001371                                  BNE     64$             ;KEEP GOING UNTIL DONE
052770  000207                                  RTS     PC              ;RETURN

052772                                  T32RT2:
052772                                          SAVREG                  ;SAVE THE REGISTERS
052776  012701  051440                          MOV     #T32PK2,R1      ;START OF THE PACKET
053002  012721  100006                          MOV     #100006,(R1)+   ;WRITE SUBSYSTEM MEM. WITH ACK.
053006  005021                                  CLR     (R1)+           ;ADDRESS OF DATA BLOCK
053010  005021                                  CLR     (R1)+           ;EXTENDED ADDRESS
053012  012721  000006                          MOV     #6.,(R1)+       ;SIZE OF DATA BLOCK IN BYTES
053016  005021                                  CLR     (R1)+
```

```
3085 053020  000207                    RTS     PC                  ;RETURN
3086 053022                    T32RT3:
3087 053022                            SAVREG                      ;SAVE REGISTERS
3088 053026  012701  051450            MOV     #T32PK3,R1          ;SET UP POINTER ADDRESS
3089 053032  005021                    CLR     (R1)+               ;COMMAND SPACE
3090 053034  005021                    CLR     (R1)+               ;ADDRESS OF DATA BLOCK
3091 053036  005021                    CLR     (R1)+               ;EXTENDED ADDRESS
3092 053040  005011                    CLR     (R1)                ;SIZE OF DATA TRANSFER BLOCK
3093 053042  000207                    RTS     PC                  ;RETURN
3094 053044                            ENDTST
     053044                                                L10053:
     053044  104401                                            TRAP    C$ETST
```

```
                        .SBTTL  TEST  5: DATA PARITY TEST
;+
;
;
;
;
;
;TEST 5 -- Data Parity Test
;
;
;This test verifies that the data parity circuitry in both the controller and the
;transport  is operating properly by forcing data records with wrong parity to be
;written onto tape and checking the results obtained when the data is read.  The
;following test sequence is performed:
;
;     1.  A Write Characteristics command is issued and the resulting  status  is
;         examined to determine the states of the Extended Features and Buffering
;         Enable switches on the controller module.  If buffering is disabled, no
;         further  actions need be taken in this step and the program proceeds to
;         the next step.  If buffering is enabled, it is disabled via the  Buffer
;         Control  field  in the extended characteristics data word supplied by a
;         Write Characteristics command.  (The module must be in  Extended  mode,
;         so  if it is not already, a Write Subsystem Memory command is issued to
;         change the logical sense of the Extended Features switch.)
;
;     2.  The Write Subsystem Memory command is  used  to  set  the  Force  Wrong
;         Parity control flip-flop.
;
;     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.
                                        ;
                                        ;
                                        ;
                                        ;-
                                             BGNTST
                                                                                                T5::
                                             MOV     #EPRT2,EPRTSW          ;SECONDARY ERROR MESSAGE
                                             MOV     #TST33ID,R0            ;ASCII MESSAGE TO IDENTIFY TEST
                                             JSR     PC,TSTSETUP            ;DO INITIAL TEST SETUP
                                             MOV     #5,LOOPCNT             ;PERFORM 5 ITERATIONS
                                             CLR     T33CNT                 ;CLEAR TAPE RECORD COUNTER
                                        ;+
                                        ;
                                        T33LOOP:
```

```
3175 053076                                BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     053076                                                                      T5.1:
     053076  104402                                                                 TRAP    C$BSUB
3176 053100  005037  002216                CLR     INTRECV         ;INTERRUPT INDICATOR
3177 053104  005037  054716                CLR     T33CNT          ;TIMER FOR WRITE DATA SPACING
3178 053110  005037  054720                CLR     T33CNU          ;TIMER FOR WRITE DATA RETRY SPACING
3179 053114  004737  055662                JSR     PC,T33REST      ;SET COMMAND PACKET
3180 053120  004737  055754                JSR     PC,T33RT2       ;SET UP OTHER COMMAND PACKET
3181 053124  004737  056016                JSR     PC,T33RT3       ;SET UP OTHER COMMAND PACKET
3182 053130  012737  176750  054722        MOV     #65000.,T33DLY  ;SET UP DELAY COUNTER
3183 053136  004737  016054          10$:  JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
3184 053142  103426                        BCS     20$             ;BR IF INIT WAS OK
3185 053144                                DELAY   250             ;DELAY ABOUT .25 SEC
     053144  012727  000250                                                     MOV     #250,(PC)+
     053150  000000                                                             .WORD   0
     053152  013727  002116                                                     MOV     L$DLY,(PC)+
     053156  000000                                                             .WORD   0
     053160  005367  177772                                                     DEC     -6(PC)
     053164  001375                                                             BNE     .-4
     053166  005367  177756                                                     DEC     -22(PC)
     053172  001367                                                             BNE     .-20
3186 053174  005337  054722                DEC     T33DLY          ;BUMP COUNTER
3187 053200  001356                        BNE     10$             ;BR, IF COUNTER NOT DONE
3188 053202  005237  002214                INC     FATFLG                  ;ERROR COUNT
3192 053206  010001                        MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
3193 053210                                ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     053210  104455                                                             TRAP    C$ERDF
     053212  000765                                                             .WORD   501
     053214  003646                                                             .WORD   SFIERR
     053216  012114                                                             .WORD   SFIMSG
3194 053220  013737  002174  054570  20$:  MOV     UNITN,T33DSW    ;SET UP UNIT NUMBER
3195
3196 053226  012704  054550                MOV     #T33PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
3197 053232  004737  010742                JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
3198 053236  103407                        BCS     23$             ;BR, IF COMMAND ISSUED OK
3199 053240  005237  002214                INC     FATFLG                  ;ERROR COUNT
3203 053244  010001                        MOV     R0,R1           ;SAVE CONTENTS OF TSSR
3204 053246                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     053246  104456                                                             TRAP    C$ERHRD
     053250  000766                                                             .WORD   502
     053252  005052                                                             .WORD   WRTMSG
     053254  012114                                                             .WORD   SFIMSG
3205 053256                          23$:  CKLOOP                  ;LOOP IF SELECTED
     053256  104406                                                             TRAP    C$CLP1
3206 053260  004737  011074                JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
3207 053264  103411                        BCS     30$             ;BR, IF NO PROBLEM
3208 053266  016501  000002                MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
3209 053272  010004                        MOV     R0,R4           ;GET PACKET ADDRESS
3210 053274  005237  002214                INC     FATFLG                  ;ERROR COUNT
3214 053300                                ERRHRD  ERRNO,T33RWN,PKTSSR     ;REWIND NOT ACCEPTED
     053300  104456                                                             TRAP    C$ERHRD
     053302  000767                                                             .WORD   503
     053304  055420                                                             .WORD   T33RWN
     053306  012126                                                             .WORD   PKTSSR
3215 053310                          30$:  CKLOOP                  ;LOOP IF SELECTED
     053310  104406                                                             TRAP    C$CLP1
3216 053312  013701  054600                MOV     T33BFR+6,R1     ;PICK UP XST0
```

SEQ 0200

```
3217 053316  010102                        MOV     R1,R2                   ;SET UP EXPECTED
3218 053320  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
3219 053324  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
3220 053326  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
3221 053330  005237  002214                INC     FATFLG                          ;ERROR COUNT
3225 053334                                ERRHRD  ERRNO,T33BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     053334  104456                                                                TRAP    C$ERHRD
     053336  000770                                                                .WORD   504
     053340  055325                                                                .WORD   T33BOT
     053342  015554                                                                .WORD   EXPREC
3226 053344                        40$:    CKLOOP                  ;LOOP IF SELECTED
     053344  104406                                                                TRAP    C$CLP1
```

```
3228 053346 005737 002220        42$:  TST    EXTFEA              ;CHECK FOR EXTENDED FEATURES SW SWITCH
3229 053352 001025                     BNE    55$                 ;BR IF SWITCH IS ON
3230 053354 112737 000200 054701       MOVB   #200,T33BS1         ;WRITE MISCELLANEOUS CONT/READ STATUS
3231 053362 112737 000010 054700       MOVB   #10,T33BS0          ;FUNC. SEL. BIT (TURN ON EXTFEA SWITCH)
3232 053370 012704 054660              MOV    #T33PK2,R4          ;WRITE SUBSYS MEM PACKET
3233 053374 010465 000000              MOV    R4,TSDB(R5)         ;ISSUE COMMAND
3234 053400 004737 016416              JSR    PC,CHKTSSR          ;WAIT FOR SSR
3235 053404 103407                     BCS    50$                 ;BR, IF NO ERROR
3236 053406 010001                     MOV    R0,R1               ;ERROR, SAVE TSSR
3237 053410 005237 002214              INC    FATFLG                      ;ERROR COUNT
3241 053414                            ERRHRD ERRNO,T33SSR,PKTSSR ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
     053414 104456                                                        TRAP   C$ERHRD
     053416 000771                                                        .WORD  505
     053420 055241                                                        .WORD  T33SSR
     053422 012126                                                        .WORD  PKTSSR
3242 053424                      50$:  CKLOOP                      ;LOOP IF SELECTED
     053424 104406                                                        TRAP   C$CLP1
3243 053426 005737 002222        55$:  TST    BENBSW              ;CHECK FOR BUFFER ENABLED
3244 053432 001426                     BEQ    70$                 ;BR, IF BUFFERING NOT ENABLED
3245 053434 013737 002174 054570       MOV    UNITN,T33DSW        ;SET UP UNIT NUMBER
3246 053442 042737 000020 054570       BIC    #BIT4,T33DSW        ;BUFFER DISABLE
3247 053450 052737 000010 054570       BIS    #BIT3,T33DSW        ;BUFFER DISABLE SEND 01 TO BITS 4 AND 3
3248 053456 012704 054550              MOV    #T33PACKET,R4       ;SUBROUTINE NEEDS PACKET ADDRESS
3249 053462 004737 010742              JSR    PC,WRTCHR           ;ISSUE WRITE CHARACTERISTICS
3250 053466 103407                     BCS    60$                 ;BR, IF COMMAND ISSUED OK
3251 053470 005237 002214              INC    FATFLG                      ;ERROR COUNT
3255 053474 010001                     MOV    R0,R1               ;SAVE CONTENTS OF TSSR
3256 053476                            ERRHRD ERRNO,WRTMSG,SFIMSG ;WRITE CHARACTERISTISC FAILED
     053476 104456                                                        TRAP   C$ERHRD
     053500 000772                                                        .WORD  506
     053502 005052                                                        .WORD  WRTMSG
     053504 012114                                                        .WORD  SFIMSG
3257 053506                      60$:  CKLOOP                      ;LOOP IF SELECTED
     053506 104406                                                        TRAP   C$CLP1
3258 053510                      70$:
3259 053510 112737 000100 054701       MOVB   #100,T33BS1         ;WRITE MISCELLANEOUS CONT/READ STATUS
3260 053516 112737 000011 054700       MOVB   #11,T33BS0          ;FUNC. SEL. BIT (SET WRONG PARITY)
3261 053524 012704 054660              MOV    #T33PK2,R4          ;WRITE SUBSYS MEM PACKET
3262 053530 010465 000000              MOV    R4,TSDB(R5)         ;ISSUE COMMAND
3263 053534 004737 016416              JSR    PC,CHKTSSR          ;WAIT FOR SSR
3264 053540 103407                     BCS    80$                 ;BR, IF NO ERROR
3265 053542 010001                     MOV    R0,R1               ;ERROR, SAVE TSSR
3266 053544 005237 002214              INC    FATFLG                      ;ERROR COUNT
3270 053550                            ERRHRD ERRNO,T33SSR,PKTSSR ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
     053550 104456                                                        TRAP   C$ERHRD
     053552 000773                                                        .WORD  507
     053554 055241                                                        .WORD  T33SSR
     053556 012126                                                        .WORD  PKTSSR
3271 053560                      80$:  CKLOOP                      ;LOOP IF SELECTED
     053560 104406                                                        TRAP   C$CLP1
3272 053562 012703 000026              MOV    #22.,R3             ;NUMBER OF RECORDS TO BE WRITTEN
3273 053566 013737 003116 054672       MOV    FREE,T33WB          ;STARTING WRITE BUFFER ADDRESS
3274 053574 005037 054720              CLR    T33CNU              ;MAKE SURE ITS CLEAR
3275 053600 012737 140005 054670 110$: MOV    #140005,T33PK3      ;WRITE DATA,ACK,CVC=1 COMMAND
3276 053606 012704 054670              MOV    #T33PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
3277 053612 012737 000024 054676       MOV    #20.,T33SZ          ;SET UP RECORD SIZE IN PACKET
3278 053620 013777 054720 127270       MOV    T33CNU,@FREE        ;MEMORY FILLED WITH DATA IN RECORD
```

```
3279 053626  005237  054720          INC     T33CNU                  ;READY FOR NEXT RECORD
3280 053632  010465  000000          MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3281 053636  004737  016330          JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3282 053642  016501  000002          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3283 053646  012702  100210          MOV     #SSR!SC!BIT3,R2         ;SET UP EXPECTED
3284 053652  020102                  CMP     R1,R2                   ;ARE THEY EQUAL
3285 053654  001406                  BEQ     120$                    ;BR, IF OK
3286 053656  005237  002214          INC     FATFLG                          ;ERROR COUNT
3290 053662                          ERRHRD  ERRNO,T33WPW,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     053662  104456                                                          TRAP    C$ERHRD
     053664  000774                                                          .WORD   508
     053666  055002                                                          .WORD   T33WPW
     053670  012126                                                          .WORD   PKTSSR
3291 053672                  120$:   CKLOOP                          ;LOOP IF SELECTED
     053672  104406                                                          TRAP    C$CLP1
3292 053674  013701  054602          MOV     T33BFR+10,R1            ;PICK UP XST1
3293 053700  010102                  MOV     R1,R2                   ;SET UP EXPECTED
3294 053702  052702  000002          BIS     #BIT1,R2                ;SET UNC BIT IN EXPECTED
3295 053706  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
3296 053710  001406                  BEQ     130$                    ;BR, IF EQUAL (OK)
3297 053712  005237  002214          INC     FATFLG                          ;ERROR COUNT
3301 053716                          ERRHRD  ERRNO,T33UNC,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     053716  104456                                                          TRAP    C$ERHRD
     053720  000775                                                          .WORD   509
     053722  055062                                                          .WORD   T33UNC
     053724  015554                                                          .WORD   EXPREC
3302 053726                  130$:   CKLOOP                          ;LOOP IF SELECTED
     053726  104406                                                          TRAP    C$CLP1
3303 053730  005303                  DEC     R3                      ;DEC RECORD COUNTER
3304 053732  001322                  BNE     110$                    ;BR, IF MORE RECORDS TO WRITE
3305 053734  004737  011074          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
3306 053740  103411                  BCS     140$                    ;BR, IF NO PROBLEM
3307 053742  016501  000002          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3308 053746  010004                  MOV     R0,R4                   ;GET PACKET ADDRESS
3309 053750  005237  002214          INC     FATFLG                          ;ERROR COUNT
3313 053754                          ERRHRD  ERRNO,T33RWN,PKTSSR     ;REWIND NOT ACCEPTED
     053754  104456                                                          TRAP    C$ERHRD
     053756  000776                                                          .WORD   510
     053760  055420                                                          .WORD   T33RWN
     053762  012126                                                          .WORD   PKTSSR
3314 053764                  140$:   CKLOOP                          ;LOOP IF SELECTED
     053764  104406                                                          TRAP    C$CLP1
3315 053766  013701  054600          MOV     T33BFR+6,R1             ;PICK UP XST0
3316 053772  010102                  MOV     R1,R2                   ;SET UP EXPECTED
3317 053774  052702  000002          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
3318 054000  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
3319 054002  001406                  BEQ     150$                    ;BR, IF EQUAL (OK)
3320 054004  005237  002214          INC     FATFLG                          ;ERROR COUNT
3324 054010                          ERRHRD  ERRNO,T33BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     054010  104456                                                          TRAP    C$ERHRD
     054012  000777                                                          .WORD   511
     054014  055325                                                          .WORD   T33BOT
     054016  015554                                                          .WORD   EXPREC
3325 054020                  150$:   CKLOOP                          ;LOOP IF SELECTED
     054020  104406                                                          TRAP    C$CLP1
3326 054022  005037  054720          CLR     T33CNU                  ;CLEAR DATA VALUE IN RECORD
3327 054026  012703  000024          MOV     #20.,R3                 ;RECORD SIZE
```

```
3328 054032  013737  003116  054672  155$:   MOV     FREE,T33RB              ;STARTING WRITE BUFFER ADDRESS
3329 054040  012737  140001  054670          MOV     #140001,T33PK3          ;READ DATA,CVC=1,ACK COMMAND
3330 054046  012704  054670                  MOV     #T33PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
3331 054052  012737  000024  054676          MOV     #20.,T33SZ              ;SET UP RECORD SIZE IN PACKET
3332 054060  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3333 054064  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3334 054070  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3335 054074  012702  100210                  MOV     #SSR!SC!BIT3,R2         ;SET UP EXPECTED
3336 054100  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3337 054102  001406                          BEQ     160$                    ;BR, IF OK
3338 054104  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3342 054110                                  ERRHRD  ERRNO,T33WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     054110  104456                                                              TRAP    C$ERHRD
     054112  001000                                                              .WORD   512
     054114  055467                                                              .WORD   T33WDC
     054116  012126                                                              .WORD   PKTSSR
3343 054120                          160$:   CKLOOP                          ;LOOP IF SELECTED
     054120  104406                                                              TRAP    C$CLP1
3344 054122  013701  054602                  MOV     T33BFR+10,R1            ;PICK UP XST1
3345 054126  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3346 054130  052702  000002                  BIS     #BIT1,R2                ;SET UNC BIT IN EXPECTED
3347 054134  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
3348 054136  001406                          BEQ     170$                    ;BR, IF EQUAL (OK)
3349 054140  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3353 054144                                  ERRHRD  ERRNO,T33UND,EXPREC     ;UNC BIT NOT SET AFTER READ CMD.
     054144  104456                                                              TRAP    C$ERHRD
     054146  001001                                                              .WORD   513
     054150  055152                                                              .WORD   T33UND
     054152  015554                                                              .WORD   EXPREC
3354 054154                          170$:   CKLOOP                          ;LOOP IF SELECTED
     054154  104406                                                              TRAP    C$CLP1
3355 054156  013701  054602                  MOV     T33BFR+10,R1            ;PICK UP XST1
3356 054162  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3357 054164  052702  000400                  BIS     #BIT8,R2                ;SET RBP BIT IN EXPECTED
3358 054170  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
3359 054172  001406                          BEQ     180$                    ;BR, IF EQUAL (OK)
3360 054174  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3364 054200                                  ERRHRD  ERRNO,T33RBP,EXPREC     ;READ BUS PARITY ERROR BIT NOT SET
     054200  104456                                                              TRAP    C$ERHRD
     054202  001002                                                              .WORD   514
     054204  054724                                                              .WORD   T33RBP
     054206  015554                                                              .WORD   EXPREC
3365 054210                          180$:   CKLOOP                          ;LOOP IF SELECTED
     054210  104406                                                              TRAP    C$CLP1
3366 054212  017701  126700                  MOV     @FREE,R1                ;GET DATA READ
3367 054216  013702  054720                  MOV     T33CNU,R2                       ;GET PATTERN
3368 054222  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3369 054224  001406                          BEQ     182$                    ;BR, IF OK
3370 054226  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3374 054232                                  ERRHRD  ERRNO,T33DTA,EXPREC     ;DATA NOT CORRECT
     054232  104456                                                              TRAP    C$ERHRD
     054234  001003                                                              .WORD   515
     054236  055550                                                              .WORD   T33DTA
     054240  015554                                                              .WORD   EXPREC
3375 054242                          182$:   CKLOOP                          ;LOOP IF SELECTED
     054242  104406                                                              TRAP    C$CLP1
3376 054244  013737  003116  054672          MOV     FREE,T33WB              ;STARTING WRITE BUFFER ADDRESS
```

```
3377 054252  012737  140401  054670  195$:   MOV     #140401,T33PK3          ;READ REVERSE DATA RETRY,ACK COMMAND
3378 054260  012704  054670                  MOV     #T33PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
3379 054264  012737  000024  054676          MOV     #20.,T33SZ              ;SET UP RECORD SIZE IN PACKET
3380 054272  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3381 054276  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3382 054302  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3383 054306  012702  100210                  MOV     #SC!SSR!BIT3,R2                 ;SET UP EXPECTED
3384 054312  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3385 054314  001406                          BEQ     190$                    ;BR, IF OK
3386 054316  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3390 054322                                  ERRHRD  ERRNO,T33WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     054322  104456                                                                  TRAP    C$ERHRD
     054324  001004                                                                  .WORD   516
     054326  055467                                                                  .WORD   T33WDC
     054330  012126                                                                  .WORD   PKTSSR
3391 054332                          190$:   CKLOOP                          ;LOOP IF SELECTED
     054332  104406                                                                  TRAP    C$CLP1
3392 054334  013701  054602                  MOV     T33BFR+10,R1            ;PICK UP XST1
3393 054340  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3394 054342  052702  000002                  BIS     #BIT1,R2                ;SET UNC BIT IN EXPECTED
3395 054346  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
3396 054350  001406                          BEQ     200$                    ;BR, IF EQUAL (OK)
3397 054352  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3401 054356                                  ERRHRD  ERRNO,T33UND,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     054356  104456                                                                  TRAP    C$ERHRD
     054360  001005                                                                  .WORD   517
     054362  055152                                                                  .WORD   T33UND
     054364  015554                                                                  .WORD   EXPREC
3402 054366                          200$:   CKLOOP                          ;LOOP IF SELECTED
     054366  104406                                                                  TRAP    C$CLP1
3403 054370  013701  054602                  MOV     T33BFR+10,R1            ;PICK UP XST0
3404 054374  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3405 054376  052702  000400                  BIS     #BIT8,R2                ;SET RBP BIT IN EXPECTED
3406 054402  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
3407 054404  001406                          BEQ     210$                    ;BR, IF EQUAL (OK)
3408 054406  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3412 054412                                  ERRHRD  ERRNO,T33RBP,EXPREC     ;READ BUS PARITY ERROR BIT NOT SET
     054412  104456                                                                  TRAP    C$ERHRD
     054414  001006                                                                  .WORD   518
     054416  054724                                                                  .WORD   T33RBP
     054420  015554                                                                  .WORD   EXPREC
3413 054422                          210$:   CKLOOP                          ;LOOP IF SELECTED
     054422  104406                                                                  TRAP    C$CLP1
3414 054424  017701  126466                  MOV     @FREE,R1                ;GET DATA READ
3415 054430  013702  054720                  MOV     T33CNU,R2                       ;GET PATTERN
3416 054434  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3417 054436  001406                          BEQ     215$                    ;BR, IF OK
3418 054440  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3422 054444                                  ERRHRD  ERRNO,T33DTA,EXPREC     ;DATA NOT CORRECT
     054444  104456                                                                  TRAP    C$ERHRD
     054446  001007                                                                  .WORD   519
     054450  055550                                                                  .WORD   T33DTA
     054452  015554                                                                  .WORD   EXPREC
3423 054454                          215$:   CKLOOP                          ;LOOP IF SELECTED
     054454  104406                                                                  TRAP    C$CLP1
3424 054456  010302                          MOV     R3,R2                   ;SAVE R3 FOR A MOMENT
3425 054460  012703  000001                  MOV     #1,R3                   ;SPACE FORWARD ONE RECORD
```

```
3426 054464  004737  010544                    JSR     PC,SPACE                ;CALL ROUTINE
3427 054470  010203                            MOV     R2,R3                   ;RESTORE R3
3428 054472  005237  054720                    INC     T33CNU                  ;BUMP TO NEXT RECORD NUMBER
3429 054476  005303                            DEC     R3                      ;BUMP COUNTER
3430 054500  001402                            BEQ     220$                    ;BR, IF DONE
3431 054502  000137  054032                    JMP     155$                    ;BR, IF NOT DONE YET
3432 054506                            220$:
3433 054506                            ENDSUB                                  ;<<<<<<<<<<<<< END SUBTEST >>>>>>>>>>>>
     054506                                                                            L10060:
     054506  104403                                                                    TRAP    C$ESUB
3434 054510  023727  002214  000017              CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
3435 054516  103402                            BLO     999$                            ;BR, IF LESS THAN 25
3436 054520  004737  017262                    JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
3437 054524                            999$:
3438                                   ;
3439                                   ;
3440                                   ;
3441 054524  004737  016536                    JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
3442 054530  103002                            BCC     230$                    ;BR, IF NO LOOP REQUIRED
3443 054532  000137  053076                    JMP     T33LOOP                 ;EXECUTE AGAIN
3444 054536                            230$:   EXIT    TST                     ;ALL DONE THIS TEST
     054536  104432                                                                    TRAP    C$EXIT
     054540  001300                                                                    .WORD   L10057-.
```

```
                                ;+
                                ;LOCAL STORAGE FOR THIS TEST
                                ;-
                                        .=<.+10>&177770
                                T33PACKET:                              ;COMMAND PACKET FOR TEST
                                        .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
                                        .WORD   T33DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
                                        .WORD   0
                                        .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
                                T33DATA:                                ;CHARACTERISTICS DATA BLOCK
                                        .WORD   T33BFR                  ;ADDRESS OF MESSAGE BUFFER
                                        .WORD   0
                                        .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
                                        .WORD   0
                                T33DSW: .WORD   0                       ;SELECT DRIVE 0
                                T33BFR: .BLKW   25.                     ;MESSAGE BUFFER
                                ;
                                ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                ;
                                        .=<.+10>&177770
                                T33PK2:
                                        .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
                                        .WORD   T33BF2                  ;ADDRESS OF SELECT BLOCK DATA
                                        .WORD   0
                                        .WORD   6.                      ;SIZE OF DATA PACKET

                                T33PK3:
                                        .WORD   100005                  ;REREAD COMMAND, AND ACK
                                T33RB:
                                T33WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
                                        .WORD   0
                                T33SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
                                        .EVEN
                                ;
                                ;
                                ;
                                T33BF2:
                                T33BS0: .BYTE   10                      ;BSEL0 AREA
                                T33BS1: .BYTE   200                     ;BSEL1 AREA
                                T33S2:  .WORD   0                       ;SEL 2 AREA
                                T33S3:  .WORD   0                       ;DATA AREA
                                ;
                                ;
                                        .EVEN
                                ;TAPE MOTION PACKET COMMAND VALUES

