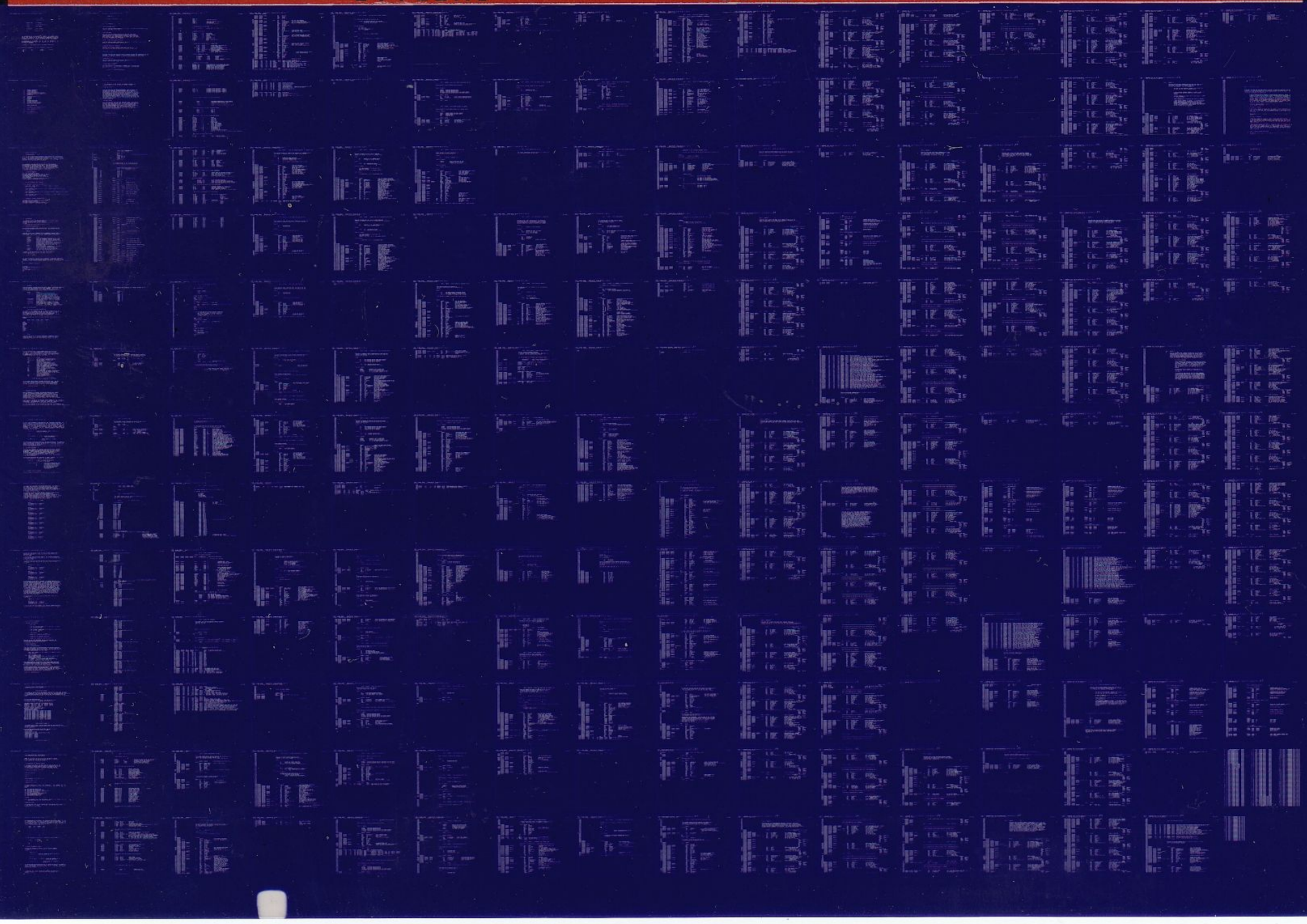
TSV05

TSV05 CTRL LT4
CVTSDA0

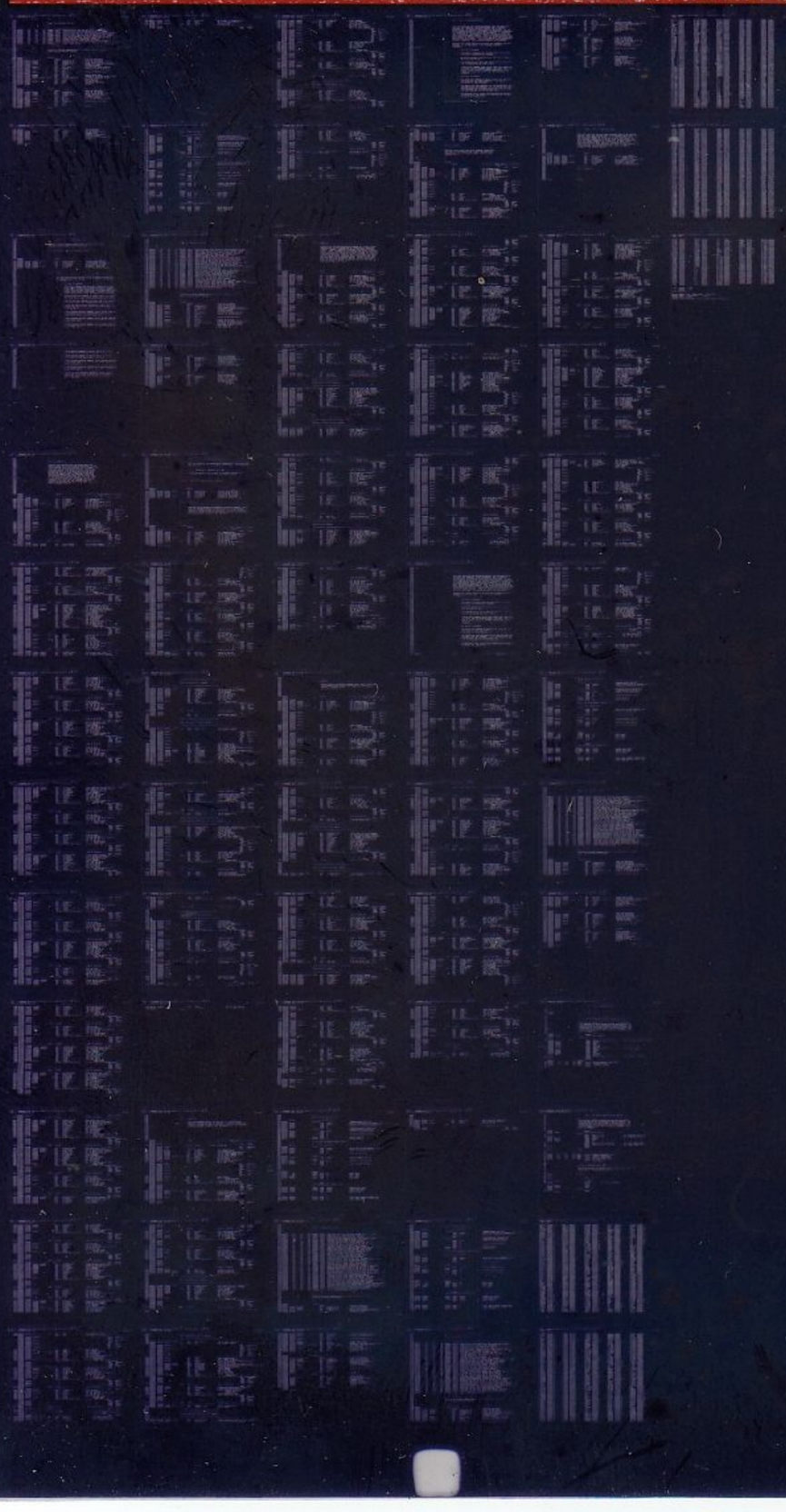
AH-T100A-MC
FICHE 1 OF 2



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

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1.0 GENERAL INFORMATION

1.1 PROGRAM ABSTRACT

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

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

1.2 SYSTEM REQUIREMENTS

PDP-11/23 PROCESSOR AND MEMORY
CAUTION:DIAGNOSTIC REQUIRES 32K WORDS OF MEMORY
(28K USEABLE AND 4K RESERVED FOR I/O PAGE)
TSV05 MAGTAPE SUBSYSTEM (DRIVE AND CONTROLLER)
CONSOLE TERMINAL
PDP-11 DIAGNOSTIC SUPERVISOR (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 MESSAGF 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$PRIO::        .WORD   0               ;DIAGNOSTIC RUN PRIORITY
002044
002044  000000          L$ENVI::        .WORD   0               ;FLAGS DESCRIBE HOW IT WAS SETUP
002046
002046  000000          L$EXP1::        .WORD   0               ;EXPANSION WORD
002050
002050     003          L$MREV::        .BYTE   C$REVISION      ;SVC REV AND EDIT #
002051     003                          .BYTE   C$EDIT
002052
002052  000000          L$EF::          .WORD   0               ;DIAG. EVENT FLAGS
002054  000000                          .WORD   0
002056
002056  000000          L$SPC::         .WORD   0
002060
002060  003374          L$DEVP::        .WORD   L$DVTYP         ; POINTER TO DEVICE TYPE LIST
002062
002062  022744          L$REPP::        .WORD   L$RPT           ;PTR. TO REPORT CODE
002064
002064  000000          L$EXP4::        .WORD   0
002066
002066  000000          L$EXP5::        .WORD   0
002070
002070  022432          L$AUT::         .WORD   L$AU            ;PTR. TO ADD UNIT CODE
002072
002072  022530          L$DUT::         .WORD   L$DU            ;PTR. TO DROP UNIT CODE
002074
002074  000000          L$LUN::         .WORD   0               ;LUN FOR EXERCISERS TO FILL
002076
002076  003402          L$DESP::        .WORD   L$DESC          ;POINTER TO DIAG. DESCRIPTION
002100
002100  104035          L$LOAD::        EMT     E$LOAD          ;GENERATE SPECIAL AUTOLOAD EMT
002102
002102  000000          L$ETP::         .WORD   0               ;POINTER TO ERRTBL
002104
002104  021636          L$ICP::         .WORD   L$INIT          ;PTR. TO INIT CODE
002106
002106  022716          L$CCP::         .WORD   L$CLEAN         ;PTR. TO CLEAN-UP CODE
002110
002110  022636          L$ACP::         .WORD   L$AUTO          ;PTR. TO AUTO CODE
002112
002112  021626          L$PRT::         .WORD   L$PROT          ;PTR. TO PROTECT TABLE
002114
002114  000000          L$TEST::        .WORD   0               ;TEST NUMBER
002116
002116  000000          L$DLY::         .WORD   0               ;DELAY COUNT
002120
002120  000000          L$HIME::        .WORD   0               .PTR. TO HIGH MEM
```

```
     32                                      .SBTTL  DISPATCH TABLE
     33
     34                                  ;++
     35                                  ; THE DISPATCH TABLE CONTAINS THE STARTING ADDRESS OF EACH TEST.
     36                                  ; IT IS USED BY THE SUPERVISOR TO DISPATCH TO EACH TEST.
     37                                  ;--
     38
     39 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
     40
```

```
                                .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.
                        ;--
                                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
                                ENDSW
002170                  L10001:

                                ENDMOD
```

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

002170                          BGNMOD  TSV3
002170                  TSV3::


                                .SBTTL  GLOBAL EQUATES SECTION

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

002170                          EQUALS          ; GET STANDARD EQUATES.
                                ;
                                ; BIT DIFINITIONS
                                ;
100000                          BIT15== 100000
040000                          BIT14== 40000
020000                          BIT13== 20000
010000                          BIT12== 10000
004000                          BIT11== 4000
002000                          BIT10== 2000
001000                          BIT09== 1000
000400                          BIT08== 400
000200                          BIT07== 200
000100                          BIT06== 100
000040                          BIT05== 40
000020                          BIT04== 20
000010                          BIT03== 10
000004                          BIT02== 4
000002                          BIT01== 2
000001                          BIT00== 1
                                ;
001000                          BIT9==  BIT09
000400                          BIT8==  BIT08
000200                          BIT7==  BIT07
000100                          BIT6==  BIT06
000040                          BIT5==  BIT05
000020                          BIT4==  BIT04
000010                          BIT3==  BIT03
000004                          BIT2==  BIT02
000002                          BIT1==  BIT01
000001                          BIT0==  BIT00
                                ;
                                ; EVENT FLAG DEFINITIONS
                                ;   EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION
                                ;
000040                          EF.START==      32.                     ; START COMMAND WAS ISSUED
000037                          EF.RESTART==    31.                     ; RESTART COMMAND WAS ISSUED
000036                          EF.CONTINUE==   30.                     ; CONTINUE COMMAND WAS ISSUED
000035                          EF.NEW==        29.                     ; A NEW PASS HAS BEEN STARTED
000034                          EF.PWR==        28.                     ; A POWER-FAIL/POWER-UP OCCURRED
                                ;
                                ;
```

```
                        ; PRIORITY LEVEL DEFINITIONS
                        ;
000340                  PRI07== 340
000300                  PRI06== 300
000240                  PRI05== 240
000200                  PRI04== 200
000140                  PRI03== 140
000100                  PRI02== 100
000040                  PRI01== 40
000000                  PRI00== 0
                        ;
                        ;OPERATOR FLAG BITS
                        ;
000004                  EVL==       4
000010                  LOT==      10
000020                  ADR==      20
000040                  IDU==      40
000100                  ISR==     100
000200                  UAM==     200
000400                  BOE==     400
001000                  PNT==    1000
002000                  PRI==    2000
004000                  IXE==    4000
010000                  IBE==   10000
020000                  IER==   20000
040000                  LOE==   40000
100000                  HOE==  100000
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.BUFF = 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.ROP   = 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 NEGATIVE?
                        BMI     TAG             ;BR IF YES
                .NLIST
                .IIF NDF LISTALL, .LIST
                .LIST
                .ENDM
                ;+
                ; MACRO TO INCREMENT ERROR COUNTS
                ;-
                .MACRO  NEXT.ERRNO
                .NLIST
                ;;;.IIF NDF LISTALL, .NLIST
                        ERRNO=ERRNO+1
                ;;;.IIF NDF LISTALL, .LIST
                .LIST
                .ENDM

                ;+
```

```
                                ;MACRO TO PERFORM XOR
                                ;-

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

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

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

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

