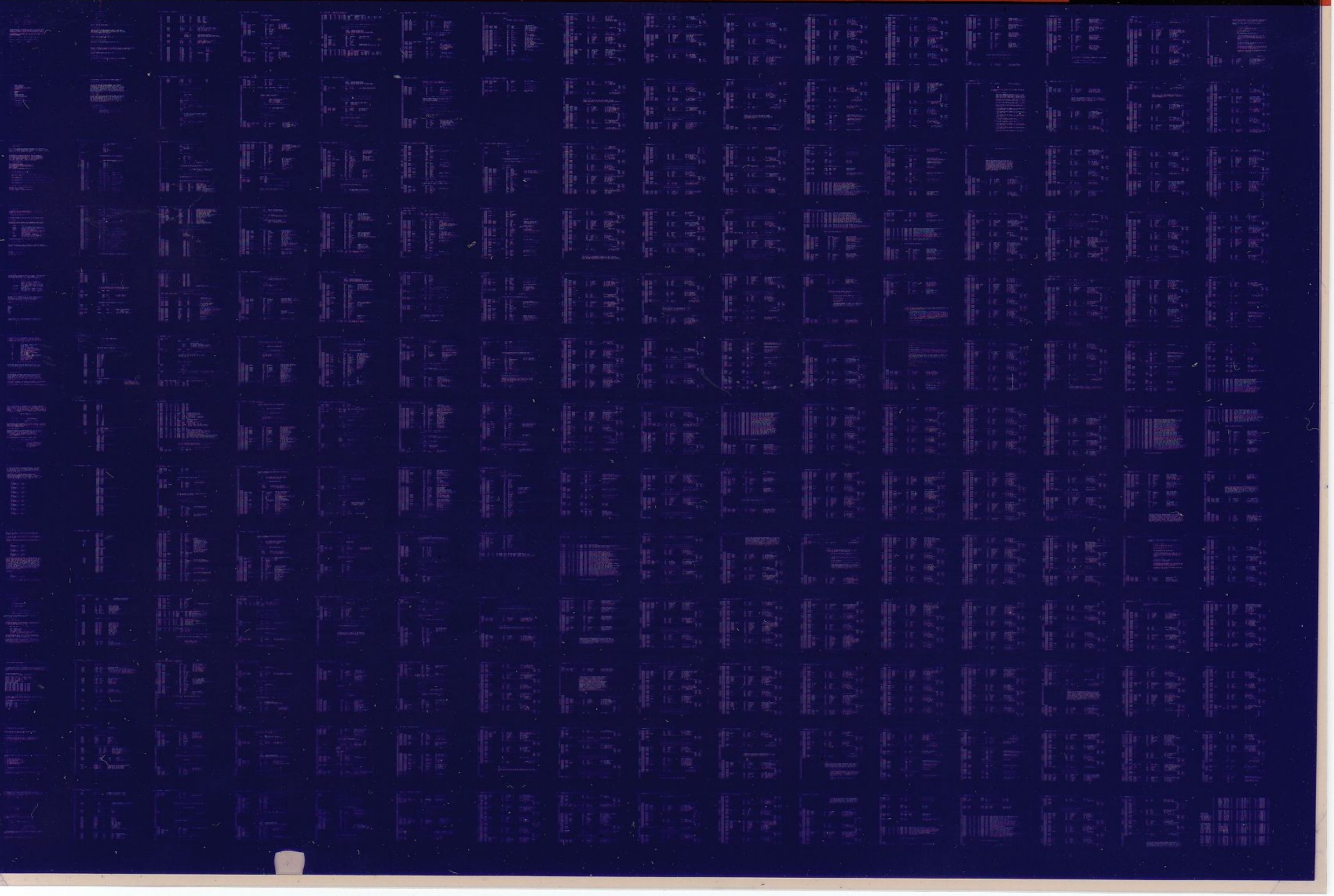
TSU05 TSU05 DIAG PART 4
CZTSDA0

AH-T723A-MC
FICHE 01 OF 02

JUL 1984
digital
Made In USA



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IDENTIFICATION

PRODUCT ID: AC-T722A-MC

PRODUCT TITLE: CZTSDA0 TSU05 DIAG PART 4

DEPARTMENT: COMPUTER SPECIAL SYSTEMS/PPG

DATE: APRIL 26, 1983

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1.0 GENERAL INFORMATION

1.1 PROGRAM ABSTRACT

THIS IS A PDP-11 RESIDENT DIAGNOSTIC WHICH CHECKS THE FUNCTIONALITY OF A TSU05 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 PROCESSOR AND MEMORY
CAUTION:DIAGNOSTIC REQUIRES 32K WORDS OF MEMORY
(28K USEABLE AND 4K RESERVED FOR I/O PAGE)
TSU05 MAGTAPE SUBSYSTEM (DRIVE AND CONTROLLER)
CONSOLE TERMINAL
PDP-11 DIAGNOSTIC SUPERVISOR (MSAAA.SYS VERSION 34 OR LATER)
PDP-11 DIAGNOSTIC LOADER/MONITOR (XXDP+)

1.3 RELATED DOCUMENTS AND STANDARDS

DIGITAL EQUIPMENT CORPORATION DOCUMENTS:

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

2. TSU05 TRANSPORT SUBSYSTEM USER'S GUIDE; DOCUMENT NUMBER EK-TSU05-UG-001
   DATE: AUGUST 1982

3. TSU05 TRANSPORT SUBSYSTEM TECHNICAL MANUAL; DOCUMENT NUMBER EK-TSU05-TM-001
   DATE: AUGUST 1982

4. TSU05 TRANSPORT SUBSYSTEM INSTALLATION MANUAL; DOCUMENT NUMBER EK-TSU05-IN-001
   DATE: AUGUST 1982

1.4 DIAGNOSTIC HIERARCY PREREQUISITES

FUNCTIONAL PDP-11 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.
CZTSAA,CZTSBA AND CZTSCA 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 TSU05 DIAGNOSTIC IS A PDP-11 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
CZTSD-B-0
****TSU05 LOGIC DIAGNOSTIC****
UNIT IS TSU05
>DR
```

2.2 SWITCHES

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

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

EXAMPLE OF SWITCH USAGE:

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

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

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

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

2.3 FLAGS

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

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

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

*ERROR MESSAGES ARE DESCRIBED IN SECTION 3.1

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

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

2.4 HARDWARE QUESTIONS

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

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

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

TSBA/TSDB = 172520, VECTOR = 224

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

```
# UNITS (D) ?  <ENTER THE NUMBER OF M7455 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 TSU05 CONTROLLERS PER PDP-11 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) O ?  1,0<CR>

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

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

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

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

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

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

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

2.7 QUICK START-UP PROCEDURE (XXDP+)

TO START-UP THIS PROGRAM:

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

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

3.0 ERROR INFORMATION

3.1 TYPES OF ERROR MESSAGES

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

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

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

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

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

3.2 SPECIFIC ERROR MESSAGES

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

ERROR MESSAGE EXAMPLE 1

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

```
TST: 016 FIFO EXERCISER TEST
CZTSD 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.

```
CZTSD 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.

```
CZTSD 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)

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

 UNITS (D) ?  1

 UNIT 0

 DEVICE ADDRESS  (0) 172520 ? <CR>

 VECTOR (0) 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
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 M7455 CONTROLLERS
                PRESENT TO BE TESTED>

UNIT 0

DEVICE ADDRESS  (0) 172520 ? <ENTER THE ADDRESS OF THE
                              TSBA/TSDB REGISTER>

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

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

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

CHANGE SW (L) ?

INHIBIT ITERATIONS (L) N ?

6.0 TEST SUMMARIES

TEST 1: WRITE TAPE MARK RETRY

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

TEST 2: SKIP TAPE MARKS

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

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

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

TEST 4: ERASE AND OPERATION INCOMPLETE

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

TEST 5: DATA PARITY TEST

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

TEST 6: OPERATIONS AT EOT

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

TEST 7: EXTENDED MODE FEATURES

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

REWIND WITH IMMEDIATE INTERRUPT

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

TEST 8: RECORD BUFFERING

THIS TEST VERIFIES THAT RECORD BUFFERING, USED FOR WRITE DATA AND READ NEXT COMMANDS, OPERATES PROPERLY AND IS PROPERLY CONTROLLED BY THE EXTENDED CHARACTERISTICS DATA WORD. IF THE M7455 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 - JUNE 1983

REVISION B - APRIL 1983

- FIXED TWO PROBLEMS, ONE IN TEST 1 AND THE OTHER IN TEST 8.
REF. DOYLE TO GRASKY "TSU05 CZTSDA DIAGNOSTIC PATCH"; 23-DEC-82.

```
                                .TITLE  TSV2 - PROGRAM HEADER
                                .SBTTL  PROGRAM HEADER
000000                          .PSECT  ABS

                                .MCALL  SVC
000000                          SVC                     ; INITIALIZE SUPERVISOR MACROS
                                .ENABLE LC
                                .NLIST  BEX,CND
                                .ENABL  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  CZTSD,A,0,655.,0
002000                  L$NAME::                ;DIAGNOSTIC NAME
002000  103                     .ASCII /C/
002001  132                     .ASCII /Z/
002002  124                     .ASCII /T/
002003  123                     .ASCII /S/
002004  104                     .ASCII /D/
002005  000                     .BYTE   0
002006  000                     .BYTE   0
002007  000                     .BYTE   0
002010                  L$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  105446'                 .WORD   L$HARD
002020                  L$SPCP::                ;POINTER TO S.W. QUES.
002020  105600'                 .WORD   L$SOFT
002022                  L$HPTP::                ;PTR. TO DEF. H.W. PTABLE
002022  002150'                 .WORD   L$HW
002024                  L$SPTP::                ;PTR. TO S.W. PTABLE
002024  002160'                 .WORD   L$SW
002026                  L$LADP::                ;DIAG. END ADDRESS
002026  105674'                 .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
```

PROGRAM HEADER

```
002040  002124'                 .WORD   L$DISPATCH
002042                  L$PRIO::                ;DIAGNOSTIC RUN PRIORITY
002042  000000                    .WORD   0
002044                  L$ENVI::                ;FLAGS DESCRIBE HOW IT WAS SETUP
002044  000000                    .WORD   0
002046                  L$EXP1::                ;EXPANSION WORD
002046  000000                    .WORD   0
002050                  L$MREV::                ;SVC REV AND EDIT #
002050     003                    .BYTE   C$REVISION
002051     003                    .BYTE   C$EDIT
002052                  L$EF::                  ;DIAG. EVENT FLAGS
002052  000000                    .WORD   0
002054  000000                    .WORD   0
002056                  L$SPC::
002056  000000                    .WORD   0
002060                  L$DEVP::                ; POINTER TO DEVICE TYPE LIST
002060  003374'                   .WORD   L$DVTYP
002062                  L$REPP::                ;PTR. TO REPORT CODE
002062  022514'                   .WORD   L$RPT
002064                  L$EXP4::
002064  000000                    .WORD   0
002066                  L$EXP5::
002066  000000                    .WORD   0
002070                  L$AUT::                 ;PTR. TO ADD UNIT CODE
002070  022202'                   .WORD   L$AU
002072                  L$DUT::                 ;PTR. TO DROP UNIT CODE
002072  022300'                   .WORD   L$DU
002074                  L$LUN::                 ;LUN FOR EXERCISERS TO FILL
002074  000000                    .WORD   0
002076                  L$DESP::                ;POINTER TO DIAG. DESCRIPTION
002076  003402'                   .WORD   L$DESC
002100                  L$LOAD::                ;GENERATE SPECIAL AUTOLOAD EMT
002100  104035                    EMT     E$LOAD
002102                  L$ETP::                 ;POINTER TO ERRTBL
002102  000000                    .WORD   0
002104                  L$ICP::                 ;PTR. TO INIT CODE
002104  021406'                   .WORD   L$INIT
002106                  L$CCP::                 ;PTR. TO CLEAN-UP CODE
002106  022466'                   .WORD   L$CLEAN
002110                  L$ACP::                 ;PTR. TO AUTO CODE
002110  022406'                   .WORD   L$AUTO
002112                  L$PRT::                 ;PTR. TO PROTECT TABLE
002112  021376'                   .WORD   L$PROT
002114                  L$TEST::                ;TEST NUMBER
002114  000000                    .WORD   0
002116                  L$DLY::                 ;DELAY COUNT
002116  000000                    .WORD   0
002120                  L$HIME::                ;PTR. TO HIGH MEM
002120  000000                    .WORD   0

                                .SBTTL  DISPATCH TABLE

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

DISPATCH TABLE

```
002122                          DISPATCH 9
002122  000011                  .WORD   9
002124                  L$DISPATCH::
002124  023276'                 .WORD   T1
002126  032114'                 .WORD   T2
002130  041222'                 .WORD   T3
002132  046600'                 .WORD   T4
002134  052666'                 .WORD   T5
002136  055702'                 .WORD   T6
002140  063264'                 .WORD   T7
002142  073224'                 .WORD   T8
002144  101010'                 .WORD   T9

                                .SBTTL  DEFAULT HARDWARE P-TABLE

                        ;++
                        ; THE DEFAULT HARDWARE P-TABLE CONTAINS DEFAULT VALUES OF
                        ; THE TEST-DEVICE PARAMETERS.  THE STRUCTURE OF THIS TABLE
                        ; IS IDENTICAL TO THE STRUCTURE OF THE RUN-TIME P-TABLE.
                        ;--
002146                          BGNHW   DFPTBL          ;DEFAULT HARD-P-TABLE
002146  000003                  .WORD   L10000-L$HW/2
002150                  L$HW::
002150                  DFPTBL::

002150  172520                  .WORD   172520          ; 1ST (OF 2) REGISTERS.
002152  000224                  .WORD   224             ; INTERRUPT VECTOR
002154  000200                  .WORD   PRI04           ; INTERRUPT PRIORITY.
002156                          ENDHW
002156                  L10000:

                                .SBTTL  SOFTWARE P-TABLE

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

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

002170                          ENDMOD
```

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

002170                          BGNMOD  TSV3
002170                  TSV3::


                                .SBTTL  GLOBAL EQUATES SECTION

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

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

```
                        ; PRIORITY LEVEL DEFINITIONS
                        ;
000340                  PRI07== 340
000300                  PRI06== 300
000240                  PRI05== 240
000200                  PRI04== 200
000140                  PRI03== 140
000100                  PRI02== 100
000040                  PRI01== 40
000000                  PRI00== 0
                        ;
                        ;OPERATOR FLAG BITS
                        ;
000004                  EVL==     4
000010                  LOT==    10
000020                  ADR==    20
000040                  IDU==    40
000100                  ISR==   100
000200                  UAM==   200
000400                  BOE==   400
001000                  PNT==  1000
002000                  PRI==  2000
004000                  IXE==  4000
010000                  IBE== 10000
020000                  IER== 20000
040000                  LOE== 40000
100000                  HOE== 100000
34
35 002170                       KT11 ..                 ;DEFINE MEMORY MANAGEMENT REGISTERS
                        .SBTTL  MEMORY MANAGEMENT DEFINITIONS
                        ;*KT11 VECTOR ADDRESS
000250                  MMVEC=  250
                        ;*KT11 STATUS REGISTER ADDRESSES
177572                  SR0=    177572
177574                  SR1=    177574
177576                  SR2=    177576
172516                  SR3=    172516
                        .IF NB
                        ;*USER "I" PAGE DESCRIPTOR REGISTERS
                        UIPDR0= 177600
                        UIPDR1= 177602
                        UIPDR2= 177604
                        UIPDR3= 177606
                        UIPDR4= 177610
                        UIPDR5= 177612
                        UIPDR6= 177614
                        UIPDR7= 177616
                        .IF NB
                        ;*USER "D" PAGE DESCRIPTOR REGISTORS
                        UDPDR0= 177620
                        UDPDR1= 177622
                        UDPDR2= 177624
                        UDPDR3= 177626
                        UDPDR4= 177630
                        UDPDR5= 177632
                        UDPDR6= 177634
                        UDPDR7= 177636
```

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

```
                        SDPAR3= 172266
                        SDPAR4= 172270
                        SDPAR5= 172272
                        SDPAR6= 172274
                        SDPAR7= 172276
                        .ENDC
                        .ENDC
                        ;*KERNEL "I" PAGE DESCRIPTOR REGISTERS
172300                  KIPDR0= 172300
172302                  KIPDR1= 172302
172304                  KIPDR2= 172304
172306                  KIPDR3= 172306
172310                  KIPDR4= 172310
172312                  KIPDR5= 172312
172314                  KIPDR6= 172314
172316                  KIPDR7= 172316
                        .IF NB
                        ;*KERNEL "D" PAGE
                         DESCRIPTOR REGISTERS
                        KDPDR0= 172320
                        KDPDR1= 172322
                        KDPDR2= 172324
                        KDPDR3= 172326
                        KDPDR4= 172330
                        KDPDR5= 172332
                        KDPDR6= 172334
                        KDPDR7= 172336
                        .ENDC
                        ;*KERNEL "I" PAGE ADDRESS REGISTERS
172340                  KIPAR0= 172340
172342                  KIPAR1= 172342
172344                  KIPAR2= 172344
172346                  KIPAR3= 172346
172350                  KIPAR4= 172350
172352                  KIPAR5= 172352
172354                  KIPAR6= 172354
172356                  KIPAR7= 172356
                        .IF NB
                        ;*KERNEL "D" PAGE ADDRESS REGISTERS
                        KDPAR0= 172360
                        KDPAR1= 172362
                        KDPAR2= 172364
                        KDPAR3= 172366
                        KDPAR4= 172370
                        KDPAR5= 172372
                        KDPAR6= 172374
                        KDPAR7= 172376
                        .ENDC
39
40
41                              .SBTTL  TSU05 REGISTER AND PACKET DEFINITIONS
42
43                      ;
44                      ; SOME GENERAL EQUATES.
45                      ;
46
47      000004          ERRVEC==        4               ; POINTER TO ERROR VECTOR FOR BUS TIME OUT.
```

```
                        TTIVEC==        60              ; INTERRUPT VECTOR FOR CONSOLE INPUT
                        TTICSR==        177560          ; BUS ADDRESS OF CONSOLE INPUT
                        TTIBFR==        177562          ; CONSOLE INPUT DATA BUFFER
                        BDVPCR==        177520          ; BDV11 PAGE CONTROL REGISTER

                        ;+
                        ;BIT DEFINITIONS FOR TSSR REGISTER
                        ;-

                        SC=     BIT15           ;SPECIAL CONDITION
                        BIE=    BIT14           ;BUS INTERFACE ERROR
                        SCE=    BIT13           ;SANITY CHECK ERROR
                        RMR=    BIT12           ;MODIFICATION REFUSED
                        NXM=    BIT11           ;NONEXISTANT MEMORY ERROR
                        NBA=    BIT10           ;NEED BUFFER ADDRESS
                        HIADDR= BIT9!BIT8       ;EXTENDED ADDRESS BITS
                        SSR=    BIT7            ;SUB SYSTEM READY
                        OFL=    BIT6            ;OFF LINE BIT
                        FATERR= BIT4!BIT5       ;FATAL TERMINATION ERROR CODES
                        TERCLS= BIT3!BIT2!BIT1  ;TERMINATION CODES


                        ;+
                        ;
                        ;BIT DEFINITIONS FOR EXTENDED STATUS REGISTER 0
                        ;(XST0)
                        ;
                        ;-

                        XSOTMK= BIT15           ;TAPE MARK DETECTED
                        XSORLS= BIT14           ;RECORD LENGTH SHORT
                        XSOLET= BIT13           ;LOGICAL END OF TAPE
                        XSORLL= BIT12           ;RECORD LENGTH LONG
                        XSOWLE= BIT11           ;WRITE LOCK ERROR
                        XSONEF= BIT10           ;NON EXECUTABLE FUNCTION
                        XSOILC= BIT9            ;ILLEGAL COMMAND
                        XSOILA= BIT8            ;ILLEGAL ADDRESS
                        XSOMOT= BIT7            ;TAPE IN MOTION
                        XSOONL= BIT6            ;TRANSPORT ON LINE
                        XSOIE=  BIT5            ;INTERRUPT ENABLE
                        XSOVCK= BIT4            ;VOLUME CHECK BIT
                        XSOPED= BIT3            ;PHASE ENCODED DRIVE
                        XSOWLK= BIT2            ;WRITE LOCKED
                        XSOBOT= BIT1            ;BEGINNING OF TAPE
                        XSOEOT= BIT0            ;END OF TAPE


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

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

```
                        ;+
                        ;BIT DEFINITIONS FOR EXTENDED STATUS REGISTER 2
                        ;(XST2)
                        ;-
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 TSU05 (ALWAYS=0)
002000                  X2.WCF  = BIT10         ;WRITE CLOCK FAILURE (FIFO NOT EMPTIED BY TRANSPORT)
000200                  X2.EXTF = BIT7          ;IF WRITE CHAR CMD THEN = EXTENDED FEATURES ENABLED
000100                  X2.BUFE = BIT6          ;IF WRITE CHAR CMD THEN = BUFFERING ENABLED
000077                  X2.REV  = 000077        ;IF WRITE CHAR CMD THEN = MICROCODE REVISION LEVEL
000007                  X2.UNIT = BIT2+BIT1+BIT0 ;IF GET STATUS THEN = CURRENTLY SELECTED UNIT NO.

                        ;+
                        ;BIT DEFINITIONS FOR EXTENDED STATUS REGISTER 3
                        ;(XST3)
                        ;-
177400                  X3.MDE  = 177400        ;MICRO-DIAGNOSTIC ERROR CODE
000200                  X3.SPARE= BIT7          ;NOT USED BY TSU05
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
```

```
                        TSSR== 2                ;TSSR REGISTER
                        TSSRH== 3               ;TSSR REGISTER HIGH BYTE

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

                        ;+
                        ; COMMAND DEFINITIONS
                        ;-
                        P.GETSTAT       = 17    ;GET STATUS
                        P.INIT          = 13    ;INITIALIZE
                        P.CONTROL       = 12    ;CONTROL COMMANDS
                        P.FORMAT        = 11    ;FORMAT
                        P.POSITION      = 10    ;POSITION
                        P.WRTSUB        = 6     ;SUBSYSTEM WRITE
                        P.WRITE         = 5     ;WRITE
                        P.WRTCHAR       = 4     ;WRITE CHARACTERISTICS
                        P.READ          = 1     ;READ

                        ;+
                        ; COMMAND PACKET HEADER WORD BIT DEFINITIONS
                        ;-
                                P.ACK   = BIT15         ;BUFFER AVAIL FOR CONTROLLER
                                P.CVC   = BIT14         ;CLEAR VOLUME CHECK
                                P.OPP   = BIT13         ;REVERSE SEQUENCE OF DATA BITS
                                P.SWB   = BIT12         ;SWAP BYTES IN MEMORY
                                P.MODE  = BIT11!BIT10!BIT9!BIT8 ;EXTENDED COMMAND MODE FIELD
                                P.IE    = BIT7          ;INTERRUPT ENABLE
                                P.FMT= BIT6!BIT5        ;PACKET HEADER TYPE (ALWAYS=0)
                                P.CMD   = 37            ;MAJOR COMMAND FIELD
                        ;+
                        ; CONTROL COMMAND MODE CODES
                        ;-
                                PC.RELEASE      = 0*256.        ;RELEASE BUFFER
                                PC.REWIND       = 1*256.        ;REWIND
                                PC.NOOP         = 2*256.        ;NO-OP
                                PC.IEREW        = 4*256.        ;REWIND IMMEDIATE INTERRUPT
                                PC.ERASE        = 5*256.        ;SECURITY ERASE

                        ;+
                        ; CONTROLLER RAM DEFINITIONS
                        ;-
                        RMCHBEG = 167           ;CHARACTERISTICS IO DATA BEGIN RAM ADDRESS
                        RMCHEND = 200           ;CHARACTERISTICS IO DATA END RAM ADDRESS
                        RMPKTBEG= 201           ;COMMAND PACKET BEGIN RAM ADDRESS
                        RMPKTEND= 210           ;COMMAND PACKET END RAM ADDRESS
                        RMMSGBEG= 215           ;MESSAGE BUFFER BEGIN RAM ADDRESS
                        RMMSGEND= 234           ;MESSAGE BUFFER END RAM ADDRESS
                        ;+
                        ;
                        ;REGISTER DEFINITIONS IN THE MESSAGE BUFFER
                        ;
                        ;-

                        XST0==  6               ;EXTENDED STATUS REGISTER 0 (WORD 4)
```

```
                        XST1==  8.              ;EXTENDED STATUS REGISTER 1 (WORD 5)
                        XST2==  10.             ;EXTENDED STATUS REGISTER 2 (WORD 6)
                        XST3==  12.             ;EXTENDED STATUS REGISTER 3 (WORD 7)
                        XST4==  14.             ;EXTENDED STATUS REGISTER 4 (WORD 8)


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

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

                                EXBCNT=10               ;NUMBER OF BYTES IN EXTENDED DATA PACKET

                        ;+
                        ;DATA PACKET OFFSETS FOR WRITE SUBSYTEM COMMAND
                        ;-
                                BSEL0   = 0             ;BYTE 0
                                BSEL1   = 1             ;BYTE 1
                                SEL2    = 2             ;WORD 2
                                SELDATA = 4             ;WORD 3

                        ;+
                        ;BSEL0 SELECT CODES FOR WRITE SUBSYSTEM COMMAND
                        ;-
                        PW.NOP          = 0             ;NO-OP
                        PW.RDRAM        = 1             ;READ RAM
                        PW.WTRAM        = 2             ;WRITE RAM
                        PW.RFIFO        = 3             ;READ FIFO
                        PW.WFIFO        = 4             ;WRITE FIFO
                        PW.RDSTAT       = 5             ;READ STATUS
                        PW.WCTL         = 6             ;WRITE TAPE CONTROL
                        PW.WFMT         = 7             ;WRITE TAPE FORMAT
                        PW.WMISC        = 10            ;WRITE MISCELLANEOUS
                        PW.WNPR         = 11            ;WRITE NPR CONTROL
                        PW.D22          = 20            ;DO MICROTEST 22
                        PW.D11          = 21            ;DO MICROTEST 11
                        PW.D13          = 22            ;DO MICROTEST 13
                        PW.NO1311       = 23            ;DISABLE MICROTEST 11 AND 13
                        PW.RDEXT        = 24            ;READ EXT. TAPE STATUS (NOT SUPPORTED BY ALL TRANSPORTS

                        ;+
                        ;BSEL1 CODES FOR WRITE TAPE CONTROL
                        ;-
                        WC.IFAD         = BIT7          ;IFAD - FORMATTER ADDRESS
                        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
                        ;-
000200                  WF.IHISP        = BIT7          ;IHISP  - HIGH SPEED
000100                  WF.IWRT         = BIT6          ;IWRT   - WRITE
000040                  WF.IREV         = BIT5          ;IREV   - REVERSE
000020                  WF.IWFM         = BIT4          ;IWFM   - WRITE FILE MARK
000010                  WF.IEDIT        = BIT3          ;IEDIT  - EDIT
000004                  WF.IERASE       = BIT2          ;IERASE - ERASE
000002                  WF.I3RESV       = BIT1          ;IRESV3 - RESERVED #3
000001                  WF.I4RESV       = BIT0          ;IRESV4 - RESERVED #4


                        ;*
                        ;BSEL1 CODES FOR WRITE MISCELLANEOUS SUBCOMMAND
                        ;-
000200                  MS.EXT          = BIT7          ;INVERT SENSE OF EXTENDED FEATURES SWITCH
000020                  MS.RSFIFO       = BIT4          ;RESET FIFO AND INPUT PARITY ERRORR
000010                  MS.RSTAPE       = BIT3          ;RESET TAPE STATUS IN 2 FLIP-FLOPS
000006                  MS.ATTN         = BIT2!BIT1     ;ATTENTION TRIGGER FIELD
000001                  MS.RSD          = BIT0          ;RESET TIMER A,B THEN DELAY TIMES IN SEL2
                        ;*
                        ; MS.ATTN SUBCODES
                        ;-
000000                          MSA.NOP = 0*2           ;NO-OP (NOTHING TRIGGERED)
000002                          MSA.VOL = 1*2           ;SIMULATE ON-LINE/OFF-LINE TRANSISTION
000004                          MSA.NRAM= 2*2           ;FORCE NON-FATAL RAM ERROR (FORCES ERRCODE 54)
000006                          MSA.FRAM= 3*2           ;FORCE FATAL RAM ERROR (CAUSES SCE TO SET)
                        ;*
                        ; WRITE SUBSYSTEM WRITE NPR BSEL1 BIT DEFINITIONS
                        ;-
000200                  NP.IR           = BIT7          ;INTERRUPT REQUEST (0-1 TRANSITION)
000100                  NP.OUT          = BIT6          ;TAPE DATA DIRECTION OUT (0= IN)
000040                  NP.LOOP         = BIT5          ;ENABLE TRANSPORT LOOPBACK
000020                  NP.WRP          = BIT4          ;WRITE CORRECT PARITY (SET=0 TO WRITE WRONG)
                        ;*
                        ; READ STATUS MESSAGE BUFFER BIT DEFINITIONS
                        ;-