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

                                ;
                                T33CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
                                T33CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
                                T33DLY: .WORD   0                       ;DELAY COUNTER
```

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

054724  122 145 141  T33RBP: .ASCIZ  'Read Bus Parity Bit Not Set (XST1), Should Be'
055002  124 123 123  T33WPW: .ASCIZ  'TSSR Incorrect After Wrong Parity Write Command'
055062  125 116 103  T33UNC: .ASCIZ  'UNC Bit (XST1) Not Set After Wrong Parity WRITE Command'
055152  125 116 103  T33UND: .ASCIZ  'UNC Bit (XST1) Not Set After Wrong Parity READ Command'
055241  127 122 111  T33SSR: .ASCIZ  'WRITE MISSCELLANEOUS CONT/READ COMMAND Not Accepted'
055325  124 141 160  T33BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
055420  122 145 167  T33RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
055467  124 123 123  T33WDC: .ASCIZ  'TSSR Not Correct After READ Wrong Parity Command'
055550  104 141 164  T33DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
055645  104 141 164  TST33ID:        .ASCIZ  'Data Parity'
                              .EVEN
                                        ;+
                                        ;
                                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                        ;WRITE SUBSYSTEM MEMORY COMMAND
                                        ;
                                        ;-

055662                                  T33REST:
055662                                          SAVREG                          ;SAVE THE REGISTERS
055666  012701  054550                          MOV     #T33PACKET,R1           ;START OF THE PACKET
055672  012721  100004                          MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
055676  012721  054560                          MOV     #T33DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
055702  005021                                  CLR     (R1)+                   ;EXTENDED ADDRESS
055704  012721  000012                          MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
055710  012721  054572                          MOV     #T33BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
055714  005021                                  CLR     (R1)+
055716  012721  000024                          MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
055722  005021                                  CLR     (R1)+
055724  012711  000000                          MOV     #0,(R1)                 ;SELECT DRIVE ZERO
055730  012702  000030                          MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
055734  012762  177777  054572  64$:           MOV     #177777,T33BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
055742  005742                                  TST     -(R2)                   ;NEXT LOCATION
055744  022702  000000                          CMP     #0,R2                   ;AT END OF LOOP YET
055750  001371                                  BNE     64$                     ;KEEP GOING UNTIL DONE
055752  000207                                  RTS     PC                      ;RETURN

055754                                  T33RT2:
055754                                          SAVREG                          ;SAVE THE REGISTERS
055760  012701  054660                          MOV     #T33PK2,R1              ;START OF THE PACKET
055764  012721  100006                          MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
055770  012721  054700                          MOV     #T33BF2,(R1)+           ;ADDRESS OF DATA BLOCK
055774  005021                                  CLR     (R1)+                   ;EXTENDED ADDRESS
055776  012721  000006                          MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
056002  005021                                  CLR     (R1)+
056004  012701  054700                          MOV     #T33BF2,R1              ;POINT TO DATA SEL AREA
056010  005021                                  CLR     (R1)+
056012  005011                                  CLR     (R1)
056014  000207                                  RTS     PC                      ;RETURN
056016                                  T33RT3:
```

```
3567 056016                            SAVREG                  ;SAVE REGISTERS
3568 056022  012701  054670            MOV     #T33PK3,R1      ;SET UP POINTER ADDRESS
3569 056026  005021                    CLR     (R1)+           ;COMMAND SPACE
3570 056030  005021                    CLR     (R1)+           ;ADDRESS OF DATA BLOCK
3571 056032  005021                    CLR     (R1)+           ;EXTENDED ADDRESS
3572 056034  005011                    CLR     (R1)            ;SIZE OF DATA TRANSFER BLOCK
3573 056036  000207                    RTS     PC              ;RETURN
3574 056040                            ENDTST
     056040                                                        L10057:
     056040  104401                                                    TRAP    C$ETST
```

```
                                        .SBTTL  TEST  6: OPERATIONS AT EOT
                                ;+
                                ;
                                ;THIS TEST VERIFIES PROPER OPERATION OF THE WRITE DATA RETRY
                                ;COMMAND (SPACE REVERSE, ERASE, WRITE DATA)
                                ;
                                ;
                                ;THE TEST CONSISTS OF THE FOLLOWING 1 SUBTEST
                                ;
                                ;
                                ;
                                ;-
056042                                  BGNTST
056042                                                                  T6::
056042  012737  006354  002172            MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
056050  012700  063207                    MOV     #TST34ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
056054  004737  016570                    JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
056060  012737  000005  002210            MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
056066  005037  060672                    CLR     T34CNT                  ;CLEAR TAPE RECORD COUNTER
                                ;+
                                ;
                                ;TEST 6, SUBTEST 1
                                ;
                                ;       THIS TEST VERIFIES THAT THE EOT STATUS IS HANDLED PROPERLY BY
                                ;       THE VARIOUS TAPE MOTION COMMANDS.  THE FOLLOWING TEST SEQUENCE
                                ;       IS PERFORMED:
                                ;
                                ;            1.  THE TAPE IS REWOUND.
                                ;
                                ;            2.  WRITE DATA COMMANDS ARE REPEATEDLY ISSUED UNTIL TAPE
                                ;                STATUS ALERT TERMINATION IS SEEN WITH EOT=1.  ERRORS
                                ;                OTHER THAN OCCASIONAL CORRECTABLE OR UNCORRECTABLE DATA
                                ;                ERRORS CAUSE A FATAL ERROR REPORT.  RECORDS WITH DATA
                                ;                ERRORS ARE RETRIED, SO THE TAPE ENDS UP WITH GOOD DATA.
                                ;
                                ;            3.  ANOTHER WRITE DATA COMMAND IS ISSUED, AND IT IS CHECKED
                                ;                THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=1.
                                ;
                                ;            4.  A WRITE TAPE MARK COMMAND IS ISSUED, AND IT IS CHECKED
                                ;                THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=1.
                                ;
                                ;            5.  A SKIP TAPE MARKS REVERSE COMMAND IS ISSUED, AND IT IS
                                ;                CHECKED THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH
                                ;                EOT=1 AND TMK=1.
                                ;
                                ;            6.  A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF
                                ;                1, IS ISSUED, AND IT IS CHECKED THAT TAPE STATUS ALERT
                                ;                TERMINATION OCCURS, WITH EOT=1 AND TMK=1.
                                ;
                                ;            7.  A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF
                                ;                1, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
                                ;                OCCURS, WITH EOT=1.
                                ;
                                ;            8.  A SPACE RECORDS FORWARD COMMAND, WITH A RECORD COUNT OF
                                ;                1, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
                                ;                OCCURS, WITH EOT=1.
```

```
3637                                    ;
3638                                    ;           9.  A READ REVERSE COMMAND IS ISSUED, AND IT IS CHECKED
3639                                    ;               THAT NORMAL TERMINATION OCCURS, WITH EOT=1.
3640                                    ;
3641                                    ;           10. A READ FORWARD COMMAND IS ISSUED, AND IT IS CHECKED
3642                                    ;               THAT NORMAL TERMINATION OCCURS, WITH EOT=1.
3643                                    ;
3644                                    ;           11. A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF
3645                                    ;               3, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
3646                                    ;               OCCURS, WITH EOT=0.
3647                                    ;
3648                                    ;           12. A SPACE RECORDS FORWARD COMMAND, WITH A RECORD COUNT OF
3649                                    ;               3, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
3650                                    ;               OCCURS, WITH EOT=1.
3651                                    ;
3652                                    ;           13. A SKIP FILE MARKS REVERSE COMMAND IS ISSUED, WHICH
3653                                    ;               SHOULD SKIP ALL THE WAY TO BOT, AND IT IS CHECKED THAT
3654                                    ;               TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=0,
3655                                    ;               BOT=1, AND RIB=1.
3656                                    ;
3657                                    ;
3658                                    ;
3659                                    ;
3660                                    ;-
3661
3662 056072                            T34LOOP:
```

```
                                        ;+
                                        ;
                                        ;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 >>>>>>>>>>>>
                                                                                        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
```

```
3709 056230  012704  060540                 MOV     #T34PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
3710 056234  004737  010742                 JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
3711 056240  103407                         BCS     30$                     ;BR, IF COMMAND ISSUED OK
3712 056242  005237  002214                 INC     FATFLG                          ;ERROR COUNT
3716 056246  010001                         MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
3717 056250                                 ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     056250  104456                                                                 TRAP    C$ERHRD
     056252  001132                                                                 .WORD   602
     056254  005052                                                                 .WORD   WRTMSG
     056256  012114                                                                 .WORD   SFIMSG
3718 056260                         30$:    CKLOOP                          ;LOOP IF SELECTED
     056260  104406                                                                 TRAP    C$CLP1
3719 056262  004737  011074                 JSR     PC,REWIND               ;REWIND CALL
3720 056266  103411                         BCS     35$                     ;BR, IF TSSR IS OK (GOOD)
3721 056270  016501  000002                 MOV     TSSR(R5),R1             ;GET TSSR
3722 056274  010004                         MOV     R0,R4                   ;SET UP PACKET
3723 056276  005237  002214                 INC     FATFLG                          ;ERROR COUNT
3727 056302                                 ERRHRD  ERRNO,T34RWN,PKTSSR     ;TSSR IS INCORRECT AFTER REWIND
     056302  104456                                                                 TRAP    C$ERHRD
     056304  001133                                                                 .WORD   603
     056306  062337                                                                 .WORD   T34RWN
     056310  012126                                                                 .WORD   PKTSSR
3728 056312                         35$:    CKLOOP                          ;LOOP IF SELECTED
     056312  104406                                                                 TRAP    C$CLP1
3729 056314  012737  140005  060660           MOV     #140005,T34PK3          ;WRITE DATA, ACK, CVC=1
3730 056322  012703  176750                 MOV     #65000.,R3              ;SET MAX NUMBER OF WRITES
3731 056326  013737  003116  060662         MOV     FREE,T34WB              ;SET UP WRITE BUFFER ADDRESS
3732 056334  012737  006654  060666         MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (4K BYTES)
3733 056342  012704  060660                 MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3734 056346  010465  000000         40$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3735 056352  004737  016330                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3736 056356  016501  000002                 MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3737 056362  012702  000200                 MOV     #SSR,R2                 ;SET UP EXPECTED
3738 056366  020102                         CMP     R1,R2                   ;ARE THEY EQUAL
3739 056370  001010                         BNE     50$                     ;BR, IT MIGHT BE END OF TAPE
3740 056372  005303                         DEC     R3                      ;DEC RECORD COUNTER
3741 056374  001364                         BNE     40$                     ;BR, IF MORE TO GO
3742 056376  005237  002214                 INC     FATFLG                          ;ERROR COUNT
3746 056402                                 ERRDF   ERRNO,T34ET,PKTSSR      ;EOT NOT FOUND (USE SHORTER TAPE?)
     056402  104455                                                                 TRAP    C$ERDF
     056404  001134                                                                 .WORD   604
     056406  062116                                                                 .WORD   T34ET
     056410  012126                                                                 .WORD   PKTSSR
3747 056412  032701  000004         50$:    BIT     #BIT2,R1                ;CHECK FOR TAPE STATUS ALERT
3748 056416  001001                         BNE     60$                     ;BR, IF SET
3749 056420  000752                         BR      40$                     ;KEEP GOING
3750 056422  013701  060570         60$:    MOV     T34BFR+6,R1             ;PICK UP XST0
3751 056426  010102                         MOV     R1,R2                   ;SET UP EXPECTED
3752 056430  052702  000001                 BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
3753 056434  020102                         CMP     R1,R2                   ;WAS THE BIT ON
3754 056436  001402                         BEQ     80$                     ;BR, IF EOT WAS FOUND
3755 056440  000137  056346                 JMP     40$                     ;KEEP LOOKING
3756 056444                         80$:    CKLOOP                          ;LOOP IF SELECTED
     056444  104406                                                                 TRAP    C$CLP1
3757 056446  012737  140005  060660           MOV     #140005,T34PK3          ;WRITE DATA, ACK, CVC=1
3758 056454  013737  003116  060662         MOV     FREE,T34WB              ;SET UP WRITE BUFFER ADDRESS
3759 056462  012737  006654  060666         MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (4K BYTES)
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3760 056470  012704  060660                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3761 056474  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3762 056500  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3763 056504  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3764 056510  012702  100204                MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
3765 056514  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
3766 056516  001406                        BEQ     90$                     ;BR, IF THEY ARE OK
3767 056520  005237  002214                INC     FATFLG                          ;ERROR COUNT
3771 056524                                ERRHRD  ERRNO,T34ET2,PKTSSR     ;WRITE TAPE AT EOT FAILED TO SET TSA
     056524  104456                                                                TRAP    C$ERHRD
     056526  001135                                                                .WORD   605
     056530  061367                                                                .WORD   T34ET2
     056532  012126                                                                .WORD   PKTSSR
3772 056534                        90$:    CKLOOP                          ;LOOP IF SELECTED
     056534  104406                                                                TRAP    C$CLP1
3773 056536  013701  060570                MOV     T34BFR+6,R1             ;PICK UP XSTO
3774 056542  010102                        MOV     R1,R2                   ;SET UP EXPECTED
3775 056544  052702  000001                BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
3776 056550  020102                        CMP     R1,R2                   ;WAS THE BIT ON
3777 056552  001406                        BEQ     100$                    ;BR, IF EOT WAS FOUND
3778 056554  005237  002214                INC     FATFLG                          ;ERROR COUNT
3782 056560                                ERRHRD  ERRNO,T34ETN,EXPREC     ;EOT BIT (XSTO) NOT SET
     056560  104456                                                                TRAP    C$ERHRD
     056562  001136                                                                .WORD   606
     056564  061451                                                                .WORD   T34ETN
     056566  015554                                                                .WORD   EXPREC
3783 056570                        100$:   CKLOOP                          ;LOOP IF SELECTED
     056570  104406                                                                TRAP    C$CLP1
3784 056572  012737  140011  060660        MOV     #140011,T34PK3          ;WRITE TAPE MARK, ACK, CVC=1 COMMAND
3785 056600  012704  060660                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3786 056604  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3787 056610  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3788 056614  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3789 056620  012702  100204                MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
3790 056624  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
3791 056626  001406                        BEQ     110$                    ;BR, IF STATUS IS GOOD (OK)
3792 056630  005237  002214                INC     FATFLG                          ;ERROR COUNT
3796 056634                                ERRHRD  ERRNO,T34WTM,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     056634  104456                                                                TRAP    C$ERHRD
     056636  001137                                                                .WORD   607
     056640  061300                                                                .WORD   T34WTM
     056642  012126                                                                .WORD   PKTSSR
3797 056644                        110$:   CKLOOP                          ;LOOP IF SELECTED
     056644  104406                                                                TRAP    C$CLP1
3798 056646  013701  060570                MOV     T34BFR+6,R1             ;PICK UP XSTO
3799 056652  010102                        MOV     R1,R2                   ;SET UP EXPECTED
3800 056654  052702  000001                BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
3801 056660  020102                        CMP     R1,R2                   ;WAS THE BIT ON
3802 056662  001406                        BEQ     120$                    ;BR, IF EOT WAS FOUND
3803 056664  005237  002214                INC     FATFLG                          ;ERROR COUNT
3807 056670                                ERRHRD  ERRNO,T34ETO,EXPREC     ;EOT BIT (XSTO) NOT SET
     056670  104456                                                                TRAP    C$ERHRD
     056672  001140                                                                .WORD   608
     056674  061002                                                                .WORD   T34ETO
     056676  015554                                                                .WORD   EXPREC
3808 056700                        120$:   CKLOOP                          ;LOOP IF SELECTED
     056700  104406                                                                TRAP    C$CLP1
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3809 056702  012737  141410  060660          MOV     #141410,T34PK3          ;SKIP TAPE MARK REVERSE ACK,CVC=1 COMMAND
3810 056710  012737  000001  060662          MOV     #1,T34WB                ;SET NUMBER (1) OF TMS TO SKIP
3811 056716  012704  060660                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3812 056722  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3813 056726  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3814 056732  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3815 056736  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
3816 056742  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3817 056744  001406                          BEQ     130$                    ;BR, IF STATUS IS GOOD (OK)
3818 056746  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3822 056752                                  ERRHRD  ERRNO,T34STM,PKTSSR     ;SKIP TAPE MARK REV. DIDN'T SET TSA
     056752  104456                                                                  TRAP    C$ERHRD
     056754  001141                                                                  .WORD   609
     056756  061700                                                                  .WORD   T34STM
     056760  012126                                                                  .WORD   PKTSSR
3823 056762                          130$:   CKLOOP                          ;LOOP IF SELECTED
     056762  104406                                                                  TRAP    C$CLP1
3824 056764  013701  060570                  MOV     T34BFR+6,R1             ;PICK UP XSTO
3825 056770  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3826 056772  052702  000001                  BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
3827 056776  020102                          CMP     R1,R2                   ;WAS THE BIT ON
3828 057000  001406                          BEQ     140$                    ;BR, IF EOT WAS FOUND
3829 057002  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3833 057006                                  ERRHRD  ERRNO,T34ETN,EXPREC     ;EOT BIT (XSTO) NOT SET
     057006  104456                                                                  TRAP    C$ERHRD
     057010  001142                                                                  .WORD   610
     057012  061451                                                                  .WORD   T34ETN
     057014  015554                                                                  .WORD   EXPREC
3834 057016                          140$:   CKLOOP                          ;LOOP IF SELECTED
     057016  104406                                                                  TRAP    C$CLP1
3835 057020  013701  060570                  MOV     T34BFR+6,R1             ;PICK UP XSTO
3836 057024  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3837 057026  052702  100000                  BIS     #BIT15,R2               ;SET THE TMK BIT ON IN EXPECTED
3838 057032  020102                          CMP     R1,R2                   ;WAS THE BIT ON
3839 057034  001406                          BEQ     150$                    ;BR, IF TMK WAS FOUND
3840 057036  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3844 057042                                  ERRHRD  ERRNO,T34TMK,EXPREC     ;EOT BIT (XSTO) NOT SET
     057042  104456                                                                  TRAP    C$ERHRD
     057044  001143                                                                  .WORD   611
     057046  061763                                                                  .WORD   T34TMK
     057050  015554                                                                  .WORD   EXPREC
3845 057052                          150$:   CKLOOP                          ;LOOP IF SELECTED
     057052  104406                                                                  TRAP    C$CLP1
3846 057054  012737  140410  060660          MOV     #140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD
3847 057062  012737  000001  060662          MOV     #1,T34WB                ;SPACE ONE RECORD REVERSE
3848 057070  012704  060660                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3849 057074  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3850 057100  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3851 057104  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3852 057110  012702  100204                  MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
3853 057114  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3854 057116  001006                          BNE     160$                    ;BR, IT MIGHT BE END OF TAPE
3855 057120  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3859 057124                                  ERRHRD  ERRNO,T34POS,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     057124  104456                                                                  TRAP    C$ERHRD
     057126  001144                                                                  .WORD   612
     057130  060714                                                                  .WORD   T34POS
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        057132  012126                                                          .WORD   PKTSSR
3860    057134                          160$:   CKLOOP                          ;LOOP IF SELECTED
        057134  104406                                                          TRAP    C$CLP1
3861    057136  013701  060570                  MOV     T34BFR+6,R1             ;PICK UP XSTO
3862    057142  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3863    057144  052702  000001                  BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
3864    057150  020102                          CMP     R1,R2                   ;WAS THE BIT ON
3865    057152  001406                          BEQ     163$                    ;BR, IF EOT WAS FOUND
3866    057154  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3870    057160                                  ERRHRD  ERRNO,T34ETN,EXPREC     ;EOT BIT (XSTO) NOT SET
        057160  104456                                                          TRAP    C$ERHRD
        057162  001145                                                          .WORD   613
        057164  061451                                                          .WORD   T34ETN
        057166  015554                                                          .WORD   EXPREC
3871    057170                          163$:   CKLOOP                          ;LOOP IF SELECTED
        057170  104406                                                          TRAP    C$CLP1
3872    057172  013701  060570                  MOV     T34BFR+6,R1             ;PICK UP XSTO
3873    057176  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3874    057200  042702  100000                  BIC     #BIT15,R2               ;CLEAR THE TMK BIT ON IN EXPECTED
3875    057204  020102                          CMP     R1,R2                   ;WAS THE BIT ON
3876    057206  001406                          BEQ     165$                    ;BR, IF TMK WAS FOUND
3877    057210  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3881    057214                                  ERRHRD  ERRNO,T34TMK,EXPREC     ;EOT BIT (XSTO) NOT SET
        057214  104456                                                          TRAP    C$ERHRD
        057216  001146                                                          .WORD   614
        057220  061763                                                          .WORD   T34TMK
        057222  015554                                                          .WORD   EXPREC
3882    057224                          165$:   CKLOOP                          ;LOOP IF SELECTED
        057224  104406                                                          TRAP    C$CLP1
3883    057226  012737  140410  060660          MOV     #140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD
3884    057234  012737  000001  060662          MOV     #1,T34WB                ;SPACE ONE RECORD REVERSE
3885    057242  012704  060660                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3886    057246  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3887    057252  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3888    057256  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3889    057262  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
3890    057266  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3891    057270  001406                          BEQ     167$                    ;BR, IT MIGHT BE END OF TAPE
3892    057272  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3896    057276                                  ERRHRD  ERRNO,T34POS,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
        057276  104456                                                          TRAP    C$ERHRD
        057300  001147                                                          .WORD   615
        057302  060714                                                          .WORD   T34POS
        057304  012126                                                          .WORD   PKTSSR
3897    057306                          167$:   CKLOOP                          ;LOOP IF SELECTED
        057306  104406                                                          TRAP    C$CLP1
3898    057310  013701  060570                  MOV     T34BFR+6,R1             ;PICK UP XSTO
3899    057314  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3900    057316  042702  000001                  BIC     #BIT0,R2                ;CLEAR THE EOT BIT ON IN EXPECTED
3901    057322  020102                          CMP     R1,R2                   ;WAS THE BIT OFF
3902    057324  001400                          BEQ     170$                    ;BR, IF EOT WAS FOUND
3903    057326                          170$:   CKLOOP                          ;LOOP IF SELECTED
        057326  104406                                                          TRAP    C$CLP1
3904    057330  012737  140010  060660          MOV     #140010,T34PK3          ;SPACE RECORDS FORWARD, ACK, CVC=1
3905    057336  012737  000002  060662          MOV     #2,T34WB                ;SPACE TWO RECORDS
3906    057344  012704  060660                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3907    057350  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
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3908 057354  004737  016330          JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3909 057360  016501  000002          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3910 057364  012702  000200          MOV     #SSR,R2                 ;SET UP EXPECTED
3911 057370  020102                  CMP     R1,R2                   ;ARE THEY EQUAL
3912 057372  001406                  BEQ     190$                    ;BR, IT MIGHT BE END OF TAPE
3913 057374  005237  002214          INC     FATFLG                          ;ERROR COUNT
3917 057400                          ERRHRD  ERRNO,T34POS,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     057400  104456                                                          TRAP    C$ERHRD
     057402  001150                                                          .WORD   616
     057404  060714                                                          .WORD   T34POS
     057406  012126                                                          .WORD   PKTSSR
3918 057410                  190$:   CKLOOP                          ;LOOP IF SELECTED
     057410  104406                                                          TRAP    C$CLP1
3919 057412  013701  060570          MOV     T34BFR+6,R1             ;PICK UP XSTO
3920 057416  010102                  MOV     R1,R2                   ;SET UP EXPECTED
3921 057420  052702  000001          BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
3922 057424  020102                  CMP     R1,R2                   ;WAS THE BIT ON
3923 057426  001406                  BEQ     200$                    ;BR, IF EOT WAS FOUND
3924 057430  005237  002214          INC     FATFLG                          ;ERROR COUNT
3928 057434                          ERRHRD  ERRNO,T34ETS,EXPREC     ;EOT BIT (XSTO) NOT SET
     057434  104456                                                          TRAP    C$ERHRD
     057436  001151                                                          .WORD   617
     057440  061530                                                          .WORD   T34ETS
     057442  015554                                                          .WORD   EXPREC
3929 057444                  200$:   CKLOOP                          ;LOOP IF SELECTED
     057444  104406                                                          TRAP    C$CLP1
3930 057446  012737  140401  060660          MOV     #140401,T34PK3          ;READ REVERSE, ACK, CVC=1
3931 057454  013737  003116  060662          MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
3932 057462  012704  060660                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3933 057466  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3934 057472  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3935 057476  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3936 057502  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
3937 057506  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3938 057510  001406                          BEQ     205$                    ;BR, ONLY SSR IS SET
3939 057512  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3943 057516                                  ERRHRD  ERRNO,T34RRE,PKTSSR     ;EOT NCT FOUND (USE SHORTER TAPE?)
     057516  104456                                                                  TRAP    C$ERHRD
     057520  001152                                                                  .WORD   618
     057522  061066                                                                  .WORD   T34RRE
     057524  012126                                                                  .WORD   PKTSSR
3944 057526                          205$:   CKLOOP                          ;LOOP IF SELECTED
     057526  104406                                                                  TRAP    C$CLP1
3945 057530  012737  140401  060660          MOV     #140401,T34PK3          ;READ REVERSE, ACK, CVC=1
3946 057536  013737  003116  060662          MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
3947 057544  012704  060660                  MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3948 057550  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3949 057554  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3950 057560  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3951 057564  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
3952 057570  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3953 057572  001406                          BEQ     210$                    ;BR, IT MIGHT BE END OF TAPE
3954 057574  005237  002214                  INC     FATFLG                          ;ERROR COUNT
3958 057600                                  ERRHRD  ERRNO,T34RRE,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     057600  104456                                                                  TRAP    C$ERHRD
     057602  001153                                                                  .WORD   619
     057604  061066                                                                  .WORD   T34RRE
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      057606  012126                                                    .WORD   PKTSSR
3959  057610                        210$:   CKLOOP                    ;LOOP IF SELECTED
      057610  104406                                                    TRAP    C$CLP1
3960  057612  012737  140001  060660        MOV     #140001,T34PK3     ;READ DATA, ACK, CVC=1
3961  057620  013737  003116  060662        MOV     FREE,T34RB         ;SET UP WRITE BUFFER ADDRESS
3962  057626  012737  006654  060666        MOV     #3500.,T34SZ       ;SET UP BUFFER SIZE (4K BYTES)
3963  057634  012704  060660                MOV     #T34PK3,R4         ;R4 = POINTER TO PACKET
3964  057640  010465  000000                MOV     R4,TSDB(R5)        ;ISSUE COMMAND
3965  057644  004737  016330                JSR     PC,WAITF           ;WAIT FOR SSR TO SET
3966  057650  016501  000002                MOV     TSSR(R5),R1        ;GET TSSR CONTENTS
3967  057654  012702  000200                MOV     #SSR,R2            ;SET UP EXPECTED
3968  057660  020102                        CMP     R1,R2              ;ARE THEY EQUAL
3969  057662  001406                        BEQ     230$               ;BR, IT MIGHT BE END OF TAPE
3970  057664  005237  002214                INC     FATFLG                     ;ERROR COUNT
3974  057670                                ERRHRD  ERRNO,T34RRE,PKTSSR ;EOT NOT FOUND (USE SHORTER TAPE?)
      057670  104456                                                    TRAP    C$ERHRD
      057672  001154                                                    .WORD   620
      057674  061066                                                    .WORD   T34RRE
      057676  012126                                                    .WORD   PKTSSR
3975  057700                        230$:   CKLOOP                     ;LOOP IF SELECTED
      057700  104406                                                    TRAP    C$CLP1
3976  057702  012737  140001  060660        MOV     #140001,T34PK3     ;READ DATA, ACK, CVC=1
3977  057710  013737  003116  060662        MOV     FREE,T34RB         ;SET UP WRITE BUFFER ADDRESS
3978  057716  012737  006654  060666        MOV     #3500.,T34SZ       ;SET UP BUFFER SIZE (4K BYTES)
3979  057724  012704  060660                MOV     #T34PK3,R4         ;R4 = POINTER TO PACKET
3980  057730  010465  000000                MOV     R4,TSDB(R5)        ;ISSUE COMMAND
3981  057734  004737  016330                JSR     PC,WAITF           ;WAIT FOR SSR TO SET
3982  057740  016501  000002                MOV     TSSR(R5),R1        ;GET TSSR CONTENTS
3983  057744  012702  000200                MOV     #SSR,R2            ;SET UP EXPECTED
3984  057750  020102                        CMP     R1,R2              ;ARE THEY EQUAL
3985  057752  001406                        BEQ     235$               ;BR, IT MIGHT BE END OF TAPE
3986  057754  005237  002214                INC     FATFLG                     ;ERROR COUNT
3990  057760                                ERRHRD  ERRNO,T34RRE,PKTSSR ;EOT NOT FOUND (USE SHORTER TAPE?)
      057760  104456                                                    TRAP    C$ERHRD
      057762  001155                                                    .WORD   621
      057764  061066                                                    .WORD   T34RRE
      057766  012126                                                    .WORD   PKTSSR
3991  057770                        235$:   CKLOOP                     ;LOOP IF SELECTED
      057770  104406                                                    TRAP    C$CLP1
3992  057772  013701  060570                MOV     T34BFR+6,R1        ;PICK UP XSTO
3993  057776  010102                        MOV     R1,R2              ;SET UP EXPECTED
3994  060000  052702  000001                BIS     #BIT0,R2           ;SET THE EOT BIT ON IN EXPECTED
3995  060004  020102                        CMP     R1,R2              ;WAS THE BIT ON
3996  060006  001406                        BEQ     240$               ;BR, IF EOT WAS FOUND
3997  060010  005237  002214                INC     FATFLG                     ;ERROR COUNT
4001  060014                                ERRHRD  ERRNO,T34ETZ,EXPREC ;EOT BIT (XSTO) NOT SET
      060014  104456                                                    TRAP    C$ERHRD
      060016  001156                                                    .WORD   622
      060020  061622                                                    .WORD   T34ETZ
      060022  015554                                                    .WORD   EXPREC
4002  060024                        240$:   CKLOOP                     ;LOOP IF SELECTED
      060024  104406                                                    TRAP    C$CLP1
4003  060026  012737  140410  060660        MOV     #140410,T34PK3     ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD.
4004  060034  012737  000005  060662        MOV     #5,T34RB           ;NUMBER OF RECORDS TO SPACE
4005  060042  012704  060660                MOV     #T34PK3,R4         ;R4 = POINTER TO PACKET
4006  060046  010465  000000                MOV     R4,TSDB(R5)        ;ISSUE COMMAND
4007  060052  004737  016330                JSR     PC,WAITF           ;WAIT FOR SSR TO SET
```

```
4008 060056  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4009 060062  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
4010 060066  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
4011 060070  001406                        BEQ     250$                    ;BR, IT MIGHT BE END OF TAPE
4012 060072  005237  002214                INC     FATFLG                          ;ERROR COUNT
4016 060076                                ERRHRD  ERRNO,T34POS,PKTSSR     ;POSITION COMMAND DIDN'T WORK
     060076  104456                                                             TRAP    C$ERHRD
     060100  001157                                                             .WORD   623
     060102  060714                                                             .WORD   T34POS
     060104  012126                                                             .WORD   PKTSSR
4017 060106                         250$:  CKLOOP                          ;LOOP IF SELECTED
     060106  104406                                                             TRAP    C$CLP1
4018 060110  013701  060570                MOV     T34BFR+6,R1             ;PICK UP XSTO
4019 060114  010102                        MOV     R1,R2                   ;SET UP EXPECTED
4020 060116  042702  000001                BIC     #BIT0,R2                ;CLEAR THE EOT BIT ON IN EXPECTED
4021 060122  020102                        CMP     R1,R2                   ;WAS THE BIT ON
4022 060124  001406                        BEQ     260$                    ;BR, IF EOT WAS FOUND
4023 060126  005237  002214                INC     FATFLG                          ;ERROR COUNT
4027 060132                                ERRHRD  ERRNO,T34ETC,EXPREC     ;EOT BIT (XSTO) NOT CLEAR
     060132  104456                                                             TRAP    C$ERHRD
     060134  001160                                                             .WORD   624
     060136  061157                                                             .WORD   T34ETC
     060140  015554                                                             .WORD   EXPREC
4028 060142                         260$:  CKLOOP                          ;LOOP IF SELECTED
     060142  104406                                                             TRAP    C$CLP1
4029 060144  012737  140010  060660          MOV     #140010,T34PK3          ;SPACE RECORDS FORWARD, ACK, CVC=1 CMD.
4030 060152  012737  000005  060662          MOV     #5,T34RB                ;NUMBER OF RECORDS TO SPACE
4031 060160  012704  060660                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
4032 060164  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4033 060170  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4034 060174  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4035 060200  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
4036 060204  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
4037 060206  001406                        BEQ     270$                    ;BR, IT MIGHT BE END OF TAPE
4038 060210  005237  002214                INC     FATFLG                          ;ERROR COUNT
4042 060214                                ERRHRD  ERRNO,T34ET,PKTSSR      ;TSSR NOT CORRECT
     060214  104456                                                             TRAP    C$ERHRD
     060216  001161                                                             .WORD   625
     060220  062116                                                             .WORD   T34ET
     060222  012126                                                             .WORD   PKTSSR
4043 060224                         270$:  CKLOOP                          ;LOOP IF SELECTED
     060224  104406                                                             TRAP    C$CLP1
4044 060226  013701  060570                MOV     T34BFR+6,R1             ;PICK UP XSTO
4045 060232  010102                        MOV     R1,R2                   ;SET UP EXPECTED
4046 060234  052702  000001                BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
4047 060240  020102                        CMP     R1,R2                   ;WAS THE BIT ON
4048 060242  001400                        BEQ     280$                    ;BR, IF EOT WAS FOUND
4049 060244                         280$:  CKLOOP                          ;LOOP IF SELECTED
     060244  104406                                                             TRAP    C$CLP1
4050 060246  012737  141410  060660          MOV     #141410,T34PK3          ;SKIP FILE MARKS REVERSE,ACK,CVC=1 COMMAND
4051 060254  012737  000003  060662          MOV     #3,T34RB                ;NUMBER OF FILE MARKS
4052 060262  012704  060660                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
4053 060266  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4054 060272  012737  176750  060674          MOV     #65000.,T34DLY          ;SET UP DELAY COUNTER
4055 060300  004737  016330         285$:  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4056 060304  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4057 060310  032701  000200                BIT     #SSR,R1                 ;CHECK FOR SSR SET
```

```
4058 060314  001017                    BNE     286$                    ;BR, WHEN SSR IS SET
4059 060316                            DELAY   250                     ;WAIT ABOUT .25 SECONDS
     060316  012727  000250                                                    MOV     #250,(PC)+
     060322  000000                                                            .WORD   0
     060324  013727  002116                                                    MOV     L$DLY,(PC)+
     060330  000000                                                            .WORD   0
     060332  005367  177772                                                    DEC     -6(PC)
     060336  001375                                                            BNE     .-4
     060340  005367  177756                                                    DEC     -22(PC)
     060344  001367                                                            BNE     .-20
4060 060346  005337  060674                    DEC     T34DLY                  ;BUMP COUNTER
4061 060352  001352                            BNE     285$                    ;BR, IF MORE TO COUNT
4062 060354  012702  000200            286$:   MOV     #SSR,R2                 ;SET UP EXPECTED
4063 060360  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
4064 060362  001007                            BNE     290$                    ;BR, IT MIGHT BE END OF TAPE
4065 060364  005303                            DEC     R3                      ;DEC RECORD COUNTER
4066 060366  005237  002214                    INC     FATFLG                          ;ERROR COUNT
4070 060372                            ERRHRD  ERRNO,T34ET,PKTSSR      ;EOT NOT FOUND (USE SHORTER TAPE?)
     060372  104456                                                            TRAP    C$ERHRD
     060374  001162                                                            .WORD   626
     060376  062116                                                            .WORD   T34ET
     060400  012126                                                            .WORD   PKTSSR
4071 060402  032701  000004            290$:   BIT     #BIT2,R1                ;CHECK FOR TAPE STATUS ALERT
4072 060406  013701  060570                    MOV     T34BFR+6,R1             ;PICK UP XSTO
4073 060412  010102                            MOV     R1,R2                   ;SET UP EXPECTED
4074 060414  042702  000001                    BIC     #BIT0,R2                ;CLEAR THE EOT BIT IN EXPECTED
4075 060420  020102                            CMP     R1,R2                   ;WAS THE BIT ON
4076 060422  001406                            BEQ     300$                    ;BR, IF EOT WAS FOUND
4077 060424  005237  002214                    INC     FATFLG                          ;ERROR COUNT
4081 060430                            ERRHRD  ERRNO,T34ETC,EXPREC     ;EOT BIT (XSTO) NOT CLEAR
     060430  104456                                                            TRAP    C$ERHRD
     060432  001163                                                            .WORD   627
     060434  061157                                                            .WORD   T34ETC
     060436  015554                                                            .WORD   EXPREC
4082 060440                    300$:   CKLOOP                          ;LOOP IF SELECTED
     060440  104406                                                            TRAP    C$CLP1
4083 060442  013701  060570                    MOV     T34BFR+6,R1             ;PICK UP XSTO
4084 060446  010102                            MOV     R1,R2                   ;SET UP EXPECTED
4085 060450  052702  000002                    BIS     #BIT1,R2                ;SET THE BOT BIT ON IN EXPECTED
4086 060454  020102                            CMP     R1,R2                   ;WAS THE BIT ON
4087 060456  001406                            BEQ     320$                    ;BR, IF BOT WAS FOUND
4088 060460  005237  002214                    INC     FATFLG                          ;ERROR COUNT
4092 060464                            ERRHRD  ERRNO,T34BOT,EXPREC     ;EOT BIT (XSTO) NOT CLEAR
     060464  104456                                                            TRAP    C$ERHRD
     060466  001164                                                            .WORD   628
     060470  061234                                                            .WORD   T34BOT
     060472  015554                                                            .WORD   EXPREC
4093 060474                    320$:   CKLOOP                          ;LOOP IF SELECTED
     060474  104406                                                            TRAP    C$CLP1
4094 060476                    600$:
4095 060476                            ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     060476                                                                 L10062:
     060476  104403                                                            TRAP    C$ESUB
4096 060500  023727  002214  000017            CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
4097 060506  103402                            BLO     999$                            ;BR, IF LESS THAN 25
4098 060510  004737  017262                    JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
4099 060514                    999$:
```

```
4100 060514  004737  016536                JSR     PC,TSTLOOP      ;DO WE NEED TO ITERATE TEST
4101 060520  103002                        BCC     163$            ;BR, IF NO LOOP REQUIRED
4102 060522  000137  056072                JMP     T34LOOP         ;EXECUTE AGAIN
4103 060526                        163$:   EXIT    TST             ;ALL DONE THIS TEST
     060526  104432                                                        TRAP    C$EXIT
     060530  002662                                                        .WORD   L10061-.
```

```
                                        ;+
                                        ;LOCAL STORAGE FOR THIS TEST
                                        ;-
                        060540                  .=<.+10>&177770
060540                                  T34PACKET:
060540  100004                                  .WORD   100004          ;COMMAND PACKET FOR TEST
060542  060550                                  .WORD   T34DATA         ;WRITE CHARACTERISTICS COMMAND, WITH ACK
060544  000000                                  .WORD   0               ;ADDRESS OF CHARACTERISTICS BLOCK
060546  000010                                  .WORD   8.              ;STARTING VALUE OF BLOCK SIZE
060550                                  T34DATA:                        ;CHARACTERISTICS DATA BLOCK
060550  060562                                  .WORD   T34BFR          ;ADDRESS OF MESSAGE BUFFER
060552  000000                                  .WORD   0
060554  000012                                  .WORD   10.             ;LENGTH OF MESSAGE BUFFER
060556  000000                                  .WORD   0
060560  000000                          T34DSW: .WORD   0               ;SELECT DRIVE 0
060562                                  T34BFR: .BLKW   25.             ;MESSAGE BUFFER
                                        ;
                                        ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                        ;
                        060650                  .=<.+10>&177770
060650                                  T34PK2:
060650  100006                                  .WORD   100006          ;WRITE SUB SYS MEM COMMAND, AND ACK
060652  060676                                  .WORD   T34BF2          ;ADDRESS OF SELECT BLOCK DATA
060654  000000                                  .WORD   0
060656  000006                                  .WORD   6.              ;SIZE OF DATA PACKET

060660                                  T34PK3:
060660  100005                                  .WORD   100005          ;WRITE COMMAND,  AND ACK
060662                                  T34RB:
060662  000000                          T34WB:  .WORD   0               ;ADDRESS OF WRITE/READ BUFFER
060664  000000                                  .WORD   0
060666  000000                          T34SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
                                                .EVEN
                                        ;
060670  000000                          T34RSZ: .WORD   0               ;LARGEST TAPE RECORD IN BYTES
060672  000000                          T34CNT: .WORD   0               ;TAPE RECORD COUNTER
060674  000000                          T34DLY: .WORD   0               ;DELAY COUNTER
                                        ;
                                        ;
060676                                  T34BF2:
060676      010                 T34BS0: .BYTE   10              ;BSEL0 AREA
060677      200                 T34BS1: .BYTE   200             ;BSEL1 AREA
060700  000000                          T34S2:  .WORD   0               ;SEL 2 AREA
060702  000000                          T34S3:  .WORD   0               ;DATA AREA
                                        ;
                                        ;
                                                .EVEN
                                        ;TAPE MOTION PACKET COMMAND VALUES

060704  100005                          T34WD:  .WORD   100005          ;WRITE DATA (NEXT)
060706  100405                          T34WDR: .WORD   100405          ;WRITE DATA RETRY
060710  102005                          T34CON: .WORD   102005          ;WRITE CONTINOUS
060712  177777                                  .WORD   177777          ;END OF DATA
```