```
                                .SBTTL  GLOBAL DATA SECTION

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

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

```
    004113   045   116   045  FUSI:    .ASCII  /%N%A/
    004117   040   040   125  USI:     .ASCIZ  /  UNEXPECTED INTERRUPT/
    004146   040   040   111  NSI:     .ASCIZ  /  INTERRUPT EXPECTED, NOT RECEIVED/
    004211   045   116   045  FNOINTR:         .ASCII  /%N%A/
    004215   040   040   116  NOINTR:  .ASCIZ  /  NO INTERRUPT WAS GENERATED/
    004252   040   040   111  IFAULT:  .ASCIZ  /  INTERRUPT FAULT/
    004274   045   101   040  INTX:    .ASCIZ  /%A  CPU PC: %06%A  TSBA: %06/
    004331   040   040   042  NOINIT:  .ASCIZ  /  ''BUS-INIT'' DIDN'T INITIALIZE CONTROLLER/
    004403   040   040   042  NSINIT:  .ASCIZ  /  ''SOFT-INIT'' DIDN'T INITIALIZE THE DPU/
    004453   040   040   042  BRINIT:  .ASCIZ  /  ''BUS-RESET'' DIDN'T INITIALIZE THE DPU/

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

```
                                        .SBTTL  GLOBAL ERROR REPORT SECTION

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

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


                                ;
                                ; THIS ROUTINE APPENDS A UNIQUE EXTENSION (IF REQUIRED)
                                ; TO ANY OF THE ABOVE ERROR SIGNATURES.
                                ;
005764  005727                 EXTEND: TST     (PC)+
005766  000000                 EXTA:   0                       ; 0 = NO EXTENSION.
005770  001402                         BEQ     1$
005772  004777  177770                 JSR     PC,@EXTA        ; APPEND EXTENSION TEXT.
005776                          1$:    PRINTX  #NULCR          ; PRINT A BLANK LINE
005776  012746  004524                 MOV     #NULCR,-(SP)
006002  012746  000001                 MOV     #1,-(SP)
006006  010600                         MOV     SP,R0
006010  104415                         TRAP    C$PNTX
006012  062706  000004                 ADD     #4,SP
006016  000207                         RTS     PC
```

```
                                .SBTTL  PRITSSR - PRITSSR 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:
010236                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
010242  013700  002230                  MOV     ERRHI,R0                ;GET HIGH ADDRESSS
010246  013701  002232                  MOV     ERRLO,R1                ;GET LOW ADDRESS
010252  010102                          MOV     R1,R2                   ;COPY LOW ADDRESS
010254  006101                          ROL     R1                      ;SHIFT BIT 15 TO C BIT
010256  006100                          ROL     R0                      ;SHIFT INTO HIGH ORDER
010260                                  PRINTB  #PRIA0,R0,R2            ;PRINT MEMORY ADDRESS IN ERROR
010260  010246                          MOV     R2,-(SP)
010262  010046                          MOV     R0,-(SP)
010264  012746  010306                  MOV     #PRIA0,-(SP)
010270  012746  000003                  MOV     #3,-(SP)
010274  010600                          MOV     SP,R0
010276  104414                          TRAP    C$PNTB
010300  062706  000010                  ADD     #10,SP
010304  000207                          RTS     PC                      ;RETURN

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


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

```
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:
                ;
                ;
                ;-
                ;
                SPACE::
                        SAVREG                          ;SAVE THE GENERAL REGISTERS
                        MOV     #500.,SDELAY            ;SET UP DELAY
                        MOV     #140010,80$             ;SET UP COMMAND, SPACE FORWARD
                        TST     R3                      ;CHECK FOR DIRECTION
                        BMI     5$                      ;BR, IF REVERSE INDICATED
                        MOV     R3,90$                  ;LOAD UP NUMBER OF RECORDS TO SPACE
                        BR      10$                     ;GO DO COMMAND
                5$:     BIC     #BIT15,R3               ;CLEAR DIRECTION BIT
                        MOV     R3,90$                  ;LOAD UP NUMBER OF RECORDS TO SPACE
                        BIS     #BIT8,80$               ;SET REVERSE BIT IN COMMAND PACKET
                10$:      V     #80$,R4                 ;SET UP R4 WITH PACKET ADDRESS
                          V     R4,TSDB(R5)             ;SEND OUT COMMAND
                15$:    JSR     PC,WAITF                ;WAIT FOR SSR
                        BCS     20$                     ;BR, IF SSR IS SET AND OK
                        DELAY   250             ;DELAY ABOUT .25 SECONDS
010632  012727  000250          MOV     #250,(PC)+
010636  000000                  .WORD   0
010640  013727  002116          MOV     L$DLY,(PC)+
010644  000000                  .WORD   0
010646  005367  177772          DEC     -6(PC)
010652  001375                  BNE     .-6
```

```
        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
```

```
                                ;
                                ;
                                ;
                                ;PACKET FOR SPACE COMMAND
                                ;
010730                                  .=<.+10>&177770
                                ;
                                ;COMMAND WORD
010730  000000                  80$:    .WORD
                                ;NUMBER OF RECORDS TO BE SPACED OVER WORD
010732  000000                  90$:    .WORD
010734  000000                          .WORD
010736  000000                          .WORD
010740  000000                  SDELAY: .WORD   0                       ;DELAY COUNTER
                                        .EVEN
```

```
                        .SBTTL  WRTCHR  - WRITE CHARACTERISTICS COMMAND

                ;+
                ;
                ;ROUTINE TO ISSUE A WRITE CHARACTERISTICS
                ;COMMAND SO THAT OTHER COMMANDS WILL BE ACCEPTED
                ;
                ;INPUT:
                ;
                ;       R4      ADDRESS OF PACKET FROM TESI
                ;       R5      FIRST DEVICE UNIBUS ADDRESS
                ;       REQUIRES A CALL TO SOFINIT BE DONE PREVIOUSLY
                ;
                ;OUTPUT:
                ;
                ;       R0      TSSR CONTENTS
                ;       CARRY   SET - WRITE CHARACTERISTICS COMMAND OK
                ;               CLR - WRITE CHARACTERISTICS FAILED
                ;
                ;IMPLICIT OUTPUT:
                ;
                ;       MESSAGE BUFFER AND OTHER BUFFERS ALL SET UP
                ;       SOFTWARE SWITCHES SET AS FOLLOWS:
                ;               EXTFEA = EXTENDED FEATURES PRESENT
                ;               BENBSW = BUFFER ENABLE SWITCH ON OR OFF
                ;
                ;
                ;SIDE EFFECTS:
                ;
                ;
                ;-
                ;
010742          WRTCHR::
010742                  SAVREG                                  ;SAVE THE GENERAL REGISTERS
010746  005037  002222          CLR     BENBSW          ;CLEAR BUFFER ENABLE SWITCH
010752  005037  002220          CLR     EXTFEA                  ;CLEAR EXTENDED FEATURES SW SWITCH
010756  010465  000000  10$:    MOV     R4,TSDB(R5)             ;SEND OUT COMMAND
010762  004737  016416          JSR     PC,CHKTSSR              ;WAIT FOR SSR
010766  103401                  BCS     20$                     ;BR, IF SSR IS SET AND OK
010770  000435                  BR      60$                     ;BR IF TROUBLE CARRY = CLEAR
010772  016501  000002  20$:    MOV     TSSR(R5),R1             ;READ TSSR
010776  012702  000200          MOV     #SSR,R2                 ;SET UP EXPECTED
011002  032701  000100          BIT     #OFL,R1                 ;WAS OFF LINE SET IN TSSR
011006  001402                  BEQ     25$                     ;BR, IF NO OFL SET
011010  052702  000100          BIS     #OFL,R2                 ;MAKE THEM LOOK ALIKE
011014  020201          25$:    CMP     R2,R1                   ;ARE THEY OK
011016  001401                  BEQ     40$                     ;BR, IF EQUAL = OK
011020  000421                  BR      60$                     ;TROUBLE EXIT
011022  062704  000010  40$:    ADD     #8.,R4                  ;POINT TO WRT CHARA DATA PACKET
011026  011403                  MOV     (R4),R3                 ;GET ADDRESS OF MESSAGE BUFFER
011030  032763  000200  000012  BIT     #X2.EXTF,XST2(R3)       ;EXTENDED FEATURES BIT SET?
011036  001402                  BEQ     45$                     ;BR IF NO
011040  005237  002220          INC     EXTFEA                  ;SET EXTENDED FEATURES SW SWITCH
011044                  45$:
011044  032763  000100  000012  BIT     #X2.BUFE,XST2(R3)                       ;BUFFER ENABLE SWITCH SET
011052  001402                  BEQ     50$                     ;BR, IF SWITCH NOT SET
011054  005237  002222          INC     BENBSW                  ;SET SOFTWARE SWITCH FOR ENABLED
```

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

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

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


                                .=<.+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
                                ;
                                ;-
011560                          CKMSG2::
011560                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
011564  020327  000144                  CMP     R3,#RECMSG-EXPMSG;@@D IS COUNT ABOVE MAX ALLOWED?
011570  003412                          BLE     5$                      ;@@D BP IF NO
011572  012703  000144                  MOV     #RECMSG-EXPMSG,R3;@@D
011576                                  PRINTF  #DEBUGMSG               ;@@D
011576  012746  011712                  MOV     #DEBUGMSG,-(SP)
011602  012746  000001                  MOV     #1,-(SP)
011606  010600                          MOV     SP,R0
011610  104417                          TRAP    C$PNTF
011612  062706  000004                  ADD     #4,SP
011616  010037  002276          5$:     MOV     R0,RCVHIADD             ;SAVE RECV HIGH ADDRESS
011622  010137  002300                  MOV     R1,RCVLOAD              ;SAVE RECV LOW ADDRESS
011626  005737  003126                  TST     KTENABLE                ;TESTING ABOVE 28K?
011632  001403                          BEQ     10$                     ;BR IF NO
011634  004737  017376                  JSR     PC,SETMAP               ;RETURN ADDRESS BIASED TO PAR6 IN R0
011640  010001                          MOV     R0,R1                   ;GET RETURNED ADDRESS BIASED TO PAR6
011642  005004          10$:    CLR     R4                      ;WORD IN BUFFER
011644  005005                  CLR     R5                      ;CLEAR ERROR SEEN FLAG
011646  111264  002314          15$:    MOVB    (R2),EXPMSG(R4) ;SAVE EXPD FOR ERROR REPORT
011652  111164  002460                  MOVB    (R1),RECMSG(R4) ;SAVE RECV FOR ERROR REPORT
011656  122221                          CMPB    (R2)+,(R1)+     ;EXPD EQUAL RECV?
011660  001401                          BEQ     25$             ;BR IF YES
011662  005205                          INC     R5              ;SET ERROR SEEN FLAG
011664  062704  000001          25$:    ADD     #1,R4           ;POINT TO NEXT BYTE
011670  020403                          CMP     R4,R3           ;DONE ALL BYTES?
011672  002001                          BGE     50$             ;BR IF YES
011674  000764                          BR      15$             ;DO NEXT BYTE
011676  005705          50$:    TST     R5              ;ANY ERRORS SEEN?
011700  001402                  BEQ     55$             ;BR IF NO
```

```
 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
```

```
1452
1453
1454                                    ;+
1455                                    ;
1456                                    ;PRINT ROUTINE TO FATAL SOFT INIT ERRORS
1457                                    ;
1458                                    ;INPUT:
1459                                    ;
1460                                    ;       R1      CONTENTS OF TSSR AT ERROR
1461                                    ;
1462                                    ;SIDE EFFECTS:
1463                                    ;
1464                                    ;       EXECUTES DROP UNIT TO CEASE TESTING
1465                                    ;
1466                                    ;-
1467
1468 012114                                    BGNMSG  SFIMSG
     012114                             SFIMSG::
1469 012114  004737  006020                    JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
1470 012120  004737  017262                    JSR     PC,CKDROP       ;DROP UNIT, IF ALLOWED
1471 012124                                    ENDMSG
     012124                             L10003:
     012124  104423                            TRAP    C$MSG
1472
1473                                    ;+
1474                                    ;PRINT ROUTINE TO PRINT THE CONTENTS OF
1475                                    ;TSSR AND A COMMAND PACKET OTHER THAN GET STATUS COMMAND PACKET.
1476                                    ;
1477                                    ;INPUTS:
1478                                    ;
1479                                    ;       R1      TSSR CONTENTS
1480                                    ;       R4      ADDRESS OF COMMAND PACKE
1481                                    ;
1482                                    ;-
1483
1484 012126                                    BGNMSG  PKTSSR
     012126                             PKTSSR::
1485 012126  004737  006020                    JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
1486 012132  012700  000004                    MOV     #4,R0           ;NO. OF WORDS IN PACKET
1487 012136  004737  007446                    JSR     PC,PRIPKT       ;PRINT THE CONTENTS OF COMMAND PACKET
1488 012142                                    ENDMSG
     012142                             L10004:
     012142  104423                            TRAP    C$MSG
1489
1490                                    ;+
1491                                    ;PRINT ROUTINE TO PRINT THE CONTENTS OF
1492                                    ;TSSR AND A GET STATUS COMMAND PACKET.
1493                                    ;
1494                                    ;INPUTS:
1495                                    ;
1496                                    ;       R1      TSSR CONTENTS
1497                                    ;       R4      ADDRESS OF COMMAND PACKET
1498                                    ;
1499                                    ;-
1500
1501 012144                                    BGNMSG  PKTGETS
     012144                             PKTGETS::
```

```
                                        JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
                                        MOV     #2,R0           ;NO. OF WORDS IN GET STATUS PACKET
                                        JSR     PC,PRIPKT       ;PRINT THE CONTENTS OF COMMAND PACKET
                                        ENDMSG
                                L10005:
                                        TRAP    C$MSG


                                ;+
                                ;PRINT TSSR ERRORS FOR INITIALIZATION TESTS
                                ;
                                ;INPUTS:
                                ;
                                ;       R1      TSSR CONTENTS
                                ;       R4      ADDRESS OF COMMAND PACKET
                                ;-

                                        BGNMSG  SFFMSG
                                SFFMSG::
                                        JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
                                        ENDMSG
                                L10006:
                                        TRAP    C$MSG


                                        .SBTTL  PKTMES  - PRINT TSSR AND MESSAGE BUFFER
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT THE CONTENTS OF TSSR AND MESSAGE
                                ;BUFFER FOR ERROR REPORTS
                                ;
                                ;INPUTS:
                                ;
                                ;       R1      CONTENTS OF TSSR
                                ;       R2      LOW ORDER MESSAGE BUFFER
                                ;       R3      HIGH ORDER MESSAGE BUFFER ADDRESS
                                ;       NOTE: R3 IS IGNORED IF KTENABLE FLAG IS CLEAR
                                ;-
                                        BGNMSG  PKTMES
                                PKTMES::
                                        JSR     PC,PRITSSR              ;PRINT CONTENTS OF TSSR
                                        MOV     R2,R0                   ;LOW ORDER ADDRESS
                                        MOV     R3,R1                   ;HIGH ORDER ADDRESS
                                        JSR     PC,PRMESS               ;PRINT THE MESSAGE BUFFER
                                        ENDMSG
                                L10007:
                                        TRAP    C$MSG
```