000200                  S2.DIM          = BIT7          ;WORD #9 BYTE 2 DATA IN MISS
000100                  S2.ILW          = BIT6          ;               ILW H
000040                  S2.OUTRDY       = BIT5          ;               OUT RDY H
000020                  S2.INRDY        = BIT4          ;               IN RDY H
000010                  S2.ATIMR        = BIT3          ;               TIMER A FLAG H
000004                  S2.BTIMR        = BIT2          ;               TIMER B FLAG H
000003                  S2.UNDEF        = BIT1+BIT0     ;(UNDEFINED)
100000                  S1.PARIN        = BIT15         ;WORD #8 BYTE 1 PARIN H
040000                  S1.I2RESV       = BIT14         ;               IRESV2
020000                  S1.I1RESV       = BIT13         ;               IRESV1
010000                  S1.IEOT         = BIT12         ;               IEOT L
004000                  S1.IIDENT       = BIT11         ;               IIDENT H
002000                  S1.ICER         = BIT10         ;               ICER H
001000                  S1.IFMK         = BIT9          ;               IFMK H
000400                  S1.IMER         = BIT8          ;               IMER H
000200                  S0.ISPEED       = BIT7          ;WORD #8 BYTE 0 ISPEED H
000100                  S0.IRDY         = BIT6          ;               IRDY L
000040                  S0.IONL         = BIT5          ;               IONL L
```

```
                        SO.ILDP         = BIT4          ;               ILDP L
                        SO.IDBY         = BIT3          ;               IDBY L
                        SO.IRWD         = BIT2          ;               IRWD L
                        SO.IFBY         = BIT1          ;               IFBY L
                        SO.IFPT         = BIT0          ;               IFPT L
                        ;+
                        ;UNIBUS MAP DEFINATIONS
                        ;-
170200                  MMR0=   170200


                                .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
```

```
                        EXTFEA::        .WORD   0       ;EXTENDED FEATURES SOFTWARE SW 0=OFF;1=ON
                        BENBSW::        .WORD   0       ;BUFFER ENABLE SWITCH SW 0=OFF;1=ON
                        EXPD::          .WORD   0       ;EXPECTED RAM DATA FOR PRAMPKT ROUTINE
                        RECV::          .WORD   0       ;RECEIVED RAM DATA FOR PRAMPKT ROUTINE
                        ERRHI::         .WORD   0       ;HIGH ADDRESS MEMORY ERROR
                        ERRLO::         .WORD   0       ;LOW ADDRESS MEMORY ERROR
                        RAMDATA::       .BLKW   16.     ;DATA READ FROM RAM PACKET OR MESSAGE BUF AREA
                        RAMSIZ::        .WORD   0       ;RAM DATA SIZE FOR PRAMPKT ROUTINE
                        RCVHIADD::      .WORD   0       ;RECEIVED BUFFER HIGH ADDRESS
                        RCVLOADD::      .WORD   0       ;RECEIVED BUFFER LOW ADDRESS
                        COUNT::         .WORD   0       ;TEST COUNT PATTERN
                        DATA::          .WORD   0       ;TEST DATA
                        TSTFLAG::       .WORD   0       ;TEST FLAG WORD
                        TSTPTR::        .WORD   0       ;TSTBLK POINTER
                        PRMNO::         .WORD   0       ;PRINT ROUTINE TEMP
                        EXPMSG::        .BLKB   100.    ;EXPECTED MESSAGE BUFFER DATA
                        RECMSG::        .BLKB   100.    ;RECEIVED MESSAGE BUFFER DATA
                        TMPBFR::        .BLKB   80.     ;TEMPORARY STORAGE FOR PRINT


                                .SBTTL  TSTBLK  - TEST DATA TABLE

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

                        TSTBLK::
                                .WORD   0               ;ALL ZEROS
                                .WORD   177777          ;ALL ONES
                                .WORD   BIT0            ;DATA FOR WALKING ONES
                                .WORD   BIT1
                                .WORD   BIT2
                                .WORD   BIT3
                                .WORD   BIT4
                                .WORD   BIT5
                                .WORD   BIT6
                                .WORD   BIT7
                                .WORD   BIT8
                                .WORD   BIT9
                                .WORD   BIT10
                                .WORD   BIT11
                                .WORD   BIT12
                                .WORD   BIT13
                                .WORD   BIT14
                                .WORD   BIT15
                                .WORD   ^CBIT0          ;DATA FOR WALKING ZEROS
                                .WORD   ^CBIT1
```

```
                                        .WORD   ↑CBIT2
                                        .WORD   ↑CBIT3
                                        .WORD   ↑CBIT4
                                        .WORD   ↑CBIT5
                                        .WORD   ↑CBIT6
                                        .WORD   ↑CBIT7
                                        .WORD   ↑CBIT8
                                        .WORD   ↑CBIT9
                                        .WORD   ↑CBIT10
                                        .WORD   ↑CBIT11
                                        .WORD   ↑CBIT12
                                        .WORD   ↑CBIT13
                                        .WORD   ↑CBIT14
                                        .WORD   ↑CBIT15
                                        .WORD   125252          ;ALTERNATING ONES, ZEROS
                                        .WORD   052525          ;ALTERNATING ONES, ZERO OPPOSITE FROM ABOVE
                        TBLEND==.


                                        .SBTTL  GLOBAL ENVIRONMENT STORAGE
                                ;
                                ;STORAGE FOR DEVICE REGISTERS
                                ;
                        DUMMY:  0,100000,0,0    ;DUMMY DEVICE REGISTERS...
                                0,0,0,0,0,0,0,0
                                                ;...FOR MULTI-UNIT CHECKOUT.


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

                        TEMP1::         .WORD   0               ;SOME TEMP LOCATIONS.
                        TEMP2::         .WORD   0
                        XXCOMM::        .WORD   0               ;XXDP+ COMM BLOCK POINTER.
                        FREE::          .WORD   0               ;1ST FREE MEMORY ADDRESS...
                        FRESIZ::        .WORD   0               ;...AND SIZE (IN WORDS).
                        FREEHI: .WORD   0               ;LAST WORD IN FREE SPACE
                        KTFLG::         .WORD   0               ;KT11, MEM AVAIL FLAG -
                                                                ;- .WORD        0 = <24K OR NO KT -
                                                                ;- NZ = >24K AND KT.

                        KTENABLE::      .WORD   0               ;SET BY TEST ROUTINES TO FLAG >28K UNDER TEST
                        NXMFLG::        .WORD   0               ;SET IF WE CAN TEST CLEARED OTHERWISE
                        NXMLO::         .WORD   0               ;NXM LO ADDRESS BITS
                        NXMHI::         .WORD   0               ;NXM HI ADDRESS BITS FOR DAL'S 16-21
                        T23A::          .WORD   0               ;PROCESSOR TYPE FLAG
                        T23B::          .WORD   0               ;PROCESSOR TYPE FLAG B
                        T3BFLG::        .WORD   0               ;TEST 3B FLAG ↑O
                        PST32W::        .WORD   2000            ;32W BLOCK ADDRESS FOR 32K START
                        SIFLAG::        .WORD   0               ;
                        BADDAT::        .WORD   0               ;ACTUAL DATA
                        GDDAT::         .WORD   0               ;EXPECTED DATA
                        LOOPFL::        .WORD   0

                        CTAB::                                  ;CONFIGURATION TABLES.
                        CTABM::         .WORD   0               ;CONFIG WORK.
                                        .WORD   0
                                        .WORD   0
```

```
                                        .WORD   0
                                        .WORD   -1              ;END OF MEM TABLE.
                                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
                                ;-
                                        DEVTYP  <TSU05>
003374                          L$DVTYP::
003374  124     123     125             .ASCIZ  /TSU05/
                                        .EVEN

                                ;+
                                ;TEST DESCRIPTION
                                ;-
                                        DESCRIPT <♦♦♦♦ TSU05 DIAG PART 4 - CHECK TRANSPORT IF ERROR ♦♦♦♦>
003402                          L$DESC::
003402  052     052     052             .ASCIZ  /♦♦♦♦ TSU05 DIAG PART 4 - CHECK TRANSPORT IF ERROR ♦♦♦♦/
                                        .EVEN



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

003472  003532' 003535' 003541' TSSRBIT::        .WORD   1$,2$,3$,4$,5$,6$,7$,8$
003512  003573' 003577' 003603'                  .WORD   9$,10$,11$,12$,13$,14$,15$,16$
003532    123     103     000   1$:     .ASCIZ  'SC'
003535    102     111     105   2$:     .ASCIZ  'BIE'
003541    123     103     105   3$:     .ASCIZ  'SCE'
003545    122     115     122   4$:     .ASCIZ  'RMR'
003551    116     130     115   5$:     .ASCIZ  'NXM'
003555    116     102     101   6$:     .ASCIZ  'NBA'
```

```
633 003561  102  111  124  7$:      .ASCIZ  'BIT9'
634 003566  102  111  124  8$:      .ASCIZ  'BIT8'
635 003573  123  123  122  9$:      .ASCIZ  'SSR'
636 003577  117  106  114  10$:     .ASCIZ  'OFL'
637 003603  102  111  124  11$:     .ASCIZ  'BIT5'
638 003610  102  111  124  12$:     .ASCIZ  'BIT4'
639 003615  102  111  124  13$:     .ASCIZ  'BIT3'
640 003622  102  111  124  14$:     .ASCIZ  'BIT2'
641 003627  102  111  124  15$:     .ASCIZ  'BIT1'
642 003634  102  111  124  16$:     .ASCIZ  'BIT0'
643                                  .EVEN
644 003642  124  123  123  SFIERR:  .ASCIZ  'TSSR ERROR AFTER SOFT INIT'
645 003675  124  123  123  SFHERR:  .ASCIZ  'TSSR ERROR AFTER BUS RESET'
646 003730  040  040  116  NXR:     .ASCIZ  /  NON-EXISTANT DEVICE REGISTER/
647 003767  045  101  040  NXRX:    .ASCIZ  /%A  ADDRESS: %O6/
648 004010  045  101  040  TSSX:    .ASCII  /%A  TSBA,TSSR EXP'D: %O6%A,%O6%N/
649 004050  045  101  040           .ASCIZ  /%A  TSBA,TSSR REC'D: %O6%A,%O6/
650 004107  045  116  045  FUSI:    .ASCII  /%N%A/
651 004113  040  040  125  USI:     .ASCIZ  /  UNEXPECTED INTERRUPT/
652 004142  040  040  111  NSI:     .ASCIZ  /  INTERRUPT EXPECTED, NOT RECEIVED/
653 004205  045  116  045  FNOINTR:         .ASCII  /%N%A/
654 004211  040  040  116  NOINTR:  .ASCIZ  /  NO INTERRUPT WAS GENERATED/
655 004246  040  040  111  IFAULT:  .ASCIZ  /  INTERRUPT FAULT/
656 004270  045  101  040  INTX:    .ASCIZ  /%A  CPU PC: %O6%A  TSBA: %O6/
657 004325  040  040  042  NOINIT:  .ASCIZ  /  "BUS-INIT" DIDN'T INITIALIZE CONTROLLER/
658 004377  040  040  042  NSINIT:  .ASCIZ  /  "SOFT-INIT" DIDN'T INITIALIZE THE DPU/
659 004447  040  040  042  BRINIT:  .ASCIZ  /  "BUS-RESET" DIDN'T INITIALIZE THE DPU/
660
661 004517  000           NUL:     .ASCIZ  //
662 004520  045  116  000  NULCR:   .ASCIZ  /%N/
663 004523  045  101  040  EXPGOT:  .ASCIZ  /%A EXP'D: %O6%A, REC'D: %O6/
664 004557  045  116  045  EXPGT2:  .ASCIZ  /%N%A EXP'D: %O6%A, %O6%N%A REC'D: %O%A, %O6/
665 004633  045  101  040  DUAD12:  .ASCIZ  /%A REG(W) WRITTEN TO: %O6%A REG(R) READ; EXP'D: %O6%A, REC'D: %O6/
666 004735  122  101  115  PKTRAM::         .ASCIZ  'RAM Contents Do Not Match Packet Sent'
667 005003  040  040  103  SCME:    .ASCIZ  /  CONFIG DOESN'T MATCH MFG. MASTER/
668 005046  127  122  111  WRTMSG:  .ASCIZ  'WRITE CHARACTERISTICS Failed'
669 005103  124  123  123  WRTERR:  .ASCIZ  'TSSR Incorrect After WRITE Command, More Bits Set Than SSR'
670 005176  124  123  123  RDERR:   .ASCIZ  'TSSR Incorrect After READ Command, More Bits Set Than SSR'
671 005270  106  101  124  SCHERR:  .ASCIZ  'FATAL ERROR IN SUBTEST - CHECK TAPE,CABLES,TRANSPORT etc.'
672 005362  105  122  122  RETERR:  .ASCIZ  'ERROR IN SUBTEST - WRITE DATA RETRY FIVE TIMES FAILED'
673 005450  045  116  045  NOMEM:   .ASCIZ  '%N%A ***** NO NXM ADDRESS--CANNOT TEST NXM TIMEOUT. *****%N'
674                                  .EVEN
675
676                                  .SBTTL  GLOBAL ERROR REPORT SECTION
677
678                          ;++
679                          ; THE GLOBAL ERROR REPORT SECTION CONTAINS THE PRINTB AND PRINTX
680                          ; CALLS THAT ARE USED IN MORE THAN ONE TEST.
681                          ; ASCII TEXT STRINGS ARE FOUND IN THE GLOBAL TEXT SECTION.
682                          ;--
683
684 005544                         BGNMSG  NXRERR          ;NON-EXISTANT DEVICE REGISTER.
    005544                 NXRERR::
685 005544                         PRINTX  #NXRX,NODEV     ;NODEV = NEXM ADDRESS.
    005544  013746  003106'        MOV     NODEV,-(SP)
    005550  012746  003767'        MOV     #NXRX,-(SP)
    005554  012746  000002         MOV     #2,-(SP)
```

```
        005560  010600                          MOV     SP,R0
        005562  104415                          TRAP    C$PNTX
        005564  062706  000006                  ADD     #6,SP
    686 005570  004737  005576'                 JSR     PC,EXTEND       ; PRINT EXTENSION IF REQUIRED.
    687 005574                                  ENDMSG
        005574                              L10002:
        005574  104423                          TRAP    C$MSG
    688
    689
    690                                     ;
    691                                     ; THIS ROUTINE APPENDS A UNIQUE EXTENSION (IF REQUIRED)
    692                                     ; TO ANY OF THE ABOVE ERROR SIGNATURES.
    693                                     ;
    694 005576  005727                      EXTEND: TST     (PC)+
    695 005600  000000                      EXTA:   0                       ; 0 = NO EXTENSION.
    696 005602  001402                              BEQ     1$
    697 005604  004777  177770                      JSR     PC,@EXTA        ; APPEND EXTENSION TEXT.
    698 005610                              1$:     PRINTX  #NULCR          ; PRINT A BLANK LINE
        005610  012746  004520'                     MOV     #NULCR,-(SP)
        005614  012746  000001                      MOV     #1,-(SP)
        005620  010600                              MOV     SP,R0
        005622  104415                              TRAP    C$PNTX
        005624  062706  000004                      ADD     #4,SP
    699 005630  000207                              RTS     PC
    700
    701                                             .SBTTL  PRITSSR - PRINT TSSR CONTENTS
    702
    703                                     ;+
    704                                     ;
    705                                     ;ROUTINE TO DISPLAY THE CONTENTS, AND BIT DEFINITIONS, OF
    706                                     ;THE TSSR REGISTER. THIS ROUTINE IS NORMALLY CALLED ONLY
    707                                     ;BY A MESSAGE PRINTING ROUTINE
    708                                     ;
    709                                     ;INPUTS:
    710                                     ;
    711                                     ;       R1      CONTENTS OF TSSR
    712                                     ;
    713                                     ;SUBORDINATE ROUTINES:
    714                                     ;
    715                                     ;       CHKAMB  CHECK FOR AMBIGUOUS CONTENTS
    716                                     ;
    717                                     ;-
    718
    719 005632                              PRITSSR:
    720 005632                                      SAVREG                  ;SAVE GENERAL REGISTERS
    721 005636  010104                              MOV     R1,R4           ;SAVE THE TSSR CONTENTS
    722 005640                                      PRINTB  #TSSRFOR,R4     ;PRINT THE CONTENTS OF TSSR
        005640  010446                              MOV     R4,-(SP)
        005642  012746  006305'                     MOV     #TSSRFOR,-(SP)
        005646  012746  000002                      MOV     #2,-(SP)
        005652  010600                              MOV     SP,R0
        005654  104414                              TRAP    C$PNTB
        005656  062706  000006                      ADD     #6,SP
    723 005662  010400                              MOV     R4,R0           ;GET TSSR BACK FOR CHKAMB
    724 005664  004737  015734'                     JSR     PC,CHKAMB       ;ARE CONTENTS AMBIGUOUS ?
    725 005670  103410                              BCS     5$              ;BRANCH IF NOT
    726 005672                                      PRINTX  #AMBTSSR        ;SHOW CONTENTS ARE AMBIGUOUS
```

```
        005672  012746  006525'                MOV     @AMBTSSR,-(SP)
        005676  012746  000001                 MOV     #1,-(SP)
        005702  010600                          MOV     SP,R0
        005704  104415                          TRAP    C$PNTX
        005706  062706  000004                 ADD     #4,SP
   727  005712  010403                  5$:     MOV     R4,R3           ;CONTENTS OF TSSR
   728  005714  042703  001476                 BIC     #HIADDR!FATERR!TERCLS,R3        ;CLEAR ALL MULTIPLE BIT FIELDS
   729  005720  001434                          BEQ     20$             ;NO BITS ARE SET
   730  005722  012702  002624'                MOV     #TMPBFR,R2      ;TEMPORARY ASCII BUFFER
   731  005726  012701  003472'                MOV     #TSSRBIT,R1     ;ASCII EQUIVALENT OF BITS
   732  005732  005703                  10$:    TST     R3              ;REMAINING BITS TO CONVERT
   733  005734  001413                          BEQ     15$             ;BRANCH WHEN ALL ARE DONE
   734  005736  000241                          CLC                     ;CLEAR CARRY FOR SHIFT
   735  005740  006103                          ROL     R3              ;SHIFT NEXT BIT TO CARRY
   736  005742  103006                          BCC     13$             ;BRANCH IF BIT NOT SET
   737  005744  011100                          MOV     (R1),R0         ;POINTER TO BIT DEFINITION
   738  005746  112022                  11$:    MOVB    (R0)+,(R2)+     ;MOVE ASCIZ TO BUFFER
   739  005750  001376                          BNE     11$             ;MOVE ALL BITS
   740  005752  112762  000054  177777         MOVB    #',,-1(R2)      ;INSERT A COMMA TO TERMINATE
   741  005760  005721                  13$:    TST     (R1)+           ;POINT TO NEXT DESCRIPTION
   742  005762  000763                          BR      10$             ;GET THE REMAINING BITS
   743  005764  105042                  15$:    CLRB    -(R2)           ;TERMINATE THE LINE
   744  005766                          PRINTX  #TSSDEF,#TMPBFR ;PRINT THE BIT DEFINITIONS
        005766  012746  002624'                MOV     #TMPBFR,-(SP)
        005772  012746  006476'                MOV     #TSSDEF,-(SP)
        005776  012746  000002                 MOV     #2,-(SP)
        006002  010600                          MOV     SP,R0
        006004  104415                          TRAP    C$PNTX
        006006  062706  000006                 ADD     #6,SP
   745
   746  006012  010403                  20$:    MOV     R4,R3           ;GET THE TSSR CONTENTS
   747  006014  042703  177761                 BIC     #^CTERCLS,R3    ;CLEAR ALL BUT TERMINATION
   748  006020  016303  006566'                MOV     TCOCOD(R3),R3   ;GET THE TERMINATION CODE MEANING
   749  006024                          PRINTX  #TCOASC,R3      ;PRINT THE TERMINATION CODE
        006024  010346                          MOV     R3,-(SP)
        006026  012746  006366'                MOV     #TCOASC,-(SP)
        006032  012746  000002                 MOV     #2,-(SP)
        006036  010600                          MOV     SP,R0
        006040  104415                          TRAP    C$PNTX
        006042  062706  000006                 ADD     #6,SP
   750  006046  010403                          MOV     R4,R3           ;TSSR CONTENTS AGAIN
   751  006050  042703  177717                 BIC     #^CFATERR,R3    ;CLEAR ALL BUT FATAL TERMINATION
   752  006054  001416                          BEQ     25$             ;DON'T PRINT IF ZERO
   753  006056  006203                          ASR     R3
   754  006060  006203                          ASR     R3
   755  006062  006203                          ASR     R3              ;ALINE TERMINATION CODE FOR INDEX
   756  006064  016303  007126'                MOV     TSFCOD(R3),R3   ;GET THE FATAL TERMINATION CODE
   757  006070                          PRINTX  #TFCASC,R3      ;PRINT THE FATAL TERMINATION CODE
        006070  010346                          MOV     R3,-(SP)
        006072  012746  006427'                MOV     #TFCASC,-(SP)
        006076  012746  000002                 MOV     #2,-(SP)
        006102  010600                          MOV     SP,R0
        006104  104415                          TRAP    C$PNTX
        006106  062706  000006                 ADD     #6,SP
   758  006112  042704  176377          25$:    BIC     #^CHIADDR,R4    ;CLEAR ALL BUT EXTENDED ADDRESS
   759  006116  001411                          BEQ     30$             ;DON'T PRINT IF ZERO
   760  006120                          PRINTX  #TEXASC,R4      ;PRINT THE EXTENDED ADDRESS BITS
```