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

060714  124  123  123  T34POS: .ASCIZ  'TSSR Incorrect After Position (SPACE RECORDS) Command'
061002  127  122  111  T34ETO: .ASCIZ  'WRITE TAPE MARK At EOT Failed To Set EOT Bit (XSTO)'
061066  122  105  101  T34RRE: .ASCIZ  'READ Command At EOT Didn''t Give Normal Termination (TSSR)'
061157  125  156  141  T34ETC: .ASCIZ  'Unable To Clear EOT Indication, (XSTO) Bit 0'
061234  122  105  127  T34BOT: .ASCIZ  'REWIND Failed To Set BOT (XSTO) Bit'
061300  127  122  111  T34WTM: .ASCIZ  'WRITE TAPE MARK At EOT Failed To Set Tape Status Alert'
061367  127  122  111  T34ET2: .ASCIZ  'WRITE DATA At EOT Failed To Set Tape Status Alert'
061451  127  122  111  T34ETN: .ASCIZ  'WRITE DATA At EOT Failed To Set EOT Bit (XSTO)'
061530  123  120  101  T34ETS: .ASCIZ  'SPACE RECORDS FORWARD At EOT Failed To Set EOT Bit (XSTO)'
061622  122  105  101  T34ETZ: .ASCIZ  'READ DATA At EOT Failed To Set EOT Bit (XSTO)'
061700  124  123  123  T34STM: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE At EOT'
061763  120  117  123  T34TMK: .ASCIZ  'POSITION Command At EOT Onto Tape Mark Failed To Set TMK (XSTO)'
062063  127  122  111  T34SSR: .ASCIZ  'WRITE Command Not Accepted'
062116  105  117  124  T34ET:  .ASCIZ  'EOT Not Found In 65000 3.5K Writes, (Use Shorter Tape)'
062205  127  122  111  T34EOT: .ASCIZ  'WRITE DATA OVER EOT GAVE NO TAPE STATUS ALERT'
062263  124  123  123  T34TM:  .ASCIZ  'TSSR Not Correct After WRITE Command Reject'
062337  122  145  167  T34RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
062406  122  101  115  T34RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
062461  124  123  123  T34AM3: .ASCIZ  'TSSR Init. Failed After WRITE Command'
062527  104  162  151  T34OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
062602  124  123  123  T34WDD: .ASCIZ  'TSSR Not Correct After WRITE DATA Command, SWB Bit Set'
062671  124  123  123  T34WDC: .ASCIZ  'TSSR Not Correct After WRITE DATA Command, Check For Tape Offline'
062773  103  126  103  T34VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
063046  124  123  102  T34BA:  .ASCIZ  'TSBA Not Correct After WRITE DATA Command'
063120  127  122  111  T34WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
063207  117  160  145  TST34ID:        .ASCIZ  'Operations At EOT'
                                .EVEN
                                ;+
                                ;
                                ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                ;WRITE SUBSYSTEM MEMORY COMMAND
                                ;
                                ;-
063232                          T34REST:
063232                                  SAVREG                          ;SAVE THE REGISTERS
063236  012701  060540                  MOV     #T34PACKET,R1           ;START OF THE PACKET
063242  012721  100004                  MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK
063246  012721  060550                  MOV     #T34DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
063252  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
063254  012721  000012                  MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
063260  012721  060562                  MOV     #T34BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
063264  005021                          CLR     (R1)+
063266  012721  000024                  MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
063272  005021                          CLR     (R1)+
063274  012711  000000                  MOV     #0,(R1)                 ;SELECT DRIVE ZERO
063300  012702  000030                  MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
063304  012762  177777  060562  64$:    MOV     #177777,T34BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
063312  005742                          TST     -(R2)                   ;BUMP DOWN TO NEXT LOCATION
063314  020227  000000                  CMP     R2,#0                   ;R2 AT ZERO YET
063320  001371                          BNE     64$                     ;KEEP GOING UNTIL DONE
```

```
 4225 063322  000207                    RTS     PC                      ;RETURN
 4226
 4227
 4228 063324                        T34RT2:
 4229 063324                            SAVREG                          ;SAVE THE REGISTERS
 4230 063330  012701  060650            MOV     #T34PK2,R1              ;START OF THE PACKET
 4231 063334  012721  100006            MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK
 4232 063340  012721  060676            MOV     #T34BF2,(R1)+           ;ADDRESS OF DATA BLOCK
 4233 063344  005021                    CLR     (R1)+                   ;EXTENDED ADDRESS
 4234 063346  012721  000006            MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
 4235 063352  012701  060676            MOV     #T34BF2,R1              ;POINT TO DATA SEL AREA
 4236 063356  005021                    CLR     (R1)+
 4237 063360  005021                    CLR     (R1)+
 4238 063362  005011                    CLR     (R1)
 4239 063364  000207                    RTS     PC                      ;RETURN
 4240 063366                        T34RT3:
 4241 063366                            SAVREG                          ;SAVE THE REGISTERS
 4242 063372  012701  060660            MOV     #T34PK3,R1              ;START OF THE PACKET
 4243 063376  012721  100005            MOV     #100005,(R1)+           ;WRITE  TAPE. WITH ACK
 4244 063402  005021                    CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
 4245 063404  005021                    CLR     (R1)+                   ;EXTENDED ADDRESS
 4246 063406  005011                    CLR     (R1)                    ;SIZE OF DATA BLOCK
 4247 063410  000207                    RTS     PC                              ;RETURN
 4248 063412                            ENDTST
      063412                                                                 L10061:
      063412  104401                                                              TRAP    C$ETST
```

```
                                        .SBTTL  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.
                                ;
                                ;
                                ;THE TEST CONSISTS OF THE FOLLOWING 7 SUBTESTS
                                ;
                                ;
                                ;-
063414                                  BGNTST
063414                                                                  T7::
063414  012737  006354  002172        MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
063422  012700  073133                MOV     #TST35ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
063426  004737  016570                JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
063432  012737  000005  002210        MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
063440  005037  067536                CLR     T35CNT                  ;CLEAR TAPE RECORD COUNTER
                                ;+
                                ;
                                ;TEST 7, SUBTEST 1
                                ;
                                ;       VERIFIES THAT A REWIND WITH IMMEDIATE INTERRUPT COMMAND, ISSUED
                                ;       WITH THE INTERRUPT ENABLE (IE) BIT CLEAR (0), CAUSES ALMOST
                                ;       IMMEDIATE TERMINATION BUT NO INTERRUPT.  STATUS IN THE MESSAGE
                                ;       BUFFER IS CHECKED TO VERIFY THAT THE MOTION (MOT) AND OPERATION
                                ;       IN PROGRESS (OPM) STATUS BITS ARE BOTH SET.
                                ;
                                ;
                                ;-
063444                          T35LOOP:
063444                                  BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
063444                                                                          T7.1:
063444  104402                                                                  TRAP    C$BSUB
063446  004737  073164                JSR     PC,T35REST              ;SET COMMAND PACKET
063452  005037  002216                CLR     INTRECV                 ;CLEAR INTERRUPT RECEIVED FLAG
063456  004737  073256                JSR     PC,T35RT2               ;SET UP OTHER COMMAND PACKET
063462  004737  073320                JSR     PC,T35RT3               ;SET UP OTHER COMMAND PACKET
063466  012737  176750  067542        MOV     #65000.,T35DLY          ;SET UP DELAY COUNTER
063474  005037  067536                CLR     T35CNT                  ;CLEAR COUNTER
063500  004737  016054        10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
063504  103426                        BCS     20$                     ;BR IF INIT WAS OK
063506                                  DELAY   250                     ;DELAY ABOUT .25 SEC
063506  012727  000250                                                          MOV     #250,(PC)+
```

```
                063512  000000                                                          .WORD   0
                063514  013727  002116                                                  MOV     L$DLY,(PC)+
                063520  000000                                                          .WORD   0
                063522  005367  177772                                                  DEC     -6(PC)
                063526  001375                                                          BNE     .-4
                063530  005367  177756                                                  DEC     -22(PC)
                063534  001367                                                          BNE     .-20
  4307          063536  005337  067542          DEC     T35DLY          ;BUMP COUNTER
  4308          063542  001356                  BNE     10$             ;BR, IF COUNTER NOT DONE
  4309          063544  005237  002214          INC     FATFLG                  ;ERROR COUNT
  4313          063550  010001                  MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
  4314          063552                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
                063552  104455                                                          TRAP    C$ERDF
                063554  001275                                                          .WORD   701
                063556  003646                                                          .WORD   SFIERR
                063560  012114                                                          .WORD   SFIMSG
  4315          063562  013737  002174  067410  20$:    MOV     UNITN,T35DSW    ;SET UP DRIVE NUMBER
  4316          063570  012704  067370          MOV     #T35PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
  4317          063574  004737  010742          JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
  4318          063600  103407                  BCS     25$             ;BR, IF COMMAND ISSUED OK
  4319          063602  005237  002214          INC     FATFLG                  ;ERROR COUNT
  4323          063606  010001                  MOV     R0,R1           ;SAVE CONTENTS OF TSSR
  4324          063610                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
                063610  104456                                                          TRAP    C$ERHRD
                063612  001276                                                          .WORD   702
                063614  005052                                                          .WORD   WRTMSG
                063616  012114                                                          .WORD   SFIMSG
  4325          063620                  25$:    CKLOOP                  ;LOOP IF SELECTED
                063620  104406                                                          TRAP    C$CLP1
  4326          063622  004737  011074          JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
  4327          063626  103411                  BCS     30$             ;BR, IF NO PROBLEM
  4328          063630  010004                  MOV     R0,R4           ;SET UP REWIND PACKET ADDRESS
  4329          063632  016501  000002          MOV     TSSR(R5),R1     ;GET TSSR FOR PRINTOUT
  4330          063636  005237  002214          INC     FATFLG                  ;ERROR COUNT
  4334          063642                  ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
                063642  104456                                                          TRAP    C$ERHRD
                063644  001277                                                          .WORD   703
                063646  070644                                                          .WORD   T35RWN
                063650  012126                                                          .WORD   PKTSSR
  4335          063652                  30$:    CKLOOP                  ;LOOP IF SELECTED
                063652  104406                                                          TRAP    C$CLP1
  4336          063654  013701  067420          MOV     T35BFR+6,R1     ;PICK UP XSTO
  4337          063660  010102                  MOV     R1,R2           ;SET UP EXPECTED
  4338          063662  052702  000002          BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
  4339          063666  020102                  CMP     R1,R2           ;DOES EXP = REC'D
  4340          063670  001406                  BEQ     40$             ;BR, IF EQUAL (OK)
  4341          063672  005237  002214          INC     FATFLG                  ;ERROR COUNT
  4345          063676                  ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                063676  104456                                                          TRAP    C$ERHRD
                063700  001300                                                          .WORD   704
                063702  070340                                                          .WORD   T35BOT
                063704  015554                                                          .WORD   EXPREC
  4346          063706                  40$:    CKLOOP                  ;LOOP IF SELECTED
                063706  104406                                                          TRAP    C$CLP1
  4347          063710  012703  000024          MOV     #20.,R3         ;NUMBER OF RECORDS
  4348          063714  012737  000400  067516  MOV     #256.,T35SZ     ;SET UP RECORD SIZE
  4349          063722  013737  003116  067512  MOV     FREE,T35WB      ;ADDRESS OF WRITE BUFFER
```

```
                                ;*****************************************
                                ;
                                ;WRITE DATA,ACK,CVC=1 COMMAND
                                ;
                                ;*****************************************
063730  012737  140005  067510          MOV     #140005,T35PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
063736  012704  067510                  MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
063742  010465  000000          50$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
063746  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
063752  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
063756  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
063762  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
063764  001406                          BEQ     60$                     ;BR, IF OK
063766  005237  002214                  INC     FATFLG                          ;ERROR COUNT
063772                                  ERRHRD  ERRNO,T35WDE,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
063772  104456                                                                  TRAP    C$ERHRD
063774  001301                                                                  .WORD   705
063776  070266                                                                  .WORD   T35WDE
064000  012126                                                                  .WORD   PKTSSR
064002                          60$:    CKLOOP                          ;LOOP IF SELECTED
064002  104406                                                                  TRAP    C$CLP1
064004  005303                          DEC     R3                      ;BUMP RECORD COUNTER
064006  001355                          BNE     50$                     ;BR, IF MORE RRECORDS TO COUNT

                                ;*****************************************
                                ;
                                ;WAIT FOR TAPE TO STOP ALL MOTION
                                ;
                                ;*****************************************
064010  012737  000012  067542          MOV     #10.,T35DLY             ;SET UP DELAY COUNTER
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
064046  005337  067542                  DEC     T35DLY                  ;BUMP COUNTER DOWN
064052  001361                          BNE     70$                     ;BR, IF MORE TO DELAY
064054  005737  002220                  TST     EXTFEA                  ;CHECK FOR EXTENDED FEATURES SW SWITCH
064060  001042                          BNE     110$                    ;BR IF SWITCH IS ON
064062  112737  000200  067521          MOVB    #200,T35BS1             ;WRITE MISCELLANEOUS CONT/READ STATUS
064070  112737  000010  067520          MOVB    #10,T35BS0              ;FUNCTION SELECTION BIT (TURN ON EXTFEA HW SWITCH)
064076  012704  067500                  MOV     #T35PK2,R4              ;WRITE SUBSYS MEM PACKET
064102  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
064106  004737  016416                  JSR     PC,CHKTSSR              ;WAIT FOR SSR
064112  103407                          BCS     90$                     ;BR, IF NO ERROR
064114  010001                          MOV     R0,R1                   ;ERROR, SAVE TSSR
064116  005237  002214                  INC     FATFLG                          ;ERROR COUNT
064122                                  ERRHRD  ERRNO,T35SSR,PKTSSR     ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
064122  104456                                                                  TRAP    C$ERHRD
064124  001302                                                                  .WORD   706
```