```
                                        .SBTTL  ADDSSR  - PRINT TEST ADDRESS AND TSSR
                                ;+
                                ;PRINT ROUTINE TO PRINT THE CONTENTS OF
                                ;TSSR AND A MEMORY TEST ADDRESS
                                ;
                                ;INPUTS:
                                ;
                                ;       R5      FIRST DEVICE UNIBUS ADDRESS
                                ;       ERRHI   HIGH ORDER MEMORY TEST ADDRESS
                                ;       ERRLO   LOW ORDER MEMORY TEST ADDRESS
                                ;-
                                
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
012320          L10012:
012320  104423          TRAP    C$MSG
012322    045   116   045 FIF1MSG:  .ASCIZ  '%N%A NUMBER OF BYTES TRANSFERRED = %U2'
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
014022                          MSGSUB::
014022  012700  000012                  MOV     #10.,R0         ;SIZE OF WRITE SUBSYSTEM BUFFER
014026  004737  014632                  JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
014032                                  ENDMSG
014032                          L10015:
014032  104423                          TRAP    C$MSG


                                        .SBTTL  MEMADD - PRINT MEMORY ADDRESS DATA ERROR
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT MEMORY ADDRESS DATA COMPARE ERROR
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       ERRHI   - MEMORY ERROR HIGH ORDER ADDRESS
                                ;       ERRLO   - MEMORY ERROR LOW ORDER ADDRESS
                                ;       EXP     - EXPECTED DATA
                                ;       RECV    - RECEIVED DATA
                                ;-
                                        BGNMSG  MEMADD
014034                          MEMADD::
014034  004737  010236                  JSR     PC,PRIADD       ;PRINT MEMORY ADDRESS IN ERROR
014040  013701  002224                  MOV     EXPD,R1         ;GET EXPD DATA
014044  013702  002226                  MOV     RECV,R2         ;GET RECEIVED DATA
014050  004737  010020                  JSR     PC,PRIXOR       ;PRINT EXPD/RECV
014054                                  ENDMSG
014054                          L10016:
014054  104423                          TRAP    C$MSG
```

```
                        .SBTTL  PRAMPKT - PRINT RAM AND PACKET DATA
                ;+
                ;
                ;PRINT ROUTINE TO DISPLAY RAM/PACKET DATA
                ;WHEN THE RAM DATA DOES NOT MATCH.
                ;
                ;INPUTS:
                ;
                ;       R4      POINTER TO COMMAND PACKET
                ;
                ;IMPLICIT INPUTS:
                ;
                ;       RAMDATA         DATA AS READ FROM THE RAM
                ;       RAMSIZ          NUMBER OF BYTES IN PACKET
                ;                       IF RAMSIZ=0 THEN DEFAULT TO 8.
                ;
                ;IMPLICIT OUTPUTS:
                ;
                ;       RAMSIZ  SET TO 0
                ;-
                PRAMPKT:
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
014066 122124   5$:     CMPB    (R1)+,(R4)+             ;COMPARE EXPECTED, RECEIVED
014070 001005           BNE     7$                      ;BR IF NO MATCH
014072                  FORCERROR       7$,NOTSSR
014074 000436           BR      10$                     ;add
014104 116105 177777    MOVB    -1(R1),R5       7$:     ;GET RECV RAM DATA
014106 116403 177777    MOVB    -1(R4),R3               ;GET EXPD PACKET DATA
014112                  XOR     R5,R3                   ;XOR EXPD/RECV
014116 042703 177400    BIC     #177400,R3              ;LOW BYTE ONLY
014126 116137 177777 002226     MOVB    -1(R1),RECV     ;GET RECEIVED RAM DATA
014132 116437 177777 002224     MOVB    -1(R4),EXPD     ;GET EXPECTED RAM DATA
014140                  PRINTB  #RAMASC,R2,RECV,EXPD,R3
014146 010346           MOV     R3,-(SP)
014146 013746 002224    MOV     EXPD,-(SP)
014150 013746 002226    MOV     RECV,-(SP)
014154 010246           MOV     R2,-(SP)
014160 012746 014236    MOV     #RAMASC,-(SP)
014162 012746 000005    MOV     #5,-(SP)
014166 010600           MOV     SP,R0
014172 104414           TRAP    C$PNTB
014174 062706 000014    ADD     #14,SP
014176 005202   10$:     INC     R2                      ;UPDATE BYTE COUNT
014202 005737 002274    TST     RAMSIZ                  ;DEFAULT TO 8.?
014204 001404           BEQ     15$                     ;BR IF YES
014210 020237 002274    CMP     R2,RAMSIZ               ;DONE ALL BYTES?
014212 003724           BLE     5$                      ;BR IF NO
014216 000403           BR      25$                     ;
014220 020227 000010    CMP     R2,#8.          15$:    ;DONE DEFAULT NUMBER OF BYTES?
014222 002720           BLT     5$              20$:    ;BR IF NO
014226 005037 002274    CLR     RAMSIZ          25$:    ;SET DEFAULT RAMSIZ
014230                  RTS     PC                      ;RETURN
014234 000207
014236      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 'S 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::
014632                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
014636  010005                          MOV     R0,R5                   ;SAVE NUMBER OF WORDS
014640  013700  002300                  MOV     RCVLOADD,R0             ;GET RECV LOW ADDRESS
014644  010004                          MOV     R0,R4                   ;COPY LOW ADDRESS
014646  013701  002276                  MOV     RCVHIADD,R1             ;GET RECV HIGH ADDRESS
014652  006100                          ROL     R0                      ;SHIFT BIT15 TO C BIT
014654  006101                          ROL     R1                      ;SHIFT TO HIGH ORDER FOR PRINTOUT
014656                                  PRINTX  #PRMSG0,R1,R4           ;PRINT MESSAGE BUFFER ADDRESS
014656  010446                          MOV     R4,-(SP)
014660  010146                          MOV     R1,-(SP)
014662  012746  015012                  MOV     #PRMSG0,-(SP)
014666  012746  000003                  MOV     #3,-(SP)
014672  010600                          MOV     SP,R0
014674  104415                          TRAP    C$PNTX
014676  062706  000010                  ADD     #10,SP
014702                                  PRINTX  #PRMSG1                 ;PRINT HEADER FOR CONTENTS
014702  012746  015057                  MOV     #PRMSG1,-(SP)
014706  012746  000001                  MOV     #1,-(SP)
014712  010600                          MOV     SP,R0
014714  104415                          TRAP    C$PNTX
014716  062706  000004                  ADD     #4,SP
014722  005004                          CLR     R4                      ;NUMBER OF THE CURRENT WORD
014724  012701  002314                  MOV     #EXPMSG,R1              ;GET EXPD BUFFER ADDRESS
014730  012702  002460                  MOV     #RECMSG,R2              ;GET RECV BUFFER ADDRESS
014734  011100                  20$:    MOV     (R1),R0                 ;GET EXPD
014736  011203                          MOV     (R2),R3                 ;GET RECV
014740                                  XOR     R0,R3                   ;XOR EXPD/RECV
014750                                  PRINTX  #PRMSG2,R4,(R1)+,(R2)+,R3
014750  010346                          MOV     R3,-(SP)
014752  012246                          MOV     (R2)+,-(SP)
014754  012146                          MOV     (R1)+,-(SP)
014756  010446                          MOV     R4,-(SP)
014760  012746  015115                  MOV     #PRMSG2,-(SP)
014764  012746  000005                  MOV     #5,-(SP)
014770  010600                          MOV     SP,R0
014772  104415                          TRAP    C$PNTX
014774  062706  000014                  ADD     #14,SP
015000  005204                          INC     R4                      ;NUMBER OF THE NEXT
015002  020405                          CMP     R4,R5                   ;DONE ALL YET?
015004  002001                          BGE     50$                     ;BR IF YES
015006  000752                          BR      20$                     ;DO ANOTHER
015010  000207                  50$:    RTS     PC                      ;RETURN
```

```
   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                          BGNMSG  EXPREC
015554                  EXPREC::
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
1997 015576  004737  010352        JSR     PC,PRITADD      ;PRINT TEST ADDRESS
1998 015602  004737  014056        JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
1999 015606                        ENDMSG
015606                  L10022:
015606  104423                    TRAP    C$MSG
2000
2001
2002                            .SBTTL  RAMEXP  - PRINT RAM EXPD/RECV DATA
2003                    ;+
2004                    ;
2005                    ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
2006                    ;
2007                    ;INPUTS:
2008                    ;
2009                    ;       R1      RECEIVED DATA
2010                    ;       R2      EXPECTED DATA
2011                    ;       R4      CONTROLLER RAM ADDRESS
2012                    ;-
2013
2014 015610                        BGNMSG  RAMEXP
015610                  RAMEXP::
2015 015610  042701  177400        BIC     #^C<377>,R1             ;SAVE EXPD RAM DATA BYTE
2016 015614  042702  177400        BIC     #^C<377>,R2             ;SAVE EXPD RAM DATA BYTE
2017 015620  004737  010144        JSR     PC,PRIRAM               ;PRINT THE RAM ADDRESS
2018 015624  004737  010020        JSR     PC,PRIXOR               ;PRINT THE DATA
2019 015630                        ENDMSG
015630                  L10023:
015630  104423                    TRAP    C$MSG
2020
2021                            .SBTTL  TIMEXP  - PRINT TIMER A,B AND EXP/REC
2022                    ;+
2023                    ;
2024                    ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
2025                    ;AND TIMER A,B HEADER MESSAGE
2026                    ;
2027                    ;INPUTS:
2028                    ;
2029                    ;       R1      RECEIVED DATA
2030                    ;       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)
                ;
                ;-

                        BGNMSG  BADSSR
                BADSSR::
016000 010246           MOV     R2,-(SP)                ;SAVE DATA TRANSFERRED
016002 042702 177400    BIC     #177400,R2              ;GET JUST ONE BYTE
016006                  PRINTB  #XFERASC,R2
016006 010246           MOV     R2,-(SP)
016010 012746 016020    MOV     #XFERASC,-(SP)
016014 012746 000002    MOV     #2,-(SP)
016020 010600           MOV     SP,R0
016022 104414           TRAP    C$PNTB
016024 062706 000006    ADD     #6,SP
016030 012602           MOV     (SP)+,R2                ;RESTORE R2
016032 004737 006020    JSR     PC,PRITSSR              ;DECODE TSSR CONTENTS
016036                  ENDMSG
016036                  L10025:
016036 104423           TRAP    C$MSG
016040  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
                                ;
                                ;-

                                SOFINIT::
                                        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::
                                        SAVREG                          ;SAVE GENERAL REGISTERS
                                        MOV     R0,R2                   ;SAVE THE MENU ADDRESS
                                1$:     MOV     R2,R3                   ;START OF MENU STRING
                                2$:     TST     (R3)                    ;END OF ASCII ?
                                        BEQ     3$                      ;BRANCH IF ALL LINES DISPLAYED
                                        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$PNTF
020370  062706  000006                  ADD     #6,SP
                                        BR      2$
                                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$HILIM
020416                          10001$:
                                        BNCOMPLETE      1$              ;RETRY IF ERROR
020416  103352                          BCC     1$
                                        MOV     MENRES,R0               ;GET THE OPERATOR'S REPLY
                                        CMP     R0,R1                   ;COMPARE TO MAXIMUM ALLOWED
                                        BLOS    5$                      ;BRANCH IF OK
                                        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$PNTF
020444  062706  000004                  ADD     #4,SP
                                        BR      1$                      ;RETRY
                                5$:     RTS     PC                      ;RETURN TO CALLER
                        045     116     045     MENERR: .ASCIZ  '%N%A *** Menu Selection Too Large ***'
                        045     116     045     SELASC: .ASCIZ  '%N%T'
                        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::
                                        SAVREG                  ;SAVE THE REGISTERS
                                        MANUAL                  ;SEE IF MANUAL INTERVENTION OK
020564  104450                          TRAP    C$MANI
                                        BCOMPLETE 1$            ;BRANCH IF ALLOWED
020566  103411                          BCS     1$
                                        PRINTF  #NOMAN          ;PRINT THE WARNING MESSAGE
020570  012746  020614                  MOV     #NOMAN,-(SP)
020574  012746  000001                  MOV     #1,-(SP)
020600  010600                          MOV     SP,R0
020602  104417                          TRAP    C$PNTF
020604  062706  000004                  ADD     #4,SP
020610  000241                          CLC                     ;CLEAR CARRY FOR ERROR
020612  000207                  1$:     RTS     PC              ;RETURN