```
                006120  010446                          MOV     R4,-(SP)
                006122  012746  006325'                MOV     #TEXASC,-(SP)
                006126  012746  000002                  MOV     #2,-(SP)
                006132  010600                          MOV     SP,R0
                006134  104415                          TRAP    C$PNTX
                006136  062706  000006                  ADD     #6,SP
            761 006142  013703  002172'          30$:   MOV     EPRTSW,R3               ;PRINT MEAASGE BUFFER ADDRESS
            762 006146                                   PRINTX  R3                      ;PRINT PROPER MESSAGE
                006146  010346                          MOV     R3,-(SP)
                006150  012746  000001                  MOV     #1,-(SP)
                006154  010600                          MOV     SP,R0
                006156  104415                          TRAP    C$PNTX
                006160  062706  000004                  ADD     #4,SP
            763 006164  000207                          RTS     PC                      ;RETURN TO CALLER
            764
            779 006166     045     116     045  EPRT1:  .ASCIZ  '%N%A *****CHECK TRANSPORT*****'
            780 006225     045     116     045  EPRT2:  .ASCIZ  '%N%A *****CHECK PARITY SWITCH IN TRANSPORT*****'
            782 006305     045     116     045  TSSRFOR:        .ASCIZ  '%N%A TSSR = %O6'
            783 006325     045     116     045  TEXASC:         .ASCIZ  '%N%A Extended Address Bits = %O6'
            784 006366     045     116     045  TCOASC:         .ASCIZ  '%N%A Termination Class Code = %T'
            785 006427     045     116     045  TFCASC:         .ASCIZ  '%N%A Fatal Termination Class Code = %T'
            786 006476     045     116     045  TSSDEF:         .ASCIZ  '%N%A TSSR Bits Set: %T'
            787 006525     045     116     045  AMBTSSR:        .ASCIZ  '%N%A TSSR Contents Are Ambiguous'
            788                                             .EVEN
            789 006566  006606' 006631' 006657' TCOCOD: .WORD   1$,2$,3$,4$,5$,6$,7$,8$
            790 006606     116     157     162  1$:     .ASCIZ  'Normal Termination'
            791 006631     124     145     162  2$:     .ASCIZ  'Termination Condition'
            792 006657     124     141     160  3$:     .ASCIZ  'Tape Status Alert'
            793 006701     106     165     156  4$:     .ASCIZ  'Function Reject'
            794 006721     122     145     143  5$:     .ASCIZ  'Recoverable Error - Tape Position One Record Down'
            795 007003     122     145     143  6$:     .ASCIZ  'Recoverable Error - Tape Was Not Moved'
            796 007052     125     156     162  7$:     .ASCIZ  'Unrecoverable Error'
            797 007076     106     141     164  8$:     .ASCIZ  'Fatal Controller Error'
            798                                         .EVEN
            799
            800 007126  007136' 007172' 007203' TSFCOD: .WORD   1$,2$,3$,4$
            801 007136     111     156     164  1$:     .ASCIZ  'Internal Diagnostic Failure'
            802 007172     122     145     163  2$:     .ASCIZ  'Reserved'
            803 007203     102     165     163  3$:     .ASCIZ  'Bus Interface or Sanity Check Error'
            804 007247     122     145     163  4$:     .ASCIZ  'Reserved'
            805                                         .EVEN
            806
            807                                         .SBTTL  PRIPKT  - PRINT THE ADDRESS/CONTENTS OF COMMAND PACKET
            808
            809                                 ;+
            810                                 ;THIS ROUTINE PRINTS THE ADDRESS AND CONTENTS OF A COMMAND PACKET.
            811                                 ;THIS ROUTINE IS NORMALLY ONLY CALLED FROM A PRINT ROUTINE.
            812                                 ;
            813                                 ;INPUT:
            814                                 ;
            815                                 ;       R0      NUMBER OF WORDS IN PACKET
            816                                 ;       R3      HIGH ORDER COMMAND PACKET ADDRESS
            817                                 ;       R4      ADDRESS OF COMMAND PACKET
            818                                 ;
            819                                 ;       NOTE:   R3 IS IGNORED IF THE KTENABLE FLAG IS CLEAR.
            820                                 ;-
            821
```

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

007260                  PRIPKT::
007260                          SAVREG                          ;SAVE THE REGISTERS
007264  010005                  MOV     R0,R5                   ;SAVE NO. OF WORDS IN PACKET
007266  005737  003126'          TST     KTENABLE                ;ABOVE 28K UNDER TEST?
007272  001001                  BNE     10$                     ;BR IF YES
007274  005003                  CLR     R3                      ;SET HIGH ORDER ADDRESS TO 0
007276  010301          10$:    MOV     R3,R1                   ;COPY HIGH ORDER ADDRESS
007300  010400                  MOV     R4,R0                   ;GET LOWER ADDRESS
007302  006100                  ROL     R0                      ;SHIFT BIT 15 INTO C BIT
007304  006101                  ROL     R1                      ;AND INTO HIGH ORDER.
007306                          PRINTB  #PKTADD,R1,R4           ;PRINT PACKET ADDRESS
007306  010446                  MOV     R4,-(SP)
007310  010146                  MOV     R1,-(SP)
007312  012746  007444'          MOV     #PKTADD,-(SP)
007316  012746  000003          MOV     #3,-(SP)
007322  010600                  MOV     SP,R0
007324  104414                  TRAP    C$PNTB
007326  062706  000010          ADD     #10,SP
007332  010300          15$:    MOV     R3,R0                   ;GET HIGH ORDER ADDRESS
007334  001404                  BEQ     20$                     ;BR IF NOT ABOVE 28K.
007336  010401                  MOV     R4,R1                   ;GET LOW ORDER ADDRESS
007340  004737  017210'          JSR     PC,SETMAP               ;SETUP PAR6 MAPPING FOR 18 BIT ADDRESS
007344  010004                  MOV     R0,R4                   ;GET RETURNED PAR6 ADDRESS BIAS
007346  005001          20$:    CLR     R1                      ;SAVE WORD NUMBER
007350  012402          25$:    MOV     (R4)+,R2                ;GET PACKET CONTENTS
007352                          PRINTB  #PKTFRM,R1,R2           ;PRINT THE DATA
007352  010246                  MOV     R2,-(SP)
007354  010146                  MOV     R1,-(SP)
007356  012746  007406'          MOV     #PKTFRM,-(SP)
007362  012746  000003          MOV     #3,-(SP)
007366  010600                  MOV     SP,R0
007370  104414                  TRAP    C$PNTB
007372  062706  000010          ADD     #10,SP
007376  005201                  INC     R1                      ;NEXT WORD NUMBER
007400  020105                  CMP     R1,R5                   ;DONE ALL PACKET WORDS?
007402  002762                  BLT     25$                     ;LOOP TILL ALL DONE
007404  000207                  RTS     PC                      ;RETURN

007406      045     116     045 PKTFRM: .ASCIZ   '%N%A Packet Word #%D1%A = %O6'
007444      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
                        ;
                        ;-

007502                  PRIBXOR::
007502                          SAVREG                          ;SAVE THE REGISTERS
007506  010203                  MOV     R2,R3                   ;EXPECTED DATA
007510                          XOR     R1,R3                   ;FORM THE EXCLUSIVE OR
007520  012700  177400          MOV     #^C<377>,R0             ;BYTE MASK
007524  040001                  BIC     R0,R1                   ;SAVE LOW BYTE RECV
007526  040002                  BIC     R0,R2                   ;SAVE LOW BYTE EXPD
007530  040003                  BIC     R0,R3                   ;SAVE LOW BYTE XOR
007532                          PRINTB  #XORBFOR,R2,R1,R3 ;PRINT THE MESSAGE
007532  010346                  MOV     R3,-(SP)
007534  010146                  MOV     R1,-(SP)
007536  010246                  MOV     R2,-(SP)
007540  012746  007564'          MOV     #XORBFOR,-(SP)
007544  012746  000004          MOV     #4,-(SP)
007550  010600                  MOV     SP,R0
007552  104414                  TRAP    C$PNTB
007554  062706  000012          ADD     #12,SP
007560  010300                  MOV     R3,R0                   ;R0 HAS XOR ON RETURN
007562  000207                  RTS     PC                      ;RETURN TO CALLER

007564      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
                        ;
                        ;-

007632                  PRIXOR::
007632                          SAVREG                          ;SAVE THE REGISTERS
007636  010203                  MOV     R2,R3                   ;EXPECTED DATA
007640                          XOR     R1,R3                   ;FORM THE EXCLUSIVE OR
007650                          PRINTB  #XORFOR,R2,R1,R3 ;PRINT THE MESSAGE
007650  010346                  MOV     R3,-(SP)
007652  010146                  MOV     R1,-(SP)
007654  010246                  MOV     R2,-(SP)
007656  012746  007702'          MOV     #XORFOR,-(SP)
007662  012746  000004          MOV     #4,-(SP)
007666  010600                  MOV     SP,R0
```

```
        007670  104414                          TRAP    C$PNTB
        007672  062706  000012                  ADD     #12,SP
    908 007676  010300                          MOV     R3,R0           ;R0 HAS XOR ON RETURN
    909 007700  000207                          RTS     PC              ;RETURN TO CALLER
    910
    911 007702     045     116     045  XORFOR: .ASCIZ  '%N%A EXPD: %O6%A RECV: %O6%A XOR: %O6'
    912                                 .EVEN
    913
    914                                 .SBTTL  PRIEQU  - PRINT BIT NUMBERS AS ASCII EQUIVALENT
    915
    916                             ;+
    917                             ;
    918                             ;ROUTINE TO CONVERT BIT VALUES TO ASCII AND PRINT THE STRING
    919                             ;THIS ROUTINE IS NORMALLY CALLED FROM A PRINT ROUTINE
    920                             ;
    921                             ;INPUTS:
    922                             ;
    923                             ;       R0      OCTAL VALUE TO CONVERT
    924                             ;       R1      TABLE OF POINTERS TO ASCII EQUIVALENT
    925                             ;
    926                             ;-
    927
    928 007750                      PRIEQU:
    929 007750                              SAVREG                          ;SAVE THE REGISTERS
    930 007754  000207                      RTS     PC                      ;RETURN TO CALLER
    931
    932
    933
    934
    935                                 .SBTTL  PRIRAM  - PRINT RAM ADDRESS
    936                             ;+
    937                             ;
    938                             ;PRINT CONTROLLER RAM ADDRESS.
    939                             ;THIS ROUTINE IS NORMALLY CALLED ONLY FROM PRINT ROUTINES.
    940                             ;
    941                             ;INPUTS:
    942                             ;
    943                             ;       R4      RAM ADDRESS
    944                             ;
    945                             ;-
    946 007756                      PRIRAM:
    947 007756                              SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
    948 007762                              PRINTB  #RAMFOR,R4              ;PRINT RAM ADDRESS IN ERROR
        007762  010446                      MOV     R4,-(SP)
        007764  012746  010006'             MOV     #RAMFOR,-(SP)
        007770  012746  000002              MOV     #2,-(SP)
        007774  010600                      MOV     SP,R0
        007776  104414                      TRAP    C$PNTB
        010000  062706  000006              ADD     #6,SP
    949 010004  000207                      RTS     PC                      ;RETURN
    950
    951 010006     045     116     045  RAMFOR: .ASCIZ  '%N%A CONTROLLER RAM ADDRESS = %O6'
    952                                 .EVEN
    953
    954
    955                                 .SBTTL  PRIADD  - PRINT MEMORY ERROR ADDRESS
    956                             ;+
```

```
                        ;
                        ;PRINT MEMORY ADDRESS
                        ;THIS ROUTINE IS NORMALLY CALLED ONLY FROM PRINT ROUTINES.
                        ;
                        ; IMPLICIT INPUTS
                        ;
                        ;       ERRHI   - HIGH ORDER ADDRESS
                        ;       ERRLO   - LOW ORDER ADDRESS
                        ;
                        ;-
010050                  PRIADD:
010050                          SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
010054  013700  002230'         MOV     ERRHI,R0                ;GET HIGH ADDRESSS
010060  013701  002232'         MOV     ERRLO,R1                ;GET LOW ADDRESS
010064  010102                  MOV     R1,R2                   ;COPY LOW ADDRESS
010066  006101                  ROL     R1                      ;SHIFT BIT 15 TO C BIT
010070  006100                  ROL     R0                      ;SHIFT INTO HIGH ORDER
010072                          PRINTB  #PRIA0,R0,R2            ;PRINT MEMORY ADDRESS IN ERROR
010072  010246                  MOV     R2,-(SP)
010074  010046                  MOV     R0,-(SP)
010076  012746  010120'         MOV     #PRIA0,-(SP)
010102  012746  000003          MOV     #3,-(SP)
010106  010600                  MOV     SP,R0
010110  104414                  TRAP    C$PNTB
010112  062706  000010          ADD     #10,SP
010116  000207                  RTS     PC                      ;RETURN

010120  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
                        ;
                        ;-
010164                  PRITADD:
010164                          SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
010170  013702  002230'         MOV     ERRHI,R2                ;GET HIGH ADDRESSS
010174  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
010200                          PRINTB  #PRIT0,R1               ;PRINT MEMORY ADDRESS LOW IN ERROR
010200  010146                  MOV     R1,-(SP)
010202  012746  010246'         MOV     #PRIT0,-(SP)
010206  012746  000002          MOV     #2,-(SP)
010212  010600                  MOV     SP,R0
010214  104414                  TRAP    C$PNTB
010216  062706  000006          ADD     #6,SP
```

```
1001 010222                                    PRINTB  @PRIT1,R2       ;PRINT MEMORY ADDRESS HIGH IN ERROR
     010222  010246                            MOV     R2,-(SP)
     010224  012746  010311'                   MOV     @PRIT1,-(SP)
     010230  012746  000002                    MOV     #2,-(SP)
     010234  010600                            MOV     SP,R0
     010236  104414                            TRAP    C$PNTB
     010240  062706  000006                    ADD     #6,SP
1002 010244  000207                            RTS     PC              ;RETURN
1003
1004 010246     045     116     045  PRIT0:   .ASCIZ  '<N><A MEMORY TEST ADDRESS LOW = <06>'
1005 010311     045     116     045  PRIT1:   .ASCIZ  '<N><A MEMORY TEST ADDRESS HIGH = <06>'
1006                                           .EVEN
1007
1008
1009                                           .SBTTL  SPACE   - SPACE RECORDS (FORWARD AND REVERSE) COMMAND
1010
1011                                   ;*
1012                                   ;
1013                                   ;ROUTINE TO ISSUE A SPACE RECORDS
1014                                   ;COMMAND (FORWARD OR REVERSE)
1015                                   ;
1016                                   ;INPUT:
1017                                   ;
1018                                   ;       R3      NUMBER OF RECORDS TO BE SPACED OVER
1019                                   ;               BIT15 CONTROLS DIRECTION
1020                                   ;               BIT15 = 0 IS FORWARD
1021                                   ;               BIT15 = 1 IS REVERSE
1022                                   ;       R5      FIRST DEVICE UNIBUS ADDRESS
1023                                   ;
1024                                   ;       REQUIRES A WRITE CHARACTERISTICS DONE PREVIOUSLY
1025                                   ;
1026                                   ;OUTPUT:
1027                                   ;
1028                                   ;       CARRY   SET - SPACE RECORDS COMMAND OK
1029                                   ;               CLR - SPACE RECORDS FAILED
1030                                   ;
1031                                   ;
1032                                   ;       R0      THE CONTENTS OF R4 IS MOVED TO R0
1033                                   ;
1034                                   ;
1035                                   ;IMPLICIT OUTPUT:
1036                                   ;
1037                                   ;       TAPE HAS BEEN MOVED
1038                                   ;
1039                                   ;SIDE EFFECTS:
1040                                   ;
1041                                   ;
1042                                   ;-
1043
1044 010356                            SPACE::
1045 010356                                    SAVREG                          ;SAVE THE GENERAL REGISTERS
1046 010362  012737  000764  010550'           MOV     #500.,SDELAY            ;SET UP DELAY
1047 010370  012737  140010  010540'           MOV     #140010,80$             ;SET UP COMMAND, SPACE FORWARD
1048 010376  005703                            TST     R3                      ;CHECK FOR DIRECTION
1049 010400  100403                            BMI     5$                      ;BR, IF REVERSE INDICATED
1050 010402  010337  010542'                   MOV     R3,90$                  ;LOAD UP NUMBER OF RECORDS TO SPACE
1051 010406  000407                            BR      10$                     ;GO DO COMMAND
```

```
1052 010410  042703  100000          5$:     BIC     #BIT15,R3               ;CLEAR DIRECTION BIT
1053 010414  010337  010542'                 MOV     R3,90$                  ;LOAD UP NUMBER OF RECORDS TO SPACE
1054 010420  052737  000400  010540'         BIS     #BIT8,80$               ;SET REVERSE BIT IN COMMAND PACKET
1055 010426  012704  010540'          10$:   MOV     #80$,R4                 ;SET UP R4 WITH PACKET ADDRESS
1056 010432  010465  000000                   MOV     R4,TSDB(R5)             ;SEND OUT COMMAND
1057 010436  004737  016140'          15$:   JSR     PC,WAITF                ;WAIT FOR SSR
1058 010442  103420                           BCS     20$                     ;BR, IF SSR IS SET AND OK
1059 010444                                   DELAY   250                 ;DELAY ABOUT .25 SECONDS
     010444  012727  000250                   MOV     #250,(PC)+
     010450  000000                           .WORD   0
     010452  013727  002116'                   MOV     L$DLY,(PC)+
     010456  000000                           .WORD   0
     010460  005367  177772                   DEC     -6(PC)
     010464  001375                           BNE     .-4
     010466  005367  177756                   DEC     -22(PC)
     010472  001367                           BNE     .-20
1060 010474  005337  010550'                 DEC     $DELAY                  ;BUMP DELAY COUNTER DOWN
1061 010500  001356                           BNE     15$                     ;BR, IF MORE DELAY
1062 010502  000411                           BR      60$                     ;BR IF TROUBLE CARRY = CLEAR
1063 010504  016501  000002          20$:     MOV     TSSR(R5),R1             ;READ TSSR
1064 010510  012702  000200                   MOV     #SSR,R2                 ;SET UP EXPECTED
1065 010514  020201                   25$:    CMP     R2,R1                   ;ARE THEY OK
1066 010516  001401                           BEQ     40$                     ;BR, IF EQUAL = OK
1067 010520  000402                           BR      60$                     ;TROUBLE EXIT
1068 010522  000261                   40$:    SEC                             ;SET CARRY NO TROUBLE
1069 010524  000401                           BR      70$                     ;EXIT
1070 010526  000241                   60$:    CLC                             ;CARRY CLEAR = ERROR
1071 010530                            70$:
1072 010530  010400                           MOV     R4,R0                   ;PASS PACKET ADDRESS
1073 010532  000207                           RTS     PC                      ;RETURN
1074
1075                                    ;
1076                                    ;
1077                                    ;
1078                                    ;PACKET FOR SPACE COMMAND
1079                                    ;
1081 010534                                    .BLKB   10-<.-TSV2&7>
1083                                    ;
1084                                    ;COMMAND WORD
1085 010540  000000                    80$:    .WORD
1086                                    ;NUMBER OF RECORDS TO BE SPACED OVER WORD
1087 010542  000000                    90$:    .WORD
1088 010544  000000                            .WORD
1089 010546  000000                            .WORD
1090 010550  000000                    SDELAY: .WORD   0                       ;DELAY COUNTER
1091                                            .EVEN
1092
1093
1094                                            .SBTTL  WRTCHR  - WRITE CHARACTERISTICS COMMAND
1095
1096                                    ;+
1097                                    ;
1098                                    ;ROUTINE TO ISSUE A WRITE CHARACTERISTICS
1099                                    ;COMMAND SO THAT OTHER COMMANDS WILL BE ACCEPTED
1100                                    ;
1101                                    ;INPUT:
1102                                    ;
```

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

010552                  WRTCHR::
010552                          SAVREG                          ;SAVE THE GENERAL REGISTERS
010556  005037  002222' 10$:    CLR     BENBSW          ;CLEAR BUFFER ENABLE SWITCH
010562  005037  002220'         CLR     EXTFEA                  ;CLEAR EXTENDED FEATURES SW SWITCH
010566  010465  000000         MOV     R4,TSDB(R5)             ;SEND OUT COMMAND
010572  004737  016226'         JSR     PC,CHKTSSR              ;WAIT FOR SSR
010576  103401                 BCS     20$                     ;BR, IF SSR IS SET AND OK
010600  000435                 BR      60$                     ;BR IF TROUBLE CARRY = CLEAR
010602  016501  000002 20$:    MOV     TSSR(R5),R1             ;READ TSSR
010606  012702  000200         MOV     #SSR,R2                 ;SET UP EXPECTED
010612  032701  000100         BIT     #OFL,R1                 ;WAS OFF LINE SET IN TSSR
010616  001402                 BEQ     25$                     ;BR, IF NO OFL SET
010620  052702  000100         BIS     #OFL,R2                 ;MAKE THEM LOOK ALIKE
010624  020201         25$:    CMP     R2,R1                   ;ARE THEY OK
010626  001401                 BEQ     40$                     ;BR, IF EQUAL = OK
010630  000421                 BR      60$                     ;TROUBLE EXIT
010632  062704  000010 40$:    ADD     #8.,R4                  ;POINT TO WRT CHARA DATA PACKET
010636  011403                 MOV     (R4),R3                 ;GET ADDRESS OF MESSAGE BUFFER
010640  032763  000200  000012 BIT     #X2.EXTF,XST2(R3)       ;EXTENDED FEATURES BIT SET?
010646  001402                 BEQ     45$                     ;BR IF NO
010650  005237  002220'         INC     EXTFEA                  ;SET EXTENDED FEATURES SW SWITCH
010654                  45$:
010654  032763  000100  000012 BIT     #X2.BUFE,XST2(R3)                       ;BUFFER ENABLE SWITCH SET
010662  001402                 BEQ     50$                     ;BR, IF SWITCH NOT SET
010664  005237  002222'         INC     BENBSW                  ;SET SOFTWARE SWITCH FOR ENABLED
010670                  50$:
010670  000261                 SEC                             ;SET CARRY NO TROUBLE
010672  000401                 BR      70$                     ;EXIT
010674  000241         60$:    CLC                             ;CARRY CLEAR = ERROR
010676  016500  000002 70$:    MOV     TSSR(R5),R0             ;RETURN TSSR CONTENTS
010702  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
                        ;
                        ;
                        ;-
010704                  REWIND::
010704                          SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
010710  012704  011000'          MOV     #RWPACK,R4              ;GET PACKET ADDRESS
010714  010465  000000          MOV     R4,TSDB(R5)             ;SEND PACKET ADDRESS TO EXECUTE
010720  012703  000550          MOV     #360.,R3                ;ENOUGH TIME FOR 2400' REEL TO REWIND
010724  004737  016140'  10$:    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
010730  103417                  BCS     20$                     ;LEAVE WHEN SSR IS SET
010732                          DELAY   250.                    ;WAIT FOR .25 SECONDS
010732  012727  000372          MOV     #250.,(PC)+
010736  000000                  .WORD   0
010740  013727  002116'          MOV     L$DLY,(PC)+
010744  000000                  .WORD   0
010746  005367  177772          DEC     -6(PC)
010752  001375                  BNE     .-4
010754  005367  177756          DEC     -22(PC)
010760  001367                  BNE     .-20
010762  005303                  DEC     R3                      ;BUMP COUNTER DOWN
010764  001357                  BNE     10$                     ;KEEP GOING
010766  000241                  CLC                             ;CLEAR CARRY TO SET ERROR
010770  010400          20$:    MOV     R4,R0                   ;PASS THE PACKET ADDRESS
010772  000207                  RTS     PC                      ;RETURN


010774                          .BLKB   10-<.-TSV2&7>
011000                  RWPACK:
011000  102010                  .WORD   102010                  ;POSTION COMMAND (REWIND)
011002  000000                  .WORD   0                       ;NOT USED


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

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

011004                  CKRAM::
                                SAVREG                          ;SAVE THE GENERAL REGISTERS
011010  012701  002234'         MOV     @RAMDATA,R1             ;ADDRESS TO SAVE THE RAM DATA
011014  012702  000201          MOV     @RMPKTBEG,R2            ;BYTE ADDRESS OF FIRST RAM DATA
011020  005003                  CLR     R3                      ;CLEAR THE ERROR FLAG
011022  004737  016226'         JSR     PC,CHKTSSR              ;WAIT FOR SSR
011026  112765  000000  000000  MOVB    @0,TSDB(R5)             ;SET MAINTENANCE MODE
011034  004737  016226'  10$:    JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
011040  010265  000000          MOV     R2,TSDB(R5)             ;SELECT NEXT RAM ADDRESS
011044  004737  016226'         JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
011050  116511  000000          MOVB    TSBA(R5),(R1)           ;READ THE RAM DATA
011054  122124                  CMPB    (R1)+,(R4)+             ;COMPARE TO EXPECTED
011056  001401                  BEQ     20$                     ;BRANCH IF OK
011060  005203                  INC     R3                      ;SET ERROR FLAG
011062  005202          20$:    INC     R2                      ;ADDRESS OF NEXT RAM LOCATION
011064  020227  000210          CMP     R2,@RMPKTEND            ;REACHED END YET ?
011070  003761                  BLE     10$                     ;BRANCH TILL ALL READ
011072  005703                  TST     R3                      ;WAS AN ERROR FOUND ?
011074  001402                  BEQ     30$                     ;BRANCH IF NOT
011076  000241                  CLC                             ;CLEAR CARRY TO SHOW ERROR
011100  000401                  BR      50$                     ;AND EXIT
011102  000261          30$:    SEC                             ;SHOW GOOD COMPARE
011104  012737  000010  002274' 50$:    MOV     @8.,RAMSIZ      ;SETUP RAMSIZ FOR PRAMPKT ROUTINE
011112  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
                                ;
                                ;-

011114                          CKRAM2::
011114                                  SAVREG                          ;SAVE THE GENERAL REGISTERS
011120  012701  002234'                 MOV     #RAMDATA,R1             ;ADDRESS TO SAVE THE RAM DATA
011124  012702  000167                  MOV     #RMCHBEG,R2             ;BYTE ADDRESS OF FIRST RAM DATA
011130  005003                          CLR     R3                      ;CLEAR THE ERROR FLAG
011132  004737  016226'                 JSR     PC,CHKTSSR              ;WAIT FOR SSR
011136  112765  000000  000000          MOVB    #0,TSDB(R5)             ;SET MAINTENANCE MODE
011144  004737  016226'         10$:    JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
011150  010265  000000                  MOV     R2,TSDB(R5)             ;SELECT NEXT RAM ADDRESS
011154  004737  016226'                 JSR     PC,CHKTSSR              ;WAIT FOR SSR TO SET
011160  116511  000000                  MOVB    TSBA(R5),(R1)           ;READ THE RAM DATA
011164  122124                          CMPB    (R1)+,(R4)+             ;COMPARE TO EXPECTED
011166  001401                          BEQ     20$                     ;BRANCH IF OK
011170  005203                          INC     R3                      ;SET ERROR FLAG
011172  005202                  20$:    INC     R2                      ;ADDRESS OF NEXT RAM LOCATION
011174  012737  000010  002274'         MOV     #8.,RAMSIZ              ;ASSUME EXTFEA NOT SET
011202  005737  002220'                 TST     EXTFEA                  ;IS THE SOFTWARE EXTENDED FEATURES SET
011206  001407                          BEQ     25$                     ;BR. IF NOT SET
011210  012737  000012  002274'         MOV     #10.,RAMSIZ             ;SET RAMSIZ FOR EXTEND FEATURES
011216  020227  000200                  CMP     R2,#RMCHEND             ;AT END OF EXTENDED BUFFER
011222  003750                          BLE     10$                     ;BR. IF NOT AT END YET
011224  000403                          BR      27$                     ;AT END BRANCH
011226  020227  000176          25$:    CMP     R2,#RMCHEND-2           ;REACHED END YET ?
011232  003744                          BLE     10$                     ;BRANCH TILL ALL READ
011234  005703                  27$:    TST     R3                      ;WAS AN ERROR FOUND ?
011236  001402                          BEQ     30$                     ;BRANCH IF NOT
011240  000241                          CLC                             ;CLEAR CARRY TO SHOW ERROR
011242  000401                          BR      50$                     ;AND EXIT
011244  000261                  30$:    SEC                             ;SHOW GOOD COMPARE
011246  000207                  50$:    RTS     PC                      ;RETURN
```

```
                                .SBTTL  CKMSG   - COMPARE WRITE CHAR. MESSAGE BUFFERS
                        ;+
                        ;
                        ;ROUTINE TO COMPARE A WRITE CHARACTERISTICS EXPD AND RECV
                        ;BUFFER. THE EXPECTED AND RECEIVED BUFFERS ARE STORED FOR
                        ;ERROR PRINT ROUTINES.
                        ;
                        ;INPUT:
                        ;
                        ;       R0      RECV MESSAGE BUFFER HIGH ORDER ADDRESS
                        ;       R1      RECV MESSAGE BUFFER LOW ORDER ADDRESS
                        ;       R2      EXPD MESSAGE BUFFER ADDRESS
                        ;OUTPUT:
                        ;
                        ;       CARRY   SET - MESSAGE BUFFERS MATCH
                        ;               CLR -MESSAGE BUFFERS DON'T MATCH
                        ;
                        ;IMPLICIT OUTPUT:
                        ;
                        ;       EXPMSG          BUFFER IS SET TO EXPD DATA
                        ;       RECMSG          BUFFER IS SET TO RECV DATA
                        ;       RCVHIADD        SET TO HIGH ORDER ADDRESS OF RECV
                        ;       RCVLOADD        SET TO LOW ORDER ADDRESS OF RECV
                        ;
                        ;-
011250                  CKMSG::
011250                          SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
011254  010037  002276'         MOV     R0,RCVHIADD             ;SAVE RECV HIGH ADDRESS
011260  010137  002300'         MOV     R1,RCVLOAD              ;SAVE RECV LOW ADDRESS
011264  005737  003126'         TST     KTENABLE                ;TESTING ABOVE 28K?
011270  001403                  BEQ     10$                     ;BR IF NO
011272  004737  017210'         JSR     PC,SETMAP               ;RETURN ADDRESS BIASED TO PAR6 IN R0
011276  010001                  MOV     R0,R1                   ;GET RETURNED ADDRESS BIASED TO PAR6
011300  005004          10$:    CLR     R4                      ;WORD IN BUFFER
011302  005003                  CLR     R3                      ;CLEAR ERROR SEEN FLAG
011304  010205                  MOV     R2,R5                   ;GET EXPD BUFFER ADDRESS
011306  011264  002314'  15$:    MOV     (R2),EXPMSG(R4)         ;SAVE EXPD FOR ERROR REPORT
011312  011164  002460'         MOV     (R1),RECMSG(R4)         ;SAVE RECV FOR ERROR REPORT
011316  022221                  CMP     (R2)+,(R1)+             ;EXPD EQUAL RECV?
011320  001401                  BEQ     25$                     ;BR IF YES
011322  005203                  INC     R3                      ;SET ERROR SEEN FLAG
011324  062704  000002  25$:    ADD     #2,R4                   ;POINT TO NEXT WORD ADDRESS
011330  020427  000014          CMP     R4,#14                  ;DONE FIRST 7 WORDS?
011334  003764                  BLE     15$                     ;BR IF NO
011336  032765  000200  000012  BIT     #X2.EXTF,XST2(R5);IS EXTENDED FEATURES SET IN EXPD?
011344  001403                  BEQ     50$                     ;BR IF NO
011346  020427  000016          CMP     R4,#16                  ;DONE EXTENDED FEATURES WORD?
011352  003755                  BLE     15$                     ;BR IF NO
011354  005703          50$:    TST     R3                      ;ANY ERRORS SEEN?
011356  001402                  BEQ     55$                     ;BR IF NO
011360  000241                  CLC                             ;SET FAILURE
011362  000401                  BR      60$                     ;
011364  000261          55$:    SEC                             ;SET SUCCESS
011366  000207          60$:    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
                                ;
                                ;-
011370                          CKMSG2::
011370                                  SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
011374  020327  000144                  CMP     R3,#RECMSG-EXPMSG;@@D IS COUNT ABOVE MAX ALLOWED?
011400  003412                          BLE     5$              ;@@D BR IF NO
011402  012703  000144                  MOV     #RECMSG-EXPMSG,R3;@@D
011406                                  PRINTF  #DEBUGMSG       ;@@D
011406  012746  011522'                  MOV     #DEBUGMSG,-(SP)
011412  012746  000001                  MOV     #1,-(SP)
011416  010600                          MOV     SP,R0
011420  104417                          TRAP    C$PNTF
011422  062706  000004                  ADD     #4,SP
011426  010037  002276'          5$:     MOV     R0,RCVHIADD     ;SAVE RECV HIGH ADDRESS
011432  010137  002300'                  MOV     R1,RCVLOAD      ;SAVE RECV LOW ADDRESS
011436  005737  003126'                  TST     KTENABLE        ;TESTING ABOVE 28K?
011442  001403                          BEQ     10$             ;BR IF NO
011444  004737  017210'                  JSR     PC,SETMAP       ;RETURN ADDRESS BIASED TO PAR6 IN R0
011450  010001                          MOV     R0,R1           ;GET RETURNED ADDRESS BIASED TO PAR6
011452  005004                  10$:    CLR     R4              ;WORD IN BUFFER
011454  005005                          CLR     R5              ;CLEAR ERROR SEEN FLAG
011456  111264  002314'          15$:    MOVB    (R2),EXPMSG(R4) ;SAVE EXPD FOR ERROR REPORT
011462  111164  002460'                  MOVB    (R1),RECMSG(R4) ;SAVE RECV FOR ERROR REPORT
011466  122221                          CMPB    (R2)+,(R1)+     ;EXPD EQUAL RECV?
011470  001401                          BEQ     25$             ;BR IF YES
011472  005205                          INC     R5              ;SET ERROR SEEN FLAG
011474  062704  000001          25$:    ADD     #1,R4           ;POINT TO NEXT BYTE
011500  020403                          CMP     R4,R3           ;DONE ALL BYTES?
011502  002001                          BGE     50$             ;BR IF YES
011504  000764                          BR      15$             ;DO NEXT BYTE
011506  005705                  50$:    TST     R5              ;ANY ERRORS SEEN?
011510  001402                          BEQ     55$             ;BR IF NO
011512  000241                          CLC                     ;SET FAILURE
```