```
                                                                                                .WORD   T35SSR
                                                                                                .WORD   PKTSSR
4398 064132                             90$:    CKLOOP                          ;LOOP IF SELECTED
     064132 104406                                                                              TRAP    C$CLP1
4399 064134 012704 067370                       MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4400 064140 004737 010742                       JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4401 064144 103407                              BCS     100$                    ;BR, IF COMMAND ISSUED OK
4402 064146 005237 002214                       INC     FATFLG                          ;ERROR COUNT
4406 064152 010001                              MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4407 064154                                     ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     064154 104456                                                                              TRAP    C$ERHRD
     064156 001303                                                                              .WORD   707
     064160 005052                                                                              .WORD   WRTMSG
     064162 012114                                                                              .WORD   SFIMSG
4408 064164                             100$:   CKLOOP                          ;SCOPE LOOP
     064164 104406                                                                              TRAP    C$CLP1
4409 064166 G12737 176750 067542        110$:   MOV     #65000.,T35DLY          ;SET UP DELAY COUNTER
4410 064174 005037 067536                       CLR     T35CNT                  ;DELAY COUNTER
4411
4412                                    ;*****************************************
4413                                    ;
4414                                    ;REWIND IMED. INTERRUPT,ACK,CVC=1,IE=0 COMMAND
4415                                    ;
4416                                    ;*****************************************
4417
4418 064200 012737 142012 067510                 MOV     #142012,T35PK3          ;REWIND IMED. INTERRUPT,ACK,CVC=1,IE=0 COMMAND
4419 064206 012704 067510                       MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4420 064212 010465 000000                       MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4421 064216 016501 000002               120$:   MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4422 064222 032701 000200                       BIT     #SSR,R1                 ;CHECK FOR SSR SET
4423 064226 001021                              BNE     130$                    ;BR, WHEN SSR IS SET
4424 064230 005237 067536                       INC     T35CNT                  ;BUMP THE CYCLE COUNTER
4425 064234                                     DELAY   1                       ;DELAY TO KEEP COUNTER DOWN
     064234 012727 000001                                                                       MOV     #1,(PC)+
     064240 000000                                                                              .WORD   0
     064242 013727 002116                                                                       MOV     L$DLY,(PC)+
     064246 000000                                                                              .WORD   0
     064250 005367 177772                                                                       DEC     -6(PC)
     064254 001375                                                                              BNE     .-4
     064256 005367 177756                                                                       DEC     -22(PC)
     064262 001367                                                                              BNE     .-20
4426 064264 005337 067542                       DEC     T35DLY                  ;DROP DEAD TIMER BUMP DOWN
4427 064270 001352                              BNE     120$                    ;BR, IF MORE TIME TO GO
4428 064272 012702 000200               130$:   MOV     #SSR,R2                 ;SET UP EXPECTED
4429 064276 020102                              CMP     R1,R2                   ;ARE THEY EQUAL
4430 064300 001406                              BEQ     140$                    ;BR, IF OK
4431 064302 005237 002214                       INC     FATFLG                          ;ERROR COUNT
4435 064306                                     ERRHRD  ERRNO,T35RWE,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     064306 104456                                                                              TRAP    C$ERHRD
     064310 001304                                                                              .WORD   708
     064312 072770                                                                              .WORD   T35RWE
     064314 012126                                                                              .WORD   PKTSSR
4436 064316                             140$:   CKLOOP                          ;LOOP IF SELECTED
     064316 104406                                                                              TRAP    C$CLP1
4437 064320 005737 002216                       TST     INTRECV                 ;CHECK FOR INTERRUPTS
4438 064324 001410                              BEQ     150$                    ;BR, IF NO INTERRUPTS DETECTED
4439 064326 016501 000002                       MOV     TSSR(R5),R1             ;GET TSSR STATUS FOR PRINTOUT
```

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4440 064332  005237  002214          INC     FATFLG                          ;ERROR COUNT
4444 064336                          ERRHRD  ERRNO,T35INT,PKTSSR     ;INTERRUPT RECEIVED (BAD)
     064336  104456                                                          TRAP    C$ERHRD
     064340  001305                                                          .WORD   709
     064342  072601                                                          .WORD   T35INT
     064344  012126                                                          .WORD   PKTSSR
4445 064346                     150$:   CKLOOP                          ;LOOP IF SELECTED
     064346  104406                                                          TRAP    C$CLP1
4446
4447                            ;*****************************************
4448                            ;
4449                            ;NOW CHECK FOR THE MOTION BITS SET
4450                            ;
4451                            ;*****************************************
4452
4453 064350  013701  067420          MOV     T35BFR+6,R1             ;PICK UP XST0
4454 064354  010102                  MOV     R1,R2                   ;SET UP EXPECTED
4455 064356  052702  000200          BIS     #BIT7,R2                ;SET MOT BIT IN EXPECTED
4456 064362  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
4457 064364  001406                  BEQ     160$                    ;BR, IF EQUAL (OK)
4458 064366  005237  002214          INC     FATFLG                          ;ERROR COUNT
4462 064372                          ERRHRD  ERRNO,T35MOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     064372  104456                                                          TRAP    C$ERHRD
     064374  001306                                                          .WORD   710
     064376  072503                                                          .WORD   T35MOT
     064400  015554                                                          .WORD   EXPREC
4463 064402                     160$:   CKLOOP                          ;LOOP IF SELECTED
     064402  104406                                                          TRAP    C$CLP1
4464 064404  013701  067424          MOV     T35BFR+12,R1            ;PICK UP XST2
4465 064410  010102                  MOV     R1,R2                   ;SET UP EXPECTED
4466 064412  052702  100000          BIS     #BIT15,R2               ;SET OPM BIT IN EXPECTED
4467 064416  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
4468 064420  001406                  BEQ     170$                    ;BR, IF EQUAL (OK)
4469 064422  005237  002214          INC     FATFLG                          ;ERROR COUNT
4473 064426                          ERRHRD  ERRNO,T35OPM,EXPREC     ;OPM BIT NOT SET
     064426  104456                                                          TRAP    C$ERHRD
     064430  001307                                                          .WORD   711
     064432  072672                                                          .WORD   T35OPM
     064434  015554                                                          .WORD   EXPREC
4474 064436                     170$:   CKLOOP                          ;LOOP IF SELECTED
     064436  104406                                                          TRAP    C$CLP1
4475 064440  012737  000027  067542      MOV     #23.,T35DLY             ;SET UP DELAY COUNTER
4476 064446                     175$:   DELAY   250                     ;START DELAY
     064446  012727  000250                                                  MOV     #250,(PC)+
     064452  000000                                                          .WORD   0
     064454  013727  002116                                                  MOV     L$DLY,(PC)+
     064460  000000                                                          .WORD   0
     064462  005367  177772                                                  DEC     -6(PC)
     064466  001375                                                          BNE     .-4
     064470  005367  177756                                                  DEC     -22(PC)
     064474  001367                                                          BNE     .-20
4477 064476  005337  067542          DEC     T35DLY                  ;BUMP DELAY COUNTER
4478 064502  001361                  BNE     175$                    ;BR, IF MORE DELAY
4479 064504                          ENDSUB
     064504                                                                 L10064:
     064504  104403                                                          TRAP    C$ESUB
4480 064506  023727  002214  000017      CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
```

```
 4481 064514  103402                        BLO     999$                    ;BR, IF LESS THAN 25
 4482 064516  004737  017262                JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
 4483 064522                        999$:
```

```
                                        ;+
                                        ;
                                        ;TEST 7: SUBTEST 2
                                        ;
                                        ;       WITH THE INTERRUPT ENABLE (IE) BIT SET (1), CAUSES ALMOST
                                        ;       IMMEDIATE TERMINATION AND AN INTERRUPT.  STATUS IN THE MESSAGE
                                        ;       BUFFER IS CHECKED TO VERIFY THAT THE MOTION (MOT) AND OPERATION
                                        ;       IN PROGRESS (OPM) STATUS BITS ARE BOTH SET.
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-
                                                BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
                                                                                                        T7.2:
                                                                                                        TRAP    C$BSUB
                                                SETPRI  #PRI00          ;ENABLE INTERRUPTS.
                                                                                                        MOV     #PRI00,R0
                                                                                                        TRAP    C$SPRI
                                                JSR     PC,T35REST              ;SET COMMAND PACKET
                                                CLR     INTRECV                 ;CLEAR INTERRUPT RECEIVED FLAG
                                                JSR     PC,T35RT2               ;SET UP OTHER COMMAND PACKET
                                                JSR     PC,T35RT3               ;SET UP OTHER COMMAND PACKET
                                                MOV     #65000.,T35DLY          ;SET UP DELAY COUNTER
                                                CLR     T35CNT                  ;CLEAR COUNTER
                                        10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
                                                BCS     20$                     ;BR IF INIT WAS OK
                                                DELAY   250                     ;DELAY ABOUT .25 SEC
                                                                                                        MOV     #250,(PC)+
                                                                                                        .WORD   0
                                                                                                        MOV     L$DLY,(PC)+
                                                                                                        .WORD   0
                                                                                                        DEC     -6(PC)
                                                                                                        BNE     .-4
                                                                                                        DEC     -22(PC)
                                                                                                        BNE     .-20
                                                DEC     T35DLY                  ;BUMP COUNTER
                                                BNE     10$                     ;BR, IF COUNTER NOT DONE
                                                INC     FATFLG                          ;ERROR COUNT
                                                MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
                                                ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
                                                                                                        TRAP    C$ERDF
                                                                                                        .WORD   712
                                                                                                        .WORD   SFIERR
                                                                                                        .WORD   SFIMSG
                                        20$:    MOV     UNITN,T35DSW            ;SET UP DRIVE NUMBER
                                                MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
                                                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
                                                BCS     25$                     ;BR, IF COMMAND ISSUED OK
                                                INC     FATFLG                          ;ERROR COUNT
                                                MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
                                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
                                                                                                        TRAP    C$ERHRD
                                                                                                        .WORD   713
```

```
        064700  005052                                                          .WORD   WRTMSG
        064702  012114                                                          .WORD   SFIMSG
4530    064704                          25$:    CKLOOP                          ;LOOP IF SELECTED
        064704  104406                                                          TRAP    C$CLP1
4531    064706  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4532    064712  103411                          BCS     30$                     ;BR, IF NO PROBLEM
4533    064714  010004                          MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
4534    064716  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4535    064722  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4539    064726                                  ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
        064726  104456                                                          TRAP    C$ERHRD
        064730  001312                                                          .WORD   714
        064732  070644                                                          .WORD   T35RWN
        064734  012126                                                          .WORD   PKTSSR
4540    064736                          30$:    CKLOOP                          ;LOOP IF SELECTED
        064736  104406                                                          TRAP    C$CLP1
4541    064740  013701  067420                  MOV     T35BFR+6,R1             ;PICK UP XSTO
4542    064744  010102                          MOV     R1,R2                   ;SET UP EXPECTED
4543    064746  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4544    064752  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
4545    064754  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
4546    064756  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4550    064762                                  ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        064762  104456                                                          TRAP    C$ERHRD
        064764  001313                                                          .WORD   715
        064766  070340                                                          .WORD   T35BOT
        064770  015554                                                          .WORD   EXPREC
4551    064772                          40$:    CKLOOP                          ;LOOP IF SELECTED
        064772  104406                                                          TRAP    C$CLP1
4552    064774  012703  000024                  MOV     #20.,R3                 ;NUMBER OF RECORDS
4553    065000  012737  000400  067516          MOV     #256.,T35SZ             ;SET UP RECORD SIZE
4554    065006  013737  003116  067512          MOV     FREE,T35WB              ;ADDRESS OF WRITE BUFFER
4555
4556                            ;*****************************************
4557                            ;
4558                            ;WRITE DATA,ACK,CVC=1 COMMAND
4559                            ;
4560                            ;*****************************************
4561
4562    065014  012737  140005  067510          MOV     #140005,T35PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
4563    065022  012704  067510                  MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4564    065026  010465  000000          50$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4565    065032  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4566    065036  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4567    065042  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
4568    065046  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
4569    065050  001406                          BEQ     60$                     ;BR, IF OK
4570    065052  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4574    065056                                  ERRHRD  ERRNO,T35WDE,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        065056  104456                                                          TRAP    C$ERHRD
        065060  001314                                                          .WORD   716
        065062  070266                                                          .WORD   T35WDE
        065064  012126                                                          .WORD   PKTSSR
4575    065066                          60$:    CKLOOP                          ;LOOP IF SELECTED
        065066  104406                                                          TRAP    C$CLP1
4576
4577                            ;*****************************************
```

```
                                        ;
                                        ;WAIT FOR TAPE TO STOP ALL MOTION
                                        ;
                                        ;*****************************************
065070  012737  000012  067542          MOV     #10.,T35DLY             ;SET UP DELAY COUNTER
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
065126  005337  067542                  DEC     T35DLY                  ;BUMP COUNTER DOWN
065132  001361                          BNE     70$                     ;BR, IF MORE TO DELAY
065134  005737  002220                  TST     EXTFEA                  ;CHECK FOR EXTENDED FEATURES SW SWITCH
065140  001042                          BNE     110$                    ;BR IF SWITCH IS ON
065142  112737  000200  067521          MOVB    #200,T35BS1             ;WRITE MISCELLANEOUS CONT/READ STATUS
065150  112737  000010  067520          MOVB    #10,T35BS0              ;FUNCTION SELECTION BIT (TURN ON EXTFEA HW SWITCH)
065156  012704  067500                  MOV     #T35PK2,R4              ;WRITE SUBSYS MEM PACKET
065162  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
065166  004737  016416                  JSR     PC,CHKTSSR              ;WAIT FOR SSR
065172  103407                          BCS     90$                     ;BR, IF NO ERROR
065174  010001                          MOV     R0,R1                   ;ERROR, SAVE TSSR
065176  005237  002214                  INC     FATFLG                          ;ERROR COUNT
065202                                  ERRHRD  ERRNO,T35SSR,PKTSSR     ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
065202  104456                                                                  TRAP    C$ERHRD
065204  001315                                                                  .WORD   717
065206  072422                                                                  .WORD   T35SSR
065210  012126                                                                  .WORD   PKTSSR
065212                          90$:    CKLOOP                          ;LOOP IF SELECTED
065212  104406                                                                  TRAP    C$CLP1
065214  012704  067370                  MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
065220  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
065224  103407                          BCS     100$                    ;BR, IF COMMAND ISSUED OK
065226  005237  002214                  INC     FATFLG                          ;ERROR COUNT
065232  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
065234                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
065234  104456                                                                  TRAP    C$ERHRD
065236  001316                                                                  .WORD   718
065240  005052                                                                  .WORD   WRTMSG
065242  012114                                                                  .WORD   SFIMSG
065244                          100$:   CKLOOP                          ;SCOPE LOOP
065244  104406                                                                  TRAP    C$CLP1
065246  012737  176750  067542  110$:   MOV     #65000.,T35DLY          ;SET UP DELAY COUNTER
065254  005037  067536                  CLR     T35CNT                  ;DELAY COUNTER

                                        ;*****************************************
                                        ;
                                        ;REWIND IMMEDIATE,ACK,CVC=1,IE=1 COMMAND
                                        ;
                                        ;*****************************************

065260  012737  142212  067510          MOV     #142212,T35PK3          ;REWIND IMMEDIATE,ACK,CVC=1,IE=1 COMMAND
065266  012704  067510                  MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
```

```
 4623 065272  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 4624 065276  016501  000002      120$:     MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 4625 065302  032701  000200                BIT     #SSR,R1                 ;CHECK FOR SSR SET
 4626 065306  001021                        BNE     130$                    ;BR, WHEN SSR IS SET
 4627 065310  005237  067536                INC     T35CNT                  ;BUMP THE CYCLE COUNTER
 4628 065314                                DELAY   1                       ;DELAY TO KEEP COUNTER DOWN
      065314  012727  000001                                                        MOV     #1,(PC)+
      065320  000000                                                                .WORD   0
      065322  013727  002116                                                        MOV     L$DLY,(PC)+
      065326  000000                                                                .WORD   0
      065330  005367  177772                                                        DEC     -6(PC)
      065334  001375                                                                BNE     .-4
      065336  005367  177756                                                        DEC     -22(PC)
      065342  001367                                                                BNE     .-20
 4629 065344  005337  067542                DEC     T35DLY                  ;DROP DEAD TIMER BUMP DOWN
 4630 065350  001352                        BNE     120$                    ;BR, IF MORE TIME TO GO
 4631 065352  012702  000200      130$:     MOV     #SSR,R2                 ;SET UP EXPECTED
 4632 065356  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 4633 065360  001406                        BEQ     140$                    ;BR, IF OK
 4634 065362  005237  002214                INC     FATFLG                          ;ERROR COUNT
 4638 065366                                ERRHRD  ERRNO,T35RWE,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      065366  104456                                                                TRAP    C$ERHRD
      065370  001317                                                                .WORD   719
      065372  072770                                                                .WORD   T35RWE
      065374  012126                                                                .WORD   PKTSSR
 4639 065376                      140$:     CKLOOP                          ;LOOP IF SELECTED
      065376  104406                                                                TRAP    C$CLP1
 4640 065400  005737  002216                TST     INTRECV                 ;CHECK FOR INTERRUPTS
 4641 065404  001010                        BNE     150$                    ;BR, IF INTERRUPTS DETECTED
 4642 065406  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR STATUS FOR PRINTOUT
 4643 065412  005237  002214                INC     FATFLG                          ;ERROR COUNT
 4647 065416                                ERRHRD  ERRNO,T35NIN,PKTSSR     ;INTERRUPT NOT RECEIVED (BAD)
      065416  104456                                                                TRAP    C$ERHRD
      065420  001320                                                                .WORD   720
      065422  073056                                                                .WORD   T35NIN
      065424  012126                                                                .WORD   PKTSSR
 4648 065426                      150$:     CKLOOP                          ;LOOP IF SELECTED
      065426  104406                                                                TRAP    C$CLP1
 4649
 4650                                    ;*****************************************
 4651                                    ;
 4652                                    ;NOW CHECK FOR THE MOTION BITS SET
 4653                                    ;
 4654                                    ;*****************************************
 4655
 4656 065430  013701  067420                MOV     T35BFR+6,R1             ;PICK UP XSTO
 4657 065434  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 4658 065436  052702  000200                BIS     #BIT7,R2                ;SET MOT BIT IN EXPECTED
 4659 065442  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 4660 065444  001406                        BEQ     160$                    ;BR, IF EQUAL (OK)
 4661 065446  005237  002214                INC     FATFLG                          ;ERROR COUNT
 4665 065452                                ERRHRD  ERRNO,T35MOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      065452  104456                                                                TRAP    C$ERHRD
      065454  001321                                                                .WORD   721
      065456  072503                                                                .WORD   T35MOT
      065460  015554                                                                .WORD   EXPREC
 4666 065462                      160$:     CKLOOP                          ;LOOP IF SELECTED
```

```
                065462  104406                                                          TRAP    C$CLP1
4667            065464  013701  067424                  MOV     T35BFR+12,R1            ;PICK UP XST2
4668            065470  010102                          MOV     R1,R2                   ;SET UP EXPECTED
4669            065472  052702  100000                  BIS     #BIT15,R2               ;SET OPM BIT IN EXPECTED
4670            065476  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
4671            065500  001406                          BEQ     170$                    ;BR, IF EQUAL (OK)
4672            065502  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4676            065506                                  ERRHRD  ERRNO,T35OPM,EXPREC     ;OPM BIT NOT SET
                065506  104456                                                          TRAP    C$ERHRD
                065510  001322                                                          .WORD   722
                065512  072672                                                          .WORD   T35OPM
                065514  015554                                                          .WORD   EXPREC
4677            065516                          170$:   CKLOOP                          ;LOOP IF SELECTED
                065516  104406                                                          TRAP    C$CLP1
4678            065520  012737  000027  067542          MOV     #23.,T35DLY             ;SET UP DELAY COUNTER
4679            065526                          175$:   DELAY   250                     ;START DELAY
                065526  012727  000250                                                  MOV     #250,(PC)+
                065532  000000                                                          .WORD   0
                065534  013727  002116                                                  MOV     L$DLY,(PC)+
                065540  000000                                                          .WORD   0
                065542  005367  177772                                                  DEC     -6(PC)
                065546  001375                                                          BNE     .-4
                065550  005367  177756                                                  DEC     -22(PC)
                065554  001367                                                          BNE     .-20
4680            065556  005337  067542                  DEC     T35DLY                  ;BUMP DELAY COUNTER
4681            065562  001361                          BNE     175$                    ;BR, IF MORE DELAY
4682            065564                                  ENDSUB
                065564                                                                  L10065:
                065564  104403                                                                  TRAP    C$ESUB
4683            065566  023727  002214  000017          CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
4684            065574  103402                          BLO     999$                    ;BR, IF LESS THAN 25
4685            065576  004737  017262                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
4686            065602                          999$:
```

```
                                        ;+
                                        ;
                                        ;TEST 7, SUBTEST 3
                                        ;
                                        ;       VERIFIES THAT THE NON-TAPE-MOTION COMMAND GET STATUS, ISSUED
                                        ;       IMMEDIATATELY AFTER TERMINATION OF A REWIND WITH IMMEDIATE
                                        ;       INTERRUPT COMMAND, TERMINATES PROPERLY AND PROVIDES PROPER
                                        ;       STATUS.  FIRST, A NUMBER OF DATA RECORDS ARE WRITTEN FROM BOT.
                                        ;       THEN THE REWIND WITH IMMEDIATE INTERRUPT COMMAND IS ISSUED AND
                                        ;       TERMINATION VERIFIED.  THEN THE GET STATUS COMMAND IS ISSUED.
                                        ;       THE GET STATUS SHOULD TERMINATE ALMOST IMMEDIATELY AND SHOW
                                        ;       MOT=1 AND OPM=1 IN THE MESSAGE BUFFER.  AFTER A DELAY LONG
                                        ;       ENOUGH TO ALLOW THE REWIND TO COMPLETE AND THE TAPE COME TO
                                        ;       REST, GET STATUS IS AGAIN ISSUED AND THE STATUS CHECKED;  BOTH
                                        ;       MOT AND OPM SHOULD BE CLEAR.
                                        ;
                                        ;
                                        ;
                                        ;-
065602                                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
                                                                                        T7.3:
065602  104402                                                                          TRAP    C$BSUB
065604  004737  073164                        JSR     PC,T35REST              ;SET COMMAND PACKET
065610  004737  073256                        JSR     PC,T35RT2               ;SET UP OTHER COMMAND PACKET
065614  004737  073320                        JSR     PC,T35RT3               ;SET UP OTHER COMMAND PACKET
065620  004737  016054                        JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
065624  103407                              BCS     20$                     ;BR IF INIT WAS OK
065626  005237  002214                        INC     FATFLG                          ;ERROR COUNT
065632  010001                              MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
065634                                      ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
065634  104455                                                                          TRAP    C$ERDF
065636  001323                                                                          .WORD   723
065640  003646                                                                          .WORD   SFIERR
065642  012114                                                                          .WORD   SFIMSG
065644  013737  002174  067410          20$:    MOV     UNITN,T35DSW            ;SET UP UNIT NUMBER IN PACKET
065652  012704  067370                        MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
065656  004737  010742                        JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
065662  103407                              BCS     23$                     ;BR, IF COMMAND ISSUED OK
065664  005237  002214                        INC     FATFLG                          ;ERROR COUNT
065670  010001                              MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
065672                                      ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
065672  104456                                                                          TRAP    C$ERHRD
065674  001324                                                                          .WORD   724
065676  005052                                                                          .WORD   WRTMSG
065700  012114                                                                          .WORD   SFIMSG
065702                                  23$:    CKLOOP                          ;LOOP IF SELECTED
065702  104406                                                                          TRAP    C$CLP1
065704  004737  011074                        JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
065710  103411                              BCS     30$                     ;BR, IF NO PROBLEM
065712  010004                              MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
065714  016501  000002                        MOV     TSSR(R5),R1             ;GET CONTENTS FOR CALL
065720  005237  002214                        INC     FATFLG                          ;ERROR COUNT
065724                                      ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
065724  104456                                                                          TRAP    C$ERHRD
065726  001325                                                                          .WORD   725
065730  070644                                                                          .WORD   T35RWN
```

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      065732  012126                                                        .WORD   PKTSSR
 4740 065734                  30$:    CKLOOP                              ;LOOP IF SELECTED
      065734  104406                                                        TRAP    C$CLP1
 4741 065736  013701  067420          MOV     T35BFR+6,R1                 ;PICK UP XSTO
 4742 065742  010102                  MOV     R1,R2                       ;SET UP EXPECTED
 4743 065744  052702  000002          BIS     #BIT1,R2                    ;SET BOT BIT IN EXPECTED
 4744 065750  020102                  CMP     R1,R2                       ;DOES EXP = REC'D
 4745 065752  001406                  BEQ     40$                         ;BR, IF EQUAL (OK)
 4746 065754  005237  002214          INC     FATFLG                              ;ERROR COUNT
 4750 065760                          ERRHRD  ERRNO,T35BOT,EXPREC         ;TAPE NOT AT BOT AFTER REWIND
      065760  104456                                                        TRAP    C$ERHRD
      065762  001326                                                        .WORD   726
      065764  070340                                                        .WORD   T35BOT
      065766  015554                                                        .WORD   EXPREC
 4751 065770                  40$:    CKLOOP                              ;LOOP IF SELECTED
      065770  104406                                                        TRAP    C$CLP1
 4752 065772  012703  000024          MOV     #20.,R3                     ;STARTING RECORD SIZE
 4753 065776  013737  003116  067512  MOV     FREE,T35WB                  ;STARTING WRITE BUFFER ADDRESS
 4754
 4755                                 ;*****************************************
 4756                                 ;
 4757                                 ;WRITE DATA,CVC=1,ACK COMMAND
 4758                                 ;
 4759                                 ;*****************************************
 4760
 4761 066004  012737  140005  067510 65$:    MOV     #140005,T35PK3              ;WRITE DATA,CVC=1,ACK COMMAND
 4762 066012  012704  067510          MOV     #T35PK3,R4                  ;SET UP R4 WITH PACKET ADDRESS
 4763 066016  010300                  MOV     R3,R0                       ;SET PATTERN IN CORRECT REGISTER
 4764 066020  004737  017502          JSR     PC,FILLMEM                  ;FILL MEMORY WITH RECORD SIZE
 4765 066024  010337  067516          MOV     R3,T35SZ                    ;SET UP RECORD SIZE IN PACKET
 4766 066030  010465  000000          MOV     R4,TSDB(R5)                 ;ISSUE COMMAND
 4767 066034  004737  016330          JSR     PC,WAITF                    ;WAIT FOR SSR TO SET
 4768 066040  016501  000002          MOV     TSSR(R5),R1                 ;GET TSSR CONTENTS
 4769 066044  012702  000200          MOV     #SSR,R2                     ;SET UP EXPECTED
 4770 066050  020102                  CMP     R1,R2                       ;ARE THEY EQUAL
 4771 066052  001406                  BEQ     80$                         ;BR, IF OK
 4772 066054  005237  002214          INC     FATFLG                              ;ERROR COUNT
 4776 066060                          ERRHRD  ERRNO,T35WDC,PKTSSR         ;TSSR INCORRECT AFTER WRITE DATA
      066060  104456                                                                TRAP    C$ERHRD
      066062  001327                                                                .WORD   727
      066064  071200                                                                .WORD   T35WDC
      066066  012126                                                                .WORD   PKTSSR
 4777 066070                  80$:    CKLOOP                              ;LOOP IF SELECTED
      066070  104406                                                                TRAP    C$CLP1
 4778
 4779                                 ;*****************************************
 4780                                 ;
 4781                                 ;WRITE DATA RETRY,CVC=1,ACK COMMAND
 4782                                 ;
 4783                                 ;*****************************************
 4784
 4785 066072  012737  141005  067510          MOV     #141005,T35PK3          ;WRITE DATA RETRY,CVC=1,ACK COMMAND
 4786 066100  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 4787 066104  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 4788 066110  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 4789 066114  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 4790 066120  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
```