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

```
                        .SBTTL  ENVIRN  - SETUP FREE DIAGNOSTIC SPACE
                ;
                ; SUBROUTINE TO SET-UP VARIOUS ENVIRONMENTAL PARAMETERS.
                ;
020710          ENVIRN: MEMORY  R0
020710  104431          TRAP    C$MEM
020712  010037  003116  MOV     R0,FREE         ; GET 1ST FREE ADDRESS...
020716  062737  000002  003116  ADD     #2,FREE
020724  011037  003120  MOV     (R0),FRESIZ     ;...AND WORD COUNT.
020730  162737  000004  003120  SUB     #4,FRESIZ
020736  013702  002012  MOV     L$UNIT,R2       ; GET NUMBER OF UNITS
020742  162737  000007  003120  10$:    SUB     #7,FRESIZ       ; TAKE AWAY 7 WORDS PER UNIT
020750  005302          DEC     R2
020752  001377          BNE     10$
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                  1$:     TST     EXTFEA                  ; IS SWITCH SET?
021272  001020                          BNE     1$                              ; 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                          RTS     PC                              ; RETURN


                                        ;       COMMAND PACKET.

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

021340  000000                          CMDPKT:: 0                      ;1ST WORD IS TSO5 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
```

```
2994            000006                          .REPT   6
2995                                            ASL     R1              ;PUT IN PLACE FOR XFER
2996                                            .ENDR
2997 021564  010137  003132                      MOV     R1,NXMLO        ;SAVE TEST ADDRESS LOW
2998            000012                          .REPT   10.
2999                                            ASR     R2              ;PUT IN PLACE FOR XFER
3000                                            .ENDR
3001 021614  042702  177700                      BIC     #177700,R2      ;DON'T WANT ILA!
3002 021620  010237  003134                      MOV     R2,NXMHI        ;SAVE TEST ADDRESS HIGH
3003 021624  000207                              RTS     PC              ;RETURN
3004
3005
3006
3007
3008 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
```

```
                        .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
```

```
     65 022000  005037  002206                    CLR     TSTCNT                  ;NUMBER OF TESTS RUN IN PASS
     66 022004  005037  002214                    CLR     FATFLG                  ;CLEAR FATAL ERROR COUNT
     67 022010  005037  003136                    CLR     T23A                    ;CLEAR 11/23A FLAG
     68 022014  005037  003140                    CLR     T23B                    ;CLEAR 11/23B FLAG
     69                                     ;       MOV     #340,-(SP)
     70                                     ;       MOV     #20$,-(SP)              ;RETURN TO DEBUGGER
     71                                     ;       JMP     0.ODT           ;;@@ENTER THE DEBUGGER
     72 022020  005037  003372                    CLR     SKIPT           ;CLEAR THE SUBTEST ''SKIPPER''
     73 022024                              20$:
     74 022024  012737  177777  002176              MOV     #-1,QVP                 ;...QUICK VERIFY...
     75 022032  004737  020710                    JSR     PC,ENVIRN               ;SET ENVIRONMENT.
     76 022036  004737  021134                    JSR     PC,KTINIT               ;INITIALIZE KT MEMORY MANAGEMENT
     77 022042  012700  003170                    MOV     #ERTABL,R0
     78 022046  005020                      30$:  CLR     (R0)+                   ;CLEAR THE ERROR TABLE
     79 022050  020027  003370                    CMP     R0,#ERTABE
     80 022054  103774                           BLO     30$
     81 022056  000404                           BR      4$
     82 022060  005037  002176              31$:  CLR     QVP
     83 022064  000137  022134                    JMP     PASRPT                  ;GO REPORT THE STATUS
     84
     85 022070                              4$:
     86 022070  012737  177777  002174    NEWPAS: MOV     #-1,UNITN               ;INIT UNIT NUMBER...
     87 022076  005037  002212                    CLR     DEVCNT                  ;CLEAR COUNT OF DEVICES RUNNING
     88 022102                              NXTU:   BREAK
        022102  104422                           TRAP    C$BRK
     89 022104  005237  002174                    INC     UNITN                   ;...AND SET NEXT UNIT NUMBER.
     90 022110  023737  002174  002012            CMP     UNITN,L$UNIT
     91 022116  103423                           BLO     SETU
     92 022120  012737  177777  003104            MOV     #-1,DUFLG
     93 022126  000401                           BR      11$
     94 022130                                   DOCLN                           ;ABORT, NO MORE UNITS.
        022130  104444                           TRAP    C$DCLN
     95 022132  000240                      11$:  NOP
     96 022134                              PASRPT:
     97 022134  023727  002012  000001            CMP     L$UNIT,#1               ;HOW MANY UNITS SELECTED?
     98 022142  101752                           BLOS    NEWPAS                  ;BR IF ONLY 1
     99 022144  005737  002212                    TST     DEVCNT                  ;ARE ANY STILL RUNNING?
    100 022150  001747                           BEQ     NEWPAS                  ;BR IF NO
    101 022152                                   RFLAGS  R0
        022152  104421                           TRAP    C$RFLA
    102 022154  032700  000100                    BIT     #ISR,R0                 ;SHOULD WE PRINT STATISTICS
    103 022160  001343                           BNE     NEWPAS                  ;BR IF NO
    104
    105 022162                                   DORPT
        022162  104424                           TRAP    C$DRPT
    106 022164  000741                           BR      NEWPAS
    107 022166                              10$:
    108
    109 022166                              SETU:   GPHARD  UNITN,R0                ;GET UNIT N P-TABLE POINTER.
        022166  013700  002174                    MOV     UNITN,R0
        022172  104442                           TRAP    C$GPHRD
    110 022174                                   BNCOMPLETE NXTU                 ;BR IF UNIT NOT AVAILABLE.
        022174  103342                           BCC     NXTU
    111 022176  005037  003104                    CLR     DUFLG                   ;CLEAR "DROPPED" FLAG.
    112 022202  005237  002212                    INC     DEVCNT
    113 022206  012001                           MOV     (R0)+,R1                ;GET 1ST REGISTER ADDRESS.
    114 022210  010137  002200                    MOV     R1,CSRADDR              ;ADDRESS OF REGISTERS OF UNIT UNDER TEST
```

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

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


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

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

```
                                        .SBTTL  ADD AND DROP UNITS SECTIONS

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

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-.
```

```
    197 022604     045     116     045 1$:     .ASCIZ  /%N%A  UNIT %D%A DROPPED/
    198                                 .EVEN
    199 022634                          ENDDU
        022634                      L10032:
        022634  104453                       TRAP    C$DU
    200                             ;++
    201                             ; AUTO-DROP CODE SECTION.
    202                             ;--
    203 022636                          BGNAUTO
        022636                      L$AUTO::
    204 022636  013705  002200              MOV     CSRADDR,R5              ;POINT TO DEVICE REGISTER
    205 022642  012703  000550              MOV     #360.,R3                ;ENOUGH TIME FOR 2400' REEL TO REWIND
    206 022646  004737  016330      10$:    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    207 022652  103420                      BCS     20$                     ;LEAVE WHEN SSR IS SET
    208 022654                              DELAY   250.                    ;WAIT FOR .25 SECONDS
        022654  012727  000372              MOV     #250.,(PC)+
        022660  000000                      .WORD   0
        022662  013727  002116              MOV     L$DLY,(PC)+
        022666  000000                      .WORD   0
        022670  005367  177772              DEC     -6(PC)
        022674  001375                      BNE     .-4
        022676  005367  177756              DEC     -22(PC)
        022702  001367                      BNE     .-20
    209 022704  005303                      DEC     R3                      ;BUMP COUNTER DOWN
    210 022706  001357                      BNE     10$                     ;KEEP GOING
    211 022710  004737  017262              JSR     PC,CKDROP               ;TRY AND DROP UNIT
    212 022714                          20$:
    213 022714                          ENDAUTO                     ; UNUSED.
        022714                      L10033:
        022714  104461                       TRAP    C$AUTO
```

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

                                        ;++
                                        ; THE CLEANUP CODING SECTION CONTAINS THE CODING THAT IS
                                        ; EXECUTED AT THE END OF EACH PASS (OR SUB-PASS).
                                        ; USE TO RETURN DEVICE UNDER TEST TO A NEUTRAL STATE.
                                        ;--
022716                                          BGNCLN
022716                                  L$CLEAN::
022716  013705  002200                          MOV     CSRADDR,R5              ;POINT TO DEVICE REGISTER
022722  005737  003104                          TST     DUFLG           ;"DROPPED" FLAG IS SET ON...
022726  100405                                  BMI     1$              ;...AND GROSS CONTROLLER FAULT...
                                                                        ;...DON'T TRY TO XCT CLEANUP CODE.
022730  012765  000000  000002                  MOV     #0,TSSR(R5)     ;DO SOFT INIT
022736  004737  016330                          JSR     PC,WAITF
022742                                  1$:
022742                                  2$:     ENDCLN
022742                                  L10034:
022742  104412                                  TRAP    C$CLEAN
                                        ;++
                                        ; THE REPORT CODING SECTION CONTAINS THE
                                        ; "PRINTS" CALLS THAT GENERATE STATISTICAL REPORTS.
                                        ;--
022744                                          BGNRPT
022744                                  L$RPT::
022744                                          PRINTS  #DEVSUM
022744  012746  023206                          MOV     #DEVSUM,-(SP)
022750  012746  000001                          MOV     #1,-(SP)
022754  010600                                  MOV     SP,R0
022756  104416                                  TRAP    C$PNTS
022760  062706  000004                          ADD     #4,SP
023064  010246                                  MOV     R2,-(SP)
023066  010346                                  MOV     R3,-(SP)
023070  010446                                  MOV     R4,-(SP)
023072  012704  003170                          MOV     #ERTABL,R4      ; GET START OF ERROR TABLE.
023076  005003                                  CLR     R3              ; CLEAR UNIT NUMBER
023100  011402                          1$:     MOV     (R4),R2         ; GET ERROR TABLE ENTRY & TEST IT.
023102  001467                                  BEQ     4$              ; ZERO IF UNIT NOT RUN
023104  100066                                  BPL     4$
023106  032702  040000                          BIT     #BIT14,R2       ; WAS UNIT DROPPED?
023112  001015                                  BNE     2$              ; BR IF YES
023114  042702  170000                          BIC     #^C7777,R2      ; GET ERROR COUNT FIELD
023120                                          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
```

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

```
                                .SBTTL  TEST  1: WRITE TAPE MARK RETRY
                        ;+
                        ;
                        ;THIS TEST VERIFIES PROPER OPERATION OF THE WRITE TAPE MARK RETRY COMMAND (SPACE
                        ;REVERSE, ERASE, WRITE TAPE MARK). SUBTESTS ARE AS FOLLOWS:
                        ;
                        ;
                        ;THE TEST CONSISTS OF THE FOLLOWING 4 SUBTESTS
                        ;
                        ;
                        ;
                        ;-
023526                          BGNTST
023526                                                                  T1::
023526  012737  006354  002172          MOV     #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,SOFINIT              ;DO INITIALIZE ON CONTROLLER
023606  103426                                  BCS     20$                     ;BR IF INIT WAS OK
023610                                          DELAY   250                     ;DELAY ABOUT .25 SECONDS
023610  012727  000250                                                                  MOV     #250,(PC)+
023614  000000                                                                          .WORD   0
023616  013727  002116                                                                  MOV     L$DLY,(PC)+
023622  000000                                                                          .WORD   0
023624  005367  177772                                                                  DEC     -6(PC)
023630  001375                                                                          BNE     .-4
023632  005367  177756                                                                  DEC     -22(PC)
023636  001367                                                                          BNE     .-20
023640  005337  026500                            DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
023644  001356                                  BNE     10$                     ;BR, IF MORE DELAY TIME LEFT
023646  005237  002214                            INC     FATFLG                          ;ERROR COUNT
023652  010001                                  MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
023654                                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
023654  104455                                                                          TRAP    C$ERDF
023656  000145                                                                          .WORD   101
023660  003646                                                                          .WORD   SFIERR
023662  012114                                                                          .WORD   SFIMSG
023664  013737  002174  026340        20$:        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,T290FL,EXPREC     ;DRIVE IS OFF LINE
        023742  104455                                                                          TRAP    C$ERDF
        023744  000147                                                                          .WORD   103
        023746  026502                                                                          .WORD   T290FL
        023750  015554                                                                          .WORD   EXPREC
     99 023752  004737  017262                          JSR     PC,CKDROP       ;TRY AND DROP DRIVE
    100 023756  004737  011074          26$:            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.
                                        ;
                                        ;
                                        ;
                                        ;-
024206                                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
                                                                                        T1.2:
024206  104402                                                                          TRAP    C$BSUB
024210  004737  032146                      JSR     PC,T29REST              ;SET COMMAND PACKET
024214  004737  032240                      JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
024220  004737  032302                      JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
024224  004737  016054                      JSR     PC,$OFINIT              ;DO INITIALIZE ON CONTROLLER
024230  103407                            BCS     20$                     ;BR IF INIT WAS OK
024232  005237  002214                      INC     FATFLG                          ;ERROR COUNT
024236  010001                            MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
024240                                    ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
024240  104455                                                                      TRAP    C$ERDF
024242  000154                                                                    .WORD   108
024244  003646                                                                    .WORD   SFIERR
024246  012114                                                                    .WORD   SFIMSG
024250  013737  002174  026340  20$:     MOV     UNITN,T29DSW            ;SET UP UNIT NUMBER

024256  012704  026320                    MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
024262  004737  010742                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
024266  103407                            BCS     25$                     ;BR, IF COMMAND ISSUED OK
024270  005237  002214                      INC     FATFLG                          ;ERROR COUNT
024274  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
024276                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
024276  104456                                                                      TRAP    C$ERHRD
024300  000155                                                                    .WORD   109
024302  005052                                                                    .WORD   WRTMSG
024304  012114                                                                    .WORD   SFIMSG
024306                          25$:      CKLOOP                          ;LOOP IF SELECTED
024306  104406                                                                    TRAP    C$CLP1
024310  004737  011074          26$:      JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
024314  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR
024320  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
024324  103407                            BCS     30$                     ;BR, IF NO PROBLEM
024326  010004                            MOV     R0,R4                   ;PACKET ADDRESS SET UP
024330  005237  002214                      INC     FATFLG                          ;ERROR COUNT
024334                                    ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
024334  104456                                                                    TRAP    C$ERHRD
024336  000156                                                                    .WORD   110
024340  030305                                                                    .WORD   T29RWN
024342  012126                                                                    .WORD   PKTSSR
024344                          30$:      CKLOOP                          ;LOOP IF SELECTED
024344  104406                                                                    TRAP    C$CLP1
024346  013701  026350                    MOV     T29BFR+6,R1             ;PICK UP XSTL
024352  010102                            MOV     R1,R2                   ;SET UP EXPECTED
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  104402                                                                                          TRAP    C$BSUB
                                                JSR     PC,T29REST              ;SET COMMAND PACKET
                                                JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
                                                JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
                                                MOV     #10000.,T29DLY          ;SET UP DELAY ROUTINE
                                        10$:    JSR     PC,$OFINIT              ;DO INITIALIZE ON CONTROLLER
                                                BCS     20$                     ;BR IF INIT WAS OK
                                                DELAY   250                     ;DELAY ABOUT .25 SECONDS
024762  012727  000250                                                                            MOV     #250,(PC)+
024766  000000                                                                                    .WORD   0
024770  013727  002116                                                                            MOV     L$DLY,(PC)+
024774  000000                                                                                    .WORD   0
024776  005367  177772                                                                            DEC     -6(PC)
025002  001375                                                                                    BNE     .-4
025004  005367  177756                                                                            DEC     -22(PC)
025010  001367                                                                                    BNE     .-20
                                                DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
                                                BNE     10$                     ;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  104455                                                                                    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  104456                                                                                    TRAP    C$ERHRD
025066  000165                                                                                    .WORD   117
025070  005052                                                                                    .WORD   WRTMSG
025072  012114                                                                                    .WORD   SFIMSG
                                        23$:    CKLOOP                          ;LOOP IF SELECTED
025074  104406                                                                                    TRAP    C$CLP1
                                                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
                                                BCS     30$                     ;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  104456                                                                                    TRAP    C$ERHRD
025120  000166                                                                                    .WORD   118
```

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        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$CLP1
    367 025320  012737  140401  026440          MOV     #140401,T29PK3      ;READ REVERSE,ACK, COMMAND
    368 025326  013737  003116  026442          MOV     FREE,T29RB          ;NUMBER OF RECORDS TO SPACE BACK
    369 025334  012704  026440                  MOV     #T29PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
    370 025340  010465  000000                  MOV     R4,TSDB(R5)         ;ISSUE COMMAND
    371 025344  004737  016330                  JSR     PC,WAITF            ;WAIT FOR SSR TO SET
    372 025350  016501  000002                  MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
    373 025354  012702  100204                  MOV     #SSR!SC!BIT2,R2     ;SET UP EXPECTED
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    374 025360  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
    375 025362  001406                        BEQ     222$                    ;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.
                                        ;
                                        ;-
025454                                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
025454                                                                                  T1.4:
025454  104402                                                                          TRAP    C$BSUB
025456  004737  032146                            JSR     PC,T29REST              ;SET COMMAND PACKET
025462  004737  032240                            JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
025466  004737  032302                            JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
025472  012737  023420  026500                    MOV     #10000.,T29DLY          ;SET UP DELAY ROUTINE
025500  004737  016054                10$:        JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
025504  103426                                    BCS     20$                     ;BR IF INIT WAS OK
025506                                          DELAY   250                     ;DELAY ABOUT .25 SECONDS
025506  012727  000250                                                                  MOV     #250,(PC)+
025512  000000                                                                          .WORD   0
025514  013727  002116                                                                  MOV     L$DLY,(PC)+
025520  000000                                                                          .WORD   0
025522  005367  177772                                                                  DEC     -6(PC)
025526  001375                                                                          BNE     .-4
025530  005367  177756                                                                  DEC     -22(PC)
025534  001367                                                                          BNE     .-20
025536  005337  026500                            DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
025542  001356                                    BNE     10$                     ;BR, IF MORE DELAY TIME LEFT
025544  005237  002214                            INC     FATFLG                          ;ERROR COUNT
025550  010001                                    MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
025552                                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
025552  104455                                                                          TRAP    C$ERDF
025554  000174                                                                          .WORD   124
025556  003646                                                                          .WORD   SFIERR
025560  012114                                                                          .WORD   SFIMSG
025562  013737  002174  026340        20$:        MOV     UNITN,T29DSW            ;SET UP DRIVE NUMBER
025570  012704  026320                            MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
025574  004737  010742                            JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
025600  103407                                    BCS     23$                     ;BR, IF COMMAND ISSUED OK
025602  005237  002214                            INC     FATFLG                          ;ERROR COUNT
025606  010001                                    MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
025610                                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
025610  104456                                                                          TRAP    C$ERHRD
025612  000175                                                                          .WORD   125
025614  005052                                                                          .WORD   WRTMSG
025616  012114                                                                          .WORD   SFIMSG
025620                                  23$:    CKLOOP                          ;LOOP IF SELECTED
025620  104406                                                                          TRAP    C$CLP1
025622  004737  011074                            JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
025626  103411                                    BCS     30$                     ;BR, IF NO PROBLEM
025630  016501  000002                            MOV     TSSR(R5),R1             ;GET TSSR
025634  010004                                    MOV     R0,R4                   ;SAVE PACKET ADDRESS
025636  005237  002214                            INC     FATFLG                          ;ERROR COUNT
025642                                          ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
```