```
1434 011514  000401                        BR      60$             ;
1435 011516  000261                55$:    SEC                     ;SET SUCCESS
1436 011520  000207                60$:    RTS     PC              ;RETURN
1437
1438 011522     120     122     117 DEBUGMSG:       .ASCIZ  'PROGRAM INTERNAL ERROR -CKMSG2 MESSAGE BUFFER EXCEEDED-';@@D
1439 011612     045     116     045 FERCM:  .ASCII  /%N%A  ***/
1440 011623     040     040     124 ERCM:   .ASCIZ  /  TSSR ERROR CODE REC'D = /
1441 011656     056     056     056 SIMSG:  .ASCIZ  /.... AFTER DOING SOFT INIT/
1442 011711     124     105     123 TINERR: .ASCIZ  /TEST: .../
1443                                 .EVEN
1444
1445
1446                               ;*
1447                               ;
1448                               ;PRINT ROUTINE TO FATAL SOFT INIT ERRORS
1449                               ;
1450                               ;INPUT:
1451                               ;
1452                               ;       R1      CONTENTS OF TSSR AT ERROR
1453                               ;
1454                               ;SIDE EFFECTS:
1455                               ;
1456                               ;       EXECUTES DROP UNIT TO CEASE TESTING
1457                               ;
1458                               ;-
1459
1460 011724                                BGNMSG  SFIMSG
      011724                     SFIMSG::
1461 011724  004737  005632'               JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
1462 011730  004737  017074'               JSR     PC,CKDROP       ;DROP UNIT, IF ALLOWED
1463 011734                                ENDMSG
      011734                     L10003:
      011734  104423                      TRAP    C$MSG
1464
1465                               ;*
1466                               ;PRINT ROUTINE TO PRINT THE CONTENTS OF
1467                               ;TSSR AND A COMMAND PACKET OTHER THAN GET STATUS COMMAND PACKET.
1468                               ;
1469                               ;INPUTS:
1470                               ;
1471                               ;       R1      TSSR CONTENTS
1472                               ;       R4      ADDRESS OF COMMAND PACKET
1473                               ;
1474                               ;-
1475
1476 011736                                BGNMSG  PKTSSR
      011736                     PKTSSR::
1477 011736  004737  005632'               JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
1478 011742  012700  000004               MOV     #4,R0           ;NO. OF WORDS IN PACKET
1479 011746  004737  007260'               JSR     PC,PRIPKT       ;PRINT THE CONTENTS OF COMMAND PACKET
1480 011752                                ENDMSG
      011752                     L10004:
      011752  104423                      TRAP    C$MSG
1481
1482                               ;*
1483                               ;PRINT ROUTINE TO PRINT THE CONTENTS OF
1484                               ;TSSR AND A GET STATUS COMMAND PACKET.
```

```
                                        ;
                                        ;INPUTS:
                                        ;
                                        ;       R1      TSSR CONTENTS
                                        ;       R4      ADDRESS OF COMMAND PACKET
                                        ;
                                        ;-

                                                BGNMSG  PKTGETS
011754                                  PKTGETS::
011754  004737  005632'                        JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
011760  012700  000002                        MOV     #2,R0           ;NO. OF WORDS IN GET STATUS PACKET
011764  004737  007260'                        JSR     PC,PRIPKT       ;PRINT THE CONTENTS OF COMMAND PACKET
011770                                          ENDMSG
011770                                  L10005:
011770  104423                                  TRAP    C$MSG


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

                                                BGNMSG  SFFMSG
011772                                  SFFMSG::
011772  004737  005632'                        JSR     PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
011776                                          ENDMSG
011776                                  L10006:
011776  104423                                  TRAP    C$MSG


                                                .SBTTL  PKTMES  - PRINT TSSR AND MESSAGE BUFFER
                                        ;+
                                        ;
                                        ;PRINT ROUTINE TO PRINT THE CONTENTS OF TSSR AND MESSAGE
                                        ;BUFFER FOR ERROR REPORTS
                                        ;
                                        ;INPUTS:
                                        ;
                                        ;       R1      CONTENTS OF TSSR
                                        ;       R2      LOW ORDER MESSAGE BUFFER
                                        ;       R3      HIGH ORDER MESSAGE BUFFER ADDRESS
                                        ;       NOTE: R3 IS IGNORED IF KTENABLE FLAG IS CLEAR
                                        ;-

                                                BGNMSG  PKTMES
012000                                  PKTMES::
012000  004737  005632'                        JSR     PC,PRITSSR              ;PRINT CONTENTS OF TSSR
012004  010200                                 MOV     R2,R0                   ;LOW ORDER ADDRESS
012006  010301                                 MOV     R3,R1                   ;HIGH ORDER ADDRESS
012010  004737  014132'                        JSR     PC,PRMESS               ;PRINT THE MESSAGE BUFFER
012014                                          ENDMSG
012014                                  L10007:
012014  104423                                  TRAP    C$MSG
```

```
                                        .SBTTL  ADDSSR  - PRINT TEST ADDRESS AND TSSR
                                ;+
                                ;PRINT ROUTINE TO PRINT THE CONTENTS OF
                                ;TSSR AND A MEMORY TEST ADDRESS
                                ;
                                ;INPUTS:
                                ;
                                ;       R5      FIRST DEVICE UNIBUS ADDRESS
                                ;       ERRHI   HIGH ORDER MEMORY TEST ADDRESS
                                ;       ERRLO   LOW ORDER MEMORY TEST ADDRESS
                                ;-
                                        BGNMSG  ADDSSR
012016                          ADDSSR::
012016  004737  010164'                 JSR     PC,PRITADD      ;PRINT MEMORY TEST ADDRESS
012022  016501  000002                  MOV     TSSR(R5),R1     ;GET CURRENT TSSR
012026  004737  005632'                 JSR     PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
012032                                  ENDMSG
012032                          L10010:
012032  104423                          TRAP    C$MSG

                                        .SBTTL  MSGEXP - PRINT WRITE CHAR. EXPD-RECV MESSAGE BUFFERS
                                ;+
                                ;
                                ;PRINT ROUTINE TO PRINT WRITE CHARACTERISTIC MESSAGE BUFFER
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                ;-
                                        BGNMSG  MSGEXP
012034                          MSGEXP::
012034  012700  000007                  MOV     #7,R0           ;ASSUME NO EXT FEATURES
012040  005737  002220'                 TST     EXTFEA          ;EXT FEATURES SET?
012044  001402                          BEQ     5$              ;BR IF NO
012046  012700  000010                  MOV     #8.,R0          ;EXT FEATURE BUFFER IS 8 WORDS
012052  004737  014442'         5$:     JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
012056                                  ENDMSG
012056                          L10011:
012056  104423                          TRAP    C$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::
                                        PRINTX  #FIF1MSG,R1     ;PRINT BYTES TRANSFERRED
012060  010146                          MOV     R1,-(SP)
012062  012746  012132'                 MOV     #FIF1MSG,-(SP)
012066  012746  000002                  MOV     #2,-(SP)
012072  010600                          MOV     SP,R0
012074  104415                          TRAP    C$PNTX
012076  062706  000006                  ADD     #6,SP
                                        PRINTX  #FIF2MSG        ;PRINT HEADER MSG
012102  012746  012201'                 MOV     #FIF2MSG,-(SP)
012106  012746  000001                  MOV     #1,-(SP)
012112  010600                          MOV     SP,R0
012114  104415                          TRAP    C$PNTX
012116  062706  000004                  ADD     #4,SP
012122  010100                          MOV     R1,R0           ;GET BYTE COUNT
012124  004737  015012'                 JSR     PC,PRBYTEXP     ;PRINT FIFO BYTES IN ERROR
                                        ENDMSG
                                L10012:
012130  104423                          TRAP    C$MSG
012132  045  116  045          FIF1MSG:        .ASCIZ  '%N%A NUMBER OF BYTES TRANSFERRED = %D2'
012201  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
                                MSGSTAT::
012240  012701  012302'                 MOV     #STATCOD,R1     ;ASCII ADDRESS TABLE
012244  012100                  10$:    MOV     (R1)+,R0        ;DONE ALL MSG LINES?
012246  001410                          BEQ     20$             ;BR IF YES
012250                                  PRINTX  R0              ;PRINT STATUS BIT NAMES
012250  010046                          MOV     R0,-(SP)
012252  012746  000001                  MOV     #1,-(SP)
012256  010600                          MOV     SP,R0
012260  104415                          TRAP    C$PNTX
012262  062706  000004                  ADD     #4,SP
012266  000766                          BR      10$             ;DO ANOTHER MSG LINE
012270  012700  000012          20$:    MOV     #10.,R0         ;NUMBER OF WORDS IN A READ STATUS BUFFER
012274  004737  014442'                 JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
                                        ENDMSG
                                L10013:
012300  104423                          TRAP    C$MSG
                                
```

```
1619 012302  012320' 012362' 012453' STATCOD:        .WORD   1$,2$,3$,4$,5$,6$,0
1620 012320     045     116     045  1$:.ASCIZ  '<NL>A Tape Bus Signals in Word #8:'
1621 012362     045     116     045  2$:.ASCIZ  '<NL>A        PARERR<15>  IEOT  <12>  IFMK  <9>  IRDY<6>  IRWD<2>'
1622 012453     045     116     045  3$:.ASCIZ  '<NL>A        IRESV2<14>  IIDENT<11>  IHER  <8>  IONL<5>  IFBY<1>'
1623 012544     045     116     045  4$:.ASCIZ  '<NL>A        IRESV1<13>  ICER  <10>  ISPEED<7>  ILDP<4>  IFPT<0>'
1624 012635     045     116     045  5$:.ASCIZ  '<NL>A Tape Bus Signals in Word #9:'
1625 012677     045     116     045  6$:.ASCIZ  '<NL>A        DATMIS<7>  ILW<6>  OUTRDY<5>  INRDY<4>'
1626                                          .EVEN
1627
1628
1629
1630                                          .SBTTL  MSGLOOP - PRINT LOOPBACK HEADER AND MESSAGE BUFFERS
1631                                  ;*
1632                                  ;
1633                                  ;PRINT ROUTINE TO PRINT MESSAGE BUFFER EXPD/RECV
1634                                  ;
1635                                  ;IMPLICIT INPUTS:
1636                                  ;
1637                                  ;       EXPMSG  - EXPECTED MESSAGE BUFFER
1638                                  ;       RECMSG  - RECEIVED MESSAGE BUFFER
1639                                  ;       RCVMIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
1640                                  ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
1641                                  ;-
1642 012754                                   BGNMSG  MSGLOOP
     012754                           MSGLOOP::
1643 012754  012701  013016'                  MOV     #LOOPCOD,R1     ;ASCII ADDRESS TABLE
1644 012760  012100                   10$:    MOV     (R1)+,R0        ;DONE ALL MSG LINES?
1645 012762  001410                           BEQ     20$             ;BR IF YES
1646 012764                                   PRINTX  R0              ;PRINT STATUS BIT NAMES
     012764  010046                           MOV     R0,-(SP)
     012766  012746  000001                   MOV     #1,-(SP)
     012772  010600                           MOV     SP,R0
     012774  104415                           TRAP    C$PNTX
     012776  062706  000004                   ADD     #4,SP
1647 013002  000766                           BR      10$             ;DO ANOTHER MSG LINE
1648 013004  012700  000012           20$:    MOV     #10.,R0         ;NUMBER OF WORDS IN A READ STATUS BUFFER
1649 013010  004737  014442'                  JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
1650 013014                                   ENDMSG
     013014                           L10014:
     013014  104423                           TRAP    C$MSG
1651
1652 013016  013036' 013111' 013210' LOOPCOD:        .WORD   1$,2$,3$,4$,5$,6$,7$,0
1653 013036     045     116     045  1$:.ASCIZ  '<NL>A Tape Bus Loopback Signals in Word #8:'
1654 013111     045     116     045  2$:.ASCIZ  '<NL>A        PARERR<15>          IRESV2<14>          IRESV1<13>'
1655 013210     045     116     045  3$:.ASCIZ  '<NL>A IHISP=>IEOT<12>    IWRT=>IIDENT<11>    IREV  =>ICER  <10>'
1656 013307     045     116     045  4$:.ASCIZ  '<NL>A IWFM =>IFMK<09>    IEDIT=>IHER <08>    IFAD  =>ISPEED<07>'
1657 013406     045     116     045  5$:.ASCIZ  '<NL>A ITADO=>IRDY<06>    ITAD1=>IONL <05>    IERASE=>ILDP  <04>'
1658 013505     045     116     045  6$:.ASCIZ  '<NL>A IREW =>IDBY<03>    IRWU =>IRWD <02>    IFEN  =>IFBY  <01>'
1659 013604     045     116     045  7$:.ASCIZ  '<NL>A IGO  =>IFPT<00>'
1660                                          .EVEN
1661
1662                                          .SBTTL  MSGSUB - PRINT WRITE SUBSYSTEM MESSAGE BUFFER
1663                                  ;*
1664                                  ;
1665                                  ;PRINT ROUTINE TO PRINT MESSAGE BUFFER EXPD/RECV
1666                                  ;
1667                                  ;
```

```
                                        ;IMPLICIT INPUTS:
                                        ;
                                        ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                        ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                        ;       RCVMIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                        ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                        ;-
013632                                          BGNMSG  MSGSUB
013632                                  MSGSUB::
013632  012700  000012                            MOV     #10.,R0         ;SIZE OF WRITE SUBSYSTEM BUFFER
013636  004737  014442'                            JSR     PC,PRMSGEXP     ;PRINT EXPD/RECV MESSAGE BUFFERS
013642                                          ENDMSG
013642                                  L10015:
013642  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
                                        ;-
013644                                          BGNMSG  MEMADD
013644                                  MEMADD::
013644  004737  010050'                            JSR     PC,PR1ADD       ;PRINT MEMORY ADDRESS IN ERROR
013650  013701  002224'                            MOV     EXPD,R1         ;GET EXPD DATA
013654  013702  002226'                            MOV     RECV,R2         ;GET RECEIVED DATA
013660  004737  007632'                            JSR     PC,PRIXOR       ;PRINT EXPD/RECV
013664                                          ENDMSG
013664                                  L10016:
013664  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:
013666                                          SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
013666  012701  002234'                         MOV     @RAMDATA,R1             ;DATA FROM THE RAM
013672  005002                                  CLR     R2                      ;INIT BYTE NUMBER
013676  122124                          5$:     CMPB    (R1)+,(R4)+             ;COMPARE EXPECTED, RECEIVED
013700  001005                                  BNE     7$                      ;BR IF NO MATCH
013702                                          FORCERROR       7$,NOTSSR
013704  000436                                  BR      10$                     ;@@D
013714  116105  177777                  7$:     MOVB    -1(R1),R5               ;GET RECV RAM DATA
013716  116403  177777                          MOVB    -1(R4),R3               ;GET EXPD PACKET DATA
013722                                          XOR     R5,R3                   ;XOR EXPD/RECV
013726  042703  177400                          BIC     @177400,R3              ;LOW BYTE ONLY
013736  116137  177777  002226'                MOVB    -1(R1),RECV             ;GET RECEIVED RAM DATA
013742  116437  177777  002224'                MOVB    -1(R4),EXPD             ;GET EXPECTED RAM DATA
013750                                          PRINTB  @RAMASC,R2,RECV,EXPD,R3
013756  010346                                  MOV     R3,-(SP)
013756  013746  002224'                         MOV     EXPD,-(SP)
013760  013746  002226'                         MOV     RECV,-(SP)
013764  010246                                  MOV     R2,-(SP)
013770  012746  014046'                         MOV     @RAMASC,-(SP)
013772  012746  000005                          MOV     @5,-(SP)
013776  010600                                  MOV     SP,R0
014002  104414                                  TRAP    C$PNTB
014004  062706  000014                          ADD     @14,SP
014006  005202                          10$:    INC     R2                      ;UPDATE BYTE COUNT
014012  005737  002274'                         TST     RAMSIZ                  ;DEFAULT TO 8.?
014014  001404                                  BEQ     15$                     ;BR IF YES
014020  020237  002274'                         CMP     R2,RAMSIZ               ;DONE ALL BYTES?
014022  003724                                  BLE     5$                      ;BR IF NO
014026  000403                                  BR      25$                     ;
014030  020227  000010                  15$:    CMP     R2,@8.                  ;DONE DEFAULT NUMBER OF BYTES?
014032  002720                          20$:    BLT     5$                      ;BR IF NO
014036  005037  002274'                 25$:    CLR     RAMSIZ                  ;SET DEFAULT RAMSIZ
014040  000207                                  RTS     PC                      ;RETURN
014044
014046  045  116  045  RAMASC: .ASCIZ  '%N%A  BYTE: %D2%A RAM: %03%A Packet: %03%A XOR:%03'
                                        .EVEN
                                        .SBTTL  PRMESS  - PRINT CONTENTS OF MESSAGE BUFFER
                                        ;*
                                        ;
                                        ;THIS ROUTINE PRINTS THE CONTENTS OF
                                        ;THE 7 OR 8 WORD MESSAGE BUFFER RETURNED BY THE
                                        ;TSV-05.
                                        ;
                                        ;INPUT:
                                        ;
                                        ;       R0      LOW ORDER ADDRESS OF MESSAGE BUFFER
                                        ;       R1      HIGH ORDER ADDRESS OF MESSAGE BUFFER
                                        ;       NOTE: R1 IS IGNORED IF KTENABLE FLAG IS CLEAR
                                        ;
                                        ;THIS ROUTINE IS NORMALLY CALLED FROM A PRINT ROUTINE
```

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

                        PROASC: .ASCIZ  '%N%A Message Buffer Address = %O1%O5'
                        PR1ASC: .ASCIZ  '%N%A Message Buffer Contents:'
                        PRASC:  .ASCIZ  '%N%A    Word%D1%A: %O'
                                .EVEN


                                .SBTTL  PRMSGEXP - PRINT EXPD/RECV MESSAGE BUFFERS
                        ;+
                        ;
                        ;ROUTINE TO PRINT EXPECTED AND RECEIVED MESSAGE BUFFERS
```

```
                                        ;
                                        ;       R0      - NUMBER OF WORDS IN BUFFER
                                        ;
                                        ;IMPLICIT INPUTS:
                                        ;
                                        ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                        ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                        ;       RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
                                        ;       RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
                                        ;-
014442                                  PRMSGEXP::
                                                SAVREG                  ;SAVE R1-R5 UNTIL NEXT RETURN
014446  010005                                  MOV     R0,R5           ;SAVE NUMBER OF WORDS
014450  013700  002300'                          MOV     RCVLOADD,R0     ;GET RECV LOW ADDRESS
014454  010004                                  MOV     R0,R4           ;COPY LOW ADDRESS
014456  013701  002276'                          MOV     RCVHIADD,R1     ;GET RECV HIGH ADDRESS
014462  006100                                  ROL     R0              ;SHIFT BIT15 TO C BIT
014464  006101                                  ROL     R1              ;SHIFT TO HIGH ORDER FOR PRINTOUT
014466                                          PRINTX  #PRMSG0,R1,R4   ;PRINT MESSAGE BUFFER ADDRESS
014466  010446                                  MOV     R4,-(SP)
014470  010146                                  MOV     R1,-(SP)
014472  012746  014622'                          MOV     #PRMSG0,-(SP)
014476  012746  000003                          MOV     #3,-(SP)
014502  010600                                  MOV     SP,R0
014504  104415                                  TRAP    C$PNTX
014506  062706  000010                          ADD     #10,SP
014512                                          PRINTX  #PRMSG1         ;PRINT HEADER FOR CONTENTS
014512  012746  014667'                          MOV     #PRMSG1,-(SP)
014516  012746  000001                          MOV     #1,-(SP)
014522  010600                                  MOV     SP,R0
014524  104415                                  TRAP    C$PNTX
014526  062706  000004                          ADD     #4,SP
014532  005004                                  CLR     R4              ;NUMBER OF THE CURRENT WORD
014534  012701  002314'                          MOV     #EXPMSG,R1      ;GET EXPD BUFFER ADDRESS
014540  012702  002460'                          MOV     #RECMSG,R2      ;GET RECV BUFFER ADDRESS
014544  011100                          20$:    MOV     (R1),R0         ;GET EXPD
014546  011203                                  MOV     (R2),R3         ;GET RECV
014550                                          XOR     R0,R3           ;XOR EXPD/RECV
014560                                          PRINTX  #PRMSG2,R4,(R1)+,(R2)+,R3
014560  010346                                  MOV     R3,-(SP)
014562  012246                                  MOV     (R2)+,-(SP)
014564  012146                                  MOV     (R1)+,-(SP)
014566  010446                                  MOV     R4,-(SP)
014570  012746  014725'                          MOV     #PRMSG2,-(SP)
014574  012746  000005                          MOV     #5,-(SP)
014600  010600                                  MOV     SP,R0
014602  104415                                  TRAP    C$PNTX
014604  062706  000014                          ADD     #14,SP
014610  005204                                  INC     R4              ;NUMBER OF THE NEXT
014612  020405                                  CMP     R4,R5           ;DONE ALL YET?
014614  002001                                  BGE     50$             ;BR IF YES
014616  000752                                  BR      20$             ;DO ANOTHER
014620  000207                          50$:    RTS     PC              ;RETURN

014622    045  116  045  PRMSG0: .ASCIZ  '%N%A Message Buffer Address = %01%05'
014667    045  116  045  PRMSG1: .ASCIZ  '%N%A Message Buffer Contents:'
014725    045  116  045  PRMSG2: .ASCIZ  '%N%A   WORD #%D2%A  EXPD: %06%A  RECV: %06%A  XOR: %06'
```

```
                                        .EVEN

                                        .SBTTL  PRBYTEXP - PRINT ERROR BYTES IN EXP/REC MESSAGE BUFFER
                                ;+
                                ;
                                ;ROUTINE TO PRINT ERROR BYTES IN MESSAGE BUFFERS
                                ;       ONLY THE FIRST 8 ERRORS ENCOUNTERED ARE PRINTED DUE TO SCREEN SPACE
                                ;
                                ;       R0      - NUMBER OF BYTES IN BUFFER
                                ;
                                ;IMPLICIT INPUTS:
                                ;
                                ;       EXPMSG  - EXPECTED MESSAGE BUFFER
                                ;       RECMSG  - RECEIVED MESSAGE BUFFER
                                ;-
015012                          PRBYTEXP::
015012                                  SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
015016  010005                          MOV     R0,R5                   ;SAVE NUMBER OF BYTES
015020  005037  002312'                 CLR     PRMNO                   ;INIT ERROR COUNT
015024  005004                          CLR     R4                      ;NUMBER OF THE CURRENT BYTE
015026  012701  002314'                 MOV     @EXPMSG,R1              ;GET EXPD BUFFER ADDRESS
015032  012702  002460'                 MOV     @RECMSG,R2              ;GET RECV BUFFER ADDRESS
015036  111100                  20$:    MOVB    (R1),R0                 ;GET EXPD BYTE
015040  042700  177400                  BIC     #^C<377>,R0             ;CLEAR UPPER BYTE
015044  110037  015360'                 MOVB    R0,PRBEXP               ;SAVE FOR ERROR REPORT
015050  111203                          MOVB    (R2),R3                 ;GET RECV BYTE
015052  042703  177400                  BIC     #^C<377>,R3             ;CLEAR UPPER BYTE
015056  110337  015362'                 MOVB    R3,PRBREC               ;FOR ERROR REPORT
015062                                  XOR     R0,R3                   ;XOR EXPD/RECV
015072  122122                          CMPB    (R1)+,(R2)+             ;EXPD = RECV?
015074  001431                          BEQ     30$                     ;BR IF YES
015076  005237  002312'                 INC     PRMNO                   ;UPDATE ERROR COUNT
015102  023727  002312'  000010        CMP     PRMNO,#8.               ;PRINTED 8?
015110  101023                          BHI     30$                     ;BR IF YES
015112                          27$:    PRINTX  #PRBMSG,R4,PRBEXP,PRBREC,R3
015112  010346                          MOV     R3,-(SP)
015114  013746  015362'                 MOV     PRBREC,-(SP)
015120  013746  015360'                 MOV     PRBEXP,-(SP)
015124  010446                          MOV     R4,-(SP)
015126  012746  015226'                 MOV     #PRBMSG,-(SP)
015132  012746  000005                  MOV     #5,-(SP)
015136  010600                          MOV     SP,R0
015140  104415                          TRAP    C$PNTX
015142  062706  000014                  ADD     #14,SP
015146                                  FORCEXIT        50$             ;@@D
015156  000404                          BR      35$                     ;@@D
015160                          30$:
015160                                  FORCERROR  27$,NOTSSR           ;@@D
015170                          35$:                                    ;@@D
015170  005204                          INC     R4                      ;NUMBER OF THE NEXT
015172  020405                          CMP     R4,R5                   ;DONE ALL YET?
015174  002001                          BGE     50$                     ;BR IF YES
015176  000717                          BR      20$                     ;DO ANOTHER
015200                          50$:    PRINTX  #PRBTOT,PRMNO           ;PRINT TOTAL ERROR COUNT
015200  013746  002312'                 MOV     PRMNO,-(SP)
015204  012746  015313'                 MOV     #PRBTOT,-(SP)
015210  012746  000002                  MOV     #2,-(SP)
```

```
                015214  010600                          MOV     SP,R0
                015216  104415                          TRAP    C$PNTX
                015220  062706  000006                  ADD     #6,SP
          1886  015224  000207                          RTS     PC                      ;RETURN
          1887
          1888  015226      045      116      045  PRBMSG: .ASCIZ  '%N%A   BYTE #%D2%A  EXPD: %03%A  RECV: %03%A  XOR: %03'
          1889  015313      045      116      045  PRBTOT: .ASCIZ  '%N%A NUMBER OF BYTES IN ERROR = %D2'
          1890                                              .EVEN
          1891  015360  000000                      PRBEXP: .WORD   0                       ;EXPD
          1892  015362  000000                      PRBREC: .WORD   0                       ;RECV
          1893
          1894                                              .SBTTL  EXPREC  - PRINT EXPD/RECV WORD DATA
          1895                                    ;+
          1896                                    ;
          1897                                    ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
          1898                                    ;
          1899                                    ;INPUTS:
          1900                                    ;
          1901                                    ;       R1      RECEIVED DATA
          1902                                    ;       R2      EXPECTED DATA
          1903                                    ;
          1904                                    ;-
          1905
          1906  015364                                    BGNMSG  EXPREC
                015364                            EXPREC::
          1907  015364  004737  007632'                   JSR     PC,PRIXOR               ;PRINT THE DATA
          1908  015370                                    ENDMSG
                015370                            L10017:
                015370  104423                          TRAP    C$MSG
          1909
          1910
          1911
          1912
          1913                                              .SBTTL  EXPBREC - PRINT EXPD/RECV BYTE DATA
          1914                                    ;+
          1915                                    ;
          1916                                    ;PRINT ROUTINE TO DISPLAY BYTE EXPD/RECV DATA
          1917                                    ;
          1918                                    ;
          1919                                    ;INPUTS:
          1920                                    ;
          1921                                    ;       R1      RECEIVED DATA BYTE
          1922                                    ;       R2      EXPECTED DATA BYTE
          1923                                    ;
          1924                                    ;-
          1925
          1926  015372                                    BGNMSG  EXPBREC
                015372                            EXPBREC::
          1927  015372  004737  007502'                   JSR     PC,PRIBXOR              ;PRINT THE DATA
          1928  015376                                    ENDMSG
                015376                            L10020:
                015376  104423                          TRAP    C$MSG
          1929
          1930
          1931
          1932
          1933                                              .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::
015400  004737  013666'                 JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
                                        ENDMSG
                                L10021:
015404  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
                                RAMTADD::
015406  004737  010164'                 JSR     PC,PRITADD      ;PRINT TEST ADDRESS
015412  004737  013666'                 JSR     PC,PRAMPKT      ;PRINT RAM/PACKET DATA
                                        ENDMSG
                                L10022:
015416  104423                         TRAP    C$MSG
```

```
                                        .SBTTL  RAMEXP  - PRINT RAM EXPD/RECV DATA
                                ;*
                                ;
                                ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
                                ;
                                ;INPUTS:
                                ;
                                ;       R1      RECEIVED DATA
                                ;       R2      EXPECTED DATA
                                ;       R4      CONTROLLER RAM ADDRESS
                                ;-
                                        BGNMSG  RAMEXP
015420                          RAMEXP::
015420  042701  177400                  BIC     #^C<377>,R1             ;SAVE EXPD RAM DATA BYTE
015424  042702  177400                  BIC     #^C<377>,R2             ;SAVE EXPD RAM DATA BYTE
015430  004737  007756'                 JSR     PC,PRIRAM               ;PRINT THE RAM ADDRESS
015434  004737  007632'                 JSR     PC,PRIXOR               ;PRINT THE DATA
015440                                  ENDMSG
015440                          L10023:
015440  104423                          TRAP    C$MSG
                                        .SBTTL  TIMEXP  - PRINT TIMER A,B AND EXP/REC
                                ;*
                                ;
                                ;PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
                                ;AND TIMER A,B HEADER MESSAGE
                                ;
                                ;INPUTS:
                                ;
                                ;       R1      RECEIVED DATA
                                ;       R2      EXPECTED DATA
                                ;-
                                        BGNMSG  TIMEXP
015442                          TIMEXP::
015442                                  PRINTX  #TIMSGO                 ;PRINT HEADER
015442  012746  015470'                 MOV     #TIMSGO,-(SP)
015446  012746  000001                  MOV     #1,-(SP)
015452  010600                          MOV     SP,R0
015454  104415                          TRAP    C$PNTX
015456  062706  000004                  ADD     #4,SP
015462  004737  007632'                 JSR     PC,PRIXOR               ;PRINT THE DATA
015466                                  ENDMSG
015466                          L10024:
015466  104423                          TRAP    C$MSG

015470  045  116  045  TIMSGO: .ASCIZ  '%N%A TIMER A STATUS IS IN BIT 3%N%A TIMER B STATUS IS IN BIT 2'
                        .EVEN


                                        .SBTTL  BADSSR - PRINT TSSR ERRORS ON DATA TRANSFERS

                                ;*
                                ;
```