```
4791 066122  001406                    BEQ     90$                     ;BR, IF OK
4792 066124  005237  002214              INC     FATFLG                          ;ERROR COUNT
4796 066130                             ERRHRD  ERRNO,T35WRF,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA RETRY
     066130  104456                                                             TRAP    C$ERHRD
     066132  001330                                                             .WORD   728
     066134  072245                                                             .WORD   T35WRF
     066136  012126                                                             .WORD   PKTSSR
4797 066140                     90$:    CKLOOP                          ;LOOP IF SELECTED
     066140  104406                                                             TRAP    C$CLP1
4798 066142  005723                    TST     (R3)+                   ;BUMP RECORD SIZE COUNTER
4799 066144  020327  000052              CMP     R3,#42.                 ;AT 42 SIZE YET
4800 066150  001315                    BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
4801 066152  004737  011074              JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4802 066156  103411                    BCS     230$                    ;BR, IF NO PROBLEM
4803 066160  010001                    MOV     R0,R1                   ;SAVE TSSR
4804 066162  016501  000002              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4805 066166  005237  002214              INC     FATFLG                          ;ERROR COUNT
4809 066172                             ERRHRD  ERRNO,T35RWN,EXPREC     ;REWIND NOT ACCEPTED
     066172  104456                                                             TRAP    C$ERHRD
     066174  001331                                                             .WORD   729
     066176  070644                                                             .WORD   T35RWN
     066200  015554                                                             .WORD   EXPREC
4810 066202                     230$:   CKLOOP                          ;LOOP IF SELECTED
     066202  104406                                                             TRAP    C$CLP1
4811 066204  013701  067420              MOV     T35BFR+6,R1             ;PICK UP XSTO
4812 066210  010102                    MOV     R1,R2                   ;SET UP EXPECTED
4813 066212  052702  000002              BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4814 066216  020102                    CMP     R1,R2                   ;DOES EXP = REC'D
4815 066220  001406                    BEQ     240$                    ;BR, IF EQUAL (OK)
4816 066222  005237  002214              INC     FATFLG                          ;ERROR COUNT
4820 066226                             ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     066226  104456                                                             TRAP    C$ERHRD
     066230  001332                                                             .WORD   730
     066232  070340                                                             .WORD   T35BOT
     066234  015554                                                             .WORD   EXPREC
4821 066236                     240$:   CKLOOP                          ;LOOP IF SELECTED
     066236  104406                                                             TRAP    C$CLP1
4822 066240  012703  000024              MOV     #20.,R3                 ;STARTING RECORD SIZE
4823 066244  013737  003116  067512      MOV     FREE,T35RB              ;STARTING READ BUFFER ADDRESS
4824
4825                            ;*****************************************
4826                            ;
4827                            ;READ DATA,ACK COMMAND
4828                            ;
4829                            ;*****************************************
4830
4831 066252  012737  100001  067510  265$:   MOV     #100001,T35PK3          ;READ DATA,ACK COMMAND
4832 066260  012704  067510              MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4833 066264  012700  177777              MOV     #177777,R0              ;SET PATTERN IN CORRECT REGISTER
4834 066270  004737  017502              JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
4835 066274  010337  067516              MOV     R3,T35SZ                ;SET UP RECORD SIZE IN PACKET
4836 066300  010465  000000              MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4837 066304  004737  016330              JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4838 066310  016501  000002              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4839 066314  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED
4840 066320  020102                    CMP     R1,R2                   ;ARE THEY EQUAL
4841 066322  001406                    BEQ     280$                    ;BR, IF OK
```

```
4842 066324  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4846 066330                                  ERRHRD  ERRNO,T35RDF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     066330  104456                                                              TRAP    C$ERHRD
     066332  001333                                                              .WORD   731
     066334  067632                                                              .WORD   T35RDF
     066336  012126                                                              .WORD   PKTSSR
4847 066340                          280$:   CKLOOP                          ;LOOP IF SELECTED
     066340  104406                                                              TRAP    C$CLP1
4848 066342  013702  003116                  MOV     FREE,R2                 ;GET BUFFER ADDRESS
4849 066346  010304                          MOV     R3,R4                   ;GET RECORD SIZE
4850 066350  162704  000024                  SUB     #20.,R4                 ;POINT BACK TO 1ST RECORD
4851 066354  060204                  285$:   ADD     R2,R4                   ;POINT TO 1ST LOC IN BUFFER
4852 066356  021403                          CMP     (R4),R3                 ;DATA WRITTEN = READ
4853 066360  001410                          BEQ     290$                    ;BR, IF DATA OK (GOOD)
4854 066362  011401                          MOV     (R4),R1                 ;PICK UP BAD DATA
4855 066364  010302                          MOV     R3,R2                   ;SET UP EXPECTED
4856 066366  005237  002214                  INC     FATFLG                          ;ERROR COUNT
4860 066372                                  ERRHRD  ERRNO,T35DTA,EXPREC     ;DATA IN BUFFER NOT CORRECT
     066372  104456                                                              TRAP    C$ERHRD
     066374  001334                                                              .WORD   732
     066376  072325                                                              .WORD   T35DTA
     066400  015554                                                              .WORD   EXPREC
4861 066402                          290$:   CKLOOP                          ;LOOP IF SELECTED
     066402  104406                                                              TRAP    C$CLP1
4862 066404  005724                          TST     (R4)+                   ;BUMP TO NEXT ADDRESS
4863 066406  160204                          SUB     R2,R4                   ;BACK TO RECORD SIZE
4864 066410  020403                          CMP     R4,R3                   ;AT END OF RECORD YET
4865 066412  001360                          BNE     285$                    ;BR, IF MORE DATA TO CHECK
4866 066414  005723                          TST     (R3)+                   ;BUMP RECORD SIZE
4867 066416  020327  000050                  CMP     R3,#40.                 ;DONE YET
4868 066422  001313                          BNE     265$                    ;BR, IF NOT DONE YET (MORE READS)
4869 066424                          300$:   CKLOOP                          ;LOOP IF SELECTED
     066424  104406                                                              TRAP    C$CLP1
4870 066426                          330$:
4871 066426                                  ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     066426                                                                      L10066:
     066426  104403                                                              TRAP    C$ESUB
4872 066430  023727  002214  000017                  CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
4873 066436  103402                                  BLO     999$                    ;BR, IF LESS THAN 25
4874 066440  004737  017262                          JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
4875 066444                          999$:
```

```
                                        ;+
                                        ;
                                        ;TEST 7, SUBTEST 4
                                        ;
                                        ;       VERIFIES THAT A TAPE-MOTION COMMAND (READ, WRITE, POSITION),
                                        ;       ISSUED IMMEDIATATELY AFTER TERMINATION OF A REWIND WITH
                                        ;       IMMEDIATE INTERRUPT COMMAND, IS "QUEUED" BY THE CONTROLLER AND
                                        ;       THEN EXECUTES PROPERLY.
                                        ;
                                        ;
                                        ;
                                        ;-
 4889 066444                                    BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      066444                                                                                    T7.4:
      066444  104402                                                                              TRAP    C$BSUB
 4890 066446  004737  073164                    JSR     PC,T35REST              ;SET COMMAND PACKET
 4891 066452  004737  073256                    JSR     PC,T35RT2               ;SET UP OTHER COMMAND PACKET
 4892 066456  004737  073320                    JSR     PC,T35RT3               ;SET UP OTHER COMMAND PACKET
 4893 066462  012737  176750  067542            MOV     #65000.,T35DLY          ;SET UP DELAY COUNTER
 4894 066470  004737  016054            10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 4895 066474  103426                            BCS     20$                     ;BR IF INIT WAS OK
 4896 066476                                    DELAY   250                     ;DELAY ABOUT .25 SEC
      066476  012727  000250                                                                   MOV     #250,(PC)+
      066502  000000                                                                          .WORD   0
      066504  013727  002116                                                                   MOV     L$DLY,(PC)+
      066510  000000                                                                          .WORD   0
      066512  005367  177772                                                                   DEC     -6(PC)
      066516  001375                                                                          BNE     .-4
      066520  005367  177756                                                                   DEC     -22(PC)
      066524  001367                                                                          BNE     .-20
 4897 066526  005337  067542                    DEC     T35DLY                  ;BUMP COUNTER
 4898 066532  001356                            BNE     10$                     ;BR, IF COUNTER NOT DONE
 4899 066534  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 4903 066540  010001                            MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 4904 066542                                    ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      066542  104455                                                                           TRAP    C$ERDF
      066544  001335                                                                          .WORD   733
      066546  003646                                                                          .WORD   SFIERR
      066550  012114                                                                          .WORD   SFIMSG
 4905 066552  013737  002174  067410    20$:    MOV     UNITN,T35DSW            ;SET UP UNIT (DRIVE) NUMBER
 4906 066560  012704  067370                    MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 4907 066564  004737  010742                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 4908 066570  103407                            BCS     23$                     ;BR, IF COMMAND ISSUED OK
 4909 066572  005237  002214                    INC     FATFLG                          ;ERROR COUNT
 4913 066576  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 4914 066600                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      066600  104456                                                                           TRAP    C$ERHRD
      066602  001336                                                                          .WORD   734
      066604  005052                                                                          .WORD   WRTMSG
      066606  012114                                                                          .WORD   SFIMSG
 4915 066610                            23$:    CKLOOP                          ;LOOP IF SELECTED
      066610  104406                                                                           TRAP    C$CLP1
 4916 066612  004737  011074                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 4917 066616  103411                            BCS     30$                     ;BR, IF NO PROBLEM
 4918 066620  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 4919 066624  010004                            MOV     R0,R4                   ;GET PACKET ADDRESS
 4920 066626  005237  002214                    INC     FATFLG                          ;ERROR COUNT
```

```
4924 066632                          ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
     066632  104456                                                          TRAP    C$ERHRD
     066634  001337                                                          .WORD   735
     066636  070644                                                          .WORD   T35RWN
     066640  012126                                                          .WORD   PKTSSR
4925 066642                     30$:  CKLOOP                          ;LOOP IF SELECTED
     066642  104406                                                          TRAP    C$CLP1
4926 066644  013701  067420           MOV     T35BFR+6,R1             ;PICK UP XSTO
4927 066650  010102                   MOV     R1,R2                   ;SET UP EXPECTED
4928 066652  052702  000002           BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4929 066656  020102                   CMP     R1,R2                   ;DOES EXP = REC'D
4930 066660  001406                   BEQ     40$                     ;BR, IF EQUAL (OK)
4931 066662  005237  002214           INC     FATFLG                          ;ERROR COUNT
4935 066666                          ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     066666  104456                                                          TRAP    C$ERHRD
     066670  001340                                                          .WORD   736
     066672  070340                                                          .WORD   T35BOT
     066674  015554                                                          .WORD   EXPREC
4936 066676                     40$:  CKLOOP                          ;LOOP IF SELECTED
     066676  104406                                                          TRAP    C$CLP1
4937 066700  012703  000024           MOV     #20.,R3                 ;STARTING RECORD SIZE
4938 066704  013737  003116  067512   MOV     FREE,T35WB              ;STARTING WRITE BUFFER ADDRESS
4939
4940                                 ;****************************************
4941                                 ;
4942                                 ;WRITE DATA,CVC=1,ACK COMMAND
4943                                 ;
4944                                 ;****************************************
4945
4946 066712  012737  140005  067510 65$:  MOV     #140005,T35PK3          ;WRITE DATA,CVC=1,ACK COMMAND
4947 066720  012704  067510           MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4948 066724  010300                   MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
4949 066726  004737  017502           JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
4950 066732  010337  067516           MOV     R3,T35SZ                ;SET UP RECORD SIZE IN PACKET
4951 066736  010465  000000           MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4952 066742  004737  016330           JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4953 066746  016501  000002           MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4954 066752  012702  000200           MOV     #SSR,R2                 ;SET UP EXPECTED
4955 066756  020102                   CMP     R1,R2                   ;ARE THEY EQUAL
4956 066760  001406                   BEQ     80$                     ;BR, IF OK
4957 066762  005237  002214           INC     FATFLG                          ;ERROR COUNT
4961 066766                          ERRHRD  ERRNO,T35WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     066766  104456                                                          TRAP    C$ERHRD
     066770  001341                                                          .WORD   737
     066772  071200                                                          .WORD   T35WDC
     066774  012126                                                          .WORD   PKTSSR
4962 066776                     80$:  CKLOOP                          ;LOOP IF SELECTED
     066776  104406                                                          TRAP    C$CLP1
4963
4964                                 ;****************************************
4965                                 ;
4966                                 ;WRITE DATA RETRY,ACK,SWB=1 COMMAND
4967                                 ;
4968                                 ;****************************************
4969
4970 067000  012737  111005  067510          MOV     #111005,T35PK3          ;WRITE DATA RETRY,ACK,SWB=1 COMMAND
4971 067006  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
```

```
4972 067012  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4973 067016  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4974 067022  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
4975 067026  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
4976 067030  001406                        BEQ     90$                     ;BR, IF OK
4977 067032  005237  002214                INC     FATFLG                          ;ERROR COUNT
4981 067036                                ERRHRD  ERRNO,T35WRF,EXPREC     ;TSSR INCORRECT AFTER WRITE DATA RETRY
     067036  104456                                                                TRAP    C$ERHRD
     067040  001342                                                                .WORD   738
     067042  072245                                                                .WORD   T35WRF
     067044  015554                                                                .WORD   EXPREC
4982 067046                        90$:    CKLOOP                          ;LOOP IF SELECTED
     067046  104406                                                                TRAP    C$CLP1
4983 067050  005723                        TST     (R3)+                   ;BUMP RECORD SIZE COUNTER
4984 067052  020327  000052                CMP     R3,#42.                 ;AT 42 SIZE YET
4985 067056  001315                        BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
4986 067060  004737  011074                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4987 067064  103411                        BCS     230$                    ;BR, IF NO PROBLEM
4988 067066  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4989 067072  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
4990 067074  005237  002214                INC     FATFLG                          ;ERROR COUNT
4994 067100                                ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
     067100  104456                                                                TRAP    C$ERHRD
     067102  001343                                                                .WORD   739
     067104  070644                                                                .WORD   T35RWN
     067106  012126                                                                .WORD   PKTSSR
4995 067110                        230$:   CKLOOP                          ;LOOP IF SELECTED
     067110  104406                                                                TRAP    C$CLP1
4996 067112  013701  067420                MOV     T35BFR+6,R1             ;PICK UP XSTO
4997 067116  010102                        MOV     R1,R2                   ;SET UP EXPECTED
4998 067120  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4999 067124  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
5000 067126  001406                        BEQ     240$                    ;BR, IF EQUAL (OK)
5001 067130  005237  002214                INC     FATFLG                          ;ERROR COUNT
5005 067134                                ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     067134  104456                                                                TRAP    C$ERHRD
     067136  001344                                                                .WORD   740
     067140  070340                                                                .WORD   T35BOT
     067142  015554                                                                .WORD   EXPREC
5006 067144                        240$:   CKLOOP                          ;LOOP IF SELECTED
     067144  104406                                                                TRAP    C$CLP1
5007 067146  012703  000024                MOV     #20.,R3                 ;STARTING RECORD SIZE
5008 067152  013737  003116  067512        MOV     FREE,T35RB              ;STARTING READ BUFFER ADDRESS
5009
5010                               ;*****************************************
5011                               ;
5012                               ;READ DATA,ACK COMMAND
5013                               ;
5014                               ;*****************************************
5015
5016 067160  012737  100001  067510  265$:   MOV     #100001,T35PK3          ;READ DATA,ACK COMMAND
5017 067166  012704  067510                MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5018 067172  010337  067516                MOV     R3,T35SZ                ;SET UP RECORD SIZE IN PACKET
5019 067176  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5020 067202  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5021 067206  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5022 067212  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
```

```
5023 067216  020102                    CMP     R1,R2                   ;ARE THEY EQUAL
5024 067220  001406                    BEQ     280$                    ;BR, IF OK
5025 067222  005237  002214            INC     FATFLG                          ;ERROR COUNT
5029 067226                            ERRHRD  ERRNO,T35RDF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     067226  104456                                                            TRAP    C$ERHRD
     067230  001345                                                            .WORD   741
     067232  067632                                                            .WORD   T35RDF
     067234  012126                                                            .WORD   PKTSSR
5030 067236                    280$:   CKLOOP                          ;LOOP IF SELECTED
     067236  104406                                                            TRAP    C$CLP1
5031 067240  013702  003116            MOV     FREE,R2                 ;GET BUFFER ADDRESS
5032 067244  010304                    MOV     R3,R4                   ;GET RECORD SIZE
5033 067246  162704  000024            SUB     #20.,R4                 ;POINT BACK TO 1ST RECORD
5034 067252  060204            285$:   ADD     R2,R4                   ;POINT TO 1ST LOC IN BUFFER
5035 067254  000303                    SWAB    R3                      ;SWAP BYTES SWB=1 ETC.
5036 067256  021403                    CMP     (R4),R3                 ;DATA WRITTEN = READ
5037 067260  001410                    BEQ     290$                    ;BR, IF DATA OK (GOOD)
5038 067262  011401                    MOV     (R4),R1                 ;PICK UP BAD DATA
5039 067264  010302                    MOV     R3,R2                   ;SET UP EXPECTED
5040 067266  005237  002214            INC     FATFLG                          ;ERROR COUNT
5044 067272                            ERRHRD  ERRNO,T35DTA,EXPREC     ;DATA IN BUFFER NOT CORRECT
     067272  104456                                                            TRAP    C$ERHRD
     067274  001346                                                            .WORD   742
     067276  072325                                                            .WORD   T35DTA
     067300  015554                                                            .WORD   EXPREC
5045 067302                    290$:   CKLOOP                          ;LOOP IF SELECTED
     067302  104406                                                            TRAP    C$CLP1
5046 067304  005724                    TST     (R4)+                   ;BUMP TO NEXT ADDRESS
5047 067306  160204                    SUB     R2,R4                   ;BACK TO RECORD SIZE
5048 067310  000303                    SWAB    R3                      ;PUT R3 BACK INTO SHAPE
5049 067312  020403                    CMP     R4,R3                   ;AT END OF RECORD YET
5050 067314  001356                    BNE     285$                    ;BR, IF MORE DATA TO CHECK
5051 067316  005723                    TST     (R3)+                   ;BUMP RECORD SIZE
5052 067320  020327  000050            CMP     R3,#40.                 ;DONE YET
5053 067324  001315                    BNE     265$                    ;BR, IF NOT DONE YET (MORE READS)
5054 067326                    300$:   CKLOOP                          ;LOOP IF SELECTED
     067326  104406                                                            TRAP    C$CLP1
5055 067330                            ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     067330                                                                 L10067:
     067330  104403                                                            TRAP    C$ESUB
5056 067332  023727  002214  000017            CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
5057 067340  103402                            BLO     999$                    ;BR, IF LESS THAN 25
5058 067342  004737  017262                    JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
5059 067346                    999$:
5060                           ;
5061                           ;
5062                           ;
5063 067346  004737  016536            JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
5064 067352  103002                    BCC     163$                    ;BR, IF NO LOOP REQUIRED
5065 067354  000137  063444            JMP     T35LOOP                 ;EXECUTE AGAIN
5066 067360                    163$:   EXIT    TST                     ;ALL DONE THIS TEST
     067360  104432                                                            TRAP    C$EXIT
     067362  003760                                                            .WORD   L10063-.
```

```
                                ;+
                                ;LOCAL STORAGE FOR THIS TEST
                                ;-
                                        .=<.+10>&177770
067370                          T35PACKET:                      ;COMMAND PACKET FOR TEST
067370  100004                          .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
067372  067400                          .WORD   T35DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
067374  000000                          .WORD   0
067376  000012                          .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
067400                          T35DATA:                        ;CHARACTERISTICS DATA BLOCK
067400  067412                          .WORD   T35BFR          ;ADDRESS OF MESSAGE BUFFER
067402  000000                          .WORD   0
067404  000024                          .WORD   20.             ;LENGTH OF MESSAGE BUFFER
067406  000000                          .WORD   0
067410  000000                  T35DSW: .WORD   0               ;SELECT DRIVE 0
067412                          T35BFR: .BLKW   25.             ;MESSAGE BUFFER
                                ;
                                ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                ;
                                        .=<.+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 XST0'
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 XST0)'
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'
071035  104  162  151  T35OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
071110  124  123  123  T35WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
071200  124  123  123  T35WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
071253  103  126  103  T35VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
071326  124  123  102  T35BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
071401  127  122  111  T35WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
071470  122  145  141  T35LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XST0'
071552  122  145  141  T35LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XST0'
071634  122  145  163  T35PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
071722  122  145  141  T35TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
072010  127  122  111  T35NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
072106  124  123  123  T35SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
072163  124  123  123  T35TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
072245  124  123  123  T35WRF: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command'
072325  104  141  164  T35DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
072422  124  123  123  T35SSR: .ASCIZ  'TSSR Incorrect After WRITE MISCELLANEOUS Command'
072503  115  117  124  T35MOT: .ASCIZ  'MOT Bit (XST0) Not Set During Rewind (Extended Features Mode)'
072601  111  156  164  T35INT: .ASCIZ  'Interrupt Received After REWIND Command (IE Bit Not Set)'
072672  117  120  115  T35OPM: .ASCIZ  'OPM Bit (XST2) Not Set During Rewind (Extended Features Mode)'
072770  124  123  123  T35RWE: .ASCIZ  'TSSR Incorrect After Extended Features REWIND Command'
073056  116  157  040  T35NIN: .ASCIZ  'No Interrupt Detected After REWIND IMMEDIATE'
073133  105  170  164  TST35ID:        .ASCIZ  'Extended Mode Functions'
                              .EVEN
                                ;+
                                ;
                                ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                ;WRITE SUBSYSTEM MEMORY COMMAND
                                ;
                                ;-

073164                          T35REST:
073164                                SAVREG                          ;SAVE THE REGISTERS
073170  012701  067370                MOV     #T35PACKET,R1           ;START OF THE PACKET
073174  012721  100004                MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
073200  012721  067400                MOV     #T35DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
073204  005021                        CLR     (R1)+                   ;EXTENDED ADDRESS
```

```
 5189 073206  012721  000012                    MOV     #10.,(R1)+      ;SIZE OF DATA BLOCK IN BYTES
 5190 073212  012721  067412                    MOV     #T35BFR,(R1)+   ;ADDRESS OF MESSAGE BUFFER
 5191 073216  005021                            CLR     (R1)+
 5192 073220  012721  000024                    MOV     #20.,(R1)+      ;LENGTH OF MESSAGE BUFFER
 5193 073224  005021                            CLR     (R1)+
 5194 073226  012711  000000                    MOV     #0,(R1)         ;SELECT DRIVE ZERO
 5195 073232  012702  000030                    MOV     #24.,R2         ;NUMBER OF LOCATIONS TO BE CLEARED
 5196 073236  012762  177777  067412  64$:     MOV     #177777,T35BFR(R2)  ;ALL ONES TO MESSAGE BUFFER
 5197 073244  005742                            TST     -(R2)           ;NEXT LOCATION
 5198 073246  022702  000000                    CMP     #0,R2           ;AT END OF LOOP YET
 5199 073252  001371                            BNE     64$             ;KEEP GOING UNTIL DONE
 5200 073254  000207                            RTS     PC              ;RETURN
 5201
 5202
 5203 073256                          T35RT2:
 5204 073256                                  SAVREG                  ;SAVE THE REGISTERS
 5205 073262  012701  067500                    MOV     #T35PK2,R1      ;START OF THE PACKET
 5206 073266  012721  100006                    MOV     #100006,(R1)+   ;WRITE SUBSYSTEM MEM. WITH ACK,
 5207 073272  012721  067520                    MOV     #T35BF2,(R1)+   ;ADDRESS OF DATA BLOCK
 5208 073276  005021                            CLR     (R1)+           ;EXTENDED ADDRESS
 5209 073300  012721  000006                    MOV     #6.,(R1)+       ;SIZE OF DATA BLOCK IN BYTES
 5210 073304  005021                            CLR     (R1)+
 5211 073306  012701  067520                    MOV     #T35BF2,R1      ;POINT TO DATA SEL AREA
 5212 073312  005021                            CLR     (R1)+
 5213 073314  005011                            CLR     (R1)
 5214 073316  000207                            RTS     PC              ;RETURN
 5215 073320                          T35RT3:
 5216 073320
 5217 073324  012701  067510                  SAVREG                    ;SAVE REGISTERS
 5218 073330  005021                          MOV     #T35PK3,R1        ;SET UP POINTER ADDRESS
 5219 073332  005021                          CLR     (R1)+             ;COMMAND SPACE
 5220 073334  005021                          CLR     (R1)+             ;ADDRESS OF DATA BLOCK
 5221 073336  005011                          CLR     (R1)+             ;EXTENDED ADDRESS
 5222 073340  000207                          CLR     (R1)              ;SIZE OF DATA TRANSFER BLOCK
 5223 073342                                  RTS     PC                ;RETURN
      073342                                  ENDTST
      073342                                                  L10063:
      073342  104401                                                 TRAP    C$ETST
```

SEQ 0246

```
5226                                    .SBTTL  TEST  8: RECORD BUFFERING
5227
5228                    ;+
5229                    ;
5230                    ;  THIS TEST VERIFIES THAT RECORD BUFFERING, USED FOR WRITE DATA
5231                    ;  AND READ NEXT COMMANDS, OPERATES PROPERLY AND IS PROPERLY
5232                    ;  CONTROLLED BY THE EXTENDED CHARACTERISTICS DATA WORD.  IF THE
5233                    ;  M7196 CONTROLLER MODULE IS NOT ALREADY IN EXTENDED FEATURES MODE
5234                    ;  (AS CONTROLLED BY THE DIP SWITCH ON THE MODULE), IT IS PLACED
5235                    ;  INTO THAT MODE BY INVERTING THE SENSE OF THE SWITCH USING THE
5236                    ;  WRITE SUBSYSTEM MEMORY COMMAND.  NOTE THAT RECORD BUFFERING HAS
5237                    ;  BEEN ENABLED IN PREVIOUS TESTS OF READ AND WRITE AND SO HAS BEEN
5238                    ;  PARTIALLY TESTED ALREADY.  THIS TEST VERIFIES THAT BUFFERING IS
5239                    ;  ACTUALLY OPERATING.  THE FOLLOWING SUBTESTS ARE PERFORMED:
5240                    ;
5241                    ;  VERIFIES THAT NORMAL BUFFERING ON WRITE DATA COMMANDS OPERATES
5242                    ;  PROPERLY AT LOW TAPE SPEED.  THE FOLLOWING SEQUENCE IS
5243                    ;  PERFORMED:
5244                    ;
5245                    ;       1.  THE TAPE IS REWOUND.
5246                    ;
5247                    ;       2.  BUFFERING IS DISABLED AND LOW TAPE SPEED IS SELECTED
5248                    ;           (VIA WRITE CHARACTERISTICS COMMAND).
5249                    ;
5250                    ;       3.  AN INITIAL RECORD IS WRITTEN ONTO THE TAPE IN ORDER TO
5251                    ;           MOVE THE TAPE OFF BOT.
5252                    ;
5253                    ;       4.  THE PROGRAM DELAYS FOR A TIME SUFFICIENT TO ALLOW THE
5254                    ;           TAPE TO REPOSITION AND COME TO REST.
5255                    ;
5256                    ;       5.  A WRITE DATA COMMAND, WITH A BYTE COUNT LESS THAN 3.5K,
5257                    ;           IS ISSUED, AND THE PROGRAM COUNTS, IN A WAIT LOOP, THE
5258                    ;           TIME IT TAKES TO RECEIVE COMMAND TERMINATION.  THIS
5259                    ;           SHOULD BE A RELATIVELY LONG TIME SINCE BUFFERING IS
5260                    ;           DISABLED.
5261                    ;
5262                    ;       6.  BUFFERING IS ENABLED.
5263                    ;
5264                    ;       7.  THE WRITE DATA COMMAND IS AGAIN ISSUED, WITH THE SAME
5265                    ;           BYTE COUNT AS THAT USED PREVIOUSLY.  THE TIME TO
5266                    ;           COMPLETION IS AGAIN MEASURED.
5267                    ;
5268                    ;       8.  THE COMPLETION TIMES MEASURED FOR THE NON-BUFFERED AND
5269                    ;           BUFFERED CASES ARE COMPARED.  IT IS VERIFIED THAT THE
5270                    ;           TIME MEASURED FOR THE NON-BUFFERED CASE IS MUCH LARGER
5271                    ;           THAN THAT MEASURED FOR THE BUFFERED CASE.
5272                    ;
5273                    ;       9.  THE PREVIOUS STEPS, EXCEPT FOR REWINDING AND WRITING A
5274                    ;           RECORD OFF BOT, ARE REPEATED FOR VARIOUS BYTE COUNTS IN
5275                    ;           THE RANGE 20 THROUGH 3.5K.
5276                    ;
5277                    ;
5278                    ;THE TEST CONSISTS OF THE FOLLOWING 2 SUBTESTS
5279                    ;
5280                    ;
5281                    ;-
5282
```