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        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$CLP1
    447 025654  013701  026350              MOV     T29BFR+6,R1             ;PICK UP XSTO
    448 025660  010102                      MOV     R1,R2                   ;SET UP EXPECTED
    449 025662  052702  000002              BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
    450 025666  020102                      CMP     R1,R2                   ;DOES EXP = REC'D
    451 025670  001406                      BEQ     40$                     ;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$:
```

```
                                        ;
                                        ;
                                        ;
026276  004737  016536                  JSR     PC,TSTLOOP      ;DO WE NEED TO ITERATE TEST
026302  103002                          BCC     163$            ;BR, IF NO LOOP REQUIRED
026304  000137  023556                  JMP     T29LOOP         ;EXECUTE AGAIN
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                  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                  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                  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                  026450  T29BF2:
026450     010          026450  T29BS0: .BYTE   10              ;BSEL0 AREA
026451     200          026451  T29BS1: .BYTE   200             ;BSEL1 AREA
026452  000000          026452  T29S2:  .WORD   0               ;SEL 2 AREA
026454  000000          026454  T29S3:  .WORD   0               ;DATA AREA
                                ;
                                ;
                                        .EVEN
                                ;TAPE MOTION PACKET COMMAND VALUES

026456  140001          026456  T29RN:  .WORD   140001          ;READ DATA
026460  140401          026460  T29WDR: .WORD   140401          ;READ DATA REVERSE
026462  141001          026462  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          026474  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    CSETST
```

```
                                        .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.
                                ;
                                ;
                                ;-

032360                          T30LOOP:
032360                                  BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>
032360                                                                                  T2.1:
032360  104402                                                                                  TRAP    C$BSUB
032362  004737  041252                  JSR     PC,T30REST              ;SET COMMAND PACKET
032366  005037  036654                  CLR     T30FCN                  ;CLEAR FILE COUNTER
```

```
    766 032372  004737  041344                JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
    767 032376  004737  041406                JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
    768 032402  012737  176750  036656        MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
    769 032410  004737  016054          10$:  JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
    770 032414  103426                        BCS     20$                     ;BR IF INIT WAS OK
    771 032416                                DELAY   250                     ;DELAY ROUTINE CALL
        032416  012727  000250                                                          MOV     #250.,(PC)+
        032422  000000                                                                  .WORD   0
        032424  013727  002116                                                          MOV     L$DLY,(PC)+
        032430  000000                                                                  .WORD   0
        032432  005367  177772                                                          DEC     -6(PC)
        032436  001375                                                                  BNE     .-4
        032440  005367  177756                                                          DEC     -22(PC)
        032444  001367                                                                  BNE     .-20
    772 032446  005337  036656                DEC     T30DLY                  ;BUMP COUNTER
    773 032452  001356                        BNE     10$                     ;BR, IF MORE COUNTING TO DO
    774 032454  005237  002214                INC     FATFLG                          ;ERROR COUNT
    778 032460  010001                        MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
    779 032462                                ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
        032462  104455                                                                  TRAP    C$ERDF
        032464  000311                                                                  .WORD   201
        032466  003646                                                                  .WORD   SFIERR
        032470  012114                                                                  .WORD   SFIMSG
    780 032472                          20$:
    781 032472  013737  002174  036520        MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
    782 032500  012704  036500                MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
    783
    784                                 ;*************************************************************
    785                                 ;
    786                                 ;ISSUE WRITE CHARACTERISTICS COMMAND
    787                                 ;
    788                                 ;*************************************************************
    789
    790 032504  004737  010742                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
    791 032510  103407                        BCS     23$                     ;BR, IF COMMAND ISSUED OK
    792 032512  005237  002214                INC     FATFLG                          ;ERROR COUNT
    796 032516  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
    797 032520                                ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        032520  104456                                                                  TRAP    C$ERHRD
        032522  000312                                                                  .WORD   202
        032524  005052                                                                  .WORD   WRTMSG
        032526  012114                                                                  .WORD   SFIMSG
    798 032530                          23$:  CKLOOP                          ;LOOP IF SELECTED
        032530  104406                                                                  TRAP    C$CLP1
    799
    800                                 ;*************************************************************
    801                                 ;
    802                                 ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
    803                                 ;
    804                                 ;*************************************************************
    805
    806 032532  004737  011074                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
    807 032536  103411                        BCS     30$                     ;BR, IF NO PROBLEM
    808 032540  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
    809 032542  016501  000002                MOV     TSSR(R5),R1             ;GET STATUS REGISTER
    810 032546  005237  002214                INC     FATFLG                          ;ERROR COUNT
    814 032552                                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$CLP1
 032740  005203                          INC     R3                         ;COUNT THE RECORD COUNTER DOWN
 032742  020327  000021                  CMP     R3,#21                     ;AT 20 YET
 032746  001331                          BNE     65$                        ;BR, IF NOT AT 20 RECORDS WRITTEN

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

 032750  012737  141011  036620          MOV     #141011,T30PK3             ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
 032756  012704  036620                  MOV     #T30PK3,R4                 ;SET UP R4 WITH PACKET ADDRESS
 032762  010465  000000                  MOV     R4,TSDB(R5)                ;ISSUE COMMAND
 032766  004737  016330                  JSR     PC,WAITF                   ;WAIT FOR SSR TO SET
 032772  016501  000002                  MOV     TSSR(R5),R1                ;PICK UP TSSR
 032776  012702  000200                  MOV     #SSR,R2                    ;SET UP EXPECTED (SSR ONLY)
 033002  020102                          CMP     R1,R2                      ;WAS STATUS GOOD
 033004  001406                          BEQ     160$                       ;BR, IF TERMINATION WAS GOOD
 033006  005237  002214                  INC     FATFLG                             ;ERROR COUNT
 033012                                  ERRHRD  ERRNO,T30WDC,PKTSSR        ;TSSR NOT CORRECT AFTER WRT TAPE M.
 033012  104456                                                                      TRAP    C$ERHRD
 033014  000316                                                                      .WORD   206
 033016  040362                                                                      .WORD   T30WDC
 033020  012126                                                                      .WORD   PKTSSR
 033022                          160$:   CKLOOP                             ;LOOP IF SELECTED
 033022  104406                                                                      TRAP    C$CLP1
 033024  005237  036654                  INC     T30FCN                     ;COUNT THE "FILE" COUNTER DOWN
 033030  023727  036654  000006          CMP     T30FCN,#6                  ;WRITE 5 FILE TO TAPE
 033036  001273                          BNE     64$                        ;BR, IF NOT AT 5 FILES WRITTEN

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

 033040  012737  141011  036620          MOV     #141011,T30PK3             ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
 033046  012704  036620                  MOV     #T30PK3,R4                 ;SET UP R4 WITH PACKET ADDRESS
 033052  010465  000000                  MOV     R4,TSDB(R5)                ;ISSUE COMMAND
 033056  004737  016330                  JSR     PC,WAITF                   ;WAIT FOR SSR TO SET
 033062  016501  000002                  MOV     TSSR(R5),R1                ;PICK UP TSSR
 033066  012702  000200                  MOV     #SSR,R2                    ;SET UP EXPECTED (SSR ONLY)
 033072  020102                          CMP     R1,R2                      ;WAS STATUS GOOD
 033074  001406                          BEQ     165$                       ;BR, IF TERMINATION WAS GOOD
 033076  005237  002214                  INC     FATFLG                             ;ERROR COUNT
 033102                                  ERRHRD  ERRNO,T30WDC,PKTSSR        ;TSSR NOT CORRECT AFTER WRT TAPE M.
 033102  104456                                                                      TRAP    C$ERHRD
 033104  000317                                                                      .WORD   207
 033106  040362                                                                      .WORD   T30WDC
 033110  012126                                                                      .WORD   PKTSSR
 033112                          165$:   CKLOOP                             ;LOOP IF SELECTED
 033112  104406                                                                      TRAP    C$CLP1

                                 ;*******************************************************************
                                 ;
                                 ;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                                                                  .RAP    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
```

```
        033440  104406                                                                  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                                    ;
```

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

033660  013701  036530          MOV     T30BFR+6,R1             ;PICK UP XST0
033664  010102                  MOV     R1,R2                   ;SET UP EXPECTED
033666  052702  000002          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
033672  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
033674  001406                  BEQ     240$                    ;BR, IF EQUAL (OK)
033676  005237  002214          INC     FATFLG                          ;ERROR COUNT
033702                          ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
033702  104456                                                          TRAP    C$ERHRD
033704  000331                                                          .WORD   217
033706  040041                                                          .WORD   T30BOT
033710  015554                                                          .WORD   EXPREC
033712                  240$:   CKLOOP                          ;LOOP IF SELECTED
033712  104406                                                          TRAP    C$CLP1
033714  005723                  TST     (R3)+                   ;POINT TO NEXT POSITION
033716  011301                  MOV     (R3),R1                 ;GET NEXT COMMAND ETC.
033720  020127  177777          CMP     R1,#177777              ;END OF TABLE MARKER
033724  001402                  BEQ     330$                    ;BR, IF AT END OF TABLE
033726  000137  033214          JMP     182$                    ;JUMP TO MORE COMMANDS TO DO
033732                  330$:   CKLOOP                          ;LOOP IF SELECTED
033732  104406                                                          TRAP    C$CLP1
033734                          ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
033734                                                                  L10044:
033734  104403                                                          TRAP    C$ESUB
033736  023727  002214  000017        CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
033744  103402                  BLO     999$                    ;BR, IF LESS THAN 25
033746  004737  017262          JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
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.
                                        ;
                                        ;
                                        ;
                                        ;-
                                                BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
                                                                                        T2.2:
                                                                                                TRAP    C$BSUB
                                                JSR     PC,T30REST      ;SET COMMAND PACKET
                                                CLR     T30FCN          ;CLEAR FILE COUNTER
                                                JSR     PC,T30RT2       ;SET UP OTHER COMMAND PACKET
                                                JSR     PC,T30RT3       ;SET UP OTHER COMMAND PACKET
                                                MOV     #65000.,T30DLY  ;SET UP DELAY COUNTER
                                        10$:    JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
                                                BCS     20$             ;BR IF INIT WAS OK
                                                DELAY   250             ;DELAY ROUTINE CALL
                                                                                MOV     #250,(PC)+
                                                                                .WORD   0
                                                                                MOV     L$DLY,(PC)+
                                                                                .WORD   0
                                                                                DEC     -6(PC)
                                                                                BNE     .-4
                                                                                DEC     -22(PC)
                                                                                BNE     .-20
                                                DEC     T30DLY          ;BUMP COUNTER
                                                BNE     10$             ;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
                                                                                TRAP    C$ERDF
                                                                                .WORD   218
                                                                                .WORD   SFIERR
                                                                                .WORD   SFIMSG
                                        20$:
                                                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
                                                                                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  10440?                                                          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
```

```
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 036?10                                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
```

SEQ 0162

```
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  T30LOG: .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    CSETST
```

```
                                        .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.
                                        ;
                                        ;-
041462                                          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$ERHRD
041620  000456                                                          .WORD   302
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                041622  005052                                                          .WORD   WRTMSG
                041624  012114                                                          .WORD   SFIMSG
     1995       041626                  23$:    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
```