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

                                        BGNMSG  BADSSR
015570                          BADSSR::
015570  010246                          MOV     R2,-(SP)                ;SAVE DATA TRANSFERRED
015572  042702  177400                  BIC     #177400,R2              ;GET JUST ONE BYTE
015576                                  PRINTB  #XFERASC,R2
015576  010246                          MOV     R2,-(SP)
015600  012746  015630'                  MOV     #XFERASC,-(SP)
015604  012746  000002                  MOV     #2,-(SP)
015610  010600                          MOV     SP,R0
015612  104414                          TRAP    C$PNTB
015614  062706  000006                  ADD     #6,SP
015620  012602                          MOV     (SP)+,R2                ;RESTORE R2
015622  004737  005632'                  JSR     PC,PRITSSR              ;DECODE TSSR CONTENTS
015626                                  ENDMSG
015626                          L10025:
015626  104423                          TRAP    C$MSG
015630    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
                                        ;
                                        ;-

015664                                  SOFINIT::
015664                                          SAVREG                  ; SAVE THE REGISTERS
015670  012765  000000  000002                  MOV     #0,TSSR(R5)     ; DO THE INIT.
015676  004737  016140'                         JSR     PC,WAITF        ; WAIT FOR SSR
015702  016500  000002                          MOV     TSSR(R5),R0     ;GET THE TSSR REGISTER
015706  010004                                  MOV     R0,R4           ;TSSR CONTENTS
015710  042704  176277                          BIC     #^C<HIADDR!OFL>,R4
015714  052704  002200                          BIS     #SSR!NBA,R4     ;R4 HAS EXPECTED CONTENTS
015720  020400                                  CMP     R4,R0           ;ONLY EXPECTED BITS SET ?
015722  001402                                  BEQ     5$              ;BRANCH IF OKAY
015724  000241                                  CLC                     ;CLEAR THE CARRY FOR ERROR
015726  000401                                  BR      10$             ;GO TO EXIT
015730  000261                          5$:     SEC                     ;SET THE CARRY BIT
015732  000207                          10$:    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
                                        ;
                                        ;-

015734                                  CHKAMB:
015734                                          SAVREG                  ;SAVE THE GENERAL REGISTERS
015740  010004                                  MOV     R0,R4           ;CONTENTS OF TSSR
015742  032700  100000                          BIT     #SC,R0          ;IS BIT 15 SET ?
015746  001004                                  BNE     5$              ;BRANCH IF YES
015750  032700  174077                          BIT     #^C<NBA!OFL!SSR!HIADDR>,R0      ;ANY OTHER BITS SET ?
015754  001023                                  BNE     40$             ;MUST BE AN ERROR
015756  000424                                  BR      45$             ;RETURN WITH SUCCESS
015760  032700  000200                  5$:     BIT     #SSR,R0         ;IS READY BIT SET ?
015764  001011                                  BNE     10$             ;BRANCH IF READY BIT IS SET.
015766  032700  000040                          BIT     #BIT5,R0        ;IS FATAL ERROR BIT SET ?
015772  001414                                  BEQ     40$             ;ERROR IF NOT
015774  042704  177761                          BIC     #^CTERCLS,R4    ;CLEAR ALL BUT TERMINATION CODE
016000  020427  000016                          CMP     R4,#16          ;ALL THREE BITS MUST BE SET
016004  001007                                  BNE     40$             ;ERROR IF NOT SET
016006  000410                                  BR      45$             ;OK IF ALL ARE SET
```

```
2136 016010  032700  000040          10$:    BIT     #BIT5,R0        ;IS FATAL ERROR BIT SET ?
2137 016014  001405                          BEQ     45$             ;ERROR IF BIT IS SET WITH SSR
2138 016016  032700  000006                  BIT     #BIT2!BIT1,R0   ;IS THIS A FUNCTION REJECT
2139 016022  001002                          BNE     45$             ;BR, IF TSSR IS OK
2140 016024  000241                  40$:    CLC                     ;AMBIGUOUS CONTENTS
2141 016026  000401                          BR      50$
2142 016030  000261                  45$:    SEC                     ;SHOW SUCCESS - NO AMBIGUITY
2143 016032  000207                  50$:    RTS     PC              ;RETURN TO CALLER
2144
2145                                         .SBTTL  ENAINT,DSBINT - ENABLE/DISABLE INTERRUPTS
2146                                 ;
2147                                 ; DEFAULT DISPLAY INTERRUPT HANDLERS.
2148                                 ; IF DISPLAY TIME-OUT, REPORT DEV FATAL, AND ABORT PASS.
2149                                 ; OTHERWISE, SAVE DPU REGISTERS AND DISMISS.
2150                                 ;
2151
2152                                 ; BIT DEFINITIONS FOR "INTMASK" AND "INTFLAG" BYTES:
2153                                 ;
2154          000200                         IOKCK1N=BIT7    ; DON'T CHECK FOR BAD INTERRUPTS -- TEST WILL.
2155          000001                         IOKSTP=BIT0     ; EXPECT "STOP" INTERRUPT.
2156                                 ;
2157                                 ;INTERRUPT MASK -- SAYS EXPECTING INTERRUPTS
2158 016034      000                 INTMASK:        .BYTE   0
2159                                 ;INTERRUPT FLAG -- SAYS WE GOT ONE (IF POSITIVE)
2160 016035      000                 INTFLAG:        .BYTE   0
2161
2162                                 ;SAVED INTERRUPT VECTOR:
2163 016036  000000                  INTVEC: .WORD   0
2164                                 ;SAVE CPU PC
2165 016040  000000                  INTCPC: .WORD   0
2166
2167                                 ;SUBROUTINE TO ENABLE INTERRUPTS:
2168 016042  010046                  ENAINT: MOV     R0,-(SP)        ;SAVE R0
2169 016044  013700  002202'                 MOV     IVEC,R0         ;GET POINTER TO VECTORS
2170 016050  012720  016106'                 MOV     #INTR,(R0)+     ;SET UP INTERRUPT VECTOR
2171 016054  012720  000340                  MOV     #PRI07,(R0)+
2172 016060  012600                          MOV     (SP)+,R0        ;RESTORE R0
2173 016062  011646                          MOV     (SP),-(SP)
2174 016064  012766  000000  000002          MOV     #0,2(SP)        ;SET CPU TO LEVEL 0
2175 016072  000002                          RTI
2176
2177                                 ;SUBROUTINE TO DISABLE INTERRUPTS (RAISE PRIORITY TO LEVEL 7)
2178 016074  011646                  DSBINT: MOV     (SP),-(SP)
2179 016076  012766  000340  000002          MOV     #PRI07,2(SP)
2180 016104  000002                          RTI
2181
2182                                         .SBTTL  INTR    - INTERRUPT HANDLERS
2183
2184 016106                                  BGNSRV  INTR            ;DEFINE INTERRUPT ENTRY
     016106                          INTR::
2185 016106  012737  000001  002216'         MOV     #1,INTRECV      ;SET FLAG TO SHOW INTERRUPT RECEIVED
2186 016114  105037  016035'                 CLRB    INTFLAG         ;CLEAR FLAG TO SAY WE GOT INTERRUPT
2187 016120  132737  000001  016034'         BITB    #IOKSTP,INTMASK ;EXPECTING STOP INTERRUPT?
2188 016126  001003                          BNE     1$              ;BR IF YES
2189 016130  152737  000001  016035'         BISB    #IOKSTP,INTFLAG ;NO. SET THE ERROR FLAG.
2190
2191                                 ;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
                                ;
016140  000401                  WAITF:: BR      1$              ;NOP WHEN SUPER FIXED
016142                                  .BREAK                  ; DO A SUPVSR BREAK FIRST.
016142  104422                         TRAP    C$BRK
016144  012746  011000          1$:     MOV     #11000,-(SP)    ;25-APRIL-83 REV B  - 1100 MSEC TIMER
016150  016500  000002          2$:     MOV     TSSR(R5),R0     ;READ THE TSSR REGISTER
016154  105700                          TSTB    R0              ;TEST FOR READY BIT SET
                                        ;
016156  100420                          BMI     3$              ; EXIT ON STOP FLAG.
016160                                  DELAY   1               ; WAIT 100 USEC
016160  012727  000001                  MOV     #1,(PC)+
016164  000000                          .WORD   0
016166  013727  002116'                 MOV     L$DLY,(PC)+
016172  000000                          .WORD   0
016174  005367  177772                  DEC     -6(PC)
016200  001375                          BNE     .-4
016202  005367  177756                  DEC     -22(PC)
016206  001367                          BNE     .-20
016210  005316                          DEC     (SP)            ;REDUCE DELAY COUNT
016212  001356                          BNE     2$              ;RETRY UNTIL TIMER EXPIRES
016214  000241                          CLC                     ; C = 0, CONTROLLER STILL RUNNING...
016216  000401                          BR      4$              ;...OR HUNG-UP AFTER 300 MSEC.
016220  000261                  3$:     SEC                     ; C = 1, CONTROLLER IS STOPPED.
016222  005326                  4$:     DEC     (SP)+           ;RESTORE STACK WITHOUT CHANGING CARRY BIT
016224  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
                        ;
                        ;-

016226                  CHKTSSR:
016226  004737  016140'        JSR     PC,WAITF                ;WAIT FOR READY
016232  103014                BCC     20$                     ;BRANCH IF TIME OUT
016234  004737  015734'        JSR     PC,CHKAMB               ;TSSR AMBIGOUS?
016240  103006                BCC     10$                     ;BR IF YES
016242  032700  100000        BIT     #SC,R0                  ;SPECIAL CONDITION SET?
016246  001405                BEQ     15$                     ;BR IF NO
016250  032700  074000        BIT     #<SCE!BIE!RMR!NXM>,R0   ;ANY ERROR BITS SET?
016254  001402                BEQ     15$                     ;BR IF NO
016256  000241        10$:    CLC                             ;SET FAILURE
016260  000401                BR      20$                     ;
016262  000261        15$:    SEC                             ;SET SUCCESS
016264  000207        20$:    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.
                        ;
016266  012737  016322' 000004  XNXM:   MOV     #2$,@#4         ; SET BUSERR VECTOR.
016274  012737  000200  000006          MOV     #PRI04,@#6
016302  005003                  CLR     R3                      ;FLAG.
016304  000241                  CLC                             ;CLEAR THE CARRY FOR NO NXM FOUND
016306  005711          1$:     TST     (R1)                    ;TEST THE ADDRESS(ES).
                                                                ;IF ANY TRAP, CONTINUE AT 2$.
016310  020102                  CMP     R1,R2                   ;OTHERWISE, CONTINUE HERE.
016312  001407                  BEQ     3$                      ;BR IF FINISHED (NO NEXM'S).
016314  062701  000002          ADD     #2,R1                   ;SET NEXT ADDRESS...
016320  000772                  BR      1$                      ;...AND CONTINUE.

016322  005103          2$:     COM     R3                      ;GOT ONE, SET FLAG...
016324  012716  016332'        MOV     #3$,(SP)
016330  000002                  RTI                             ;...AND DISMISS INTERRUPT...
016332                  3$:     CLRVEC  #4                      ;...AND GIVE BACK THE VECTOR.
016332  012700  000004          MOV     #4,R0
016336  104436                  TRAP    C$CVEC
016340  005703                  TST     R3                      ;DID WE CATCH ONE ??
016342  001401                  BEQ     .+4                     ;NO, "C" = 0, SKIP NEXT.
016344  000261                  SEC                             ;YES, "C" = 1, (R1) = NEXM ADDR.
016346  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
                                ;
016350                          TSTLOOP::
016350  005737  002162'                 TST     NOITS           ; ITERATIONS INHIBITED?
016354  001006                         BNE     1$              ; YES.
016356  005737  002176'                 TST     QVP             ; NO.
016362  100403                         BMI     1$              ;LOOPS DISALLOWED IN QUICK PASS.
016364  005337  002210'                 DEC     LOOPCNT         ; BUMP LOOP COUNTER.
016370  001002                         BNE     2$
016372  000241                  1$:     CLC                     ;LOOP DISALLOWED, OR DONE.
016374  000401                         BR      3$
016376  000261                  2$:     SEC                     ;LOOP ENABLED.
016400  000207                  3$:     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
                                ;
                                ;-
016402                          TSTSETUP::
016402  010046                         MOV     R0,-(SP)        ;SAVE THE TEST ID MESSAGE
016404  005037  003146'                 CLR     SIFLAG          ; CLEAR "SOFT INIT" FLAG
016410  005037  016650'                 CLR     ERRK            ; CLEAR LOCAL ERROR COUNTER.
016414  005037  005600'                 CLR     EXTA            ; CLEAR ERROR EXTENSION FLAG.
016420  105037  016034'                 CLRB    INTMASK         ; CLEAR INTERRUPT MASK (CHECK ERROR)
016424  013700  002174'                 MOV     UNITN,R0        ; GET THE UNIT NUMBER,
016430  006300                         ASL     R0              ; ... AND MAKE IT A WORD OFFSET.
016432  005737  003106'                 TST     NODEV           ; DID STARTUP FIND THE DEVICE?
016436  001430                         BEQ     4$              ; BR IF YES
016440  100010                         BPL     3$              ; BR IF NOT IDLE
016442  052760  160000  003170'         BIS     #160000,ERTABL(R0) ; FLAG ERROR IN THE ERROR TABLE
```

```
                                                ERRDF   1,NXR,NXRERR    ; NO DEVICE HERE -- PRINT IT
016450  104455                                  TRAP    C$ERDF
016452  000001                                  .WORD   1
016454  003730'                                 .WORD   NXR
016456  005544'                                 .WORD   NXRERR
016460  000407                                  BR      2$
016462  052760  160001  003170'  3$:           BIS     #160001,ERTABL(R0)      ; FLAG ERROR IN THE ERROR TABLE
016470                                          ERRDF   2,NOINIT        ; DEVICE NOT IDLE
016470  104455                                  TRAP    C$ERDF
016472  000002                                  .WORD   2
016474  004325'                                 .WORD   NOINIT
016476  000000                                  .WORD   0
016500  012737  177777  003104'  2$:           MOV     #-1,DUFLG       ; DROP THE UNIT
016506                                          DODU    UNITN
016506  013700  002174'                         MOV     UNITN,R0
016512  104451                                  TRAP    C$DODU
016514                                          DOCLN                   ; ABORT THE PASS
016514  104444                                  TRAP    C$DCLN
016516  000423                                  BR      5$

016520                                  4$:     RFLAGS  R0              ; GET THE OPERATOR FLAGS.
016520  104421                                  TRAP    C$RFLA
016522  032700  001000                          BIT     #PNT,R0         ; PRINT THE TEST NUMBERS?
016526  001412                                  BEQ     1$              ; BR IF NO
016530  011600                                  MOV     (SP),R0         ;GET THE ID MESSAGE
016532                                          PRINTF  #TNAM,R0                ;DISPLAY THE TEST ID
016532  010046                                  MOV     R0,-(SP)
016534  012746  016576'                         MOV     #TNAM,-(SP)
016540  012746  000002                          MOV     #2,-(SP)
016544  010600                                  MOV     SP,R0
016546  104417                                  TRAP    C$PNTF
016550  062706  000006                          ADD     #6,SP
016554  005237  002206'          1$:           INC     TSTCNT          ; BUMP TEST COUNTER.
016560                                          SETPRI  IPRI            ;PRIORITY THAT OF DEVICE
016560  013700  002204'                         MOV     IPRI,R0
016564  104441                                  TRAP    C$SPRI
016566  005726                  5$:             TST     (SP)+           ;FIX UP THE STACK
016570  013705  002200'                         MOV     CSRADDR,R5      ; ADDRESS OF TSV REGISTERS ON UNIBUS
016574  000207                                  RTS     PC
016576     045     123     045  TNAM:           .ASCIZ  '%S%T%A Test'
                                                .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).
                                ;
016612                          TSTEND: RFLAGS  R0
016612  104421                          TRAP    C$RFLA
016614  030027  020000                  BIT     R0,#IER
016620  001412                          BEQ     1$                      ; BR IF "IER" NOT SET.
016622                                  PRINTF  #ESUM,ERRK              ; PRINT ERROR COUNT.
016622  013746  016650'                 MOV     ERRK,-(SP)
016626  012746  016652'                 MOV     #ESUM,-(SP)
016632  012746  000002                  MOV     #2,-(SP)
016636  010600                          MOV     SP,R0
016640  104417                          TRAP    C$PNTF
```

```
        016642  062706  000006                  ADD     #6,SP
2381    016646  000207                  1$:     RTS     PC
2382
2383    016650  000000                  ERRK:   0                       ; LOCAL ERROR COUNT.
2384    016652     045     101     040  ESUM:   .ASCIZ  /%A %D%A ERRORS/
2385    016671     105     122     122  EMAXDU: .ASCIZ  /ERROR LIMIT REACHED -- DROPPING UNIT/
2386                                            .EVEN
2387
2388                                            .SBTTL  INCERK  - INCREMENT LOCAL ERROR COUNT
2389                                    ;+
2390                                    ; ROUTINES TO INCREMENT LOCAL ERROR COUNT AND CHECK FOR LIMIT:
2391                                    ;-
2392    016736  005237  016650'          INCERK: INC     ERRK            ; INCREMENT LOCAL ERROR COUNT
2393    016742  010046                          MOV     R0,-(SP)        ; SAVE R0
2394    016744  013700  002174'                MOV     UNITN,R0        ; GET UNIT NUMBER,
2395    016750  006300                          ASL     R0              ; ... AND MAKE IT A WORD OFFSET.
2396    016752  062700  003170'                ADD     #ERTABL,R0      ; R0 GETS ADDRESS OF ERROR TABLE ENTRY.
2397    016756  005210                          INC     (R0)            ; INCREMENT THE DEVICE ERROR COUNT
2398    016760  032710  007777                BIT     #7777,(R0)      ; DID WE OVERFLOW THE FIELD?
2399    016764  001001                          BNE     1$              ; BR IF NO.
2400    016766  005310                          DEC     (R0)            ; YES -- BACK IT UP TO 7777.
2401    016770  012600                  1$:     MOV     (SP)+,R0        ; RESTORE R0
2402    016772  000207                          RTS     PC              ; RETURN TO CALLER.
2403
2404    016774  010046                  CKEMAX: MOV     R0,-(SP)        ; SAVE R0
2405    016776  013700  002174'                MOV     UNITN,R0        ; GET UNIT NUMBER
2406    017002  006300                          ASL     R0              ; ... AND MAKE IT A WORD OFFSET
2407    017004  016000  003170'                MOV     ERTABL(R0),R0   ; GET ERROR TABLE ENTRY
2408    017010  042700  170000                BIC     #170000,R0      ; EXTRACT ERROR COUNT FIELD
2409    017014  020037  002166'                CMP     R0,GERRMAX      ; IS GLOBAL LIMIT EXCEEDED FOR THIS UNIT?
2410    017020  103004                          BHIS    1$              ; BR IF YES
2411    017022  023737  016650' 002164'        CMP     ERRK,LERRMAX    ; IS LOCAL LIMIT EXCEEDED FOR THIS TEST?
2412    017030  103417                          BLO     2$              ; BR IF NO
2413    017032                          1$:     RFLAGS  R0              ; GET OPERATOR FLAGS
        017032  104421                          TRAP    C$RFLA
2414    017034  032700  000040                  BIT     #IDU,R0         ; IS DROPPING INHIBITED?
2415    017040  001013                          BNE     2$              ; BR IF YES.
2416    017042  012737  177777  003104'        MOV     #-1,DUFLG       ; NO -- DROP THE UNIT
2417    017050                                  ERRDF   4,EMAXDU
        017050  104455                          TRAP    C$ERDF
        017052  000004                          .WORD   4
        017054  016671'                         .WORD   EMAXDU
        017056  000000                          .WORD   0
2418    017060                                  DODU    UNITN
        017060  013700  002174'                MOV     UNITN,R0
        017064  104451                          TRAP    C$DODU
2419    017066                                  DOCLN
        017066  104444                          TRAP    C$DCLN
2420    017070  012600                  2$:     MOV     (SP)+,R0        ; RESTORE R0
2421    017072  000207                          RTS     PC              ; RETURN TO CALLER
2422
2423                                            .SBTTL  CKDROP  - CHECK IF UNIT SHOULD BE DROPPED
2424                                    ;+
2425                                    ; CHECK IF UNIT SHOULD BE DROPPED
2426                                    ;-
2427    017074  010046                  CKDROP: MOV     R0,-(SP)
2428    017076                                  FORCERROR       1$,NOTSSR
```

```
2429 017106                                    RFLAGS  R0
     017106  104421                           TRAP    C$RFLA
2430 017110  032700  000040                   BIT     #IDU,R0
2431 017114  001010                           BNE     1$
2432 017116  011600                           MOV     (SP),R0
2433 017120  012737  177777  003104'          MOV     #-1,DUFLG
2434 017126                                    DODU    UNITN
     017126  013700  002174'                   MOV     UNITN,R0
     017132  104451                           TRAP    C$DODU
2435 017134                                    DOCLN                   ;ABORT THE PASS
     017134  104444                           TRAP    C$DCLN
2436 017136  012600                    1$:    MOV     (SP)+,R0
2437 017140  000207                           RTS     PC
2438
2439                                           .SBTTL  CONFIG  - DETERMINE CONFIGURATION OF SYSTEM
2440                                   ;
2441                                   ; SUBROUTINE - DETERMINE CONFIGURATION OF TSU05 SYSTEM.
2442                                   ;
2443 017142                            CONFIG:
2444 017142  004737  015664'                   JSR     PC,SOFINIT
2445 017146  000207                           RTS     PC
2446
2447                                           .SBTTL  KTON,KTOFF      - ENABLE/DISABLE MEMORY MANAGEMENT
2448                                   ;
2449                                   ; SUBROUTINE - ENABLE MEM MGT.
2450                                   ;
2451 017150  005737  003124'           KTON:   TST     KTFLG           ; GOT KT?
2452 017154  001403                           BEQ     1$              ; NO.
2453 017156  012737  000001  177572           MOV     #1,SR0          ; YES. ENABLE KT11.
2454 017164  000207                    1$:    RTS     PC
2455
2456
2457
2458                                   ;
2459                                   ; SUBROUTINE - DISABLE MEM MGT.
2460                                   ;
2461 017166  005737  003124'           KTOFF:  TST     KTFLG           ; GOT KT11?
2462 017172  001405                           BEQ     1$              ; NO.
2463 017174  000240                           NOP
2464 017176  000240                           NOP
2465 017200  012737  000000  177572           MOV     #0,SR0          ; DISABLE KT.
2466 017206  000207                    1$:    RTS     PC
2467
2468                                           .SBTTL  SETMAP  - SETUP PAR6 MAPPING
2469
2470                                   ;+
2471                                   ;
2472                                   ;THIS ROUTINE SETS UP KERNEL PAR6 TP HANDLE
2473                                   ;AN 22 BIT ADDRESS. THE OFFSET INTO THE PAGE
2474                                   ;IS RETURNED BIASED TO PAR6.
2475                                   ;
2476                                   ;INPUTS:
2477                                   ;
2478                                   ;       R0      HIGH ORDER ADDRESS BITS
2479                                   ;       R1      LOW ORDER ADDRESS BITS
2480                                   ;
2481                                   ;OUTPUTS:
```

```
                                        ;
                                        ;       R0      OFFSET INTO BLOCK WITH PAR6 BIAS (I.E. THE ADDRESS)
                                        ;       CARRY   SET IF SUCCESS
                                        ;               CLR IF ERROR
                                        ;-
017210                                  SETMAP:
017210                                          SAVREG                          ;SAVE R1-R4 UNTIL NEXT RETURN
017214  005737  003124'                         TST     KTFLG                   ;SYSTEM HAVE ABOVE 28K?
017220  001433                                  BEQ     10$                     ;BR IF NO
017222  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
017254  042701  000177                         BIC     #177,R1                 ;ALINE FOR LOWER 4K BOUNDARY
017260  020137  003124'                         CMP     R1,KTFLG                ;HIGHER THAN EXISTING MEMORY?
017264  103011                                  BHIS    10$                     ;BR IF YES
017266  010137  172354                         MOV     R1,@#KIPAR6             ;SETUP MAPPING REGISTER PAR6
017272  042702  160000                         BIC     #160000,R2              ;SETUP DISPLACEMENT IN PAGE
017276  062702  140000                         ADD     #140000,R2              ;ADD IN PAR6 BIAS
017302  010200                                  MOV     R2,R0                   ;RETURN IN R0
017304  000261                                  SEC                             ;SET SUCCESS
017306  000401                                  BR      15$                     ;
017310  000241                          10$:    CLC                             ;SET FAILURE
017312  000207                          15$:    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
                                        ;-
                                        ;
017314                                  FILLMEM:
017314                                          SAVREG                          ;SAVE R1-R5 UNTIL NEXT RETURN
017320  004737  017166'                         JSR     PC,KTOFF                ;DISABLE KT.
017324  010003                                  MOV     R0,R3                   ;COPY TEST PATTERN
017326  013701  003116'                         MOV     FREE,R1                 ;GET FIRST FREE LOCATION
017332  013702  003120'                         MOV     FRESIZ,R2               ;SIZE OF FREE SPACE BELOW 28K.
017336  010321                          10$:    MOV     R3,(R1)+                ;STORE A BACKGROUND WORD
017340  005302                                  DEC     R2                      ;DONE ALL MEMORY IN FREE SPACE?
017342  003375                                  BGT     10$                     ;BR IF NO
017344  005737  003124'                         TST     KTFLG                   ; GOT KT?
017350  001502                                  BEQ     55$                     ; NO. GET OUT.
017352  004737  017150'                         JSR     PC,KTON                 ; YES. ENABLE KT.
017356  005000                                  CLR     R0                      ;HIGH ORDER ADDRESS START
017360  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
017430  004737  017210'                            JSR     PC,SETMAP           ;SETUP PAR6 MAPPING REGISTER
017434  010320                              30$:    MOV     R3,(R0)+            ;STORE TEST PATTERN IN >28K ADDRESS
017436  020027  160000                              CMP     R0,#160000          ;END OF PAR6 MAPPING AREA?
017442  103774                                      BLO     30$                 ;BR IF NO
017444  162700  020000                              SUB     #20000,R0           ;BACKUP INTO PAR6 MAPPING BEGIN
017450  062737  000200  172354                      ADD     #200,@#KIPAR6       ;POINT TO NEXT 4K BLOCK >28K.
017456  013705  003124'                            MOV     KTFLG,R5            ;GET VALUE FROM MEMORY SIZER
017462  042705  170000                            BIC     #170000,R5          ;ONLY 18 BITS PASS
017466  023705  172354                            CMP     @#KIPAR6,R5         ;END OF MEMORY?
017472  001427                                    BEQ     50$                 ;BR IF YES
017474  005737  003136'                            TST     T23A                ;PROCESSOR TYPE A
017500  001407                                    BEQ     35$                 ;NO KEEP GOING
017502  013704  177572                            MOV     SR0,R4              ;GET SR0 CONTENTS
017506  042704  177761                            BIC     #177761,R4          ;CLEAR ALL BUT PAGE NUMBER
017512  022704  000016                            CMP     #16,R4              ;SEE IF PAGE 7
017516  001415                                    BEQ     50$                 ;EXIT IF THERE
017520  005737  003140'                    35$:    TST     T23B                ;PROCESSOR TYPE B
017524  001410                                    BEQ     45$                 ;NO KEEP GOING
017526  023727  172354  007600                    CMP     @#KIPAR6,#7600      ;REACHED 18 BITS?
017534  103001                                    BHIS    40$                 ;YES
017536  000403                                    BR      45$                 ;NO KEEP GOING
017540  012737  000020  172516            40$:    MOV     #20,SR3             ;SET MMU RELOCATION
017546  000137  017434'                    45$:    JMP     30$                 ;KEEP GOING ON ETC.
017552  004737  017166'                    50$:    JSR     PC,KTOFF            ; DISABLE KT.
017556  000207                              55$:    RTS     PC