```
 5283 073344                                BGNTST
      073344                                                                T8::
 5284 073344  012737  006354  002172        MOV     #EPRT1,EPRTSW         ;PRIMARY ERROR MESSAGE
 5285 073352  004737  017354                JSR     PC,KTOFF              ;TURN OFF KT11
 5290 073356  012700  100731                MOV     #TST36ID,R0           ;ASCII MESSAGE TO IDENTIFY TEST
 5291 073362  004737  016570                JSR     PC,TSTSETUP           ;DO INITIAL TEST SETUP
 5292 073366  012737  000005  002210        MOV     #5,LOOPCNT            ;PERFORM 5 ITERATIONS
 5293 073374  005037  075726                CLR     T36CNT                ;CLEAR TAPE RECORD COUNTER
 5294                                ;+
 5295                                ;
 5296                                ;TEST 8, SUBTEST 1
 5297                                ;
 5298                                ;
 5299                                ;VERIFIES THAT A WRITE DATA RETRY COMMAND ISSUED WHILE
 5300                                ;THE TAPE IS POSITIONED AT BOT CAUSES FUNCTION REJECT
 5301                                ;TERMINATION, WITH THE NON-EXECUTABLE FUNCTION (NEF)
 5302                                ;ERROR BIT SET.
 5303                                ;
 5304                                ;
 5305                                ;-
 5306
 5307 073400                        T36LOOP:
 5308 073400                                BGNSUB                        ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      073400                                                                T8.1:
      073400  104402                                                                  TRAP    C$BSUB
 5309 073402  004737  100752                JSR     PC,T36REST            ;SET COMMAND PACKET
 5310 073406  004737  101044                JSR     PC,T36RT2             ;SET UP OTHER COMMAND PACKET
 5311 073412  004737  101106                JSR     PC,T36RT3             ;SET UP OTHER COMMAND PACKET
 5312 073416  012737  176750  075732        MOV     #65000.,T36DLY        ;SET UP DELAY COUNTER
 5313 073424  005037  075726                CLR     T36CNT                ;CLEAR COUNTER
 5314 073430  004737  016054        10$:    JSR     PC,SOFINIT            ;DO INITIALIZE ON CONTROLLER
 5315 073434  103426                        BCS     20$                   ;BR IF INIT WAS OK
 5316 073436                                DELAY   250                   ;DELAY ABOUT .25 SEC
      073436  012727  000250                                                        MOV     #250,(PC)+
      073442  000000                                                                .WORD   0
      073444  013727  002116                                                        MOV     L$DLY,(PC)+
      073450  000000                                                                .WORD   0
      073452  005367  177772                                                        DEC     -6(PC)
      073456  001375                                                                BNE     .-4
      073460  005367  177756                                                        DEC     -22(PC)
      073464  001367                                                                BNE     .-20
 5317 073466  005337  075732                DEC     T36DLY                ;BUMP COUNTER
 5318 073472  001356                        BNE     10$                   ;BR, IF COUNTER NOT DONE
 5319 073474  005237  002214                INC     FATFLG                        ;ERROR COUNT
 5323 073500  010001                        MOV     R0,R1                 ;CONTENTS OF TSSR REGISTER
 5324 073502                                ERRDF   ERRNO,SFIERR,SFIMSG   ;FATAL ERROR TSSR WAS NOT OK
      073502  104455                                                                TRAP    C$ERDF
      073504  001441                                                                .WORD   801
      073506  003646                                                                .WORD   SFIERR
      073510  012114                                                                .WORD   SFIMSG
 5325 073512  013737  002174  075600  20$:    MOV     UNITN,T36DSW          ;SET UP DRIVE NUMBER
 5326 073520  012704  075560                MOV     #T36PACKET,R4         ;SUBROUTINE NEEDS PACKET ADDRESS
 5327 073524  004737  010742                JSR     PC,WRTCHR             ;ISSUE WRITE CHARACTERISTICS
 5328 073530  103407                        BCS     25$                   ;BR, IF COMMAND ISSUED OK
 5329 073532  005237  002214                INC     FATFLG                        ;ERROR COUNT
 5333 073536  010001                        MOV     R0,R1                 ;SAVE CONTENTS OF TSSR
 5334 073540                                ERRHRD  ERRNO,WRTMSG,SFIMSG   ;WRITE CHARACTERISTISC FAILED
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                073540  104456                                                          TRAP    C$ERHRD
                073542  001442                                                          .WORD   802
                073544  005052                                                          .WORD   WRTMSG
                073546  012114                                                          .WORD   SFIMSG
5335            073550                  25$:    CKLOOP                  ;LOOP IF SELECTED
                073550  104406                                                          TRAP    C$CLP1
5336            073552  004737  011074          JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
5337            073556  103407          BCS     30$                     ;BR, IF NO PROBLEM
5338            073560  010004          MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
5339            073562  005237  002214  INC     FATFLG                          ;ERROR COUNT
5343            073566          ERRHRD  ERRNO,T36RWN,PKTSSR     ;REWIND NOT ACCEPTED
                073566  104456                                                          TRAP    C$ERHRD
                073570  001443                                                          .WORD   803
                073572  077153                                                          .WORD   T36RWN
                073574  012126                                                          .WORD   PKTSSR
5344            073576                  30$:    CKLOOP                  ;LOOP IF SELECTED
                073576  104406                                                          TRAP    C$CLP1
5345            073600  013701  075610          MOV     T36BFR+6,R1     ;PICK UP XSTO
5346            073604  010102          MOV     R1,R2                   ;SET UP EXPECTED
5347            073606  052702  000002  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5348            073612  020102          CMP     R1,R2                   ;DOES EXP = REC'D
5349            073614  001406          BEQ     40$                     ;BR, IF EQUAL (OK)
5350            073616  005237  002214  INC     FATFLG                          ;ERROR COUNT
5354            073622          ERRHRD  ERRNO,T36BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                073622  104456                                                          TRAP    C$ERHRD
                073624  001444                                                          .WORD   804
                073626  076647                                                          .WORD   T36BOT
                073630  015554                                                          .WORD   EXPREC
5355            073632                  40$:    CKLOOP                  ;LOOP IF SELECTED
                073632  104406                                                          TRAP    C$CLP1
5356            073634  013737  002174  075600  MOV     UNITN,T36DSW    ;SET UP DRIVE NUMBER
5357            073642  052737  000010  075600  BIS     #BIT3,T36DSW    ;TURN OFF BUFFERING CAPABILITY
5358            073650  012704  075560          MOV     #T36PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
5359            073654  004737  010742          JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
5360            073660  103407          BCS     50$                     ;BR, IF COMMAND ISSUED OK
5361            073662  005237  002214  INC     FATFLG                          ;ERROR COUNT
5365            073666  010001          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5366            073670          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
                073670  104456                                                          TRAP    C$ERHRD
                073672  001445                                                          .WORD   805
                073674  005052                                                          .WORD   WRTMSG
                073676  012114                                                          .WORD   SFIMSG
5367            073700                  50$:    CKLOOP                  ;LOOP IF SELECTED
                073700  104406                                                          TRAP    C$CLP1
5368            073702  012737  003720  075706  MOV     #2000.,T36SZ    ;SET UP RECORD SIZE
5369            073710  013737  003116  075702  MOV     FREE,T36WB      ;ADDRESS OF WRITE BUFFER
5370            073716  012737  140005  075700  MOV     #140005,T36PK3  ;WRITE DATA,ACK,CVC=1 COMMAND
5371            073724  012704  075700          MOV     #T36PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
5372            073730  010465  000000          MOV     R4,TSDB(R5)     ;ISSUE COMMAND
5373            073734  004737  016330          JSR     PC,WAITF        ;WAIT FOR SSR TO SET
5374            073740  016501  000002          MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
5375            073744  012702  000200          MOV     #SSR,R2         ;SET UP EXPECTED
5376            073750  020102          CMP     R1,R2                   ;ARE THEY EQUAL
5377            073752  001406          BEQ     60$                     ;BR, IF OK
5378            073754  005237  002214  INC     FATFLG                          ;ERROR COUNT
5382            073760          ERRHRD  ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
                073760  104456                                                          TRAP    C$ERHRD
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                073762  001446                                                          .WORD   806
                073764  005107                                                          .WORD   WRTERR
                073766  012126                                                          .WORD   PKTSSR
     5383       073770                          60$:    CKLOOP                  ;LOOP IF SELECTED
                073770  104406                                                          TRAP    C$CLP1
     5384       073772  012737  000012  075732          MOV     #10.,T36DLY     ;DELAY FOR TAPE TO STOP
     5385       074000                          70$:    DELAY   250             ;DELAY ROUTINE CALL
                074000  012727  000250                                                  MOV     #250,(PC)+
                074004  000000                                                          .WORD   0
                074006  013727  002116                                                  MOV     L$DLY,(PC)+
                074012  000000                                                          .WORD   0
                074014  005367  177772                                                  DEC     -6(PC)
                074020  001375                                                          BNE     .-4
                074022  005367  177756                                                  DEC     -22(PC)
                074026  001367                                                          BNE     .-20
     5386       074030  005337  075732                  DEC     T36DLY          ;BUMP COUNTER DOWN
     5387       074034  001361                          BNE     70$             ;BR, IF MORE DELAY TO GO
     5388       074036  012737  006642  075706          MOV     #3490.,T36SZ    ;SET SIZE OF TRANSFER
     5389       074044  012737  140005  075700          MOV     #140005,T36PK3  ;WRITE DATA,ACK,CVC=1 COMMAND
     5390       074052  012704  075700                  MOV     #T36PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
     5391       074056  005037  075726                  CLR     T36CNT          ;CLEAR COUNTER
     5392       074062  012737  001750  075732          MOV     #1000.,T36DLY   ;SET DROP DEAD COUNTER VALUE
     5393       074070  010465  000000                  MOV     R4,TSDB(R5)     ;ISSUE COMMAND
     5394       074074  016501  000002          80$:    MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
     5395       074100  032701  000200                  BIT     #SSR,R1         ;CHECK FOR SSR SET
     5396       074104  001021                          BNE     90$             ;BR, IF SSR IS SET
     5397       074106  005237  075726                  INC     T36CNT          ;BUMP CYCLE COUNTER
     5398       074112                                  DELAY   1               ;CUT NUMBER OF LOOPS DOWN
                074112  012727  000001                                                  MOV     #1,(PC)+
                074116  000000                                                          .WORD   0
                074120  013727  002116                                                  MOV     L$DLY,(PC)+
                074124  000000                                                          .WORD   0
                074126  005367  177772                                                  DEC     -6(PC)
                074132  001375                                                          BNE     .-4
                074134  005367  177756                                                  DEC     -22(PC)
                074140  001367                                                          BNE     .-20
     5399       074142  005337  075732                  DEC     T36DLY          ;BUMP DROP DEAD COUNTER
     5400       074146  001352                          BNE     80$             ;BR, IF THERE IS STILL TIME
     5401       074150  012702  000200          90$:    MOV     #SSR,R2         ;SET UP EXPECTED
     5402       074154  020102                          CMP     R1,R2           ;ARE THEY EQUAL
     5403       074156  001406                          BEQ     100$            ;BR, IF OK
     5404       074160  005237  002214                  INC     FATFLG                  ;ERROR COUNT
     5408       074164                                  ERRHRD  ERRNO,T36WDE,PKTSSR ;TSSR INCORRECT AFTER READ DATA
                074164  104456                                                          TRAP    C$ERHRD
                074166  001447                                                          .WORD   807
                074170  076575                                                          .WORD   T36WDE
                074172  012126                                                          .WORD   PKTSSR
     5409       074174                          100$:   CKLOOP                  ;LOOP IF SELECTED
                074174  104406                                                          TRAP    C$CLP1
     5410       074176  013737  002174  075600          MOV     UNITN,T36DSW    ;SET UP DRIVE NUMBER
     5411       074204  052737  000030  075600          BIS     #BIT3!BIT4,T36DSW ;TURN ON THE BUFFERING
     5412       074212  012704  075560                  MOV     #T36PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
     5413       074216  004737  010742                  JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
     5414       074222  103407                          BCS     110$            ;BR, IF COMMAND ISSUED OK
     5415       074224  005237  002214                  INC     FATFLG                  ;ERROR COUNT
     5419       074230  010001                          MOV     R0,R1           ;SAVE CONTENTS OF TSSR
     5420       074232                                  ERRHRD  ERRNO,WRTMSG,SFIMSG ;WRITE CHARACTERISTISC FAILED
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                                                                                TRAP    C$ERHRD
        074232  104456                                                          .WORD   808
        074234  001450                                                          .WORD   WRTMSG
        074236  005052                                                          .WORD   SFIMSG
        074240  012114
5421    074242                          110$:   CKLOOP                  ;LOOP IF SELECTED
        074242  104406                                                          TRAP    C$CLP1
5422    074244  012737  006642  075706          MOV     #3490.,T36SZ    ;SET SIZE OF TRANSFER
5423    074252  012737  140005  075700          MOV     #140005,T36PK3  ;WRITE DATA,ACK,CVC=1 COMMAND
5424    074260  012704  075700                  MOV     #T36PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
5425    074264  005037  075730                  CLR     T36CNU          ;CLEAR COUNTER
5426    074270  012737  001750  075732          MOV     #1000.,T36DLY   ;SET DROP DEAD COUNTER VALUE
5427    074276  010465  000000                  MOV     R4,TSDB(R5)     ;ISSUE COMMAND
5428    074302  016501  000002          120$:   MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
5429    074306  032701  000200                  BIT     #SSR,R1         ;CHECK FOR SSR SET
5430    074312  001021                          BNE     130$            ;BR, IF SSR IS SET
5431    074314  005237  075730                  INC     T36CNU          ;BUMP CYCLE COUNTER
5432    074320                                  DELAY   1               ;CUT NUMBER OF LOOPS DOWN
        074320  012727  000001                                                  MOV     #1,(PC)+
        074324  000000                                                          .WORD   0
        074326  013727  002116                                                  MOV     L$DLY,(PC)+
        074332  000000                                                          .WORD   0
        074334  005367  177772                                                  DEC     -6(PC)
        074340  001375                                                          BNE     .-4
        074342  005367  177756                                                  DEC     -22(PC)
        074346  001367                                                          BNE     .-20
5433    074350  005337  075732                  DEC     T36DLY          ;BUMP DROP DEAD COUNTER
5434    074354  001352                          BNE     120$            ;BR, IF THERE IS STILL TIME
5435    074356  012702  000200          130$:   MOV     #SSR,R2         ;SET UP EXPECTED
5436    074362  020102                          CMP     R1,R2           ;ARE THEY EQUAL
5437    074364  001406                          BEQ     140$            ;BR, IF OK
5438    074366  005237  002214                  INC     FATFLG                  ;ERROR COUNT
5442    074372                                  ERRHRD  ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        074372  104456                                                                  TRAP    C$ERHRD
        074374  001451                                                                  .WORD   809
        074376  005107                                                                  .WORD   WRTERR
        074400  012126                                                                  .WORD   PKTSSR
5443    074402                          140$:   CKLOOP                  ;LOOP IF SELECTED
        074402  104406                                                                  TRAP    C$CLP1
5444    074404  013701  075726                  MOV     T36CNT,R1       ;GET FIRST COUNTER
5445    074410  013702  075730                  MOV     T36CNU,R2       ;GET SECOND COUNTER
5446    074414  020201                          CMP     R2,R1           ;COMPARE EM
5447    074416  003406                          BLE     300$            ;BR, IF VALUES ARE CORRECT (OK)
5448    074420  005237  002214                  INC     FATFLG                  ;ERROR COUNT
5452    074424                                  ERRHRD  ERRNO,T36NAS,EXPREC     ;TAPE NOT AT CORRECT SPEED
        074424  104456                                                                  TRAP    C$ERHRD
        074426  001452                                                                  .WORD   810
        074430  075734                                                                  .WORD   T36NAS
        074432  015554                                                                  .WORD   EXPREC
5453    074434                          300$:   CKLOOP                  ;LOOP IF SELECTED
        074434  104406                                                                  TRAP    C$CLP1
5454    074436                                  ENDSUB
        074436                                                                  L10071:
        074436  104403                                                                  TRAP    C$ESUB
5455    074440  023727  002214  000017          CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
5456    074446  103402                          BLO     999$                    ;BR, IF LESS THAN 25
5457    074450  004737  017262                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
5458    074454                          999$:
```

```
5460                    ;+
5461                    ;
5462                    ;TEST 8, SUBTEST 2
5463                    ;
5464                    ;
5465                    ;       THIS TEST VERIFIES THAT RECORD BUFFERING, USED FOR WRITE DATA
5466                    ;       AND READ NEXT COMMANDS, OPERATES PROPERLY AND IS PROPERLY
5467                    ;       CONTROLLED BY THE EXTENDED CHARACTERISTICS DATA WORD.  IF THE
5468                    ;       M7196 CONTROLLER MODULE IS NOT ALREADY IN EXTENDED FEATURES MODE
5469                    ;       (AS CONTROLLED BY THE DIP SWITCH ON THE MODULE), IT IS PLACED
5470                    ;       INTO THAT MODE BY INVERTING THE SENSE OF THE SWITCH USING THE
5471                    ;       WRITE SUBSYSTEM MEMORY COMMAND.  NOTE THAT RECORD BUFFERING HAS
5472                    ;       BEEN ENABLED IN PREVIOUS TESTS OF READ AND WRITE AND SO HAS BEEN
5473                    ;       PARTIALLY TESTED ALREADY.  THIS TEST VERIFIES THAT BUFFERING IS
5474                    ;       ACTUALLY OPERATING.  THE FOLLOWING SUBTESTS ARE PERFORMED:
5475                    ;
5476                    ;       VERIFIES THAT NORMAL BUFFERING ON WRITE DATA COMMANDS OPERATES
5477                    ;       PROPERLY AT LOW TAPE SPEED.  THE FOLLOWING SEQUENCE IS
5478                    ;       PERFORMED:
5479                    ;
5480                    ;            1.  THE TAPE IS REWOUND.
5481                    ;
5482                    ;            2.  BUFFERING IS DISABLED AND LOW TAPE SPEED IS SELECTED
5483                    ;                (VIA WRITE CHARACTERISTICS COMMAND).
5484                    ;
5485                    ;            3.  AN INITIAL RECORD IS WRITTEN ONTO THE TAPE IN ORDER TO
5486                    ;                MOVE THE TAPE OFF BOT.
5487                    ;
5488                    ;            4.  THE PROGRAM DELAYS FOR A TIME SUFFICIENT TO ALLOW THE
5489                    ;                TAPE TO REPOSITION AND COME TO REST.
5490                    ;
5491                    ;            5.  A WRITE DATA COMMAND, WITH A BYTE COUNT LESS THAN 3.5K,
5492                    ;                IS ISSUED, AND THE PROGRAM COUNTS, IN A WAIT LOOP, THE
5493                    ;                TIME IT TAKES TO RECEIVE COMMAND TERMINATION.  THIS
5494                    ;                SHOULD BE A RELATIVELY LONG TIME SINCE BUFFERING IS
5495                    ;                DISABLED.
5496                    ;
5497                    ;            6.  BUFFERING IS ENABLED.
5498                    ;
5499                    ;            7.  THE WRITE DATA COMMAND IS AGAIN ISSUED, WITH THE SAME
5500                    ;                BYTE COUNT AS THAT USED PREVIOUSLY.  THE TIME TO
5501                    ;                COMPLETION IS AGAIN MEASURED.
5502                    ;
5503                    ;            8.  THE COMPLETION TIMES MEASURED FOR THE NON-BUFFERED AND
5504                    ;                BUFFERED CASES ARE COMPARED.  IT IS VERIFIED THAT THE
5505                    ;                TIME MEASURED FOR THE NON-BUFFERED CASE IS MUCH LARGER
5506                    ;                THAN THAT MEASURED FOR THE BUFFERED CASE.
5507                    ;
5508                    ;            9.  THE PREVIOUS STEPS, EXCEPT FOR REWINDING AND WRITING A
5509                    ;                RECORD OFF BOT, ARE REPEATED FOR VARIOUS BYTE COUNTS IN
5510                    ;                THE RANGE 20 THROUGH 3.5K.
5511                    ;
5512                    ;
5513                    ;
5514                    ;-
5515 074454            BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     074454                                                     T8.2:
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```
                074454  104402                                                          TRAP    C$BSUB
5516            074456  004737  100752                  JSR     PC,T36REST      ;SET COMMAND PACKET
5517            074462  004737  101044                  JSR     PC,T36RT2       ;SET UP OTHER COMMAND PACKET
5518            074466  004737  101106                  JSR     PC,T36RT3       ;SET UP OTHER COMMAND PACKET
5519            074472  012737  176750  075732          MOV     #65000.,T36DLY  ;SET UP DELAY COUNTER
5520            074500  005037  075726                  CLR     T36CNT          ;CLEAR COUNTER
5521            074504  004737  016054          10$:    JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
5522            074510  103426                  BCS     20$             ;BR IF INIT WAS OK
5523            074512                          DELAY   250             ;DELAY ABOUT .25 SEC
                074512  012727  000250                                                  MOV     #250,(PC)+
                074516  000000                                                          .WORD   0
                074520  013727  002116                                                  MOV     L$DLY,(PC)+
                074524  000000                                                          .WORD   0
                074526  005367  177772                                                  DEC     -6(PC)
                074532  001375                                                          BNE     .-4
                074534  005367  177756                                                  DEC     -22(PC)
                074540  001367                                                          BNE     .-20
5524            074542  005337  075732                  DEC     T36DLY          ;BUMP COUNTER
5525            074546  001356                  BNE     10$             ;BR, IF COUNTER NOT DONE
5526            074550  005237  002214                  INC     FATFLG                  ;ERROR COUNT
5530            074554  010001                  MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
5531            074556                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
                074556  104455                                                          TRAP    C$ERDF
                074560  001453                                                          .WORD   811
                074562  003646                                                          .WORD   SFIERR
                074564  012114                                                          .WORD   SFIMSG
5532            074566  013737  002174  075600  20$:    MOV     UNITN,T36DSW    ;SET UP DRIVE NUMBER
5533            074574  052737  000040  075600          BIS     #BIT5,T36DSW    ;TURN ON HIGH SPEED
5534            074602  012704  075560                  MOV     #T36PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
5535            074606  004737  010742                  JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
5536            074612  103407                  BCS     25$             ;BR, IF COMMAND ISSUED OK
5537            074614  005237  002214                  INC     FATFLG                  ;ERROR COUNT
5541            074620  010001                  MOV     R0,R1           ;SAVE CONTENTS OF TSSR
5542            074622                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
                074622  104456                                                          TRAP    C$ERHRD
                074624  001454                                                          .WORD   812
                074626  005052                                                          .WORD   WRTMSG
                074630  012114                                                          .WORD   SFIMSG
5543            074632                  25$:    CKLOOP                          ;LOOP IF SELECTED
                074632  104406                                                          TRAP    C$CLP1
5544            074634  004737  011074                  JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
5545            074640  103407                  BCS     30$             ;BR, IF NO PROBLEM
5546            074642  010004                  MOV     R0,R4           ;SET UP REWIND PACKET ADDRESS
5547            074644  005237  002214                  INC     FATFLG                  ;ERROR COUNT
5551            074650                          ERRHRD  ERRNO,T36RWN,PKTSSR     ;REWIND NOT ACCEPTED
                074650  104456                                                          TRAP    C$ERHRD
                074652  001455                                                          .WORD   813
                074654  077153                                                          .WORD   T36RWN
                074656  012126                                                          .WORD   PKTSSR
5552            074660                  30$:    CKLOOP                          ;LOOP IF SELECTED
                074660  104406                                                          TRAP    C$CLP1
5553            074662  013701  075610                  MOV     T36BFR+6,R1     ;PICK UP XSTO
5554            074666  010102                  MOV     R1,R2           ;SET UP EXPECTED
5555            074670  052702  000002                  BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
5556            074674  020102                  CMP     R1,R2           ;DOES EXP = REC'D
5557            074676  001406                  BEQ     40$             ;BR, IF EQUAL (OK)
5558            074700  005237  002214                  INC     FATFLG                  ;ERROR COUNT
```

```
5562 074704                                    ERRHRD  ERRNO,T36BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     074704  104456                                                                TRAP    C$ERHRD
     074706  001456                                                                .WORD   814
     074710  076647                                                                .WORD   T36BOT
     074712  015554                                                                .WORD   EXPREC
5563 074714                            40$:    CKLOOP                          ;LOOP IF SELECTED
     074714  104406                                                                TRAP    C$CLP1
5564 074716  013737  002174  075600           MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
5565 074724  052737  000010  075600           BIS     #BIT3,T36DSW            ;TURN OFF BUFFERING CAPABILITY
5566 074732  012704  075560                   MOV     #T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5567 074736  004737  010742                   JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5568 074742  103407                           BCS     50$                     ;BR, IF COMMAND ISSUED OK
5569 074744  005237  002214                   INC     FATFLG                          ;ERROR COUNT
5573 074750  010001                           MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5574 074752                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     074752  104456                                                                TRAP    C$ERHRD
     074754  001457                                                                .WORD   815
     074756  005052                                                                .WORD   WRTMSG
     074760  012114                                                                .WORD   SFIMSG
5575 074762                            50$:    CKLOOP                          ;LOOP IF SELECTED
     074762  104406                                                                TRAP    C$CLP1
5576 074764  012737  003720  075706           MOV     #2000.,T36SZ            ;SET UP RECORD SIZE
5577 074772  013737  003116  075702           MOV     FREE,T36WB              ;ADDRESS OF WRITE BUFFER
5578 075000  012737  140005  075700           MOV     #140005,T36PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
5579 075006  012704  075700                   MOV     #T36PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5580 075012  010465  000000                   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5581 075016  004737  016330                   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5582 075022  016501  000002                   MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5583 075026  012702  000200                   MOV     #SSR,R2                 ;SET UP EXPECTED
5584 075032  020102                           CMP     R1,R2                   ;ARE THEY EQUAL
5585 075034  001406                           BEQ     60$                     ;BR, IF OK
5586 075036  005237  002214                   INC     FATFLG                          ;ERROR COUNT
5590 075042                                    ERRHRD  ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     075042  104456                                                                TRAP    C$ERHRD
     075044  001460                                                                .WORD   816
     075046  005107                                                                .WORD   WRTERR
     075050  012126                                                                .WORD   PKTSSR
5591 075052                            60$:    CKLOOP                          ;LOOP IF SELECTED
     075052  104406                                                                TRAP    C$CLP1
5592 075054  012737  000012  075732           MOV     #10.,T36DLY             ;DELAY FOR TAPE TO STOP
5593 075062                            70$:    DELAY   250                     ;DELAY ROUTINE CALL
     075062  012727  000250                                                        MOV     #250,(PC)+
     075066  000000                                                                .WORD   0
     075070  013727  002116                                                        MOV     L$DLY,(PC)+
     075074  000000                                                                .WORD   0
     075076  005367  177772                                                        DEC     -6(PC)
     075102  001375                                                                BNE     .-4
     075104  005367  177756                                                        DEC     -22(PC)
     075110  001367                                                                BNE     .-20
5594 075112  005337  075732                   DEC     T36DLY                  ;BUMP COUNTER DOWN
5595 075116  001361                           BNE     70$                     ;BR, IF MORE DELAY TO GO
5596 075120  012737  006642  075706           MOV     #3490.,T36SZ            ;SET SIZE OF TRANSFER
5597 075126  012737  140005  075700           MOV     #140005,T36PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
5598 075134  012704  075700                   MOV     #T36PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5599 075140  005037  075726                   CLR     T36CNT                  ;CLEAR COUNTER
5600 075144  012737  001750  075732           MOV     #1000.,T36DLY           ;SET DROP DEAD COUNTER VALUE
5601 075152  010465  000000                   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
```