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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
```

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        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.
                                        ;
                                        ;-
2124 042340                                     BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     042340                                                                             T3.2:
     042340  104402                                                                    TRAP    C$BSUB
2125 042342  004737  046610                     JSR     PC,T31REST              ;SET COMMAND PACKET
2126 042346  004737  046702                     JSR     PC,T31RT2               ;SET UP OTHER COMMAND PACKET
2127 042352  004737  046744                     JSR     PC,T31RT3               ;SET UP OTHER COMMAND PACKET
2128 042356  004737  016054                     JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
2129 042362  103407                             BCS     20$                     ;BR IF INIT WAS OK
2130 042364  005237  002214                     INC     FATFLG                          ;ERROR COUNT
2134 042370  010001                             MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
2135 042372                                     ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     042372  104455                                                                    TRAP    C$ERDF
     042374  000470                                                                    .WORD   312
     042376  003646                                                                    .WORD   SFIERR
     042400  012114                                                                    .WORD   SFIMSG
2136 042402  013737  002174  043210  20$:      MOV     UNITN,T31DSW            ;SET UP UNIT NUMBER IN PACKET
2137 042410  012704  043170                     MOV     #T31PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
2138 042414  004737  010742                     JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
2139 042420  103407                             BCS     23$                     ;BR, IF COMMAND ISSUED OK
2140 042422  005237  002214                     INC     FATFLG                          ;ERROR COUNT
2144 042426  010001                             MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
2145 042430                                     ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     042430  104456                                                                    TRAP    C$ERHRD
     042432  000471                                                                    .WORD   313
     042434  005052                                                                    .WORD   WRTMSG
     042436  012114                                                                    .WORD   SFIMSG
2146 042440                             23$:    CKLOOP                          ;LOOP IF SELECTED
     042440  104406                                                                    TRAP    C$CLP1
2147 042442  004737  011074                     JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
2148 042446  103407                             BCS     30$                     ;BR, IF NO PROBLEM
2149 042450  010004                             MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
2150 042452  005237  002214                     INC     FATFLG                          ;ERROR COUNT
2154 042456                                     ERRHRD  ERRNO,T31RWN,PKTSSR     ;REWIND NOT ACCEPTED
     042456  104456                                                                    TRAP    C$ERHRD
     042460  000472                                                                    .WORD   314
     042462  044674                                                                    .WORD   T31RWN
     042464  012126                                                                    .WORD   PKTSSR
2155 042466                             30$:    CKLOOP                          ;LOOP IF SELECTED
     042466  104406                                                                    TRAP    C$CLP1
2156 042470  013701  043220                     MOV     T31BFR+6,R1             ;PICK UP XSTO
2157 042474  010102                             MOV     R1,R2                   ;SET UP EXPECTED
2158 042476  052702  000002                     BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2159 042502  020102                             CMP     R1,R2                   ;DOES EXP = REC'D
2160 042504  001406                             BEQ     40$                     ;BR, IF EQUAL (OK)
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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
```

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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
                                ;-


2340 043344      124     123     123  T31RDE: .ASCIZ  'TSSR Not Correct After READ Command'
2341 043410      124     141     160  T31WNH: .ASCIZ  'Tape Position Incorrect After INITIALIZE Command'
2342 043471      124     141     160  T31WNG: .ASCIZ  'Tape Position Incorrect After NOP Command'
2343 043543      124     123     123  T31RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
2344 043612      122     105     122  T31RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
2345 043707      120     117     123  T31SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
2346 043771      122     111     102  T31LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
2347 044041      124     123     123  T31WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
2348 044116      111     154     154  T31LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
2349 044177      122     105     122  T31SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
2350 044233      124     123     123  T31WDE: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE Command,At BOT'
2351 044345      124     141     160  T31BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XSTO)'
2352 044440      116     117     055  T31TIM: .ASCIZ  'NO-OP ("CLEAN TAPE") AND INITIALIZE''S Erase Tape Not Long Enough'
2353 044540      122     105     122  T31EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
2354 044617      124     123     123  T31TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
2355 044674      122     145     167  T31RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
2356 044743      122     101     115  T31RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
2357 045016      124     123     123  T31AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
2358 045065      104     162     151  T310FL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
2359 045140      124     123     123  T31WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
2360 045230      124     123     123  T31WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
2361 045303      103     126     103  T31VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
2362 045356      124     123     102  T31BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
2363 045431      127     122     111  T31WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
2364 045520      122     145     141  T31LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XSTO'
2365 045602      122     145     141  T31LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
2366 045664      122     145     163  T31PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
2367 045752      122     145     141  T31TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
2368 046040      116     117     055  T31NEF: .ASCIZ  'NO-OP ("CLEAN TAPE") AND INITIALIZE, At First Record, Failed To Set RIB Bit
2369 046161      124     123     123  T31SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
2370 046236      124     123     123  T31TSA: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE, Into BOT'
2371 046343      124     123     123  T31WRF: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE Command'
2372 046446      104     141     164  T31DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
2373 046543      116     117     055  TST31ID:        .ASCIZ  'NO-OP ("Clean Tape") And INITIALIZE'
2374                                          .EVEN
2375                                ;+
2376                                ;
2377                                ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
2378                                ;WRITE SUBSYSTEM MEMORY COMMAND
2379                                ;
2380                                ;-
2381
2382 046610                       T31REST:
2383 046610                               SAVREG                          ;SAVE THE REGISTERS
2384 046614  012701  043170               MOV     #T31PACKET,R1           ;START OF THE PACKET
2385 046620  012721  100004               MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
2386 046624  012721  043200               MOV     #T31DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
2387 046630  005021                       CLR     (R1)+                   ;EXTENDED ADDRESS
2388 046632  012721  000012               MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
2389 046636  012721  043212               MOV     #T31BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
```

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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    CSETST
```

```
                        .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
```

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2527 047232  012737  140005  051450          MOV     #140005,T32PK3          ;WRITE DATA,CVC=1,ACK COMMAND
2528 047240  012704  051450                  MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2529 047244  010337  051456          27$:    MOV     R3,T32SZ                ;SET UP RECORD SIZE IN PACKET
2530 047250  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2531 047254  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2532 047260  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2533 047264  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
2534 047270  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
2535 047272  001406                          BEQ     28$                     ;BR, IF OK
2536 047274  005237  002214                  INC     FATFLG                          ;ERROR COUNT
2540 047300                                  ERRHRD  ERRNO,T32WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     047300  104456                                                                  TRAP    C$ERHRD
     047302  000624                                                                  .WORD   404
     047304  052536                                                                  .WORD   T32WDC
     047306  012126                                                                  .WORD   PKTSSR
2541 047310                          28$:    CKLOOP                          ;LOOP IF SELECTED
     047310  104406                                                                  TRAP    C$CLP1
2542 047312  005723                          TST     (R3)+                   ;BUMP RECORD COUNTER
2543 047314  020327  001002                  CMP     R3,#514.                ;AT MAX SIZE YET
2544 047320  001351                          BNE     27$                     ;BR, IF NOT AT END OF LOOP
2545 047322  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
2546 047326  103411                          BCS     30$                     ;BR, IF NO PROBLEM
2547 047330  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2548 047334  010004                          MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
2549 047336  005237  002214                  INC     FATFLG                          ;ERROR COUNT
2553 047342                                  ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
     047342  104456                                                                  TRAP    C$ERHRD
     047344  000625                                                                  .WORD   405
     047346  051700                                                                  .WORD   T32RWN
     047350  012126                                                                  .WORD   PKTSSR
2554 047352                          30$:    CKLOOP                          ;LOOP IF SELECTED
     047352  104406                                                                  TRAP    C$CLP1
2555 047354  013701  051360                  MOV     T32BFR+6,R1             ;PICK UP XST0
2556 047360  010102                          MOV     R1,R2                   ;SET UP EXPECTED
2557 047362  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2558 047366  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
2559 047370  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
2560 047372  005237  002214                  INC     FATFLG                          ;ERROR COUNT
2564 047376                                  ERRHRD  ERRNO,T32BOE,EXPREC     ;TAPE AT BOT AFTER ERASE
     047376  104456                                                                  TRAP    C$ERHRD
     047400  000626                                                                  .WORD   406
     047402  052366                                                                  .WORD   T32BOE
     047404  015554                                                                  .WORD   EXPREC
2565 047406                          40$:    CKLOOP                          ;LOOP IF SELECTED
     047406  104406                                                                  TRAP    C$CLP1
2566 047410  012737  140411  051450          MOV     #140411,T32PK3          ;ERASE TAPE,CVC=1,ACK COMMAND
2567 047416  012704  051450                  MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2568 047422  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2569 047426  004737  016330                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2570 047432  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2571 047436  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
2572 047442  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
2573 047444  001406                          BEQ     50$                     ;BR, IF OK
2574 047446  005237  002214                  INC     FATFLG                          ;ERROR COUNT
2578 047452                                  ERRHRD  ERRNO,T32ERA,PKTSSR     ;TSSR INCORRECT AFTER ERASE DATA
     047452  104456                                                                  TRAP    C$ERHRD
     047454  000627                                                                  .WORD   407
```

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                                                                                .WORD   T32ERA
                                                                                .WORD   PKTSSR
2579 047462                             50$:    CKLOOP                          ;LOOP IF SELECTED
     047462 104406                                                              TRAP    C$CLP1
2580 047464 013701 051360                       MOV     T32BFR+6,R1             ;PICK UP XSTO
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$:
```

```
                        ;+
                        ;
                        ;TEST 4, SUBTEST 2
                        ;
                        ;       VERIFIES THAT AN ERASE COMMAND EXECUTED WHEN THE TAPE IS NOT
                        ;       POSITIONED AT BOT OPERATES PROPERLY AND DOES NOT CORRUPT
                        ;       PREVIOUS TAPE RECORDS.  THE TEST SEQUENCE IS:
                        ;
                        ;            1.  THE TAPE IS FIRST REWOUND, SEVERAL TEST RECORDS ARE
                        ;                WRITTEN, AND THE TAPE IS REWOUND AGAIN.
                        ;
                        ;
                        ;            2.  A SPACE RECORDS FORWARD COMMAND IS ISSUED TO MOVE THE
                        ;                TAPE OFF OF BOT AND SKIP OVER THE FIRST SEVERAL
                        ;                RECORDS.
                        ;
                        ;            3.  AN ERASE COMMAND IS ISSUED, WHICH SHOULD ERASE A NUMBER
                        ;                OF THE TEST RECORDS.
                        ;
                        ;            4.  NORMAL TERMINATION IS VERIFIED AND STATUS IS CHECKED.
                        ;
                        ;            5.  A READ REVERSE COMMAND IS ISSUED.  IT IS VERIFIED THAT
                        ;                NORMAL TERMINATION IS ACCOMPLISHED AND THAT THE DATA
                        ;                TRANSFERRED CORRESPONDS TO THAT FOR THE EXPECTED
                        ;                RECORD.  THIS DEMONSTRATES THAT NO DATA WAS ENCOUNTERED
                        ;                IN THE AREA ERASED BY THE ERASE COMMAND, AND THAT THE
                        ;                PREVIOUS RECORD WAS NOT CORRUPTED.
                        ;
                        ;
                        ;-
047660                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
047660                                                                  T4.2:
047660  104402                                                          TRAP    C$BSUB
047662  004737  052700          JSR     PC,T32REST              ;SET COMMAND PACKET
047666  004737  052772          JSR     PC,T32RT2               ;SET UP OTHER COMMAND PACKET
047672  004737  053022          JSR     PC,T32RT3               ;SET UP OTHER COMMAND PACKET
047676  004737  016054          JSR     PC,SDFINIT              ;DO INITIALIZE ON CONTROLLER
047702  103407                  BCS     20$                     ;BR IF INIT WAS OK
047704  005237  002214          INC     FATFLG                          ;ERROR COUNT
047710  010001                  MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
047712                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
047712  104455                                                          TRAP    C$ERDF
047714  000633                                                          .WORD   411
047716  003646                                                          .WORD   SFIERR
047720  012114                                                          .WORD   SFIMSG
047722  013737  002174  051350  20$:    MOV     UNITN,T32DSW            ;SET UP UNIT NUMBER IN PACKET
047730  012704  051330                  MOV     #T32PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
047734  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
047740  103407                  BCS     23$                     ;BR, IF COMMAND ISSUED OK
047742  005237  002214          INC     FATFLG                          ;ERROR COUNT
047746  010001                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
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
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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$CLP1
     050420  017701  132472                  MOV     @FREE,R1            ;GET DATA READ
     050424  012702  000144                  MOV     #100.,R2            ;SHOULD BE 100
     050430  020102                          CMP     R1,R2               ;CHECK'EM OUT
     050432  001406                          BEQ     300$                ;BR, IF OK
     050434  005237  002214                  INC     FATFLG                  ;ERROR COUNT
     050440                                  ERRHRD  ERRNO,T32ECF,EXPREC ;ERASE COMMAND DIDN'T WORK
     050440  104456                                                                TRAP    C$ERHRD
     050442  000644                                                                .WORD   420
     050444  052455                                                                .WORD   T32ECF
     050446  015554                                                                .WORD   EXPREC
     050450                          300$:   CKLOOP                      ;LOOP IF SELECTED
     050450  104406                                                                TRAP    C$CLP1
     050452                          330$:
     050452                                  ENDSUB                      ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     050452                                                                   L10055:
     050452  104403                                                                TRAP    C$ESUB
     050454  023727  002214  000017          CMP     FATFLG,#15.                 ;IS ERROR COUNT AT 25
     050462  103402                          BLO     999$                        ;BR, IF LESS THAN 25
     050464  004737  017262                  JSR     PC,CKDROP                   ;TRY TO DROP THE UNIT
     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  00211o                                                      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$CLP1
 2870 050676  013701  051360                MOV     T32BFR+6,R1             ;PICK UP XST0
 2871 050702  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 2872 050704  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 2873 050710  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
 2874 050712  001406                        BEQ     40$                     ;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
051330  100004                          .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
051332  051340                          .WORD   T32DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
051334  000000                          .WORD   0
051336  000012                          .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
051340                          T32DATA:                                ;CHARACTERISTICS DATA BLOCK
051340  051352                          .WORD   T32BFR                  ;ADDRESS OF MESSAGE BUFFER
051342  000000                          .WORD   0
051344  000024                          .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
051346  000000                          .WORD   0
051350  000000                  T32DSW: .WORD   0                       ;SELECT DRIVE 0
051352                          T32BFR: .BLKW   25.                     ;MESSAGE BUFFER
                                ;
                                ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                ;
        051440                          .=<.+10>&177770
051440                          T32PK2:
051440  100006                          .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
051442  000000                          .WORD   0                       ;ADDRESS OF SELECT BLOCK DATA
051444  000000                          .WORD   0
051446  000006                          .WORD   6.                      ;SIZE OF DATA PACKET

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

051460                          T32CMD:
051460  140410                          .WORD   140410                  ;SPACE RECORDS REVERSE
051462  141410                          .WORD   141410                  ;SKIP TAPE MARKS REVERSE
051464  140401                          .WORD   140401                  ;READ REVERSE
051466  141001                          .WORD   141001                  ;REREAD PREVIOUS (OPP=0)
051470  161401                          .WORD   161401                  ;REREAD NEXT (OPP=1)
051472  161001                          .WORD   161001                  ;REREAD PREVIOUS (OPP=1)
051474  141401                          .WORD   141401                  ;REREAD NEXT (OPP=0)
051476  140001                          .WORD   140001                  ;READ NEXT
051500  141410                          .WORD   141410                  ;SKIP TAPE MARKS REVERSE
051502  141010                          .WORD   141010                  ;SKIP RECORDS FORWARD
051504  141005                          .WORD   141005                  ;WRITE DATA RETRY
051506  177777                          .WORD   177777                  ;END OF DATA

                                ;
051510  000000                  T32CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
```

```
   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                                  T32PT2:
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    CSETST
```

```
                        .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.
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-
053046                                          BGNTST
053046                                                                                  T5::
053046  012737  006413  002172                  MOV     #EPRT2,EPRTSW           ;SECONDARY ERROR MESSAGE
053054  012700  055645                          MOV     #TST33ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
053060  004737  016570                          JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
053064  012737  000005  002210                  MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
053072  005037  054716                          CLR     T33CNT                  ;CLEAR TAPE RECORD COUNTER
                                        ;+
                                        ;
053076                                  T33LOOP:
```

```
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 XSTO
```

```
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
```