                        .SBTTL  CMPMEM  - COMPARE MEMORY TO BACKGROUND PATTERN
;+
; COMPARE MEMORY WITH A BACKGROUND PATTERN
;
; INPUTS:
;
;       R0 = BACKGROUND PATTERN
;       FREE    = FIRST LOCATION AVAILABLE TO DIAGNOSTIC
;       KTFLG   = SET TO HIGHEST MEMORY LOCATION IF > 28K.
;
; OUTPUTS:
;
;       CARRY   - SET IF NO ERROR
;       CARRY   - CLR IF ERROR
;
; IMPLICIT OUTPUTS:
;
;       ERRHI   - ERROR HIGH ADDRESS
;       ERRLO   - ERROR LOW ADDRESS
;       EXPD    - EXPECTED DATA
;       RECV    - RECEIVED DATA
;-
CMPMEM:
017560                                          SAVREG                      ;SAVE R1-R5 UNTIL NEXT RETURN
017560  010003                                  MOV     R0,R3               ;COPY TEST PATTERN
017564  004737  017166'                          JSR     PC,KTOFF            ;DISABLE KT.
017566  013701  003116'                          MOV     FREE,R1             ;GET FIRST FREE LOCATION
017572
```

```
2596 017576  013702  003120'                  MOV     FRESIZ,R2       ;SIZE OF FREE SPACE BELOW 28K.
2597 017602  020311                    10$:    CMP     R3,(R1)         ;FREE SPACE LOCATION EQUAL TO EXPD?
2598 017604  001411                            BEQ     15$             ;BR IF YES
2599 017606  010137  002232'                    MOV     R1,ERRLO        ;SAVE ADDRESS IN ERROR
2600 017612  005037  002230'                    CLR     ERRHI           ;NO HIGH ADDRESS
2601 017616  010337  002224'                    MOV     R3,EXPD         ;SAVE EXPD FOR ERROR REPORT
2602 017622  011137  002226'                    MOV     (R1),RECV       ;SAVE RECV FOR ERROR REPORT
2603 017626  000474                            BR      50$             ;
2604 017630  005721                    15$:    TST     (R1)+           ;POINT TO NEXT ADDRESS
2605 017632  005302                            DEC     R2              ;DONE ALL MEMORY IN FREE SPACE?
2606 017634  003362                            BGT     10$             ;BR IF NO
2607 017636  005737  003124'                    TST     KTFLG           ; GOT KT?
2608 017642  001472                            BEQ     55$             ; NO. GET OUT.
2609 017644  004737  017150'                    JSR     PC,KTON         ; YES. ENABLE KT.
2610 017650  005000                            CLR     R0              ;HIGH ORDER ADDRESS START
2611 017652  013701  003144'                    MOV     PST32W,R1       ;GET >28K START ADDRESS (IN 32W BLOCKS)
2612         000006                            .REPT   6
2613                                           ROL     R1              ;CONVERT BLOCKS TO WORDS
2614                                           ROL     R0              ;MAKE IT DOUBLE PRECISION
2615                                           .ENDR
2616 017706  042701  000177                    BIC     #177,R1         ;ALINE 4K BOUNDARY
2617 017712  010046                            MOV     R0,-(SP)        ;SAVE HIGH ORDER
2618 017714  010146                            MOV     R1,-(SP)        ;SAVE LOW ORDER
2619 017716  004737  017210'                    JSR     PC,SETMAP       ;SETUP PAR6 MAPPING REGISTER
2620 017722  010004                            MOV     R0,R4           ;COPY ADDRESS BIASED TO PAR6
2621 017724  012601                            MOV     (SP)+,R1        ;RESTORE LOW ORDER IN NON PAR6 FORMAT
2622 017726  012600                            MOV     (SP)+,R0        ;RESTORE HIGH ORDER IN NON PAR6 FORMAT
2623 017730  020314                    30$:    CMP     R3,(R4)         ;ABOVE 28K LOCATION EQUAL EXPD?
2624 017732  001411                            BEQ     32$             ;BR IF YES
2625 017734  010037  002230'                    MOV     R0,ERRHI        ;SAVE HIGH ORDER IN ERROR
2626 017740  010137  002232'                    MOV     R1,ERRLO        ;SAVE LOW ORDER IN ERROR
2627 017744  010337  002224'                    MOV     R3,EXPD         ;SAVE EXPD FOR ERROR REPORT
2628 017750  011437  002226'                    MOV     (R4),RECV       ;SAVE RECV FOR ERROR REPORT
2629 017754  000421                            BR      50$             ;
2630 017756  062701  000002            32$:    ADD     #2,R1           ;UPDATE NON PAR6 ADDRESS
2631 017762  005500                            ADC     R0              ;MAKE IT DOUBLE PRECISION ADD
2632 017764  062704  000002                    ADD     #2,R4           ;UPDATE PAR FORMAT ADDRESS
2633 017770  020427  160000                    CMP     R4,#160000      ;END OF PAR6 MAPPING AREA?
2634 017774  103755                            BLO     30$             ;BR IF NO
2635 017776  162704  020000                    SUB     #20000,R4       ;BACKUP INTO PAR6 MAPPING BEGIN
2636 020002  062737  000200  172354            ADD     #200,@#KIPAR6   ;POINT TO NEXT 4K BLOCK >28K.
2637 020010  023737  172354  003124'            CMP     @#KIPAR6,KTFLG  ;END OF MEMORY?
2638 020016  101744                            BLOS    30$             ;BR IF NO
2639 020020  004737  017166'            50$:    JSR     PC,KTOFF        ;TURN OFF MEMORY MAPPING
2640 020024  000241                            CLC                     ;SET FAILURE
2641 020026  000403                            BR      60$             ;
2642 020030  004737  017166'            55$:    JSR     PC,KTOFF        ;TURN OFF MEMORY MAPPING
2643 020034  000261                            SEC                     ;SET SUCCESS
2644 020036  000207                    60$:    RTS     PC
2645
2646                                           .SBTTL  REGSAV  - SAVE R1-R5 ON STACK
2647                                   ;+
2648                                   ;
2649                                   ;ROUTINE TO
2650                                   ;SAVE R1 THROUGH R5 ON THE STACK
2651                                   ;
2652                                   ;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
                                        ;
                                        ;-

020040                                  REGSAV:
020040  010446                                MOV     R4,-(SP)
020042  010346                                MOV     R3,-(SP)
020044  010246                                MOV     R2,-(SP)
020046  010146                                MOV     R1,-(SP)
020050  010546                                MOV     R5,-(SP)
020052  016605  000012                        MOV     10.(SP),R5
020056  004736                                JSR     PC,@(SP)+
020060  012601                                MOV     (SP)+,R1
020062  012602                                MOV     (SP)+,R2
020064  012603                                MOV     (SP)+,R3
020066  012604                                MOV     (SP)+,R4
020070  012605                                MOV     (SP)+,R5
020072  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
                                        ;
                                        ;-

020074                                  GETPAT::
020074                                          SAVREG                          ;SAVE THE GENERAL REGISTERS
020100                                  1$:     GMANID  DATASC,PATDAT,0,377,0,377,NO
020100  104443                                  TRAP    C$GMAN
020102  000406                                  BR      10000$
020104  020130'                                 .WORD   PATDAT
020106  000022                                  .WORD   T$CODE
020110  020132'                                 .WORD   DATASC
020112  000377                                  .WORD   377
020114  000000                                  .WORD   T$LOLIM
```

```
        020116  000377                          .WORD   T$HILIM
        020120                          10000$:
   2703 020120                                  BNCOMPLETE      1$      ;RETRY IF ERROR
        020120  103367                          BCC     1$
   2704 020122  013700  020130'                 MOV     PATDAT,R0       ;DATA PATTERN FROM OPERATOR
   2705 020126  000207                          RTS     PC              ;RETURN TO CALLER
   2706
   2707                                 ;+
   2708                                 ;LOCAL DATA AREA
   2709                                 ;-
   2710
   2711 020130  000000                  PATDAT: .WORD   0               ;TEMPORARY STORAGE FOR DATA
   2712 020132     105     116     124  DATASC: .ASCIZ  'ENTER DATA PATTERN'
   2713                                          .EVEN
   2714
   2715                                          .SBTTL  GETSEL  - ISSUE MENU AND GET OPERATOR RESPONSE
   2716                                 ;+
   2717                                 ;
   2718                                 ;ROUTINE TO ISSUE A MENU AND GET
   2719                                 ;THE OPERATOR'S RESPONSE.
   2720                                 ;
   2721                                 ;INPUTS:
   2722                                 ;
   2723                                 ;       R0      ADDRESS OF ASCIZ STRING OF MENU
   2724                                 ;       R1      MAXIMUM ALLOWABLE OPERATOR RESPONSE
   2725                                 ;
   2726                                 ;OUTPUTS:
   2727                                 ;
   2728                                 ;       R0      NUMBER OF THE OPERATOR'S SELECTION
   2729                                 ;
   2730                                 ;-
   2731
   2732 020156                          GETSEL::
   2733 020156                                  SAVREG                  ;SAVE GENERAL REGISTERS
   2734 020162  010002                          MOV     R0,R2           ;SAVE THE MENU ADDRESS
   2735 020164  010203                  1$:     MOV     R2,R3           ;START OF MENU STRING
   2736 020166  005713                  2$:     TST     (R3)            ;END OF ASCII ?
   2737 020170  001412                          BEQ     3$              ;BRANCH IF ALL LINES DISPLAYED
   2738 020172                                  PRINTF  @SELASC,(R3)+   ;DISPLAY THE MENU
        020172  012346                          MOV     (R3)+,-(SP)
        020174  012746  020342'                 MOV     @SELASC,-(SP)
        020200  012746  000002                  MOV     #2,-(SP)
        020204  010600                          MOV     SP,R0
        020206  104417                          TRAP    C$PNTF
        020210  062706  000006                  ADD     #6,SP
   2739 020214  000764                          BR      2$
   2740 020216                          3$:     GMANID  MENASC,MENRES,D,-1,0,-1,NO
        020216  104443                          TRAP    C$GMAN
        020220  000406                          BR      10001$
        020222  020376'                         .WORD   MENRES
        020224  000042                          .WORD   T$CODE
        020226  020347'                         .WORD   MENASC
        020230  177777                          .WORD   -1
        020232  000000                          .WORD   T$LOLIM
        020234  177777                          .WORD   T$HILIM
        020236                          10001$:
   2741 020236                                  BNCOMPLETE      1$      ;RETRY IF ERROR
```

```
      020236  103352                          BCC     1$
 2742 020240  013700  020376'                 MOV     MENRES,R0       ;GET THE OPERATOR'S REPLY
 2743 020244  020001                          CMP     R0,R1           ;COMPARE TO MAXIMUM ALLOWED
 2744 020246  101411                          BLOS    5$              ;BRANCH IF OK
 2745 020250                                  PRINTF  @MENERR         ;DISPLAY ERROR MESSAGE
      020250  012746  020274'                 MOV     @MENERR,-(SP)
      020254  012746  000001                  MOV     #1,-(SP)
      020260  010600                          MOV     SP,R0
      020262  104417                          TRAP    C$PNTF
      020264  062706  000004                  ADD     #4,SP
 2746 020270  000735                          BR      1$              ;RETRY
 2747 020272  000207                  5$:     RTS     PC              ;RETURN TO CALLER
 2748 020274     045     116     045  MENERR: .ASCIZ  '%N%A *** Menu Selection Too Large ***'
 2749 020342     045     116     045  SELASC: .ASCIZ  '%N%T'
 2750 020347     105     156     164  MENASC: .ASCIZ  'Enter Menu Selection: '
 2751                                          .EVEN
 2752 020376  000000                  MENRES:         .WORD   0
 2753
 2754                                          .SBTTL  CHKMAN  - CHECK MANUAL INTERVENTION LEGALITY
 2755                                  ;+
 2756                                  ;
 2757                                  ;ROUTINE TO TEST FOR MANUAL INTERVENTION LEGALITY.
 2758                                  ;
 2759                                  ;INPUT:
 2760                                  ;
 2761                                  ;       NONE.
 2762                                  ;
 2763                                  ;OUTPUT:
 2764                                  ;
 2765                                  ;       CARRY   0       MANUAL INTERVENTION NOT ALLOWED
 2766                                  ;               1       MANUAL INTERVENTION IS OK
 2767                                  ;
 2768                                  ;SIDE EFFECTS:
 2769                                  ;
 2770                                  ;       A MESSAGE IS DISPLAYED WARNING THAT TEST IS
 2771                                  ;       NOT EXECUTED IF MANUAL INTERVENTION IS NOT
 2772                                  ;       ALLOWED.
 2773                                  ;
 2774                                  ;-
 2775
 2776 020400                          CHKMAN::
 2777 020400                                  SAVREG                  ;SAVE THE REGISTERS
 2778 020404                                  MANUAL                  ;SEE IF MANUAL INTERVENTION OK
      020404  104450                          TRAP    C$MANI
 2779 020406                                  BCOMPLETE 1$            ;BRANCH IF ALLOWED
      020406  103411                          BCS     1$
 2780 020410                                  PRINTF  @NOMAN          ;PRINT THE WARNING MESSAGE
      020410  012746  020434'                 MOV     @NOMAN,-(SP)
      020414  012746  000001                  MOV     #1,-(SP)
      020420  010600                          MOV     SP,R0
      020422  104417                          TRAP    C$PNTF
      020424  062706  000004                  ADD     #4,SP
 2781 020430  000241                          CLC                     ;CLEAR CARRY FOR ERROR
 2782 020432  000207                  1$:     RTS     PC              ;RETURN
 2783
 2784 020434     045     116     045  NOMAN:  .ASCIZ  '%N%A *** Manual Intervention not Allowed - Test Aborted ***'
 2785                                          .even
```

```
                                        .SBTTL  ENVIRN  - SETUP FREE DIAGNOSTIC SPACE
                                ;
                                ; SUBROUTINE TO SET-UP VARIOUS ENVIRONMENTAL PARAMETERS.
                                ;
020530                          ENVIRN: MEMORY  R0
020530  104431                          TRAP    C$MEM
020532  010037  003116'                 MOV     R0,FREE         ; GET 1ST FREE ADDRESS...
020536  062737  000002  003116'         ADD     #2,FREE
020544  011037  003120'                 MOV     (R0),FRESIZ     ;...AND WORD COUNT.
020550  162737  000004  003120'         SUB     #4,FRESIZ
020556  013702  002012'                 MOV     L$UNIT,R2       ; GET NUMBER OF UNITS
020562  162737  000007  003120'  10$:    SUB     #7,FRESIZ       ; TAKE AWAY 7 WORDS PER UNIT
020570  005302                          DEC     R2
020572  001373                          BNE     10$
020574  013700  003116'                 MOV     FREE,R0         ;GET FIRST FREE ADDRESS
020600  063700  003120'                 ADD     FRESIZ,R0       ;POINT TO LAST FREE ADDRESS
020604  162700  000002                 SUB     #2,R0           ;BACKUP 1 WORD
020610  010037  003122'                 MOV     R0,FREEHI       ;STORE LAST FREE ADDRESS
020614  000207                  40$:    RTS     PC              ;RETURN

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

020616                          KTINIT:
020616  005037  003124'                 CLR     KTFLG           ; INIT >28K MEMORY FLAG
020622  005037  003126'                 CLR     KTENABLE        ; INIT TEST >28K FLAG
020626  023727  002120'  001577         CMP     L$HIME,#1577    ; GOT ENOUGH MEMORY (>28K)?
020634  101453                          BLOS    9$              ; NO.
020636  023727  002120'  001777         CMP     L$HIME,#1777    ; GOT ENOUGH MEMORY (>32K)?
020644  101447                          BLOS    9$              ; NO.
020646  013700  000004                 MOV     @#ERRVEC,R0     ; SAVE OLD ERR VEC PTR.
020652  012737  020744'  000004         MOV     #2$,@#ERRVEC    ; SET ERR VEC PTR.
020660  005737  177572                 TST     @#SR0           ; GOT KT11?
020664  000240                          NOP                     ;  (TRAP IF NO).
020666  013737  002120'  003124'         MOV     L$HIME,KTFLG    ; YES. SET KT FLAG.
020674  042737  000177  003124'         BIC     #177,KTFLG      ;
020702  010037  000004                 MOV     R0,@#ERRVEC     ; RESTORE OLD ERR VEC PTR.
020706  005000                          CLR     R0              ; R0 = AR DATA.
020710  012701  172340                 MOV     #KIPAR0,R1      ; R1 = KI REGS PTR.
020714  012761  077406  177740  1$:     MOV     #77406,-40(R1)  ; SET DESCRIPTOR REG.
020722  010021                          MOV     R0,(R1)+        ; SET KIPAR REG.
020724  062700  000200                 ADD     #200,R0         ; BUMP AR DATA BY "4K".
020730  020027  002000                 CMP     R0,#2000        ; AT "I/O"?
020734  001367                          BNE     1$              ; NO.
020736  012741  177600                 MOV     #177600,-(R1)   ; YES. SET KTPAR7 FOR I/O.
020742  000410                          BR      9$

020744  012716  020760'          2$:    MOV     #6$,(SP)        ; SET UP RETURN
020750  000002                          RTI                     ; RTI TO NEXT LOCATION

020752  012716  021006'          3$:    MOV     #10$,(SP)       ; SET UP RETURN
```

```
2842 020756  000002                        RTI                     ; RTI TO NEXT LOCATION
2843
2844 020760  010037  000004          6$:    MOV     R0,@#ERRVEC     ; RESTORE OLD ERR VEC PTR.
2845
2846 020764                          9$:
2847 020764  013700  000004                 MOV     @#ERRVEC,R0     ; SAVE OLD ERR VEC PTR.
2848 020770  012737  020752' 000004         MOV     #3$,@#ERRVEC    ; SET ERR VEC PTR.
2849 020776  042737  000001  170200         BIC     #BIT0,@#MMR0    ;BE SURE UNIBUS MAP IS OFF
2850 021004  000240                         NOP
2851 021006  010037  000004          10$:   MOV     R0,@#ERRVEC     ; RESET VECTOR BACK TO ERROR POINTER
2852 021012  000207                         RTS     PC
2853
2854
2855                                 ;+
2856                                 ;       SUBROUTINE TO SET EXTENDED FEATURES SWITCH
2857                                 ;
2858                                 ;       Requires that SOFINIT and WRTCHR have been done previous to call.
2859                                 ;
2860                                 ;
2861                                 ;INPUTS:
2862                                 ;       R5      CURRENT UNIT NUMBER
2863                                 ;OUTPUTS:
2864                                 ;       The Extended Features Switch is set.
2865                                 ;
2866                                 ;-
2867
2868 021014                          INVERT::
2869
2870 021014  005737  002220'                TST     EXTFEA                  ; IS SWITCH SET?
2871 021020  001020                         BNE     1$                      ; YES,EXIT STAGE RIGHT!(or the next one outa town!)
2872 021022  012737  100206  021070'        MOV     #100206,CMDPKT          ; WRT SUB-SYS MEM CMD
2873 021030  012737  021100' 021072'        MOV     #WSMBK,CMDPKT+2         ; MSG BUF ADDR
2874 021036  012737  000006  021076'        MOV     #6,CMDPKT+6             ; BYTE COUNT
2875 021044  012737  100010  021100'        MOV     #100010,WSMBK           ; INVERT THE SWITCH
2876 021052  012704  021070'                MOV     #CMDPKT,R4              ; SET CMDPKT INTO R4
2877 021056  004737  010552'                JSR     PC,WRTCHR               ; DO IT
2878 021062  000207                  1$:    RTS     PC                      ; RETURN
2879
2880
2881                                 ;       COMMAND PACKET.
2882
2884 021064                                 .BLKB   10-<.-TSV2&7>
2886
2887 021070  000000                  CMDPKT:: 0                      ;1ST WORD IS TSO5 COMMAND.
2888 021072  000000                           0                      ;2ND WORD IS THE BUFFER LOW ADDRESS.
2889 021074  000000                           0                      ;3RD WORD IS THE BUFFER HIGH ADDRESS.
2890 021076  000000                           0                      ;4TH WORD IS THE BYTE/RECORD/FILE COUNT.
2891
2892
2893                                 ;       WRITE SUB-SYSTEM MEMORY CHARACTERISTIC BLOCK.
2894
2895 021100  000000                  WSMBK::  0                      ;1ST WORD:: SEL 0
2896 021102  000000                           0                      ;2ND WORD:: SEL 2
2897 021104  000000                           0                      ;3RD WORD:: SEL 4
2898                                         .EVEN
2899
2900                                 ;+
```

```
                                        ;       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.
                                        ;-
                                        MEMCK::
                                                SAVREG                          ;SAVE THE REGISTERS
                                                CLR     NXMFLG                  ;CLEAR THE FLAG
                                                CLR     NXMLO                   ;CLEAR THE TEST ADDRESS LO
                                                CLR     NXMHI                   ;CLEAR THE TEST ADDRESS HI
                                                BIT     #170000,L$HIME          ;CHECK FOR MORE THAN 18 BITS INDICATED
                                                                                ;FROM THE SUPERVISOR
                                                BNE     14$                     ;BR, IF MAP BOX ETC.
                                                TST     T23B                    ;IS IT A PROCESSOR TYPE B?
                                                BEQ     1$                      ;NO
                                                CMP     L$HIME,#7777            ; GREATER THAN 128K
                                                BLO     2$                      ; NO
                                                JSR     PC,NXMTST               ;SETUP THE ADDRESS
                                                BR      13$                     ;SET THE FLAG AND EXIT
                                        1$:     TST     T23A                    ;IS IT A PROCESSOR TYPE A?
                                                BEQ     4$                      ;NO
                                        2$:     CMP     L$HIME,#5777            ;GREATER THAN 96K
                                                BHI     14$                     ;YES,23A/23B WITH 128K MEMORY
                                                CMP     L$HIME,#3777            ;GREATER THAN 64K BUT LESS THAN 92K?
                                                BLO     4$                      ;NO, CHECK 24K
                                                JSR     PC,NXMTST               ;SETUP THE ADDRESS
                                                BR      13$                     ;SET THE FLAG AND EXIT
                                        4$:     CMP     L$HIME,#1577            ;GREATER THAN 24K BUT LESS THAN 64K?
                                                BLO     14$                     ;NO, TELL THEM AND EXIT WITH FLAG CLEAR
                                                JSR     PC,NXMTST               ;SETUP THE ADDRESS
                                                ADD     #77,NXMHI               ;FOOL THE 11/02 & 11/03
                                        13$:    BIT     #177774,NXMHI           ;ANY MORE THAN 18 BITS SET?
                                                BNE     15$                     ;BR, IF MORE THAN 18 BITS SET
                                                INC     NXMFLG                  ;SET THE FLAG
                                                BR      15$                     ;EXIT
                                        14$:    BR      15$                     ;NOP FOR PRINTOUT
                                                PRINTF  @NOMEM                  ;TELL THEM & EXIT ***NO PRINT*****
                                                MOV     @NOMEM,-(SP)
                                                MOV     #1,-(SP)
                                                MOV     SP,R0
                                                TRAP    C$PNTF
                                                ADD     #4,SP
                                        15$:    RTS     PC                      ;RETURN