```
5602 075156  016501  000002          80$:    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5603 075162  032701  000200                  BIT     #SSR,R1                 ;CHECK FOR SSR SET
5604 075166  001021                          BNE     90$                     ;BR, IF SSR IS SET
5605 075170  005237  075726                  INC     T36CNT                  ;BUMP CYCLE COUNTER
5606 075174                                  DELAY   1                       ;CUT NUMBER OF LOOPS DOWN
     075174  012727  000001                                                          MOV     #1,(PC)+
     075200  000000                                                                  .WORD   0
     075202  013727  002116                                                          MOV     L$DLY,(PC)+
     075206  000000                                                                  .WORD   0
     075210  005367  177772                                                          DEC     -6(PC)
     075214  001375                                                                  BNE     .-4
     075216  005367  177756                                                          DEC     -22(PC)
     075222  001367                                                                  BNE     .-20
5607 075224  005337  075732                  DEC     T36DLY                  ;BUMP DROP DEAD COUNTER
5608 075230  001352                          BNE     80$                     ;BR, IF THERE IS STILL TIME
5609 075232  012702  000200          90$:    MOV     #SSR,R2                 ;SET UP EXPECTED
5610 075236  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
5611 075240  001406                          BEQ     100$                    ;BR, IF OK
5612 075242  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5616 075246                                  ERRHRD  ERRNO,T36WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     075246  104456                                                                 TRAP    C$ERHRD
     075250  001461                                                                 .WORD   817
     075252  076575                                                                 .WORD   T36WDE
     075254  012126                                                                 .WORD   PKTSSR
5617 075256                          100$:   CKLOOP                          ;LOOP IF SELECTED
     075256  104406                                                                 TRAP    C$CLP1
5618 075260  013737  002174  075600          MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
5619 075266  052737  000030  075600          BIS     #BIT3!BIT4,T36DSW       ;TURN ON THE BUFFERING
5620 075274  012704  075560                  MOV     #T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5621 075300  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5622 075304  103407                          BCS     110$                    ;BR, IF COMMAND ISSUED OK
5623 075306  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5627 075312  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5628 075314                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     075314  104456                                                                 TRAP    C$ERHRD
     075316  001462                                                                 .WORD   818
     075320  005052                                                                 .WORD   WRTMSG
     075322  012114                                                                 .WORD   SFIMSG
5629 075324                          110$:   CKLOOP                          ;LOOP IF SELECTED
     075324  104406                                                                 TRAP    C$CLP1
5630 075326  012737  006642  075706          MOV     #3490.,T36SZ            ;SET SIZE OF TRANSFER
5631 075334  012737  140005  075700          MOV     #140005,T36PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
5632 075342  012704  075700                  MOV     #T36PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5633 075346  005037  075730                  CLR     T36CNU                  ;CLEAR COUNTER
5634 075352  012737  001750  075732          MOV     #1000.,T36DLY           ;SET DROP DEAD COUNTER VALUE
5635 075360  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5636 075364  016501  000002          120$:   MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5637 075370  032701  000200                  BIT     #SSR,R1                 ;CHECK FOR SSR SET
5638 075374  001021                          BNE     130$                    ;BR, IF SSR IS SET
5639 075376  005237  075730                  INC     T36CNU                  ;BUMP CYCLE COUNTER
5640 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
```

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                075424  005367  177756                                                          DEC     -22(PC)
                075430  001367                                                                  BNE     .-20
     5641       075432  005337  075732          DEC     T36DLY          ;BUMP DROP DEAD COUNTER
     5642       075436  001352                  BNE     120$            ;BR, IF THERE IS STILL TIME
     5643       075440  012702  000200  130$:   MOV     #SSR,R2         ;SET UP EXPECTED
     5644       075444  020102                  CMP     R1,R2           ;ARE THEY EQUAL
     5645       075446  001406                  BEQ     140$            ;BR, IF OK
     5646       075450  005237  002214          INC     FATFLG                  ;ERROR COUNT
     5650       075454                          ERRHRD  ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
                075454  104456                                                                  TRAP    C$ERHRD
                075456  001463                                                                  .WORD   819
                075460  005107                                                                  .WORD   WRTERR
                075462  012126                                                                  .WORD   PKTSSR
     5651       075464                  140$:   CKLOOP                  ;LOOP IF SELECTED
                075464  104406                                                                  TRAP    C$CLP1
     5652       075466  013701  075726          MOV     T36CNT,R1       ;GET FIRST COUNTER
     5653       075472  013702  075730          MOV     T36CNU,R2       ;GET SECOND COUNTER
     5654       075476  020201                  CMP     R2,R1           ;COMPARE EM
     5655       075500  003406                  BLE     300$            ;BR, IF VALUES ARE CORRECT (OK)
     5656       075502  005237  002214          INC     FATFLG                  ;ERROR COUNT
     5660       075506                          ERRHRD  ERRNO,T36NAS,EXPREC     ;TAPE NOT AT CORRECT SPEED
                075506  104456                                                                  TRAP    C$ERHRD
                075510  001464                                                                  .WORD   820
                075512  075734                                                                  .WORD   T36NAS
                075514  015554                                                                  .WORD   EXPREC
     5661       075516                  300$:   CKLOOP                  ;LOOP IF SELECTED
                075516  104406                                                                  TRAP    C$CLP1
     5662       075520                          ENDSUB
                075520                                                                  L10072:
                075520  104403                                                                  TRAP    C$ESUB
     5663       075522  023727  002214  000017          CMP     FATFLG,#15.     ;IS ERROR COUNT AT 25
     5664       075530  103402                  BLO     999$            ;BR, IF LESS THAN 25
     5665       075532  004737  017262          JSR     PC,CKDROP       ;TRY TO DROP THE UNIT
     5666       075536                  999$:
```

```
 5668                                   ;
 5669                                   ;
 5670                                   ;
 5671 075536  004737  016536                JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
 5672 075542  103002                        BCC     163$                    ;BR, IF NO LOOP REQUIRED
 5673 075544  000137  073400                JMP     T36LOOP                 ;EXECUTE AGAIN
 5674 075550                            163$:
 5675 075550                                EXIT    TST                     ;ALL DONE THIS TEST
      075550  104432                                                            TRAP    C$EXIT
      075552  003356                                                            .WORD   L10070-.
```

```
                                        ;+
                                        ;LOCAL STORAGE FOR THIS TEST
                                        ;-
                        075560                  .=<.+10>&177770
075560                                  T36PACKET:                      ;COMMAND PACKET FOR TEST
075560  100004                                  .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
075562  075570                                  .WORD   T36DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
075564  000000                                  .WORD   0
075566  000012                                  .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
075570                                  T36DATA:                        ;CHARACTERISTICS DATA BLOCK
075570  075602                                  .WORD   T36BFR          ;ADDRESS OF MESSAGE BUFFER
075572  000000                                  .WORD   0
075574  000024                                  .WORD   20.             ;LENGTH OF MESSAGE BUFFER
075576  000000                                  .WORD   0
075600  000000                          T36DSW: .WORD   0               ;SELECT DRIVE 0
075602                                  T36BFR: .BLKW   25.             ;MESSAGE BUFFER
                                        ;
                                        ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                        ;
                        075670                  .=<.+10>&177770
075670                                  T36PK2:
075670  100006                                  .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
075672  075710                                  .WORD   T36BF2          ;ADDRESS OF SELECT BLOCK DATA
075674  000000                                  .WORD   0
075676  000006                                  .WORD   6.              ;SIZE OF DATA PACKET

075700                                  T36PK3:
075700  100005                                  .WORD   100005          ;REREAD COMMAND, AND ACK
075702                                  T36RB:
075702  003116                          T36WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
075704  000000                                  .WORD   0
075706  000000                          T36SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
                                                .EVEN
                                        ;
                                        ;
                                        ;
075710                                  T36BF2:
075710     010                          T36BS0: .BYTE   10              ;BSEL0 AREA
075711     200                          T36BS1: .BYTE   200             ;BSEL1 AREA
075712  000000                          T36S2:  .WORD   0               ;SEL 2 AREA
075714  000000                          T36S3:  .WORD   0               ;DATA AREA
                                        ;
                                        ;
                                                .EVEN
                                        ;TAPE MOTION PACKET COMMAND VALUES

075716  100205                          T36RN:  .WORD   100205          ;REREAD DATA (NEXT)
075720  100605                          T36WDR: .WORD   100605          ;REREAD DATA RETRY
075722  102205                          T36CON: .WORD   102205          ;WRITE CONTINOUS
075724  177777                                  .WORD   177777          ;END OF DATA

                                        ;
075726  000000                          T36CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
075730  000000                          T36CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
075732  000000                          T36DLY: .WORD   0               ;DELAY COUNTER
```

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

075734  124  141  160  T36NAS: .ASCIZ  'Tape Drive Is Not Running At 100 Inches Per Second'
076017  124  141  160  T36WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
076105  124  123  123  T36RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
076154  122  105  122  T36RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
076251  120  117  123  T36SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
076333  122  111  102  T36LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
076403  124  123  123  T36WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
076460  111  154  154  T36LOG: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
076541  122  105  122  T36SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
076575  124  123  123  T36WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA Command'
076647  124  141  160  T36BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
076742  127  122  111  T36TIM: .ASCIZ  'WRITE DATA RETRY''S Erase Tape Not Long Enough'
077017  122  105  122  T36EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
077076  124  123  123  T36TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
077153  122  145  167  T36RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
077222  122  101  115  T36RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
077275  124  123  123  T36AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
077344  104  162  151  T36OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
077417  124  123  123  T36WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
077507  124  123  123  T36WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
077562  103  126  103  T36VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
077635  124  123  102  T36BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
077710  127  122  111  T36WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
077777  122  145  141  T36LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XST0'
100061  122  145  141  T36LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XST0'
100143  122  145  163  T36PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
100231  122  145  141  T36TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
100317  127  122  111  T36NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
100415  124  123  123  T36SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
100472  124  123  123  T36TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
100554  124  123  123  T36WRF: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command'
100634  104  141  164  T36DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
100731  122  145  143  TST36ID:        .ASCIZ  'Record Buffering'
                              .EVEN
                        ;+
                        ;
                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                        ;WRITE SUBSYSTEM MEMORY COMMAND
                        ;
                        ;-

100752                  T36REST:
100752                        SAVREG                          ;SAVE THE REGISTERS
100756  012701  075560        MOV     #T36PACKET,R1           ;START OF THE PACKET
100762  012721  100004        MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
100766  012721  075570        MOV     #T36DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
100772  005021                CLR     (R1)+                   ;EXTENDED ADDRESS
100774  012721  000012        MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
101000  012721  075602        MOV     #T36BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
101004  005021                CLR     (R1)+
101006  012721  000024        MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
```

```
 5798 101012  005021                          CLR     (R1)+
 5799 101014  012711  000000                  MOV     #0,(R1)          ;SELECT DRIVE ZERO
 5800 101020  012702  000030                  MOV     #24.,R2          ;NUMBER OF LOCATIONS TO BE CLEARED
 5801 101024  012762  177777  075602  64$:    MOV     #177777,T36BFR(R2)  ;ALL ONES TO MESSAGE BUFFER
 5802 101032  005742                          TST     -(R2)            ;NEXT LOCATION
 5803 101034  022702  000000                  CMP     #0,R2            ;AT END OF LOOP YET
 5804 101040  001371                          BNE     64$              ;KEEP GOING UNTIL DONE
 5805 101042  000207                          RTS     PC               ;RETURN
 5806
 5807
 5808 101044                          T36RT2:
 5809 101044                                  SAVREG                   ;SAVE THE REGISTERS
 5810 101050  012701  075670                  MOV     #T36PK2,R1       ;START OF THE PACKET
 5811 101054  012721  100006                  MOV     #100006,(R1)+    ;WRITE SUBSYSTEM MEM. WITH ACK,
 5812 101060  012721  075710                  MOV     #T36BF2,(R1)+    ;ADDRESS OF DATA BLOCK
 5813 101064  005021                          CLR     (R1)+            ;EXTENDED ADDRESS
 5814 101066  012721  000006                  MOV     #6.,(R1)+        ;SIZE OF DATA BLOCK IN BYTES
 5815 101072  005021                          CLR     (R1)+
 5816 101074  012701  075710                  MOV     #T36BF2,R1       ;POINT TO DATA SEL AREA
 5817 101100  005021                          CLR     (R1)+
 5818 101102  005011                          CLR     (R1)
 5819 101104  000207                          RTS     PC               ;RETURN
 5820 101106                          T36RT3:
 5821 101106                                  SAVREG                   ;SAVE REGISTERS
 5822 101112  012701  075700                  MOV     #T36PK3,R1       ;SET UP POINTER ADDRESS
 5823 101116  005021                          CLR     (R1)+            ;COMMAND SPACE
 5824 101120  005021                          CLR     (R1)+            ;ADDRESS OF DATA BLOCK
 5825 101122  005021                          CLR     (R1)+            ;EXTENDED ADDRESS
 5826 101124  005011                          CLR     (R1)             ;SIZE OF DATA TRANSFER BLOCK
 5827 101126  000207                          RTS     PC               ;RETURN
 5828 101130                                  ENDTST
      101130
      101130                                                       L10070:
      101130  104401                                                      TRAP    C$ETST
```

```
                                .SBTTL  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
                        ;SPACE RECORDS COMMAND WITH A RECORD COUNT OF 80 OR MORE, AND A
                        ;SKIP TAPE MARKS COMMAND WITH A COUNT OF 2 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.
                        ;
                        ;
                        ;-
101132                          BGNTST
101132                                                                  T9::
101132  012737  006354  002172        MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
101140  004737  017354                JSR     PC,KTOFF                        ;TURN KT OFF
101144  012700  105353                MOV     #TST37ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
101150  004737  016570                JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
101154  012737  000005  002210        MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
101162  005037  102416                CLR     T37CNT                  ;CLEAR TAPE RECORD COUNTER
                        ;+
                        ;
                        ;TEST 9, SUBTEST 1
                        ;
                        ;
                        ;
                        ;
                        ;-
                        ;
101166                  T37LOOP:
```