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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
```

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 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
                                        ;-
                 054550                         .=<.+10>&177770
054550                                  T33PACKET:                      ;COMMAND PACKET FOR TEST
054550  100004                                  .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
054552  054560                                  .WORD   T33DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
054554  000000                                  .WORD   0
054556  000012                                  .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
054560                                  T33DATA:                        ;CHARACTERISTICS DATA BLOCK
054560  054572                                  .WORD   T33BFR          ;ADDRESS OF MESSAGE BUFFER
054562  000000                                  .WORD   0
054564  000024                                  .WORD   20.             ;LENGTH OF MESSAGE BUFFER
054566  000000                                  .WORD   0
054570  000000                          T33DSW: .WORD   0               ;SELECT DRIVE 0
054572                                  T33BFR: .BLKW   25.             ;MESSAGE BUFFER
                                        ;
                                        ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                        ;
                 054660                         .=<.+10>&177770
054660                                  T33PK2:
054660  100006                                  .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
054662  054700                                  .WORD   T33BF2          ;ADDRESS OF SELECT BLOCK DATA
054664  000000                                  .WORD   0
054666  000006                                  .WORD   6.              ;SIZE OF DATA PACKET

054670                                  T33PK3:
054670  100005                                  .WORD   100005          ;REREAD COMMAND, AND ACK
054672                                  T33RB:
054672  003116                          T33WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
054674  000000                                  .WORD   0
054676  000000                          T33SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
                                                .EVEN
                                        ;
                                        ;
                                        ;
054700                                  T33BF2:
054700     010                          T33BS0: .BYTE   10              ;BSEL0 AREA
054701     200                          T33BS1: .BYTE   200             ;BSEL1 AREA
054702  000000                          T33S2:  .WORD   0               ;SEL 2 AREA
054704  000000                          T33S3.  .WORD   0               ;DATA AREA
                                        ;
                                        ;
                                                .EVEN
                                        ;TAPE MOTION PACKET COMMAND VALUES

054706  100205                          T33RN:  .WORD   100205          ;REREAD DATA (NEXT)
054710  100605                          T33WDR: .WORD   100605          ;REREAD DATA RETRY
054712  102205                          T33CON: .WORD   102205          ;WRITE CONTINOUS
054714  177777                                  .WORD   177777          ;END OF DATA

                                        ;
054716  000000                          T33CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
054720  000000                          T33CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
054722  000000                          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:
```

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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    CSETST
```

```
                                        .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.
```

```
                                ;
                                ;           9.  A READ REVERSE COMMAND IS ISSUED, AND IT IS CHECKED
                                ;               THAT NORMAL TERMINATION OCCURS, WITH EOT=1.
                                ;
                                ;           10. A READ FORWARD COMMAND IS ISSUED, AND IT IS CHECKED
                                ;               THAT NORMAL TERMINATION OCCURS, WITH EOT=1.
                                ;
                                ;           11. A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF
                                ;               3, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
                                ;               OCCURS, WITH EOT=0.
                                ;
                                ;           12. A SPACE RECORDS FORWARD COMMAND, WITH A RECORD COUNT OF
                                ;               3, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
                                ;               OCCURS, WITH EOT=1.
                                ;
                                ;           13. A SKIP FILE MARKS REVERSE COMMAND IS ISSUED, WHICH
                                ;               SHOULD SKIP ALL THE WAY TO BOT, AND IT IS CHECKED THAT
                                ;               TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=0,
                                ;               BOT=1, AND RIB=1.
                                ;
                                ;
                                ;
                                ;
                                ;-
                                ;
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.
                                ;
                                ;
                                ;
                                ;
                                ;-

                                        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$:    MOV     T34BFR+6,R1             ;PICK UP XSTO
3751 056426  010102                    MOV     R1,R2                   ;SET UP EXPECTED
3752 056430  052702  000001            BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
3753 056434  020102                    CMP     R1,R2                   ;WAS THE BIT ON
3754 056436  001402                    BEQ     80$                     ;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)
```

```
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  104436                                                              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) NC  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
```

```
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
```

```
     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
```

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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
```

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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:                      ;COMMAND PACKET FOR TEST
060540  100004                                  .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH ACK
060542  060550                                  .WORD   T34DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
060544  000000                                  .WORD   0
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,  SSUED
                                ;       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.
                                ;
                                ;
                                ;-
                                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$:      MOV     R4,TSDB(R5)             ;ISSUE COMMAND
063746  004737  016530                      JSR     PC,WAITF                ;WAIT FOR SSR TO SET
063752  016501  000002                      MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
063756  012702  000200                      MOV     #SSR,R2                 ;SET UP EXPECTED
063762  020102                              CMP     R1,R2                   ;ARE THEY EQUAL
063764  001406                              BEQ     60$                     ;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
```

```
       064126  072422                                                                  .WORD   T35SSR
       064130  012126                                                                  .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$CLP1
  4409 064166  012737  176750  067542  110$:   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
```

```
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$DLY,(PC)+
     064460  000000                                                          .WORD   0
     064462  005367  177772                                                  DFC     -6(PC)
     064466  001375                                                          BNE     .-4
     064470  005367  177756                                                  DEC     -22(PC)
     064474  001367                                                          BNE     .-20
4477 064476  005337  067542          DEC     T35DLY                  ;BUMP DELAY COUNTER
4478 064502  001361                  BNE     175$                    ;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
                                        ;
                                        ;*****************************************
                                        MOV     #10.,T35DLY             ;SET UP DELAY COUNTER
                                70$:    DELAY   250                     ;WAIT ABOUT .25 SEC
                                                                                MOV     #250,(PC)+
                                                                                .WORD   0
                                                                                MOV     L$DLY,(PC)+
                                                                                .WORD   0
                                                                                DEC     -6(PC)
                                                                                BNE     .-4
                                                                                DEC     -22(PC)
                                                                                BNE     .-20
                                        DEC     T35DLY                  ;BUMP COUNTER DOWN
                                        BNE     70$                     ;BR, IF MORE TO DELAY
                                        TST     EXTFEA                  ;CHECK FOR EXTENDED FEATURES SW SWITCH
                                        BNE     110$                    ;BR IF SWITCH IS ON
                                        MOVB    #200,T35BS1             ;WRITE MISCELLANEOUS CONT/READ STATUS
                                        MOVB    #10,T35BS0              ;FUNCTION SELECTION BIT (TURN ON EXTFEA HW SWITCH)
                                        MOV     #T35PK2,R4              ;WRITE SUBSYS MEM PACKET
                                        MOV     R4,TSDB(R5)             ;ISSUE COMMAND
                                        JSR     PC,CHKTSSR              ;WAIT FOR SSR
                                        BCS     90$                     ;BR, IF NO ERROR
                                        MOV     R0,R1                   ;ERROR, SAVE TSSR
                                        INC     FATFLG                          ;ERROR COUNT
                                        ERRHRD  ERRNO,T35SSR,PKTSSR     ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
                                                                                TRAP    C$ERHRD
                                                                                .WORD   717
                                                                                .WORD   T35SSR
                                                                                .WORD   PKTSSR
                                90$:    CKLOOP                          ;LOOP IF SELECTED
                                                                                TRAP    C$CLP1
                                        MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
                                        JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
                                        BCS     100$                    ;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$ERHRD
                                                                                .WORD   718
                                                                                .WORD   WRTMSG
                                                                                .WORD   SFIMSG
                                100$:   CKLOOP                          ;SCOPE LOOP
                                                                                TRAP    C$CLP1
                                110$:   MOV     #65000.,T35DLY          ;SET UP DELAY COUNTER
                                        CLR     T35CNT                  ;DELAY COUNTER

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

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

```
 4623 065272  010465  000000                 MOV     R4,T5DB(R5)             ;ISSUE COMMAND
 4624 065276  016501  000002       120$:     MOV     T5SR(R5),R1             ;GET T5SR CONTENTS
 4625 065302  032701  000200                 BIT     #SSR,R1                 ;CHECK FOR SSR SET
 4626 065306  001021                         BNE     130$                    ;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     T5SR(R5),R1             ;GET T5SR 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$CLP1
 4649
 4650                                       ;*****************************************
 4651                                       ;
 4652                                       ;NOW CHECK FOR THE MOTION BITS SET
 4653                                       ;
 4654                                       ;*****************************************
 4655
 4656 065430  013701  067420                 MOV     T35BFR+6,R1             ;PICK UP XST0
 4657 065434  010102                         MOV     R1,R2                   ;SET UP EXPECTED
 4658 065436  052702  000200                 BIS     #BIT7,R2                ;SET MOT BIT IN EXPECTED
 4659 065442  020102                         CMP     R1,R2                   ;DOES EXP = REC'D
 4660 065444  001406                         BEQ     160$                    ;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 >>>>>>>>>>>>
065602                                                                  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.
                                ;
                                ;
                                ;
                                ;-
                                        BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
                                                                                        T7.4:
                                                                                TRAP    C$BSUB
                                        JSR     PC,T35REST              ;SET COMMAND PACKET
                                        JSR     PC,T35RT2               ;SET UP OTHER COMMAND PACKET
                                        JSR     PC,T35RT3               ;SET UP OTHER COMMAND PACKET
                                        MOV     #65000.,T35DLY          ;SET UP DELAY COUNTER
                                10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
                                        BCS     20$                     ;BR IF INIT WAS OK
                                        DELAY   250                     ;DELAY ABOUT .25 SEC
                                                                        MOV     #250,(PC)+
                                                                        .WORD   0
                                                                        MOV     L$DLY,(PC)+
                                                                        .WORD   0
                                                                        DEC     -6(PC)
                                                                        BNE     .-4
                                                                        DEC     -22(PC)
                                                                        BNE     .-20
                                        DEC     T35DLY                  ;BUMP COUNTER
                                        BNE     10$                     ;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$ERDF
                                                                                .WORD   733
                                                                                .WORD   SFIERR
                                                                                .WORD   SFIMSG
                                20$:    MOV     UNITN,T35DSW            ;SET UP UNIT (DRIVE) NUMBER
                                        MOV     #T35PACKET,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$ERHRD
                                                                                .WORD   734
                                                                                .WORD   WRTMSG
                                                                                .WORD   SFIMSG
                                23$:    CKLOOP                          ;LOOP IF SELECTED
                                                                                TRAP    C$CLP1
                                        JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
                                        BCS     30$                     ;BR, IF NO PROBLEM
                                        MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
                                        MOV     R0,R4                   ;GET PACKET ADDRESS
                                        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
                                        ;-
                        067370                  .=<.+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
                                        ;
                        067500                  .=<.+10>&177770
067500                                  T35PK2:
067500  100006                                  .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
067502  067520                                  .WORD   T35BF2          ;ADDRESS OF SELECT BLOCK DATA
067504  000000                                  .WORD   0
067506  000006                                  .WORD   6.              ;SIZE OF DATA PACKET

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

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

                                        ;
067536  000000                          T35CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
067540  000000                          T35CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
067542  000000                          T35DLY: .WORD   0               ;DELAY COUNTER
```

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

067544  124  141  160  T35WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
067632  124  123  123  T35RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
067701  122  105  122  T35RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
067776  120  117  123  T35SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
070060  122  111  102  T35LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
070130  124  123  123  T35WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
070205  111  154  154  T35LOG: .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 READ 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                                SAVREG                  ;SAVE REGISTERS
5217 073324  012701  067510                MOV     #T35PK3,R1      ;SET UP POINTER ADDRESS
5218 073330  005021                        CLR     (R1)+           ;COMMAND SPACE
5219 073332  005021                        CLR     (R1)+           ;ADDRESS OF DATA BLOCK
5220 073334  005021                        CLR     (R1)+           ;EXTENDED ADDRESS
5221 073336  005011                        CLR     (R1)            ;SIZE OF DATA TRANSFER BLOCK
5222 073340  000207                        RTS     PC              ;RETURN
5223 073342                                ENDTST
     073342
     073342  104401                                        L10063:
                                                                TRAP    C$ETST
```