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

```
2953 021302  013701  002120'        NXMTST: MOV     L$HIME,R1       ;GET TOP OF MEMORY
2954 021306  062701  000200                ADD     #200,R1         ;MAKE IT I/O BLOCK OR OTHER NXM
2955 021312  042701  000177                BIC     #177,R1
2956 021316  010102                        MOV     R1,R2           ;RESAVE RESULTS
2957         000006                        .REPT   6
2958                                       ASL     R1              ;PUT IN PLACE FOR XFER
2959                                       .ENDR
2960 021334  010137  003132'                MOV     R1,NXMLO        ;SAVE TEST ADDRESS LOW
2961         000012                        .REPT   10.
2962                                       ASR     R2              ;PUT IN PLACE FOR XFER
2963                                       .ENDR
2964 021364  042702  177700                BIC     #177700,R2      ;DON'T WANT ILA!
2965 021370  010237  003134'                MOV     R2,NXMHI        ;SAVE TEST ADDRESS HIGH
2966 021374  000207                        RTS     PC              ;RETURN
2967
2968
2969
2970
2971 021376                                ENDMOD
```

```
                                        .TITLE  TSV4 - MISCELLANEOUS SECTIONS

021376                                  BGNMOD  TSV4
021376                          TSV4::

                                        .SBTTL  PROTECTION TABLE
021376                                  BGNPROT
021376                          L$PROT::
021376  177777  177777  177777        .WORD   -1, -1, -1, -1          ;NO DEVICE PROTECTION REQUIRED.
021406                                  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
                                ;-
021406                                  BGNINIT
021406                          L$INIT::
021406  005037  002220'        40$:    CLR     EXTFEA
021412  005037  003130'                CLR     NXMFLG
021416  012737  006166' 002172'        MOV     @EPRT1,EPRTSW           ;SET UP PRIMARY MESSAGE FOR REPLACEMENT
021424  005037  003146'                CLR     SIFLAG                  ;CLEAR "SOFT INIT" FLAG
021430  005037  003126'                CLR     KTENABLE                ;CLEAR TEST ABOVE 28K FLAG
021434  005037  002274'                CLR     RAMSIZ                  ;CLEAR RAM SIZE FOR RAMERR ROUTINE
021440                                  READEF  @EF.CONTINUE
021440  012700  000036                MOV     @EF.CONTINUE,R0
021444  104447                        TRAP    C$REFG
021446                                  BNCOMPLETE 1$
021446  103023                        BCC     1$
021450  023737  002174' 002012'        CMP     UNITN,L$UNIT            ;UNIT IN RANGE?
021456  103070                        BHIS    4$                      ;BR IF NO.
021460  005737  003104'                TST     DUFLG                   ;DROPPED UNIT?
021464  100472                        BMI     NXTU                    ;BR IF YES
021466  013701  002174'                MOV     UNITN,R1
021472  006301                        ASL     R1
021474  005761  003170'                TST     ERTABL(R1)
021500  001516                        BEQ     SETU
021502  032761  040000  003170'        BIT     @BIT14,ERTABL(R1)       ;DROPPED?
021510  001060                        BNE     NXTU
021512                                  EXIT    INIT                    ;DO NOTHING IF "CONTINUE".
021512  104432                        TRAP    C$EXIT
021514  000416                        .WORD   L10030-.
021516                          1$:     READEF  @EF.NEW
021516  012700  000035                MOV     @EF.NEW,R0
021522  104447                        TRAP    C$REFG
021524                                  BNCOMPLETE NXTU                 ;TAKE NEXT UNIT IF NOT NEW PASS.
021524  103052                        BCC     NXTU
021526                                  READEF  @EF.START
```

```
                021526  012700  000040                  MOV     #EF.START,R0
                021532  104447                          TRAP    C$REFG
            57  021534                                  BCOMPLETE 2$
                021534  103404                          BCS     2$
            58  021536                                  READEF  #EF.RESTART
                021536  012700  000037                  MOV     #EF.RESTART,R0
                021542  104447                          TRAP    C$REFG
            59  021544                                  BNCOMPLETE 31$
                021544  103031                          BCC     31$
            60  021546                          2$:                             ;1ST PASS, BUS-INIT...
            61  021546                                  BRESET                  ;BUS RESET.
                021546  104433                          TRAP    C$RESET
            62  021550  005037  002206'                CLR     TSTCNT          ;NUMBER OF TESTS RUN IN PASS
            63  021554  005037  002214'                CLR     FATFLG          ;CLEAR FATAL ERROR COUNT
            64  021560  005037  003136'                CLR     T23A            ;CLEAR PROCSSOR TYPE A FLAG
            65  021564  005037  003140'                CLR     T23B            ;CLEAR PROCSSOR TYPE B FLAG
            66                          ;               MOV     #340,-(SP)
            67                          ;               MOV     #20$,-(SP)      ;RETURN TO DEBUGGER
            68                          ;               JMP     0.ODT       ;;@@ENTER THE DEBUGGER
            69  021570  005037  003372'                CLR     SKIPT       ;CLEAR THE SUBTEST "SKIPPER"
            70  021574                          20$:
            71  021574  012737  177777  002176'        MOV     #-1,QVP         ;...QUICK VERIFY...
            72  021602  004737  020530'                JSR     PC,ENVIRN       ;SET ENVIRONMENT.
            73  021606  004737  020616'                JSR     PC,KTINIT       ;INITIALIZE KT MEMORY MANAGEMENT
            74  021612  012700  003170'                MOV     #ERTABL,R0
            75  021616  005020                  30$:    CLR     (R0)+           ;CLEAR THE ERROR TABLE
            76  021620  020027  003370'                CMP     R0,#ERTABE
            77  021624  103774                          BLO     30$
            78  021626  000404                          BR      4$
            79  021630  005037  002176'          31$:    CLR     QVP
            80  021634  000137  021704'                JMP     PASRPT          ;GO REPORT THE STATUS
            81
            82  021640                          4$:
            83  021640  012737  177777  002174' NEWPAS: MOV     #-1,UNITN       ;INIT UNIT NUMBER...
            84  021646  005037  002212'                CLR     DEVCNT          ;CLEAR COUNT OF DEVICES RUNNING
            85  021652                          NXTU:   BREAK
                021652  104422                          TRAP    C$BRK
            86  021654  005237  002174'                INC     UNITN           ;...AND SET NEXT UNIT NUMBER.
            87  021660  023737  002174' 002012'        CMP     UNITN,L$UNIT
            88  021666  103423                          BLO     SETU
            89  021670  012737  177777  003104'        MOV     #-1,DUFLG
            90  021676  000401                          BR      11$
            91  021700                                  DOCLN                   ;ABORT, NO MORE UNITS.
                021700  104444                          TRAP    C$DCLN
            92  021702  000240                  11$:    NOP
            93  021704                          PASRPT:
            94  021704  023727  002012' 000001        CMP     L$UNIT,#1       ;HOW MANY UNITS SELECTED?
            95  021712  101752                          BLOS    NEWPAS          ;BR IF ONLY 1
            96  021714  005737  002212'                TST     DEVCNT          ;ARE ANY STILL RUNNING?
            97  021720  001747                          BEQ     NEWPAS          ;BR IF NO
            98  021722                                  RFLAGS  R0
                021722  104421                          TRAP    C$RFLA
            99  021724  032700  000100                BIT     #ISR,R0         ;SHOULD WE PRINT STATISTICS
           100  021730  001343                          BNE     NEWPAS          ;BR IF NO
           101
           102  021732                                  DORPT
                021732  104424                          TRAP    C$DRPT
```

```
                                        BR      NEWPAS
                                10$:
                                SETU:   GPHARD  UNITN,R0               ;GET UNIT N P-TABLE POINTER.
021736  013700  002174'                MOV     UNITN,R0
021742  104442                        TRAP    C$GPHRD
021744                                  BNCOMPLETE NXTU                 ;BR IF UNIT NOT AVAILABLE.
021744  103342                        BCC     NXTU
021746  005037  003104'                CLR     DUFLG                   ;CLEAR "DROPPED" FLAG.
021752  005237  002212'                INC     DEVCNT
021756  012001                        MOV     (R0)+,R1                ;GET 1ST REGISTER ADDRESS.
021760  010137  002200'                MOV     R1,CSRADDR              ;ADDRESS OF REGISTERS OF UNIT UNDER TEST

021764  012001                        MOV     (R0)+,R1                ;GET VECTOR ADDRESS.
                                        ;MOV    (R0),R2                 ;GET INTERRUPT PRIORITY
                                        ;MOV    R2,IPRI                 ;SET INTERRUPT PRIORITY.
021766  010137  002202'                MOV     R1,IVEC                 ;SET INTERRUPT VECTOR POINTER...
021772  012721  016106'                MOV     #INTR,(R1)+             ;...VECTOR...
021776  013721  002204'                MOV     IPRI,(R1)+              ;...AND PRIORITY.

022002                          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.
                                ;
022002  013701  002174'                MOV     UNITN,R1
022006  006301                        ASL     R1
022010  052761  100000  003170'        BIS     #BIT15,ERTABL(R1)       ;SAY DEVICE RUNNING
022016  005037  005600'                CLR     EXTA                    ;CLEAR ERROR EXTENSION FLAG.
022022  023727  002012'  000001        CMP     L$UNIT,#1               ;ARE WE TESTING MULTIPLE UNITS?
022030  101416                        BLOS    10$                     ;BR IF NO.
022032                                  RFLAGS  R0                      ;YES -- GET OPERATOR FLAGS.
022032  104421                        TRAP    C$RFLA
022034  032700  001000                BIT     #PNT,R0                 ;SHOULD WE PRINT UNIT #?
022040  001412                        BEQ     10$                     ;BR IF NOT.
022042                                  PRINTF  #PUNIT,UNITN            ;PRINT THE UNIT #
022042  013746  002174'                MOV     UNITN,-(SP)
022046  012746  022134'                MOV     #PUNIT,-(SP)
022052  012746  000002                MOV     #2,-(SP)
022056  010600                        MOV     SP,R0
022060  104417                        TRAP    C$PNTF
022062  062706  000006                ADD     #6,SP
022066                          10$:
022066  005037  003106'                CLR     NODEV
022072  013701  002200'                MOV     CSRADDR,R1              ;ADDRESS OF FIRST REGISTER
022076  010102                        MOV     R1,R2                   ;START OF REGISTERS
022100  062702  000002                ADD     #TSSR,R2                ;ADDRESS OF TSSR REGISTER
022104  004737  016266'                JSR     PC,XNXM                 ;TEST BOTH CONTROLLER REGISTERS...
022110  103005                        BCC     2$                      ;...AND BR IF ALL OK.
022112  010137  003106'                MOV     R1,NODEV                ;FLAG DEVICE AS NON-EXISTENT
022116  012737  177777  003104'        MOV     #-1,DUFLG               ;DROP THIS UNIT.
022124                          2$:
                                ;
                                ;FINALLY, SET CPU PRIORITY AND WE'RE DONE.
```

```
                                        ;
                                5$:     SETPRI  #PRIOO          ;ENABLE INTERRUPTS.
022124  012700  000000                  MOV     #PRIOO,R0
022130  104441                         TRAP    C$SPRI
                                        ENDINIT
022132                          L10030:
022132  104411                         TRAP    C$INIT

022134    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.
                                ;--
022202                                  BGNAU
022202                          L$AU::
022202  010001                         MOV     R0,R1                   ; GET UNIT TO BE ADDED (R0)
022204  006301                         ASL     R1                      ; MAKE IT A WORD INDEX
022206  052761  100000  003170'        BIS     #100000,ERTABL(R1)      ; SET THE "ACTIVE" BIT
022214  042761  040000  003170'        BIC     #40000,ERTABL(R1)       ; CLEAR THE "DROPPED" BIT
022222                                  PRINTF  #1$,R0
022222  010046                         MOV     R0,-(SP)
022224  012746  022250'                MOV     #1$,-(SP)
022230  012746  000002                 MOV     #2,-(SP)
022234  010600                         MOV     SP,R0
022236  104417                         TRAP    C$PNTF
022240  062706  000006                 ADD     #6,SP
022244                                  EXIT    AU
022244  000167                         .WORD   J$JMP
022246  000026                         .WORD   L10031-2-.
022250    045     116     045   1$:     .ASCIZ  /%N%A  UNIT %D%A ADDED/
                                        .EVEN

022276                                  ENDAU           ; UNUSED.
022276                          L10031:
022276  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.

022300                                  BGNDU
022300                          L$DU::
022300  012737  177777  003104'        MOV     #-1,DUFLG
022306  010001                         MOV     R0,R1
022310  006301                         ASL     R1
022312  052761  140000  003170'        BIS     #140000,ERTABL(R1)      ; SAY DROPPED
```

```
                                240,240,240                     ; ?????????
                                PRINTF  #1$,R0
022326  010046                  MOV     R0,-(SP)
022330  012746  022354'          MOV     #1$,-(SP)
022334  012746  000002          MOV     #2,-(SP)
022340  010600                  MOV     SP,R0
022342  104417                  TRAP    C$PNTF
022344  062706  000006          ADD     #6,SP
                                EXIT    DU
022350  000167                  .WORD   J$JMP
022352  000030                  .WORD   L10032-2-.
022354     045     116     045  1$:     .ASCIZ  /%N%A  UNIT %D%A DROPPED/
                                .EVEN
                                ENDDU
                        L10032:
022404  104453                  TRAP    C$DU
                                ;++
                                ; AUTO-DROP CODE SECTION.
                                ;--
                                BGNAUTO
                        L$AUTO::
022406  013705  002200'          MOV     CSRADDR,R5              ;POINT TO DEVICE REGISTER
022412  012703  000550          MOV     #360.,R3                ;ENOUGH TIME FOR 2400' REEL TO REWIND
022416  004737  016140'      10$:    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
022422  103420                  BCS     20$                     ;LEAVE WHEN SSR IS SET
                                DELAY   250.                    ;WAIT FOR .25 SECONDS
022424  012727  000372          MOV     #250.,(PC)+
022430  000000                  .WORD   0
022432  013727  002116'          MOV     L$DLY,(PC)+
022436  000000                  .WORD   0
022440  005367  177772          DEC     -6(PC)
022444  001375                  BNE     .-4
022446  005367  177756          DEC     -22(PC)
022452  001367                  BNE     .-20
022454  005303                  DEC     R3                      ;BUMP COUNTER DOWN
022456  001357                  BNE     10$                     ;KEEP GOING
022460  004737  017074'          JSR     PC,CKDROP               ;TRY AND DROP UNIT
022464                  20$:
                                ENDAUTO                 ; UNUSED.
                        L10033:
022464  104461                  TRAP    C$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.
                                ;--
                                BGNCLN
                        L$CLEAN::
022466  013705  002200'          MOV     CSRADDR,R5              ;POINT TO DEVICE REGISTER
022472  005737  003104'          TST     DUFLG           ;"DROPPED" FLAG IS SET ON...
022476  100405                  BMI     1$              ;...AND GROSS CONTROLLER FAULT...
                                                        ;...DON'T TRY TO XCT CLEANUP CODE.

022500  012765  000000  000002  MOV     #0,TSSR(R5)     ;DO SOFT INIT
```

```
                                        JSR     PC,WAITF
                                1$:
                                2$:     ENDCLN
                                L10034:
                                        TRAP    C$CLEAN
                                ;++
                                ; THE REPORT CODING SECTION CONTAINS THE
                                ; "PRINTS" CALLS THAT GENERATE STATISTICAL REPORTS.
                                ;--
                                        BGNRPT
                                L$RPT::
                                        PRINTS  #DEVSUM
022514  012746  022756'                  MOV     #DEVSUM,-(SP)
022520  012746  000001                  MOV     #1,-(SP)
022524  010600                          MOV     SP,R0
022526  104416                          TRAP    C$PNTS
022530  062706  000004                  ADD     #4,SP
022534  010246                          MOV     R2,-(SP)
022536  010346                          MOV     R3,-(SP)
022540  010446                          MOV     R4,-(SP)
022542  012704  003170'                  MOV     #ERTABL,R4      ; GET START OF ERROR TABLE.
022546  005003                          CLR     R3              ; CLEAR UNIT NUMBER
022550  011402                  1$:     MOV     (R4),R2         ; GET ERROR TABLE ENTRY & TEST IT.
022552  001467                          BEQ     4$              ; ZERO IF UNIT NOT RUN
022554  100066                          BPL     4$
022556  032702  040000                  BIT     #BIT14,R2       ; WAS UNIT DROPPED?
022562  001015                          BNE     2$              ; BR IF YES
022564  042702  170000                  BIC     #^C7777,R2      ; GET ERROR COUNT FIELD
022570                                  PRINTS  #DEVONL,R3,R2   ; PRINT
022570  010246                          MOV     R2,-(SP)
022572  010346                          MOV     R3,-(SP)
022574  012746  023013'                  MOV     #DEVONL,-(SP)
022600  012746  000003                  MOV     #3,-(SP)
022604  010600                          MOV     SP,R0
022606  104416                          TRAP    C$PNTS
022610  062706  000010                  ADD     #10,SP
022614  000446                          BR      4$
022616  020227  160000          2$:     CMP     R2,#160000      ; WAS UNIT NON-EXISTENT?
022622  001012                          BNE     3$              ; BR IF NO
022624                                  PRINTS  #DEVNXR,R3
022624  010346                          MOV     R3,-(SP)
022626  012746  023063'                  MOV     #DEVNXR,-(SP)
022632  012746  000002                  MOV     #2,-(SP)
022636  010600                          MOV     SP,R0
022640  104416                          TRAP    C$PNTS
022642  062706  000006                  ADD     #6,SP
022646  000431                          BR      4$
022650  020227  160001          3$:     CMP     R2,#160001      ; WAS UNIT NOT READY AT STARTUP?
022654  001012                          BNE     30$             ; BR IF NO.
022656                                  PRINTS  #DEVNRD,R3
022656  010346                          MOV     R3,-(SP)
022660  012746  023145'                  MOV     #DEVNRD,-(SP)
022664  012746  000002                  MOV     #2,-(SP)
022670  010600                          MOV     SP,R0
022672  104416                          TRAP    C$PNTS
022674  062706  000006                  ADD     #6,SP
022700  000414                          BR      4$
```

```
    256 022702  042702  170000          30$:    BIC     #^C7777,R2
    257 022706                                  PRINTS  #DEVDRO,R3,R2
        022706  010246                          MOV     R2,-(SP)
        022710  010346                          MOV     R3,-(SP)
        022712  012746  023226'                MOV     #DEVDRO,-(SP)
        022716  012746  000003                  MOV     #3,-(SP)
        022722  010600                          MOV     SP,R0
        022724  104416                          TRAP    C$PNTS
        022726  062706  000010                  ADD     #10,SP
    258 022732  062704  000002          4$:     ADD     #2,R4
    259 022736  005203                          INC     R3
    260 022740  020427  003370'                 CMP     R4,#ERTABE
    261 022744  103701                          BLO     1$
    262 022746  012604                          MOV     (SP)+,R4
    263 022750  012603                          MOV     (SP)+,R3
    264 022752  012602                          MOV     (SP)+,R2
    265 022754                                  ENDRPT          ; UNUSED.
        022754                          L10035:
        022754  104425                          TRAP    C$RPT
    266
    267
    268 022756      045     116     045 DEVSUM: .ASCIZ  /%N%ADEVICE STATUS SUMMARY:%N/
    269 023013      045     101     040 DEVONL: .ASCIZ  /%A  UNIT %D3%A    ONLINE,  ERRORS = %D%N/
    270 023063      045     101     040 DEVNXR: .ASCIZ  /%A  UNIT %D3%A    DROPPED, NON-EXISTENT REGISTER%N/
    271 023145      045     101     040 DEVNRD: .ASCIZ  /%A  UNIT %D3%A    DROPPED, NOT READY AT STARTUP%N/
    272 023226      045     101     040 DEVDRO: .ASCIZ  /%A  UNIT %D3%A    DROPPED, ERRORS = %D%N/
    273                                         .EVEN
    274
    275 023276                                  ENDMOD
    276
    277
    278
```

```
                                        .TITLE  TEST 1 - HARDWARE TEST 1-8 TESTS
                                        BGNMOD  TSV7B
023276                          TSV7B::
                                        .SBTTL  TEST  1: WRITE TAPE MARK RETRY
                                ;+
                                ;
                                ;THIS TEST VERIFIES PROPER OPERATION OF THE WRITE TAPE MARK RETRY COMMAND (SPACE
                                ;REVERSE, ERASE, WRITE TAPE MARK). SUBTESTS ARE AS FOLLOWS:
                                ;
                                ;
                                ;THE TEST CONSISTS OF THE FOLLOWING 4 SUBTESTS
                                ;
                                ;
                                ;
                                ;-
                                        BGNTST
                                                                                T1::
023276  012737  006166' 002172'        MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
023304  012700  031677'                MOV     #TST29ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
023310  004737  016402'                JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
023314  012737  000005  002210'        MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
023322  005037  026254'                CLR     T29CNT                  ;CLEAR TAPE RECORD COUNTER
023326                          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.
                                ;
                                ;
                                ;
                                ;-
023326                                  BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
                                                                                T1.1:
023326  104402                                                                  TRAP    C$BSUB
023330  004737  031726'                JSR     PC,T29REST              ;SET COMMAND PACKET
023334  004737  032020'                JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
023340  004737  032062'                JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
023344  012737  023420  026260'        MOV     #10000.,T29DLY          ;SET UP DELAY ROUTINE
023352  004737  015664'        10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
023356  103426                        BCS     20$                     ;BR IF INIT WAS OK
023360                                  DELAY   250                     ;DELAY ABOUT .25 SECONDS
023360  012727  000250                                                    MOV     #250,(PC)+
023364  000000                                                            .WORD   0
023366  013727  002116'                                                    MOV     L$DLY,(PC)+
023372  000000                                                            .WORD   0
023374  005367  177772                                                    DEC     -6(PC)
023400  001375                                                            BNE     .-4
023402  005367  177756                                                    DEC     -22(PC)
023406  001367                                                            BNE     .-20
```

```
 68 023410  005337  026260'                DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
 69 023414  001356                         BNE     10$                     ;BR, IF MORE DELAY TIME LEFT
 70 023416  005237  002214'                INC     FATFLG                          ;ERROR COUNT
 74 023422  010001                         MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 75 023424                                 ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
    023424  104455                                                                 TRAP    C$ERDF
    023426  000145                                                                 .WORD   101
    023430  003642'                                                                .WORD   SFIERR
    023432  011724'                                                                .WORD   SFIMSG
 76 023434  013737  002174' 026110' 20$:     MOV     UNITN,T29DSW            ;SET UP UNIT NUMBER
 77
 78 023442  012704  026070'                MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 79 023446  004737  010552'                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 80 023452  103407                         BCS     25$                     ;BR, IF COMMAND ISSUED OK
 81 023454  005237  002214'                INC     FATFLG                          ;ERROR COUNT
 85 023460  010001                         MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 86 023462                                 ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
    023462  104456                                                                 TRAP    C$ERHRD
    023464  000146                                                                 .WORD   102
    023466  005046'                                                                .WORD   WRTMSG
    023470  011724'                                                                .WORD   SFIMSG
 87 023472                         25$:    CKLOOP                          ;LOOP IF SELECTED
    023472  104406                                                                 TRAP    C$CLP1
 88 023474  016501  000002                 MOV     TSSR(R5),R1             ;GET THE TSSR
 89 023500  010102                         MOV     R1,R2                   ;SET UP EXPECTED
 90 023502  042702  000100                 BIC     #OFL,R2                 ;OFF LINE SHOULD NOT BE SET
 91 023506  020102                         CMP     R1,R2                   ;THEY SHOULD BE EQUAL
 92 023510  001406                         BEQ     26$                     ;BR, IF OFL IS NOT SET
 96 023512                                 ERRDF   ERRNO,T29OFL,EXPREC     ;DRIVE IS OFF LINE
    023512  104455                                                                 TRAP    C$ERDF
    023514  000147                                                                 .WORD   103
    023516  026262'                                                                .WORD   T29OFL
    023520  015364'                                                                .WORD   EXPREC
 97 023522  004737  017074'                JSR     PC,CKDROP               ;TRY AND DROP DRIVE
 98 023526  004737  010704'        26$:    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 99 023532  016501  000002                 MOV     TSSR(R5),R1             ;GET TSSR
100 023536  012702  000200                 MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
101 023542  103407                         BCS     30$                     ;BR, IF NO PROBLEM
102 023544  010004                         MOV     R0,R4                   ;PACKET ADDRESS SET UP
103 023546  005237  002214'                INC     FATFLG                          ;ERROR COUNT
107 023552                                 ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
    023552  104456                                                                 TRAP    C$ERHRD
    023554  000150                                                                 .WORD   104
    023556  030065'                                                                .WORD   T29RWN
    023560  011736'                                                                .WORD   PKTSSR
108 023562                         30$:    CKLOOP                          ;LOOP IF SELECTED
    023562  104406                                                                 TRAP    C$CLP1
109 023564  013701  026120'                MOV     T29BFR+6,R1             ;PICK UP XSTO
110 023570  010102                         MOV     R1,R2                   ;SET UP EXPECTED
111 023572  052702  000002                 BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
112 023576  020102                         CMP     R1,R2                   ;DOES EXP = REC'D
113 023600  001406                         BEQ     40$                     ;BR, IF EQUAL (OK)
114 023602  005237  002214'                INC     FATFLG                          ;ERROR COUNT
118 023606                                 ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
    023606  104456                                                                 TRAP    C$ERHRD
    023610  000151                                                                 .WORD   105
    023612  027556'                                                                .WORD   T29BOT
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  01-FEB-84 18:55                                                    SEQ 090
TEST  1: WRITE TAPE MARK RETRY

     023614  015364'                                                                          .WORD   EXPREC
 119 023616                          40$:    CKLOOP                          ;LOOP IF SELECTED
     023616  104406                                                                          TRAP    C$CLP1
 120 023620  013737  003116' 026222'        MOV     FREE,T29RB              ;ADDRESS OF READ BUFFER
 121 023626  012737  141011  026220'        MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,CVC=1,ACK COMMAND
 122 023634  012704  026220'                MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 123 023640  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 124 023644  004737  016140'                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 125 023650  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 126 023654  012702  100206                MOV     #SSR!SC!BIT1!BIT2,R2    ;SET UP EXPECTED
 127 023660  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 128 023662  001406                        BEQ     75$                     ;BR, IF OK
 129 023664  005237  002214'                INC     FATFLG                          ;ERROR COUNT
 133 023670                                ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     023670  104456                                                                          TRAP    C$ERHRD
     023672  000152                                                                          .WORD   106
     023674  027342'                                                                          .WORD   T29WDE
     023676  011736'                                                                          .WORD   PKTSSR
 134 023700                          75$:    CKLOOP                          ;LOOP IF SELECTED
     023700  104406                                                                          TRAP    C$CLP1
 135 023702  013701  026120'                MOV     T29BFR+6,R1             ;GET XSTO STATUS WORD
 136 023706  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 137 023710  052702  002000                BIS     #BIT10,R2               ;SET THE NEF BIT
 138 023714  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 139 023716  001406                        BEQ     170$                    ;BR, IF EQUAL (GOOD)
 140 023720  005237  002214'                INC     FATFLG                          ;ERROR COUNT
 144 023724                                ERRHRD  ERRNO,T29NEF,EXPREC     ;NEF SHOULD BE SET
     023724  104456                                                                          TRAP    C$ERHRD
     023726  000153                                                                          .WORD   107
     023730  026410'                                                                          .WORD   T29NEF
     023732  015364'                                                                          .WORD   EXPREC
 145 023734                          170$:
 146 023734  005103                        COM     R3                      ;RESET THE SWITCH
 147 023736  001273                        BNE     26$                     ;BR, IF FIRST TIME THROUGH HERE
 148 023740                                ENDSUB
     023740                                                                              L10037:
     023740  104403                                                                          TRAP    C$ESUB
 149 023742  023727  002214' 000017        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
 150 023750  103402                        BLO     999$                            ;BR, IF LESS THAN 25
 151 023752  004737  017074'                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
 152 023756                          999$:
 153
 154                                 ;+
 155                                 ;
 156                                 ;TEST 1, SUBTEST 2
 157                                 ;
 158                                 ;VERIFIES THAT A WRITE TAPE MARK RETRY COMMAND ISSUED WHILE THE TAPE
 159                                 ;IS POSITIONED BEFORE THE FIRST RECORD ON TAPE (BUT NOT AT BOT) RESULTS IN
 160                                 ;TAPE STATUS ALERT TERMINATION, WITH THE REVERSE INTO BOT (RIB) STATUS BIT
 161                                 ;SET.
 162                                 ;
 163                                 ;
 164                                 ;
 165                                 ;-
 166 023756                                BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     023756                                                                              T1.2:
     023756  104402                                                                          TRAP    C$BSUB
```

```
    167 023760  004737  031726'                 JSR     PC,T29REST              ;SET COMMAND PACKET
    168 023764  004737  032020'                 JSR     PC,T29RT2               ;SET UP OTHER COMMAND PACKET
    169 023770  004737  032062'                 JSR     PC,T29RT3               ;SET UP OTHER COMMAND PACKET
    170 023774  004737  015664'                 JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
    171 024000  103407                          BCS     20$                     ;BR IF INIT WAS OK
    172 024002  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
    176 024006  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
    177 024010                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
        024010  104455                                                                      TRAP    C$ERDF
        024012  000154                                                                      .WORD   108
        024014  003642'                                                                     .WORD   SFIERR
        024016  011724'                                                                     .WORD   SFIMSG
    178 024020  013737  002174' 026110' 20$:    MOV     UNITN,T29DSW            ;SET UP UNIT NUMBER
    179
    180 024026  012704  026070'                 MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
    181 024032  004737  010552'                 JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
    182 024036  103407                          BCS     25$                     ;BR, IF COMMAND ISSUED OK
    183 024040  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
    187 024044  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
    188 024046                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        024046  104456                                                                      TRAP    C$ERHRD
        024050  000155                                                                      .WORD   109
        024052  005046'                                                                     .WORD   WRTMSG
        024054  011724'                                                                     .WORD   SFIMSG
    189 024056                          25$:    CKLOOP                          ;LOOP IF SELECTED
        024056  104406                                                                      TRAP    C$CLP1
    190 024060  004737  010704'         26$:    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
    191 024064  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR
    192 024070  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED TSSR
    193 024074  103407                          BCS     30$                     ;BR, IF NO PROBLEM
    194 024076  010004                          MOV     R0,R4                   ;PACKET ADDRESS SET UP
    195 024100  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
    199 024104                                  ERRHRD  ERRNO,T29RWN,PKTSSR     ;REWIND NOT ACCEPTED
        024104  104456                                                                              TRAP    C$ERHRD
        024106  000156                                                                              .WORD   110
        024110  030065'                                                                             .WORD   T29RWN
        024112  011736'                                                                             .WORD   PKTSSR
    200 024114                          30$:    CKLOOP                          ;LOOP IF SELECTED
        024114  104406                                                                              TRAP    C$CLP1
    201 024116  013701  026120'                 MOV     T29BFR+6,R1             ;PICK UP XSTO
    202 024122  010102                          MOV     R1,R2                   ;SET UP EXPECTED
    203 024124  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
    204 024130  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
    205 024132  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
    206 024134  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
    210 024140                                  ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        024140  104456                                                                              TRAP    C$ERHRD
        024142  000157                                                                              .WORD   111
        024144  027556'                                                                             .WORD   T29BOT
        024146  015364'                                                                             .WORD   EXPREC
    211 024150  012737  000001  026222' 40$:    MOV     #1,T29RB                ;NUMBER OF RECORDS TO SPACE OVER
    212 024156  012737  000400  026226'         MOV     #256.,T29SZ             ;SET UP RECORD SIZE
    213 024164  012737  140005  026220'         MOV     #140005,T29PK3          ;WRITE FORWARD,CVC=1,ACK COMMAND
    214 024172  012704  026220'                 MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
    215 024176  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
    216 024202  004737  016140'                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    217 024206  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  01-FEB-84 18:55                                    SEQ 092
TEST  1: WRITE TAPE MARK RETRY

    218 024212  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
    219 024216  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
    220 024220  001420                          BEQ     75$                     ;BR, IF OK
    221 024222  013703  026120'                 MOV     T29BFR+6,R3             ;PICK UP XTSO
    222 024226  032703  000004                  BIT     #4,R3                   ;IS UNIT WRITE-LOCKED?
    223 024232  001405                          BEQ     41$                     ;NO,PROCEED WITH NORMAL ERROR
    224 024234                                  ERRDF   ERRNO,T29WLK,SFIMSG     ;TAPE IS WRITE LOCKED
        024234  104455                                                              TRAP    C$ERDF
        024236  000157                                                              .WORD   111
        024240  027424'                                                             .WORD   T29WLK
        024242  011724'                                                             .WORD   SFIMSG
    225 024244                                  DOCLN                           ;DROP IT
        024244  104444                                                              TRAP    C$DCLN
    226 024246  005237  002214'         41$:    INC     FATFLG                          ;ERROR COUNT
    230 024252                                  ERRHRD  ERRNO,T29WRT,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        024252  104456                                                              TRAP    C$ERHRD
        024254  000160                                                              .WORD   112
        024256  027511'                                                             .WORD   T29WRT
        024260  011736'                                                             .WORD   PKTSSR