```
 5868 101166                                    BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      101166                                                                    T9.1:
      101166  104402                                                                TRAP    C$BSUB
 5869 101170  005037  002216                    CLR     INTRECV         ;INTERRUPT INDICATOR
 5870 101174  005037  102416                    CLR     T37CNT          ;TIMER FOR WRITE DATA SPACING
 5871 101200  005037  102420                    CLR     T37CNU          ;TIMER FOR WRITE DATA RETRY SPACING
 5872 101204  004737  105374                    JSR     PC,T37REST      ;SET COMMAND PACKET
 5873 101210  004737  105466                    JSR     PC,T37RT2       ;SET UP OTHER COMMAND PACKET
 5874 101214  004737  105530                    JSR     PC,T37RT3       ;SET UP OTHER COMMAND PACKET
 5875 101220  012737  176750  102422            MOV     #65000.,T37DLY  ;SET UP DELAY COUNTER
 5876 101226  004737  016054          10$:      JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
 5877 101232  103426                            BCS     20$             ;BR IF INIT WAS OK
 5878 101234                                    DELAY   250             ;DELAY ABOUT .25 SEC
      101234  012727  000250                                                   MOV     #250,(PC)+
      101240  000000                                                           .WORD   0
      101242  013727  002116                                                   MOV     L$DLY,(PC)+
      101246  000000                                                           .WORD   0
      101250  005367  177772                                                   DEC     -6(PC)
      101254  001375                                                           BNE     .-4
      101256  005367  177756                                                   DEC     -22(PC)
      101262  001367                                                           BNE     .-20
 5879 101264  005337  102422                    DEC     T37DLY          ;BUMP COUNTER
 5880 101270  001356                            BNE     10$             ;BR, IF COUNTER NOT DONE
 5881 101272  005237  002214                    INC     FATFLG                  ;ERROR COUNT
 5885 101276  010001                            MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
 5886 101300                                    ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      101300  104455                                                           TRAP    C$ERDF
      101302  001605                                                           .WORD   901
      101304  003646                                                           .WORD   SFIERR
      101306  012114                                                           .WORD   SFIMSG
 5887 101310  013737  002174  102270  20$:      MOV     UNITN,T37DSW    ;SET UP UNIT NUMBER
 5888
 5889 101316  012704  102250                    MOV     #T37PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
 5890 101322  004737  010742                    JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
 5891 101326  103407                            BCS     23$             ;BR, IF COMMAND ISSUED OK
 5892 101330  005237  002214                    INC     FATFLG                  ;ERROR COUNT
 5896 101334  010001                            MOV     R0,R1           ;SAVE CONTENTS OF TSSR
 5897 101336                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      101336  104456                                                           TRAP    C$ERHRD
      101340  001606                                                           .WORD   902
      101342  005052                                                           .WORD   WRTMSG
      101344  012114                                                           .WORD   SFIMSG
 5898 101346                            23$:    CKLOOP                  ;LOOP IF SELECTED
      101346  104406                                                           TRAP    C$CLP1
 5899 101350  004737  011074                    JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
 5900 101354  103411                            BCS     30$             ;BR, IF NO PROBLEM
 5901 101356  016501  000002                    MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
 5902 101362  010004                            MOV     R0,R4           ;GET PACKET ADDRESS
 5903 101364  005237  002214                    INC     FATFLG                  ;ERROR COUNT
 5907 101370                                    ERRHRD  ERRNO,T37RWN,PKTSSR     ;REWIND NOT ACCEPTED
      101370  104456                                                           TRAP    C$ERHRD
      101372  001607                                                           .WORD   903
      101374  103575                                                           .WORD   T37RWN
      101376  012126                                                           .WORD   PKTSSR
 5908 101400                            30$:    CKLOOP                  ;LOOP IF SELECTED
      101400  104406                                                           TRAP    C$CLP1
 5909 101402  013701  102300                    MOV     T37BFR+6,R1     ;PICK UP XSTO
```

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 5910 101406  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 5911 101410  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 5912 101414  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 5913 101416  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
 5914 101420  005237  002214                INC     FATFLG                          ;ERROR COUNT
 5918 101424                                ERRHRD  ERRNO,T37BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      101424  104456                                                                TRAP    C$ERHRD
      101426  001610                                                                .WORD   904
      101430  103271                                                                .WORD   T37BOT
      101432  015554                                                                .WORD   EXPREC
 5919 101434                        40$:    CKLOOP                          ;LOOP IF SELECTED
      101434  104406                                                                TRAP    C$CLP1
 5920 101436  012703  000144                MOV     #100.,R3                ;NUMBER OF RECORDS TO BE WRITTEN
 5921 101442  013737  003116  102372        MOV     FREE,T37WB              ;STARTING WRITE BUFFER ADDRESS
 5922 101450  012737  140005  102370  65$:  MOV     #140005,T37PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
 5923 101456  012704  102370                MOV     #T37PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 5924 101462  012737  001130  102376        MOV     #600.,T37SZ             ;SET UP RECORD SIZE IN PACKET
 5925 101470  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 5926 101474  004737  016330                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 5927 101500  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 5928 101504  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
 5929 101510  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 5930 101512  001406                        BEQ     70$                     ;BR, IF OK
 5931 101514  005237  002214                INC     FATFLG                          ;ERROR COUNT
 5935 101520                                ERRHRD  ERRNO,T37WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      101520  104456                                                                TRAP    C$ERHRD
      101522  001611                                                                .WORD   905
      101524  104131                                                                .WORD   T37WDC
      101526  012126                                                                .WORD   PKTSSR
 5936 101530                        70$:    CKLOOP                          ;LOOP IF SELECTED
      101530  104406                                                                TRAP    C$CLP1
 5937 101532  005303                        DEC     R3                      ;DEC RECORD COUNTER
 5938 101534  001345                        BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
 5939 101536  004737  011074                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 5940 101542  103411                        BCS     130$                    ;BR, IF NO PROBLEM
 5941 101544  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 5942 101550  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
 5943 101552  005237  002214                INC     FATFLG                          ;ERROR COUNT
 5947 101556                                ERRHRD  ERRNO,T37RWN,PKTSSR     ;REWIND NOT ACCEPTED
      101556  104456                                                                TRAP    C$ERHRD
      101560  001612                                                                .WORD   906
      101562  103575                                                                .WORD   T37RWN
      101564  012126                                                                .WORD   PKTSSR
 5948 101566                        130$:   CKLOOP                          ;LOOP IF SELECTED
      101566  104406                                                                TRAP    C$CLP1
 5949 101570  013701  102300                MOV     T37BFR+6,R1             ;PICK UP XSTO
 5950 101574  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 5951 101576  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 5952 101602  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 5953 101604  001406                        BEQ     140$                    ;BR, IF EQUAL (OK)
 5954 101606  005237  002214                INC     FATFLG                          ;ERROR COUNT
 5958 101612                                ERRHRD  ERRNO,T37BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      101612  104456                                                                TRAP    C$ERHRD
      101614  001613                                                                .WORD   907
      101616  103271                                                                .WORD   T37BOT
      101620  015554                                                                .WORD   EXPREC
 5959 101622                        140$:   CKLOOP                          ;LOOP IF SELECTED
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                101622  104406                                                          TRAP    C$CLP1
5960            101624  012704  102370                  MOV     #T37PK3,R4              ;SET UP PACKET ADDRESS
5961            101630  012737  000037  102372          MOV     #31.,T37RB              ;SET UP RECORDS TO SPACE OVER
5962            101636  012737  140010  102370          MOV     #140010,T37PK3          ;ACK,CVC=1,SPACE FORWARD COMMAND
5963            101644  010465  000000          150$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5964            101650  005237  102416          152$:   INC     T37CNT                  ;BUMP TIMER
5965            101654                          .       DELAY   1                       ;DELAY ABOUT 100US
                101654  012727  000001                                                  MOV     #1,(PC)+
                101660  000000                                                          .WORD   0
                101662  013727  002116                                                  MOV     L$DLY,(PC)+
                101666  000000                                                          .WORD   0
                101670  005367  177772                                                  DEC     -6(PC)
                101674  001375                                                          BNE     .-4
                101676  005367  177756                                                  DEC     -22(PC)
                101702  001367                                                          BNE     .-20
5966            101704  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR
5967            101710  032701  000200                  BIT     #SSR,R1                 ;CHECK FOR TSSR'S SSR SET
5968            101714  001755                          BEQ     152$                    ;KEEP COUNTING UNTIL SET
5969            101716  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
5970            101722  020201                          CMP     R2,R1                   ;WAS EVERYTHING OK
5971            101724  001406                          BEQ     160$                    ;BR, IF ALL IS WELL
5972            101726  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5976            101732                                  ERRHRD  ERRNO,T37SCF,PKTSSR     ;SPACE FORWARD DIDN'T WORK OUT
                101732  104456                                                          TRAP    C$ERHRD
                101734  001614                                                          .WORD   908
                101736  105037                                                          .WORD   T37SCF
                101740  012126                                                          .WORD   PKTSSR
5977            101742                  160$:   CKLOOP                                  ;LOOP IF SELECTED
                101742  104406                                                          TRAP    C$CLP1
5978            101744  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5979            101750  103411                          BCS     170$                    ;BR, IF NO PROBLEM
5980            101752  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
5981            101754  016501  000002                  MOV     TSSR(R5),R1             ;GET STATUS FROM TSSR
5982            101760  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5986            101764                                  ERRHRD  ERRNO,T37RWN,PKTSSR     ;REWIND NOT ACCEPTED
                101764  104456                                                          TRAP    C$ERHRD
                101766  001615                                                          .WORD   909
                101770  103575                                                          .WORD   T37RWN
                101772  012126                                                          .WORD   PKTSSR
5987            101774                  170$:   CKLOOP                                  ;LOOP IF SELECTED
                101774  104406                                                          TRAP    C$CLP1
5988            101776  013701  102300                  MOV     T37BFR+6,R1             ;PICK UP XSTO
5989            102002  010102                          MOV     R1,R2                   ;SET UP EXPECTED
5990            102004  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5991            102010  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
5992            102012  001406                          BEQ     175$                    ;BR, IF EQUAL (OK)
5993            102014  005237  002214                  INC     FATFLG                          ;ERROR COUNT
5997            102020                                  ERRHRD  ERRNO,T37BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                102020  104456                                                          TRAP    C$ERHRD
                102022  001616                                                          .WORD   910
                102024  103271                                                          .WORD   T37BOT
                102026  015554                                                          .WORD   EXPREC
5998            102030                  175$:   CKLOOP                                  ;LOOP IF SELECTED
                102030  104406                                                          TRAP    C$CLP1
5999            102032  012704  102370                  MOV     #T37PK3,R4              ;SET UP PACKET ADDRESS
6000            102036  012737  000121  102372          MOV     #81.,T37RB              ;SET UP RECORDS TO SPACE OVER
6001            102044  012737  140010  102370          MOV     #140010,T37PK3          ;ACK,CVC=1,SPACE FORWARD COMMAND
```

```
6002 102052 010465 000000          250$:  MOV     R4,TSDB(R5)              ;ISSUE COMMAND
6003 102056 005237 102420          252$:  INC     T37CNU                   ;BUMP TIMER
6004 102062                               DELAY   1                        ;DELAY ABOUT 100US
     102062 012727 000001                                                           MOV     #1,(PC)+
     102066 000000                                                                  .WORD   0
     102070 013727 002116                                                           MOV     L$DLY,(PC)+
     102074 000000                                                                  .WORD   0
     102076 005367 177772                                                           DEC     -6(PC)
     102102 001375                                                                  BNE     .-4
     102104 005367 177756                                                           DEC     -22(PC)
     102110 001367                                                                  BNE     .-20
6005 102112 016501 000002                 MOV     TSSR(R5),R1              ;GET TSSR
6006 102116 032701 000200                 BIT     #SSR,R1                  ;CHECK FOR TSSR'S SSR SET
6007 102122 001755                        BEQ     252$                     ;KEEP COUNTING UNTIL SET
6008 102124 012702 000200                 MOV     #SSR,R2                  ;SET UP EXPECTED
6009 102130 020201                        CMP     R2,R1                    ;WAS EVERYTHING OK
6010 102132 001406                        BEQ     260$                     ;BR, IF ALL IS WELL
6011 102134 005237 002214                 INC     FATFLG                           ;ERROR COUNT
6015 102140                               ERRHRD  ERRNO,T37SCF,PKTSSR      ;SPACE FORWARD DIDN'T WORK OUT
     102140 104456                                                                  TRAP    C$ERHRD
     102142 001617                                                                  .WORD   911
     102144 105037                                                                  .WORD   T37SCF
     102146 012126                                                                  .WORD   PKTSSR
6016 102150                        260$:  CKLOOP                           ;LOOP IF SELECTED
     102150 104406                                                                  TRAP    C$CLP1
6017 102152 013701 102416                 MOV     T37CNT,R1                ;TIME FOR WRITE SPACING
6018 102156 013702 102420                 MOV     T37CNU,R2                ;TIME FOR WRITE RETRY SPACING
6019 102162 042701 000077                 BIC     #000077,R1               ;SETTING UP CONSTANTS
6020 102166 042702 000077                 BIC     #000077,R2               ;SETTING UP CONSTANTS
6021 102172 020102                        CMP     R1,R2                    ;CHECK FOR DIFFERENCE
6022 102174 003406                        BLE     300$                     ;BR, IF GOOD aaaa CHECK aaaa
6023 102176 005237 002214                 INC     FATFLG                           ;ERROR COUNT
6027 102202                               ERRHRD  ERRNO,T37TIM,EXPREC      ;TIME WAS NOT DIFFERENT ENOUGH
     102202 104456                                                                  TRAP    C$ERHRD
     102204 001620                                                                  .WORD   912
     102206 103364                                                                  .WORD   T37TIM
     102210 015554                                                                  .WORD   EXPREC
6028 102212                        300$:  CKLOOP                           ;LOOP IF SELECTED
     102212 104406                                                                  TRAP    C$CLP1
6029 102214                               ENDSUB                           ;<<<<<<<<<<<< END SUBTEST >>>>>>>>>>>>
     102214                                                                   L10074:
     102214 104403                                                                  TRAP    C$ESUB
6030 102216 023727 002214 000017          CMP     FATFLG,#15.                      ;IS ERROR COUNT AT 25
6031 102224 103402                        BLO     999$                             ;BR, IF LESS THAN 25
6032 102226 004737 017262                 JSR     PC,CKDROP                        ;TRY TO DROP THE UNIT
6033 102232                        999$:
6034                                       ;
6035                                       ;
6036                                       ;
6037 102232 004737 016536                 JSR     PC,TSTLOOP               ;DO WE NEED TO ITERATE TEST
6038 102236 103002                        BCC     163$                     ;BR, IF NO LOOP REQUIRED
6039 102240 000137 101166                 JMP     T37LOOP                  ;EXECUTE AGAIN
6040 102244                        163$:
6041 102244                               EXIT    TST                      ;ALL DONE THIS TEST
     102244 104432                                                                  TRAP    C$EXIT
     102246 003304                                                                  .WORD   L10073-.
```

```
                                        ;+
                                        ;LOCAL STORAGE FOR THIS TEST
                                        ;-
102250                                  T37PACKET:                      ;COMMAND PACKET FOR TEST
102250  100004                                .WORD   100004            ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
102252  102260                                .WORD   T37DATA           ;ADDRESS OF CHARACTERISTICS BLOCK
102254  000000                                .WORD   0
102256  000012                                .WORD   10.               ;STARTING VALUE OF BLOCK SIZE
102260                                  T37DATA:                        ;CHARACTERISTICS DATA BLOCK
102260  102272                                .WORD   T37BFR            ;ADDRESS OF MESSAGE BUFFER
102262  000000                                .WORD   0
102264  000024                                .WORD   20.               ;LENGTH OF MESSAGE BUFFER
102266  000000                                .WORD   0
102270  000000                          T37DSW: .WORD   0                 ;SELECT DRIVE 0
102272                                  T37BFR: .BLKW   25.               ;MESSAGE BUFFER
                                        ;
                                        ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                        ;
                                                .=<.+10>&177770
102360                                  T37PK2:
102360                                          .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
102360  100006                              .WORD   T37BF2              ;ADDRESS OF SELECT BLOCK DATA
102362  102400                              .WORD   0
102364  000000                              .WORD   6.                  ;SIZE OF DATA PACKET
102366  000006
                                        T37PK3:
102370                                          .WORD   100005          ;REREAD COMMAND, AND ACK
102370  100005                          T37RB:
102372                                  T37WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
102372  003116                              .WORD   0
102374  000000                          T37SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
102376  000000                              .EVEN
                                        ;
                                        ;
                                        ;
102400                                  T37BF2:
102400  010                             T37BS0: .BYTE   10              ;BSEL0 AREA
102400  200                             T37BS1: .BYTE   200             ;BSEL1 AREA
102401  000000                          T37S2:  .WORD   0               ;SEL 2 AREA
102402  000000                          T37S3:  .WORD   0               ;DATA AREA
102404                                  ;
                                        ;
                                                .EVEN
                                        ;TAPE MOTION PACKET COMMAND VALUES

102406  100205                          T37RN:  .WORD   100205          ;REREAD DATA (NEXT)
102410  100605                          T37WDR: .WORD   100605          ;REREAD DATA RETRY
102412  102205                          T37CON: .WORD   102205          ;WRITE CONTINOUS
102414  177777                                  .WORD   177777          ;END OF DATA

                                        ;
102416  000000                          T37CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
102420  000000                          T37CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
102422  000000                          T37DLY: .WORD   0               ;DELAY COUNTER
```

```
                                                                I 5
 6107
 6108                                   ;+
 6109                                   ;LOCAL TEXT MESSAGES FOR TEST
 6110                                   ;-
 6111
 6112
 6113 102424      124      141      160  T37WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
 6114 102512      124      123      123  T37RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
 6115 102561      122      105      122  T37RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
 6116 102656      120      117      123  T37SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
 6117 102740      122      111      102  T37LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
 6118 103010      124      123      123  T37WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
 6119 103065      111      154      154  T37LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
 6120 103146      122      105      122  T37SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
 6121 103202      124      123      123  T37WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command,At BOT'
 6122 103271      124      141      160  T37BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
 6123 103364      127      122      111  T37TIM: .ASCIZ  'WRITE DATA RETRY''S Erase Tape Not Long Enough'
 6124 103441      122      105      122  T37EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
 6125 103520      124      123      123  T37TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
 6126 103575      122      145      167  T37RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
 6127 103644      122      101      115  T37RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
 6128 103717      124      123      123  T37AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
 6129 103766      104      162      151  T37OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
 6130 104041      124      123      123  T37WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
 6131 104131      124      123      123  T37WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
 6132 104204      103      126      103  T37VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
 6133 104257      124      123      102  T37BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
 6134 104332      127      122      111  T37WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
 6135 104421      122      145      141  T37LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XST0'
 6136 104503      122      145      141  T37LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XST0'
 6137 104565      122      145      163  T37PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
 6138 104653      122      145      141  T37TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
 6139 104741      127      122      111  T37NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
 6140 105037      124      123      123  T37SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
 6141 105114      124      123      123  T37TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
 6142 105176      124      123      123  T37WRF: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command'
 6143 105256      104      141      164  T37DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
 6144 105353      106      165      156  TST37ID:        .ASCIZ  'Function Timing'
 6145                                           .EVEN
 6146                                   ;+
 6147                                   ;
 6148                                   ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
 6149                                   ;WRITE SUBSYSTEM MEMORY COMMAND
 6150                                   ;
 6151                                   ;-
 6152
 6153 105374                           T37REST:
 6154 105374                                   SAVREG                          ;SAVE THE REGISTERS
 6155 105400  012701  102250                    MOV     #T37PACKET,R1           ;START OF THE PACKET
 6156 105404  012721  100004                    MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
 6157 105410  012721  102260                    MOV     #T37DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
 6158 105414  005021                            CLR     (R1)+                   ;EXTENDED ADDRESS
 6159 105416  012721  000012                    MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
 6160 105422  012721  102272                    MOV     #T37BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
 6161 105426  005021                            CLR     (R1)+
 6162 105430  012721  000024                    MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
 6163 105434  005021                            CLR     (R1)+
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 6164 105436  012711  000000                    MOV     #0,(R1)          ;SELECT DRIVE ZERO
 6165 105442  012702  000030                    MOV     #24.,R2          ;NUMBER OF LOCATIONS TO BE CLEARED
 6166 105446  012762  177777  102272  64$:      MOV     #177777,T37BFR(R2) ;ALL ONES TO MESSAGE BUFFER
 6167 105454  005742                            TST     -(R2)            ;NEXT LOCATION
 6168 105456  022702  000000                    CMP     #0,R2            ;AT END OF LOOP YET
 6169 105462  001371                            BNE     64$              ;KEEP GOING UNTIL DONE
 6170 105464  000207                            RTS     PC               ;RETURN
 6171
 6172
 6173 105466                        T37RT2:
 6174 105466                                    SAVREG                   ;SAVE THE REGISTERS
 6175 105472  012701  102360                    MOV     #T37PK2,R1       ;START OF THE PACKET
 6176 105476  012721  100006                    MOV     #100006,(R1)+    ;WRITE SUBSYSTEM MEM. WITH ACK,
 6177 105502  012721  102400                    MOV     #T37BF2,(R1)+    ;ADDRESS OF DATA BLOCK
 6178 105506  005021                            CLR     (R1)+            ;EXTENDED ADDRESS
 6179 105510  012721  000006                    MOV     #6.,(R1)+        ;SIZE OF DATA BLOCK IN BYTES
 6180 105514  005021                            CLR     (R1)+
 6181 105516  012701  102400                    MOV     #T37BF2,R1       ;POINT TO DATA SEL AREA
 6182 105522  005021                            CLR     (R1)+
 6183 105524  005011                            CLR     (R1)
 6184 105526  000207                            RTS     PC               ;RETURN
 6185 105530                        T37RT3:
 6186 105530                                    SAVREG                   ;SAVE REGISTERS
 6187 105534  012701  102370                    MOV     #T37PK3,R1       ;SET UP POINTER ADDRESS
 6188 105540  005021                            CLR     (R1)+            ;COMMAND SPACE
 6189 105542  005021                            CLR     (R1)+            ;ADDRESS OF DATA BLOCK
 6190 105544  005021                            CLR     (R1)+            ;EXTENDED ADDRESS
 6191 105546  005011                            CLR     (R1)             ;SIZE OF DATA TRANSFER BLOCK
 6192 105550  000207                            RTS     PC               ;RETURN
 6193 105552                                    ENDTST
      105552                                                        L10073:
      105552  104401                                                    TRAP    C$ETST
 6194 105554                                    ENDMOD
```

```
                                        .TITLE  TSV6 - PARAMETER CODING
                                        BGNMOD  TSV6
                                TSV6::
                                        .SBTTL  HARDWARE PARAMETER CODING SECTION
                                ;++
                                ; THE HARDWARE PARAMETER CODING SECTION CONTAINS MACROS
                                ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
                                ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
                                ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
                                ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
                                ; WITH THE OPERATOR.
                                ;--
105554                                  BGNHRD
105554  000010                          .WORD L10075-L$HARD/2
105556                          L$HARD::
                                        GPRMA   HPM1,0,0,160010,177776,YES      ;GET TSBA/TSDB REGISTER ADDRESS.
105556  000031                          .WORD   T$CODE
105560  105576                          .WORD   HPM1
105562  160010                          .WORD   T$LOLIM
105564  177776                          .WORD   T$HILIM
                                        GPRMA   HPM2,2,0,0,776,YES              ;GET VECTOR ADDRESS.
105566  001031                          .WORD   T$CODE
105570  105632                          .WORD   HPM2
105572  000000                          .WORD   T$LOLIM
105574  000776                          .WORD   T$HILIM
                                        ;GPRMD  HPM3,4,0,340,0,7,YES            ;GET INTERRUPT PRIORITY.
105576                                  ENDHRD
                                        .EVEN
105576                          L10075:
105576      104     105     126 HPM1:   .ASCIZ  'DEVICE ADDRESS (TSBA/TSDB) '
105632      111     116     124 HPM2:   .ASCIZ  'INTERRUPT VECTOR    '
105656      111     116     124 HPM3:   .ASCIZ  'INTERRUPT PRIORITY     '
                                        .EVEN
```

```
                                        .SBTTL  SOFTWARE PARAMETER CODING SECTION


                                ;++
                                ; THE SOFTWARE PARAMETER CODING SECTION CONTAINS MACROS
                                ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
                                ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
                                ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
                                ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
                                ; WITH THE OPERATOR.
                                ;--
105706                                  BGNSFT
105706  000003                          .WORD L10076-L$SOFT/2
105710                          L$SOFT::
                                ;       GPRML   SPM1,0,-1,YES                   ; GET TRANSPORT TEST FLAG.
105710                                  GPRML   SPM4,2,-1,YES                   ; GET ITERATION CONTROL.
105710  001130                          .WORD   T$CODE
105712  105746                          .WORD   SPM4
105714  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
105716                                  ENDSFT
                                        .EVEN
105716                          L10076:


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

106056                          PATCH::

106056                                  .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
```

```
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    105576        KTENAB  003126 G
CMDPKT  021340 G      C$SEFG= 000046      FIFEXP  012250 G      HPM2    105632        KTFLG   003124 G
CMPMEM  017740        C$SPRI= 000041      FIF1MS  012322        HPM3    105656        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
```

SYMBOL TABLE

```
LOOPCO  013206          L10001  002170          L10073  105552          O$ERRT= 000000          PST32W  003144 G
LOOPFL  003154 G        L10002  003762          L10074  102214          O$GNSW= 000001          PUNIT   022364
LOT   = 000010 G        L10003  012124          L10075  105576          O$POIN= 000001          PW.D11= 000021
L$ACP   002110 G        L10004  012142          L10076  105716          O$SETU= 000000          PW.D13= 000022
L$APT   002036 G        L10005  012160          MEMADD  014034 G        PASRPT  022134          PW.D22= 000020
L$AU    022432 G        L10006  012166          MEMCK   021356 G        PATCH   106056 G        PW.NOP= 000000
L$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  105556 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$HPTP  002022 G        L10041  025436          NOMAN   020614          PRIA0   010306          P.WRIT= 000005
L$HW    002150 G        L10042  026260          NOMEM   005454          PRIBX0  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          PRIT0   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$PRIO  002042 G        L10053  053044          NXM   = 004000          PRI00 = 000000 G        RAMTAD  015576 G
L$PROT  021626 G        L10054  047642          NXMFLG  003130 G        PRI01 = 000040 G        RCVHIA  002276 G
L$PRT   002112 G        L10055  050452          NXMHI   003134 G        PRI02 = 000100 G        RCVLOA  002300 G
L$REPP  002062 G        L10056  051266          NXMLO   003132 G        PRI03 = 000140 G        RDERR   005202
L$REV   002010 G        L10057  056040          NXMTST  021532          PRI04 = 000200 G        RECMSG  002460 G
L$RPT   022744 G        L10060  054506          NXR     003734          PRI05 = 000240 G        RECV    002226 G
L$SOFT  105710 G        L10061  063412          NXRERR  005732 G        PRI06 = 000300 G        REGSAV  020220
L$SPC   002056 G        L10062  060476          NXRX    003773          PRI07 = 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  101130          O$BGNR= 000001          PRMSG2  015115          RMPKTB= 000201
L$UNIT  002012 G        L10071  074436          O$BGNS= 000001          PR0ASC  014500          RMPKTE= 000210
L10000  002156          L10072  075520          O$DU  = 000001          PR1ASC  014545          RMR   = 010000
```

```
RWPACK  011170          S2.INR= 000020          T$EXCP= 000000          T29CON  026462          T30BOT  040041
SC    = 100000          S2.OUT= 000040          T$FLAG= 000040          T29DAT  026330          T30BS0  036630
SCE   = 020000          S2.UND= 000003          T$GMAN= 000000          T29DLY  026500          T30BS1  036631
SCHERR  005274          TBLEND= 003054 G        T$HILI= 000776          T29DSW  026340          T30CNT  036650
SCME    005007          TCOASC  006554          T$LAST= 000001          T29DTA  030043          T30CNU  036652
SDELAY  010740          TCOCOD  006754          T$LOLI= 000000          T29EOT  030131          T30DAT  036510
SELASC  020522          TEMP1   003110 G        T$LSYM= 010000          T29LON  031225          T30DLY  036656
SELDAT= 000004          TEMP2   003112 G        T$LTNO= 000011          T29LOO  023556          T30DSW  036520
SEL2  = 000002          TERCLS= 000016          T$NEST= 177777          T29LOP  031307          T30DTA  041134
SETMAP  017376          TESTNO= 000011          T$NS0 = 000000          T29LOQ  027426          T30DTR  041070
SETU    022166          TEXASC  006513          T$NS1 = 000005          T29LOR  027301          T30ETM  036516
SFFMSG  012162 G        TFCASC  006615          T$NS2 = 000002          T29NEF  026630          T30FCN  036654
SFHERR  003701          TIMEXP  015632 G        T$PTNU= 000000          T29NEQ  031545          T30IBT  037031
SFIERR  003646          TIMSGO  015660          T$SAVL= 177777          T29OFL  026502          T30IBU  036660
SFIMSG  012114 G        TINERR  012101          T$SEGL= 177777          T29OF7  030515          T30IMV  036636
SFPTBL  002160 G        TMPBFR  002624 G        T$SUBN= 000001          T29PAC  026320          T30LOO  032360
SIFLAG  003146 G        TNAM    016764          T$TAGL= 177777          T29PBF  031371          T30LOQ  037630
SIMSG   012046          TRANST  002160 G        T$TAGN= 010077          T29PK2  026430          T30NEF  040576
SKIPT   003372          TSBA  = 000000 G        T$TEMP= 000000          T29PK3  026440          T30OFL  040307
SOFINI  016054 G        TSBAH = 000001 G        T$TEST= 000011          T29RB   026442          T30PAC  036500
SPACE   010544 G        TSDB  = 000000 G        T$TSTM= 177777          T29RDF  026720          T30PK2  036610
SPM1    105716          TSDBH = 000001 G        T$TSTS= 000001          T29RDG  031643          T30PK3  036620
SPM4    105746          TSFCOD  007314          T$$AU = 010031          T29RES  032146          T30PTB  037242
SPM6    105776          TSREJ = 000006          T$$AUT= 010033          T29RIB  031724          T30RB   036622
SPM7    106026          TSSDEF  006664          T$$CLE= 010034          T29RN   026456          T30RDF  037413
SR0   = 177572          TSSR  = 000002 G        T$$DU = 010032          T29RNC  030354          T30RDG  037471
SR1   = 177574          TSSRBI  003476 G        T$$HAR= 010075          T29RRF  026767          T30RES  041252
SR2   = 177576          TSSRFO  006473          T$$HW = 010000          T29RRG  027103          T30RIB  036745
SR3   = 172516          TSSRH = 000003 G        T$$INI= 010030          T29RRN  032024          T30RN   036636
SSR   = 000200          TSSX    004014          T$$MSG= 010025          T29RSZ  026476          T30RRM  040655
STATCO  012472          TSTBLK  002744 G        T$$PRO= 010027          T29RT2  032240          T30RRN  040733
SVCGBL= 000000          TSTCNT  002206 G        T$$RPT= 010035          T29RT3  032302          T30RRP  041012
SVCINS= 000000          TSTEND  017000          T$$SOF= 010076          T29RWN  030305          T30RT2  041344
SVCSUB= 000001          TSTFLA  002306 G        T$$SRV= 010026          T29SC   027217          T30RT3  041406
SVCTAG= 000000          TSTLOO  016536 G        T$$SUB= 010074          T29SSR  027507          T30RWN  040240
SVCTST= 000001          TSTPTR  002310 G        T$$SW = 010001          T29SZ   026446          T30SKM  037114
S$LSYM= 010000          TSTSET  016570 G        T$$TES= 010073          T29S2   026452          T30SSR  037711
S0.IDB= 000010          TST29I  032117          T1      023526 G        T29S3   026454          T30SZ   036626
S0.IFB= 000002          TST30I  041231          T1.1    023556          T29TM   030227          T30S2   036632
S0.IFP= 000001          TST31I  046543          T1.2    024206          T29TRL  031457          T30S3   036634
S0.ILD= 000020          TST32I  052640          T1.3    024730          T29VCK  030771          T30TM   040106
S0.ION= 000040          TST33I  055645          T1.4    025454          T29WB   026442          T30TMK  040514
S0.IRD= 000100          TST34I  063207          T2      032334 G        T29WDC  030677          T30TM2  040163
S0.IRW= 000004          TST35I  073133          T2.1    032360          T29WDD  030570          T30TPB  037333
S0.ISP= 000200          TST36I  100721          T2.2    033752          T29WDE  027562          T30VCK  040441
S1.ICE= 002000          TST37I  105353          T2.3    035376          T29WDF  027351          T30WB   036622
S1.IEO= 010000          TSV2    002000 G        T2.4    035772          T29WDR  026460          T30WDC  040362
S1.IFM= 001000          TSV3    002170 G        T23A    003136 G        T29WLK  027644          T30WDD  037170
S1.IHE= 000400          TSV4    021626 G        T23B    003140 G        T29WNG  026523          T30WDE  037762
S1.IID= 004000          TSV6    105554 G        T29AM3  030427          T29WRT  027731          T30WDF  037553
S1.I1R= 020000          TSV7B   023526 G        T29BA   031044          T29WSS  031136          T31AM3  045016
S1.I2R= 040000          TTIBFR= 177562 G        T29BFR  026342          T3      041432 G        T31BA   045356
S1.PAR= 100000          TTICSR= 177560 G        T29BF2  026450          T3BFLG  003142 G        T31BFR  043212
S2.ATI= 000010          TTIVEC= 000060 G        T29BOT  027776          T3.1    041462          T31BF2  043320
S2.BTI= 000004          T$ARGC= 000003          T29BS0  026450          T3.2    042340          T31BOT  044345
S2.DIM= 000200          T$CODE= 001130          T29BS1  026451          T30BFR  036522          T31BS0  043320
S2.ILW= 000100          T$ERRN= 001620          T29CNT  026474          T30BF2  036630          T31BS1  043321
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SYMBOL TABLE

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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
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T32BA   052063
T32BFR  051352
T32BOE  052366
T32BOT  051516
T32CMD  051460
T32CNT  051510
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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
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T32WB   051452
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T33BFR  054572
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T33BOT  055325
T33BS0  054700
T33BS1  054701
T33CNT  054716
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T33CON  054712
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T33DLY  054722
T33DSW  054570
T33DTA  055550
T33LOO  053076
T33PAC  054550
T33PK2  054660
T33PK3  054670
T33RB   054672
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T33RES  055662
T33RN   054706
T33RT2  055754
T33RT3  056016
T33RWN  055420
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T33SZ   054676
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T33S3   054704
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T33UND  055152
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T34AM3  062461
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T34BFR  060562
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T34BS1  060677
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T34ETS  061530
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T34PK2  060650
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T34POS  060714
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T34RSZ  060670
T34RT2  063324
T34RT3  063366
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T34STM  061700
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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
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T35BS1  067521
T35CNT  067536
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T35DLY  067542
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T35RES  073164
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T35RWE  072770
T35RWN  070644
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T35SCF  072106
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T35VCK  071253
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T35WNG  067544
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T35WSS  071401
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T36DLY  075732
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T36DTA  100634
T36EOT  077017
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T36LOR  076333
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T36NEF  100317
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T36PK3  075700
T36RB   075702
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T36RES  100752
T36RN   075716
T36RNC  077222
T36RRF  076154
T36RT2  101044
T36RT3  101106
T36RWN  077153
T36SC   076251
T36SCF  100415
T36SSR  076541
T36SZ   075706
T36S2   075712
T36S3   075714
T36TIM  076742
T36TM   077076
T36TRL  100231
T36TSA  100472
T36VCK  077562
T36WB   075702
T36WDC  077507
T36WDD  077417
T36WDE  076575
T36WDF  076403
T36WDR  075720
T36WNG  076017
T36WRF  100554
T36WSS  077710
T37AM3  103717
T37BA   104257
T37BFR  102272
T37BF2  102400
T37BOT  103271
T37BS0  102400
T37BS1  102401
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T37CNT  102416          T37SSR  103146          T7.4    066444          WSMBK   021350 G        X$OFFS= 000400
T37CNU  102420          T37SZ   102376          T8      073344 G        XFERAS  016020          X$TRUE= 000020
T37CON  102412          T37S2   102402          T8.1    073400          XNXM    016456          X1.COR= 020000
T37DAT  102260          T37S3   102404          T8.2    074454          XORBFO  007752          X1.DLT= 100000
T37DLY  102422          T37TIM  103364          T9      101132 G        XORFOR  010070          X1.MBZ= 017375
T37DSW  102270          T37TM   103520          T9.1    101166          XST0   = 000006 G       X1.RBP= 000400
T37DTA  105256          T37TRL  104653          UAM    = 000200 G       XST1   = 000010 G       X1.SPA= 040000
T37EOT  103441          T37TSA  105114          UNITN   002174 G        XST2   = 000012 G       X1.UNC= 000002
T37LON  104421          T37VCK  104204          UNREC  = 000006          XST3   = 000014 G       X2.BUF= 000100
T37LOO  101166          T37WB   102372          USI     004117          XST4   = 000016 G       X2.EXT= 000200
T37LOP  104503          T37WDC  104131          WAITF   016330 G        XSOBOT= 000002          X2.OPM= 100000
T37LOQ  103065          T37WDD  104041          WC.IFA= 000200          XSOEOT= 000001          X2.RCE= 040000
T37LOR  102740          T37WDE  103202          WC.IFE= 000002          XSOIE  = 000040         X2.REV= 000077
T37NEF  104741          T37WDF  103010          WC.IGO= 000001          XSOILA= 000400          X2.SPA= 035400
T37OFL  103766          T37WDR  102410          WC.IRE= 000010          XSOILC= 001000          X2.UNI= 000007
T37PAC  102250          T37WNG  102424          WC.IRW= 000004          XSOLET= 020000          X2.WCF= 002000
T37PBP  104565          T37WRF  105176          WC.IOT= 000100          XSOMOT= 000200          X3.DCK= 000010
T37PK2  102360          T37WSS  104332          WC.I1T= 000040          XSONEF= 002000          X3.MBZ= 000006
T37PK3  102370          T4      046770 G        WC.I5R= 000020          XSOONL= 000100          X3.MDE= 177400
T37RB   102372          T4.1    047020          WF.IED= 000010          XSOPED= 000010          X3.OPI= 000100
T37RDF  102512          T4.2    047660          WF.IER= 000004          XSORLL= 010000          X3.REV= 000040
T37RES  105374          T4.3    050470          WF.IHI= 000200          XSORLS= 040000          X3.RIB= 000001
T37RN   102406          T5      053046 G        WF.IRE= 000040          XSOTMK= 100000          X3.SPA= 000200
T37RNC  103644          T5.1    053076          WF.IWF= 000020          XSOVCK= 000020          X3.TRF= 000020
T37RRF  102561          T6      056042 G        WF.IWR= 000100          XSOWLE= 004000          X4.HSP= 100000
T37RT2  105466          T6.1    056072          WF.I3R= 000002          XSOWLK= 000004          X4.MBZ= 017400
T37RT3  105530          T7      063414 G        WF.I4R= 000001          XXCOMM  003114 G        X4.RCE= 040000
T37RWN  103575          T7.1    063444          WRTCHR  010742 G        X$ALWA= 000000          X4.TSM= 020000
T37SC   102656          T7.2    064522          WRTERR  005107          X$FALS= 000040          X4.WRC= 000377
T37SCF  105037          T7.3    065602          WRTMSG  005052

. ABS.  106404      000
        000000      001
ERRORS DETECTED:  0

VIRTUAL MEMORY USED:  30328 WORDS  ( 119 PAGES)
DYNAMIC MEMORY:  20346 WORDS  ( 78 PAGES)
ELAPSED TIME:  00:39:26
CVTSDA0,CVTSDA0/-SP=SVC/ML,TSV1D,TSV22D,TSV3B,TSV4,TSV7B,TSV6
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