```
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
```

```
                                        BGNTST
                                                                                T8::
                        012737  006354  002172          MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
                        004737  017354                  JSR     PC,KTOFF                ;TURN OFF KT11
                        012700  100731                  MOV     #TST36ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
                        004737  016570                  JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
                        012737  000005  002210          MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
                        005037  075726                  CLR     T36CNT                  ;CLEAR TAPE RECORD COUNTER
                                                ;+
                                                ;
                                                ;TEST 8, SUBTEST 1
                                                ;
                                                ;
                                                ;VERIFIES THAT A WRITE DATA RETRY COMMAND ISSUED WHILE
                                                ;THE TAPE IS POSITIONED AT BOT CAUSES FUNCTION REJECT
                                                ;TERMINATION, WITH THE NON-EXECUTABLE FUNCTION (NEF)
                                                ;ERROR BIT SET.
                                                ;
                                                ;
                                                ;-
                                                T36LOOP:
                                                        BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
                                                                                                T8.1:
                        104402                                                                          TRAP    C$BSUB
                        004737  100752                  JSR     PC,T36REST              ;SET COMMAND PACKET
                        004737  101044                  JSR     PC,T36RT2               ;SET UP OTHER COMMAND PACKET
                        004737  101106                  JSR     PC,T36RT3               ;SET UP OTHER COMMAND PACKET
                        012737  176750  075732          MOV     #65000.,T36DLY          ;SET UP DELAY COUNTER
                        005037  075726                  CLR     T36CNT                  ;CLEAR COUNTER
                                                10$:     JSR     PC,SOFINIT             ;DO INITIALIZE ON CONTROLLER
                        103426                          BCS     20$                     ;BR IF INIT WAS OK
                                                        DELAY   250                     ;DELAY ABOUT .25 SEC
                        012727  000250                                                          MOV     #250,(PC)+
                        000000                                                                  .WORD   0
                        013727  002116                                                          MOV     L$DLY,(PC)+
                        000000                                                                  .WORD   0
                        005367  177772                                                          DEC     -6(PC)
                        001375                                                                  BNE     .-4
                        005367  177756                                                          DEC     -22(PC)
                        001367                                                                  BNE     .-20
                        005337  075732                  DEC     T36DLY                  ;BUMP COUNTER
                        001356                          BNE     10$                     ;BR, IF COUNTER NOT DONE
                        005237  002214                  INC     FATFLG                          ;ERROR COUNT
                        010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
                                                        ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
                        104455                                                                  TRAP    C$ERDF
                        001441                                                                  .WORD   801
                        003646                                                                  .WORD   SFIERR
                        012114                                                                  .WORD   SFIMSG
                        013737  002174  075600  20$:     MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
                        012704  075560                  MOV     #T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
                        004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
                        103407                          BCS     25$                     ;BR, IF COMMAND ISSUED OK
                        005237  002214                  INC     FATFLG                          ;ERROR COUNT
                        010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
                                                        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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     074232  104456                                                                   TRAP    C$ERHRD
     074234  001450                                                                   .WORD   808
     074236  005052                                                                   .WORD   WRTMSG
     074240  012114                                                                   .WORD   SFIMSG
     074242                          110$:   CKLOOP                  ;LOOP IF SELECTED
     074242  104406                                                                   TRAP    C$CLP1
     074244  012737  006642  075706          MOV     #3490.,T36SZ    ;SET SIZE OF TRANSFER
     074252  012737  140005  075700          MOV     #140005,T36PK3  ;WRITE DATA,ACK,CVC=1 COMMAND
     074260  012704  075700                  MOV     #T36PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
     074264  005037  075730                  CLR     T36CNU          ;CLEAR COUNTER
     074270  012737  001750  075732          MOV     #1000.,T36DLY   ;SET DROP DEAD COUNTER VALUE
     074276  010465  000000                  MOV     R4,TSDB(R5)     ;ISSUE COMMAND
     074302  016501  000002          120$:   MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
     074306  032701  000200                  BIT     #SSR,R1         ;CHECK FOR SSR SET
     074312  001021                          BNE     130$            ;BR, IF SSR IS SET
     074314  005237  075730                  INC     T36CNU          ;BUMP CYCLE COUNTER
     074320                                  DELAY   1               ;CUT NUMBER OF LOOPS DOWN
     074320  012727  000001                                                           MOV     #1,(PC)+
     074324  000000                                                                   .WORD   0
     074326  013727  002116                                                           MOV     L$DLY,(PC)+
     074332  000000                                                                   .WORD   0
     074334  005367  177772                                                           DEC     -6(PC)
     074340  001375                                                                   BNE     .-4
     074342  005367  177756                                                           DEC     -22(PC)
     074346  001367                                                                   BNE     .-20
     074350  005337  075732                  DEC     T36DLY          ;BUMP DROP DEAD COUNTER
     074354  001352                          BNE     120$            ;BR, IF THERE IS STILL TIME
     074356  012702  000200          130$:   MOV     #SSR,R2         ;SET UP EXPECTED
     074362  020102                          CMP     R1,R2           ;ARE THEY EQUAL
     074364  001406                          BEQ     140$            ;BR, IF OK
     074366  005237  002214                  INC     FATFLG                  ;ERROR COUNT
     074372                                  ERRHRD  ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     074372  104456                                                                   TRAP    C$ERHRD
     074374  001451                                                                   .WORD   809
     074376  005107                                                                   .WORD   WRTERR
     074400  012126                                                                   .WORD   PKTSSR
     074402                          140$:   CKLOOP                  ;LOOP IF SELECTED
     074402  104406                                                                   TRAP    C$CLP1
     074404  013701  075726                  MOV     T36CNT,R1       ;GET FIRST COUNTER
     074410  013702  075730                  MOV     T36CNU,R2       ;GET SECOND COUNTER
     074414  020201                          CMP     R2,R1           ;COMPARE EM
     074416  003406                          BLE     300$            ;BR, IF VALUES ARE CORRECT (OK)
     074420  005237  002214                  INC     FATFLG                  ;ERROR COUNT
     074424                                  ERRHRD  ERRNO,T36NAS,EXPREC     ;TAPE NOT AT CORRECT SPEED
     074424  104456                                                                   TRAP    C$ERHRD
     074426  001452                                                                   .WORD   810
     074430  075734                                                                   .WORD   T36NAS
     074432  015554                                                                   .WORD   EXPREC
     074434                          300$:   CKLOOP                  ;LOOP IF SELECTED
     074434  104406                                                                   TRAP    C$CLP1
     074436                                  ENDSUB
     074436                                                                  L10071:
     074436  104403                                                                   TRAP    C$ESUB
     074440  023727  002214  000017          CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
     074446  103402                          BLO     999$                    ;BR, IF LESS THAN 25
     074450  004737  017262                  JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
     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 074454   BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
                                                            T8.2:
```

```
     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
```

```
        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
```

```
5741
5742                                    ;+
5743                                    ;LOCAL TEXT MESSAGES FOR TEST
5744                                    ;-
5745
5746
5747 075734  124  141  160  T36NAS: .ASCIZ  'Tape Drive Is Not Running At 100 Inches Per Second'
5748 076017  124  141  160  T36WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
5749 076105  124  123  123  T36RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
5750 076154  122  105  122  T36RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
5751 076251  120  117  123  T36SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
5752 076333  122  111  102  T36LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
5753 076403  124  123  123  T36WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
5754 076460  111  154  154  T36LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
5755 076541  122  105  122  T36SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
5756 076575  124  123  123  T36WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA Command'
5757 076647  124  141  160  T36BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
5758 076742  127  122  111  T36TIM: .ASCIZ  'WRITE DATA RETRY''S Erase Tape Not Long Enough'
5759 077017  122  105  122  T36EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
5760 077076  124  123  123  T36TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
5761 077153  122  145  167  T36RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
5762 077222  122  101  115  T36RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
5763 077275  124  123  123  T36AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
5764 077344  104  162  151  T36OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
5765 077417  124  123  123  T36WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
5766 077507  124  123  123  T36WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
5767 077562  103  126  103  T36VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
5768 077635  124  123  102  T36BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
5769 077710  127  122  111  T36WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
5770 077777  122  145  141  T36LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XST0'
5771 100061  122  145  141  T36LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XST0'
5772 100143  122  145  163  T36PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
5773 100231  122  145  141  T36TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
5774 100317  127  122  111  T36NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
5775 100415  124  123  123  T36SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
5776 100472  124  123  123  T36TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
5777 100554  124  123  123  T36WRF: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command'
5778 100634  104  141  164  T36DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
5779 100731  122  145  143  TST36ID:        .ASCIZ  'Record Buffering'
5780                                .EVEN
5781                            ;+
5782                            ;
5783                            ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
5784                            ;WRITE SUBSYSTEM MEMORY COMMAND
5785                            ;
5786                            ;-
5787
5788 100752                      T36REST:
5789 100752                              SAVREG                          ;SAVE THE REGISTERS
5790 100756  012701  075560              MOV     #T36PACKET,R1           ;START OF THE PACKET
5791 100762  012721  100004              MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
5792 100766  012721  075570              MOV     #T36DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
5793 100772  005021                      CLR     (R1)+                   ;EXTENDED ADDRESS
5794 100774  012721  000012              MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
5795 101000  012721  075602              MOV     #T36BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
5796 101004  005021                      CLR     (R1)+
5797 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    CSETST
```

```
                                        .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:
```

```
101166                                  BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
101166                                                                                  T9.1:
101166  104402                                                                                  TRAP    C$BSUB
101170  005037  002216                  CLR     INTRECV                 ;INTERRUPT INDICATOR
101174  005037  102416                  CLR     T37CNT                  ;TIMER FOR WRITE DATA SPACING
101200  005037  102420                  CLR     T37CNU                  ;TIMER FOR WRITE DATA RETRY SPACING
101204  004737  105374                  JSR     PC,T37REST              ;SET COMMAND PACKET
101210  004737  105466                  JSR     PC,T37RT2               ;SET UP OTHER COMMAND PACKET
101214  004737  105530                  JSR     PC,T37RT3               ;SET UP OTHER COMMAND PACKET
101220  012737  176750  102422          MOV     #65000.,T37DLY          ;SET UP DELAY COUNTER
101226  004737  016054          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
101232  103426                          BCS     20$                     ;BR IF INIT WAS OK
101234                                  DELAY   250                     ;DELAY ABOUT .25 SEC
101234  012727  000250                                                                          MOV     #250,(PC)+
101240  000000                                                                                  .WORD   0
101242  013727  002116                                                                          MOV     L$DLY,(PC)+
101246  000000                                                                                  .WORD   0
101250  005367  177772                                                                          DEC     -6(PC)
101254  001375                                                                                  BNE     .-4
101256  005367  177756                                                                          DEC     -22(PC)
101262  001367                                                                                  BNE     .-20
101264  005337  102422                  DEC     T37DLY                  ;BUMP COUNTER
101270  001356                          BNE     10$                     ;BR, IF COUNTER NOT DONE
101272  005237  002214                  INC     FATFLG                          ;ERROR COUNT
101276  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
101300                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
101300  104455                                                                                  TRAP    C$ERDF
101302  001605                                                                                  .WORD   901
101304  003646                                                                                  .WORD   SFIERR
101306  012114                                                                                  .WORD   SFIMSG
101310  013737  002174  102270  20$:    MOV     UNITN,T37DSW            ;SET UP UNIT NUMBER

101316  012704  102250                  MOV     #T37PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
101322  004737  010742                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
101326  103407                          BCS     23$                     ;BR, IF COMMAND ISSUED OK
101330  005237  002214                  INC     FATFLG                          ;ERROR COUNT
101334  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
101336                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
101336  104456                                                                                  TRAP    C$ERHRD
101340  001606                                                                                  .WORD   902
101342  005052                                                                                  .WORD   WRTMSG
101344  012114                                                                                  .WORD   SFIMSG
101346                          23$:    CKLOOP                          ;LOOP IF SELECTED
101346  104406                                                                                  TRAP    C$CLP1
101350  004737  011074                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
101354  103411                          BCS     30$                     ;BR, IF NO PROBLEM
101356  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
101362  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
101364  005237  002214                  INC     FATFLG                          ;ERROR COUNT
101370                                  ERRHRD  ERRNO,T37RWN,PKTSSR     ;REWIND NOT ACCEPTED
101370  104456                                                                                  TRAP    C$ERHRD
101372  001607                                                                                  .WORD   903
101374  103575                                                                                  .WORD   T37RWN
101376  012126                                                                                  .WORD   PKTSSR
101400                          30$:    CKLOOP                          ;LOOP IF SELECTED
101400  104406                                                                                  TRAP    C$CLP1
101402  013701  102300                  MOV     T37BFR+6,R1             ;PICK UP XSTO
```

```
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
```

```
                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
                                        ;-
6049 102250                             T37PACKET:                      ;COMMAND PACKET FOR TEST
6050 102250  100004                             .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
6051 102252  102260                             .WORD   T37DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
6052 102254  000000                             .WORD   0
6053 102256  000012                             .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
6054 102260                             T37DATA:                        ;CHARACTERISTICS DATA BLOCK
6055 102260  102272                             .WORD   T37BFR          ;ADDRESS OF MESSAGE BUFFER
6056 102262  000000                             .WORD   0
6057 102264  000024                             .WORD   20.             ;LENGTH OF MESSAGE BUFFER
6058 102266  000000                             .WORD   0
6059 102270  000000                     T37DSW: .WORD   0               ;SELECT DRIVE 0
6060 102272                             T37BFR: .BLKW   25.             ;MESSAGE BUFFER
6061                                    ;
6062                                    ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
6063                                    ;
6065         102360                             .=<.+10>&177770
6067 102360                             T37PK2:
6068 102360  100006                             .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
6069 102362  102400                             .WORD   T37BF2          ;ADDRESS OF SELECT BLOCK DATA
6070 102364  000000                             .WORD   0
6071 102366  000006                             .WORD   6.              ;SIZE OF DATA PACKET
6072
6076 102370                             T37PK3:
6077 102370  100005                             .WORD   100005          ;REREAD COMMAND, AND ACK
6078 102372                             T37RB:
6079 102372  003116                     T37WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
6080 102374  000000                             .WORD   0
6081 102376  000000                     T37SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
6082                                            .EVEN
6083                                    ;
6084                                    ;
6085                                    ;
6086 102400                             T37BF2:
6087 102400      010                    T37BS0: .BYTE   10              ;BSEL0 AREA
6088 102401      200                    T37BS1: .BYTE   200             ;BSEL1 AREA
6089 102402  000000                     T37S2:  .WORD   0               ;SEL 2 AREA
6090 102404  000000                     T37S3:  .WORD   0               ;DATA AREA
6091                                    ;
6092                                    ;
6093                                            .EVEN
6094                                    ;TAPE MOTION PACKET COMMAND VALUES
6095
6096 102406  100205                     T37RN:  .WORD   100205          ;REREAD DATA (NEXT)
6097 102410  100605                     T37WDR: .WORD   100605          ;REREAD DATA RETRY
6098 102412  102205                     T37CON: .WORD   102205          ;WRITE CONTINOUS
6099 102414  177777                             .WORD   177777          ;END OF DATA
6100
6101                                    ;
6102 102416  000000                     T37CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
6103 102420  000000                     T37CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
6104 102422  000000                     T37DLY: .WORD   0               ;DELAY COUNTER
6105
```

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

102424  124  141  160  T37WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
102512  124  123  123  T37RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
102561  122  105  122  T37RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
102656  120  117  123  T37SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
102740  122  111  102  T37LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
103010  124  123  123  T37WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
103065  111  154  154  T37LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
103146  122  105  122  T37SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
103202  124  123  123  T37WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command,At BOT'
103271  124  141  160  T37BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XSTO)'
103364  127  122  111  T37TIM: .ASCIZ  'WRITE DATA RETRY''S Erase Tape Not Long Enough'
103441  122  105  122  T37EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
103520  124  123  123  T37TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
103575  122  145  167  T37RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
103644  122  101  115  T37RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
103717  124  123  123  T37AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
103766  104  162  151  T37OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
104041  124  123  123  T37WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
104131  124  123  123  T37WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
104204  103  126  103  T37VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
104257  124  123  102  T37BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
104332  127  122  111  T37WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
104421  122  145  141  T37LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XSTO'
104503  122  145  141  T37LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
104565  122  145  163  T37PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
104653  122  145  141  T37TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
104741  127  122  111  T37NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
105037  124  123  123  T37SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
105114  124  123  123  T37TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
105176  124  123  123  T37WRF: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command'
105256  104  141  164  T37DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
105353  106  165  156  TST37ID:        .ASCIZ  'Function Timing'
                              .EVEN
                        ;+
                        ;
                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                        ;WRITE SUBSYSTEM MEMORY COMMAND
                        ;
                        ;-

105374                  T37REST:
105374                          SAVREG                          ;SAVE THE REGISTERS
105400  012701  102250          MOV     #T37PACKET,R1           ;START OF THE PACKET
105404  012721  100004          MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
105410  012721  102260          MOV     #T37DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
105414  005021                  CLR     (R1)+                   ;EXTENDED ADDRESS
105416  012721  000012          MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
105422  012721  102272          MOV     #T37BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
105426  005021                  CLR     (R1)+
105430  012721  000024          MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
105434  005021                  CLR     (R1)+
```

```
 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
      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::

105556                          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$HILIM
105566                          GPRMA   HPM2,2,0,0,776,YES              ;GET VECTOR ADDRESS.
105566  001031                  .WORD   T$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 TH' 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                          I$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
```

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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
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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          T30USKM  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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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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