    231 024262                          75$:    CKLOOP                          ;LOOP IF SELECTED
        024262  104406                                                              TRAP    C$CLP1
    232 024264  012737  000001  026222'         MOV     #1,T29RB                ;NUMBER OF RECORDS TO SPACE OVER
    233 024272  012737  140410  026220'         MOV     #140410,T29PK3          ;SET UP COMMAND IN APCKET                       ;SET
UP SPACE REVERSE
    234 024300  012704  026220'                 MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
    235 024304  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
    236 024310  004737  016140'                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    237 024314  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
    238 024320  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
    239 024324  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
    240 024326  001406                          BEQ     175$                    ;BR, IF OK
    241 024330  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
    245 024334                                  ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
        024334  104456                                                              TRAP    C$ERHRD
        024336  000161                                                              .WORD   113
        024340  027342'                                                             .WORD   T29WDE
        024342  011736'                                                             .WORD   PKTSSR
    246 024344                          175$:   CKLOOP                          ;LOOP IF SELECTED
        024344  104406                                                              TRAP    C$CLP1
    247 024346  013737  003116' 026222'         MOV     FREE,T29RB              ;ADDRESS OF BUFFER
    248 024354  012737  141011  026220'         MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMD.
    249 024362  012704  026220'                 MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
    250 024366  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
    251 024372  004737  016140'                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    252 024376  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
    253 024402  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
    254 024406  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
    255 024410  001406                          BEQ     180$                    ;BR, IF OK
    256 024412  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
    260 024416                                  ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
        024416  104456                                                              TRAP    C$ERHRD
        024420  000162                                                              .WORD   114
        024422  027342'                                                             .WORD   T29WDE
        024424  011736'                                                             .WORD   PKTSSR
    261 024426                          180$:   CKLOOP                          ;LOOP IF SELECTED
        024426  104406                                                              TRAP    C$CLP1
    262 024430  013701  026126'                 MOV     T29BFR+14,R1            ;GET XST3 STATUS WORD
    263 024434  010102                          MOV     R1,R2                   ;SET UP EXPECTED
```

```
                                        BIS     #BIT0,R2                ;SET THE RIB BIT
                                        CMP     R1,R2                   ;ARE THEY EQUAL
                                        BEQ     190$                    ;BR, IF EQUAL (GOOD)
                                        INC     FATFLG                          ;ERROR COUNT
                                        ERRHRD  ERRNO,T29RIB,EXPREC     ;NEF SHOULD BE SET
024452  104456                                                                  TRAP    C$ERHRD
024454  000163                                                                  .WORD   115
024456  031504'                                                                 .WORD   T29RIB
024460  015364'                                                                 .WORD   EXPREC
                                190$:
                                        ENDSUB                          ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
024462                                                                          L10040:
024462  104403                                                                  TRAP    C$ESUB
                                        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
                                        BLO     999$                            ;BR, IF LESS THAN 25
                                        JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
                                999$:
                                ;*
                                ;
                                ;TEST 1, SUBTEST 3
                                ;
                                ;VERIFIES THAT A WRITE TAPE MARK RETRY COMMAND TERMINATES
                                ;PROPERLY AND WRITES THE TAPE MARK ONTO TAPE (BY ISSUING A READ REVERSE
                                ;COMMAND AND CHECKING FOR TAPE STATUS ALERT TERMINATION AND TMK=1).
                                ;
                                ;-
                                        BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
024500                                                                          T1.3:
024500  104402                                                                  TRAP    C$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$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
                                        BCS     20$                     ;BR IF INIT WAS OK
                                        DELAY   250                     ;DELAY ABOUT .25 SECONDS
024532  012727  000250                                                          MOV     #250.,(PC)+
024536  000000                                                                  .WORD   0
024540  013727  002116'                                                         MOV     L$DLY,(PC)+
024544  000000                                                                  .WORD   0
024546  005367  177772                                                         DEC     -6(PC)
024552  001375                                                                  BNE     .-4
024554  005367  177756                                                         DEC     -22(PC)
024560  001367                                                                  BNE     .-20
                                        DEC     T29DLY                  ;BUMP DELAY ROUTINE DOWN
                                        BNE     10$                     ;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
024576  104455                                                                  TRAP    C$ERDF
024600  000164                                                                  .WORD   116
024602  003642'                                                                 .WORD   SFIERR
024604  011724'                                                                 .WORD   SFIMSG
                                20$:    MOV     UNITN,T29DSW            ;SET UP DRIVE NUMBER
                                        MOV     #T29PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
                                        JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
```

```
    307 024624  103407                    BCS     23$                 ;BR, IF COMMAND ISSUED OK
    308 024626  005237  002214'                INC     FATFLG                      ;ERROR COUNT
    312 024632  010001                    MOV     R0,R1               ;SAVE CONTENTS OF TSSR
    313 024634                            ERRHRD  ERRNO,WRTMSG,SFIMSG ;WRITE CHARACTERISTISC FAILED
        024634  104456                                                        TRAP    C$ERHRD
        024636  000165                                                        .WORD   117
        024640  005046'                                                      .WORD   WRTMSG
        024642  011724'                                                      .WORD   SFIMSG
    314 024644                        23$:    CKLOOP                      ;LOOP IF SELECTED
        024644  104406                                                        TRAP    C$CLP1
    315 024646  004737  010704'            JSR     PC,REWIND           ;CALL TAPE REWIND COMMAND
    316 024652  103411                    BCS     30$                 ;BR, IF NO PROBLEM
    317 024654  016501  000002            MOV     TSSR(R5),R1         ;GET TSSR
    318 024660  010004                    MOV     R0,R4               ;SAVE PACKET ADDRESS
    319 024662  005237  002214'                INC     FATFLG                      ;ERROR COUNT
    323 024666                            ERRHRD  ERRNO,T29RWN,PKTSSR ;REWIND NOT ACCEPTED
        024666  104456                                                        TRAP    C$ERHRD
        024670  000166                                                        .WORD   118
        024672  030065'                                                      .WORD   T29RWN
        024674  011736'                                                      .WORD   PKTSSR
    324 024676                        30$:    CKLOOP                      ;LOOP IF SELECTED
        024676  104406                                                        TRAP    C$CLP1
    325 024700  013701  026120'            MOV     T29BFR+6,R1         ;PICK UP XSTO
    326 024704  010102                    MOV     R1,R2               ;SET UP EXPECTED
    327 024706  052702  000002            BIS     #BIT1,R2            ;SET BOT BIT IN EXPECTED
    328 024712  020102                    CMP     R1,R2               ;DOES EXP = REC'D
    329 024714  001406                    BEQ     40$                 ;BR, IF EQUAL (OK)
    330 024716  005237  002214'                INC     FATFLG                      ;ERROR COUNT
    334 024722                            ERRHRD  ERRNO,T29BOT,EXPREC ;TAPE NOT AT BOT AFTER REWIND
        024722  104456                                                        TRAP    C$ERHRD
        024724  000167                                                        .WORD   119
        024726  027556'                                                      .WORD   T29BOT
        024730  015364'                                                      .WORD   EXPREC
    335 024732                        40$:    CKLOOP                      ;LOOP IF SELECTED
        024732  104406                                                        TRAP    C$CLP1
    336 024734  012737  140011  026220'      MOV     #140011,T29PK3      ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
    337 024742  012704  026220'            MOV     #T29PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
    338 024746  010465  000000            MOV     R4,TSDB(R5)         ;ISSUE COMMAND
    339 024752  004737  016140'            JSR     PC,WAITF            ;WAIT FOR SSR TO SET
    340 024756  016501  000002            MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
    341 024762  012702  000200            MOV     #SSR,R2             ;SET UP EXPECTED
    342 024766  020102                    CMP     R1,R2               ;ARE THEY EQUAL
    343 024770  001406                    BEQ     70$                 ;BR, IF OK
    344 024772  005237  002214'                INC     FATFLG                      ;ERROR COUNT
    348 024776                            ERRHRD  ERRNO,T29WDC,PKTSSR ;TSSR INCORRECT AFTER WRITE TAPE MARK
        024776  104456                                                        TRAP    C$ERHRD
        025000  000170                                                        .WORD   120
        025002  030457'                                                      .WORD   T29WDC
        025004  011736'                                                      .WORD   PKTSSR
    349 025006                        70$:    CKLOOP                      ;LOOP IF SELECTED
        025006  104406                                                        TRAP    C$CLP1
    350 025010  012703  000001        150$:   MOV     #1.,R3              ;NUMBER OF RECORDS TO WRITE TM
    351 025014  012737  141011  026220'      MOV     #141011,T29PK3      ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMMAND
    352 025022  012704  026220'            MOV     #T29PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
    353 025026  010465  000000        155$:   MOV     R4,TSDB(R5)         ;ISSUE COMMAND
    354 025032  004737  016140'            JSR     PC,WAITF            ;WAIT FOR SSR TO SET
    355 025036  016501  000002            MOV     TSSR(R5),R1         ;PICK UP TSSR
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  01-FEB-84 18:55                                    SEQ 095
TEST  1: WRITE TAPE MARK RETRY

    356 025042  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
    357 025046  020102                            CMP     R1,R2                   ;WAS STATUS GOOD
    358 025050  001406                            BEQ     165$                    ;BR, IF TERMINATION WAS GOOD
    359 025052  005237  002214'                   INC     FATFLG                          ;ERROR COUNT
    363 025056                                    ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
        025056  104456                                                                    TRAP    C$ERHRD
        025060  000171                                                                    .WORD   121
        025062  030457'                                                                   .WORD   T29WDC
        025064  011736'                                                                   .WORD   PKTSSR
    364 025066                          165$:     CKLOOP                          ;LOOP IF SELECTED
        025066  104406                                                                    TRAP    C$CLP1
    365 025070  012737  140401  026220'            MOV     #140401,T29PK3          ;READ REVERSE,ACK, COMMAND
    366 025076  013737  003116' 026222'           MOV     FREE,T29RB              ;NUMBER OF RECORDS TO SPACE BACK
    367 025104  012704  026220'                   MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
    368 025110  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
    369 025114  004737  016140'                   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    370 025120  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
    371 025124  012702  100204                    MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
    372 025130  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
    373 025132  001406                            BEQ     222$                    ;BR, IF OK
    374 025134  005237  002214'                   INC     FATFLG                          ;ERROR COUNT
    378 025140                                    ERRHRD  ERRNO,T29RDG,PKTSSR     ;TSSR INCORRECT AFTER SPACE CMD.
        025140  104456                                                                    TRAP    C$ERHRD
        025142  000172                                                                    .WORD   122
        025144  031423'                                                                   .WORD   T29RDG
        025146  011736'                                                                   .WORD   PKTSSR
    379 025150                          222$:     CKLOOP                          ;LOOP IF SELECTED
        025150  104406                                                                    TRAP    C$CLP1
    380 025152  013701  026120'                   MOV     T29BFR+6,R1             ;PICK UP XSTO
    381 025156  010102                            MOV     R1,R2                   ;SET UP EXPECTED
    382 025160  052702  100000                    BIS     #BIT15,R2               ;TMK SHOULD BE SET
    383 025164  020102                            CMP     R1,R2                   ;IS TMK SET
    384 025166  001406                            BEQ     226$                    ;BR, IF TMK WAS SET (GOOD)
    385 025170  005237  002214'                   INC     FATFLG                          ;ERROR COUNT
    389 025174                                    ERRHRD  ERRNO,T29RRN,EXPREC     ;TMK NOT SET AFTER READ REV
        025174  104456                                                                    TRAP    C$ERHRD
        025176  000173                                                                    .WORD   123
        025200  031604'                                                                   .WORD   T29RRN
        025202  015364'                                                                   .WORD   EXPREC
    390 025204                          226$:     CKLOOP                          ;LOOP IF SELECTED
        025204  104406                                                                    TRAP    C$CLP1
    391 025206                                    ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
        025206                                                                          L10041:
        025206  104403                                                                    TRAP    C$ESUB
    392 025210  023727  002214' 000017            CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
    393 025216  103402                            BLO     999$                    ;BR, IF LESS THAN 25
    394 025220  004737  017074'                   JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
    395 025224                          999$:
    396
    397                                 ;*
    398                                 ;
    399                                 ;TEST 1, SUBTEST 4
    400                                 ;
    401                                 ;VERIFIES THAT THE SPACE-REVERSE PORTION OF THE WRITE TAPE MARK
    402                                 ;RETRY OPERATION IS PERFORMED BY REWINDING THE TAPE, ISSUING SEVERAL
    403                                 ;WRITE TAPE MARK RETRY COMMANDS IN SUCCESSION, THEN ISSUING TWO SPACE
    404                                 ;RECORDS REVERSE COMMANDS IN SUCCESSION.  THE SECOND SPACE RECORDS REVERSE
```

```
                                        ;COMMAND SHOULD TERMINATE WITH REVERSE INTO BOT (RIB) STATUS SET.
                                        ;
                                        ;-
                                              BGNSUB                                ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
                                                                                                    T1.4:
                                                                                                          TRAP    C$BSUB
                                              JSR     PC,T29REST                    ;SET COMMAND PACKET
                                              JSR     PC,T29RT2                     ;SET UP OTHER COMMAND PACKET
                                              JSR     PC,T29RT3                     ;SET UP OTHER COMMAND PACKET
                                              MOV     #10000.,T29DLY                ;SET UP DELAY ROUTINE
                                        10$:  JSR     PC,SOFINIT                    ;DO INITIALIZE ON CONTROLLER
                                              BCS     20$                           ;BR IF INIT WAS OK
                                              DELAY   250                           ;DELAY ABOUT .25 SECONDS
                                                                                                          MOV     #250,(PC)+
                                                                                                          .WORD   0
                                                                                                          MOV     L$DLY,(PC)+
                                                                                                          .WORD   0
                                                                                                          DEC     -6(PC)
                                                                                                          BNE     .-4
                                                                                                          DEC     -22(PC)
                                                                                                          BNE     .-20
                                              DEC     T29DLY                        ;BUMP DELAY ROUTINE DOWN
                                              BNE     10$                           ;BR, IF MORE DELAY TIME LEFT
                                              INC     FATFLG                                ;ERROR COUNT
                                              MOV     R0,R1                         ;CONTENTS OF TSSR REGISTER
                                              ERRDF   ERRNO,SFIERR,SFIMSG           ;FATAL ERROR TSSR WAS NOT OK
                                                                                                          TRAP    C$ERDF
                                                                                                          .WORD   124
                                                                                                          .WORD   SFIERR
                                                                                                          .WORD   SFIMSG
                                        20$:  MOV     UNITN,T29DSW                  ;SET UP DRIVE NUMBER
                                              MOV     #T29PACKET,R4                 ;SUBROUTINE NEEDS PACKET ADDRESS
                                              JSR     PC,WRTCHR                     ;ISSUE WRITE CHARACTERISTICS
                                              BCS     23$                           ;BR, IF COMMAND ISSUED OK
                                              INC     FATFLG                                ;ERROR COUNT
                                              MOV     R0,R1                         ;SAVE CONTENTS OF TSSR
                                              ERRHRD  ERRNO,WRTMSG,SFIMSG           ;WRITE CHARACTERISTISC FAILED
                                                                                                          TRAP    C$ERHRD
                                                                                                          .WORD   125
                                                                                                          .WORD   WRTMSG
                                                                                                          .WORD   SFIMSG
                                        23$:  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
                                              MOV     R0,R4                         ;SAVE PACKET ADDRESS
                                              INC     FATFLG                                ;ERROR COUNT
                                              ERRHRD  ERRNO,T29RWN,PKTSSR           ;REWIND NOT ACCEPTED
                                                                                                          TRAP    C$ERHRD
                                                                                                          .WORD   126
                                                                                                          .WORD   T29RWN
                                                                                                          .WORD   PKTSSR
                                        30$:  CKLOOP                                ;LOOP IF SELECTED
                                                                                                          TRAP    C$CLP1
                                              MOV     T29BFR+6,R1                   ;PICK UP XSTO
                                              MOV     R1,R2                         ;SET UP EXPECTED
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  01-FEB-84 18:55                                    SEQ 097
TEST  1: WRITE TAPE MARK RETRY

    447 025432  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
    448 025436  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
    449 025440  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
    450 025442  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
    454 025446                                  ERRHRD  ERRNO,T29BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        025446  104456                                                                     TRAP    C$ERHRD
        025450  000177                                                                     .WORD   127
        025452  027556'                                                                    .WORD   T29BOT
        025454  015364'                                                                    .WORD   EXPREC
    455 025456                          40$:    CKLOOP                          ;LOOP IF SELECTED
        025456  104406                                                                     TRAP    C$CLP1
    456 025460  012737  140011  026220'          MOV     #140011,T29PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
    457 025466  012704  026220'                 MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
    458 025472  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
    459 025476  004737  016140'                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    460 025502  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
    461 025506  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
    462 025512  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
    463 025514  001406                          BEQ     70$                     ;BR, IF OK
    464 025516  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
    468 025522                                  ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE TAPE MARK
        025522  104456                                                                     TRAP    C$ERHRD
        025524  000200                                                                     .WORD   128
        025526  030457'                                                                    .WORD   T29WDC
        025530  011736'                                                                    .WORD   PKTSSR
    469 025532                          70$:    CKLOOP                          ;LOOP IF SELECTED
        025532  104406                                                                     TRAP    C$CLP1
    470 025534  012703  000012          150$:   MOV     #10.,R3                 ;NUMBER OF RECORDS TO WRITE TM
    471 025540  012737  000001  026222'          MOV     #1,T29RB                ;SET UP PACKET
    472 025546  012737  141011  026220'          MOV     #141011,T29PK3          ;WRITE TAPE MARK RETRY,ACK,CVC=1 COMMAND
    473 025554  012704  026220'                 MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
    474 025560  010465  000000          155$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
    475 025564  004737  016140'                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    476 025570  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
    477 025574  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
    478 025600  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
    479 025602  001406                          BEQ     165$                    ;BR, IF TERMINATION WAS GOOD
    480 025604  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
    484 025610                                  ERRHRD  ERRNO,T29WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
        025610  104456                                                                     TRAP    C$ERHRD
        025612  000201                                                                     .WORD   129
        025614  030457'                                                                    .WORD   T29WDC
        025616  011736'                                                                    .WORD   PKTSSR
    485 025620                          165$:   CKLOOP                          ;LOOP IF SELECTED
        025620  104406                                                                     TRAP    C$CLP1
    486 025622  005303                          DEC     R3                      ;BUMP COUNTER DOWN
    487 025624  001355                          BNE     155$                    ;BR, IF LESS THAN 10 TAPE MARKS
    488 025626  012737  140410  026220'          MOV     #140410,T29PK3          ;SPACE REVERSE,ACK,CVC=1, COMMAND
    489 025634  012737  000001  026222'          MOV     #1,T29RB                ;NUMBER OF RECORDS TO SPACE BACK
    490 025642  012704  026220'                 MOV     #T29PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
    491 025646  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
    492 025652  004737  016140'                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
    493 025656  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
    494 025662  012702  100204                  MOV     #SSR!SC!BIT2,R2         ;SET UP EXPECTED
    495 025666  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
    496 025670  001406                          BEQ     222$                    ;BR, IF OK
    497 025672  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  01-FEB-84 18:55                                                    SEQ 098
TEST  1: WRITE TAPE MARK RETRY

    501 025676                                      ERRHRD  ERRNO,T29WDE,PKTSSR     ;TSSR INCORRECT AFTER SPACE CMD.
        025676  104456                                                                          TRAP    C$ERHRD
        025700  000202                                                                          .WORD   130
        025702  027342'                                                                         .WORD   T29WDE
        025704  011736'                                                                         .WORD   PKTSSR
    502 025706                              222$:   CKLOOP                          ;LOOP IF SELECTED
        025706  104406                                                                          TRAP    C$CLP1
    503 025710  012737  100410  026220'              MOV     #100410,T29PK3      ;SPACE REVERSE,ACK, COMMAND
    504 025716  012737  000005  026222'              MOV     #5,T29RB            ;NUMBER OF RECORDS TO SPACE BACK
    505 025724  012704  026220'                      MOV     #T29PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
    506 025730  010465  000000                       MOV     R4,TSDB(R5)         ;ISSUE COMMAND
    507 025734  004737  016140'                      JSR     PC,WAITF            ;WAIT FOR SSR TO SET
    508 025740  016501  000002                       MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
    509 025744  012702  100204                       MOV     #SSR!SC!BIT2,R2     ;SET UP EXPECTED
    510 025750  020102                               CMP     R1,R2               ;ARE THEY EQUAL
    511 025752  001406                               BEQ     260$                ;BR, IF OK
    512 025754  005237  002214'                      INC     FATFLG                      ;ERROR COUNT
    516 025760                                       ERRHRD  ERRNO,T29RDG,PKTSSR ;TSSR INCORRECT AFTER SPACE REV CMD.
        025760  104456                                                                          TRAP    C$ERHRD
        025762  000203                                                                          .WORD   131
        025764  031423'                                                                         .WORD   T29RDG
        025766  011736'                                                                         .WORD   PKTSSR
    517 025770                              260$:   CKLOOP                          ;LOOP IF SELECTED
        025770  104406                                                                          TRAP    C$CLP1
    518 025772  013701  026126'                      MOV     T29BFR+14,R1        ;PICK UP XST3
    519 025776  010102                               MOV     R1,R2               ;SET UP EXPECTED
    520 026000  052702  000001                       BIS     #BIT0,R2            ;RIB SHOULD BE SET
    521 026004  020102                               CMP     R1,R2               ;IS RIB SET
    522 026006  001406                               BEQ     270$                ;BR, IF RIB WAS SET (GOOD)
    523 026010  005237  002214'                      INC     FATFLG                      ;ERROR COUNT
    527 026014                                       ERRHRD  ERRNO,T29RIB,EXPREC ;TMK NOT SET AFTER READ REV
        026014  104456                                                                          TRAP    C$ERHRD
        026016  000204                                                                          .WORD   132
        026020  031504'                                                                         .WORD   T29RIB
        026022  015364'                                                                         .WORD   EXPREC
    528 026024                              270$:   CKLOOP                          ;LOOP IF SELECTED
        026024  104406                                                                          TRAP    C$CLP1
    529 026026                              330$:   CKLOOP                          ;LOOP IF SELECTED
        026026  104406                                                                          TRAP    C$CLP1
    530 026030                                      ENDSUB                      ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
        026030                                                                          L10042:
        026030  104403                                                                          TRAP    C$ESUB
    531 026032  023727  002214'  000017              CMP     FATFLG,#15.                 ;IS ERROR COUNT AT 25
    532 026040  103402                               BLO     999$                        ;BR, IF LESS THAN 25
    533 026042  004737  017074'                      JSR     PC,CKDROP                   ;TRY TO DROP THE UNIT
    534 026046                              999$:
    535
    536                                     ;
    537                                     ;
    538                                     ;
    539 026046  004737  016350'                      JSR     PC,TSTLOOP          ;DO WE NEED TO ITERATE TEST
    540 026052  103002                               BCC     163$                ;BR, IF NO LOOP REQUIRED
    541 026054  000137  023326'                      JMP     T29LOOP             ;EXECUTE AGAIN
    542 026060                              163$:   EXIT    TST                 ;ALL DONE THIS TEST
        026060  104432                                                                          TRAP    C$EXIT
        026062  004030                                                                          .WORD   L10036
    543
```

```
                                ;+
                                ;LOCAL STORAGE FOR THIS TEST
                                ;-
026064                                  .BLKB   10-<.-TSV2&7>
026070                          T29PACKET:
026070  014004                          .WORD   14004                   ;COMMAND PACKET FOR TEST
026072  026100'                        .WORD   T29DATA                 ;WRITE CHARACTERISTICS COMMAND, WITH CVC=1, ACK
026074  000000                          .WORD   0                       ;ADDRESS OF CHARACTERISTICS BLOCK
026076  000012                          .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
026100                          T29DATA:                                ;CHARACTERISTICS DATA BLOCK
026100  026112'                        .WORD   T29BFR                  ;ADDRESS OF MESSAGE BUFFER
026102  000000                          .WORD   0
026104  000024                          .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
026106  000000                          .WORD   0
026110  000000                  T29DSW: .WORD   0                       ;SELECT DRIVE 0
026112                          T29BFR: .BLKW   25.                     ;MESSAGE BUFFER
                                ;
                                ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                ;
026174                                  .BLKB   10-<.-TSV2&7>
026200                          T29PK2:
026200  100006                          .WORD   100006                  ;WRITE SUB SYS MEM COMMAND, AND ACK
026202  026230'                        .WORD   T29BF2                  ;ADDRESS OF SELECT BLOCK DATA
026204  000000                          .WORD   0
026206  000006                          .WORD   6.                      ;SIZE OF DATA PACKET

026210                                  .BLKB   10-<.-TSV2&7>
026220                          T29PK3:
026220  140005                          .WORD   140005                  ;WRITE TAPE MARK RETRY COMMAND, CVC=1 AND ACK
026222                          T29RB:
026222  003116'                 T29WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
026224  000000                          .WORD   0
026226  000000                  T29SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
                                        .EVEN
                                ;
                                ;
                                ;
026230                          T29BF2:
026230      010                 T29BS0: .BYTE   10                      ;BSELO AREA
026231      200                 T29BS1: .BYTE   200                     ;BSEL1 AREA
026232  000000                  T29S2:  .WORD   0                       ;SEL 2 AREA
026234  000000                  T29S3:  .WORD   0                       ;DATA AREA
                                ;
                                ;
                                        .EVEN
                                ;TAPE MOTION PACKET COMMAND VALUES

026236  140001                  T29RN:  .WORD   140001                  ;READ DATA
026240  140401                  T29WDR: .WORD   140401                  ;READ DATA REVERSE
026242  141001                  T29CON: .WORD   141001                  ;READ PREVIOUS OPP=0
026244  161001                          .WORD   161001                  ;READ PREVIOUS OPP=1
026246  141401                          .WORD   141401                  ;WRITE TAPE MARK RETRY NEXT OPP=0
026250  161401                          .WORD   161401                  ;WRITE TAPE MARK RETRY NEXT OPP=1
026252  177777                          .WORD   177777                  ;END OF DATA

                                ;
026254  000000                  T29CNT: .WORD   0                       ;TAPE RECORD COUNTER STORAGE AREA
```

```
                                ;RECORD STORAGE SIZE  AREA
                                ;DELAY COUNTER STORAGE AREA
                                ;*
                                ;LOCAL TEXT MESSAGES FOR TEST
                                ;-
                                T29OFL: .ASCIZ  'Drive is OFFLINE'
                                T29WNG: .ASCIZ  'Tape Position Incorrect After WRITE TAPE MARK RETRY Previous (OPP=1)'
                                T29NEF: .ASCIZ  'WRITE TAPE MARK RETRY, At BOT, Failed To Set NEF (XSTO)'
                                T29RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
                                T29RRF: .ASCIZ  'WRITE TAPE MARK RETRY Previous (Space Reverse, Read Forward) Command Failed
                                T29RRG: .ASCIZ  'WRITE TAPE MARK RETRY Previous (Read Forward, Space Reverse) Command Failed
                                T29SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
                                T29LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
                                T29WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
                                T29LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
                                T29SSR: .ASCIZ  'WRITE TAPE MARK RETRY COMMAND Not Accepted'
                                T29WDE: .ASCIZ  'TSSR Not Correct After SPACE REVERSE DATA Command'
                                T29WLK: .ASCIZ  '*****TAPE IS WRITE-LOCKED AND WILL CAUSE ERRORS*****'
                                T29WRT: .ASCIZ  'TSSR Not Correct After WRITE Command'
                                T29BOT: .ASCIZ  'Tape Not At BOT After REWIND Command'
                                T29DTA: .ASCIZ  'Data Written To Tape Not Equal To Data Read From Tape'
                                T29EOT: .ASCIZ  'WRITE TAPE MARK RETRY DATA OVER EOT GAVE NO TAPE STATUS ALERT'
                                T29TM:  .ASCIZ  'TSSR Not Correct After SPACE REVERSE Into BOT'
                                T29RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
                                T29RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
                                T29AM3: .ASCIZ  'TSSR Init. Failed After WRITE TAPE MARK RETRY COMMAND'
                                T29OF7: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
                                T29WDD: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK RETRY DATA Command, SWB Bit Set'
                                T29WDC: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK RETRY DATA Command'
                                T29VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
                                T29BA:  .ASCIZ  'TSBA Not Correct After WRITE TAPE MARK RETRY DATA Command'
                                T29WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
                                T29LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XSTO'
                                T29LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
                                T29PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
                                T29TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
                                T29NEQ: .ASCIZ  'Data WRITE TAPE MARK RETRY From Tape Not Correct, After SWB=1'
                                T29RDG: .ASCIZ  'TSSR Incorrect After READ REVERSE Into Tape Mark'
                                T29RIB: .ASCIZ  'WRITE TAPE MARK RETRY At First Record, Failed To Set RIB (XST3)'
                                T29RRN: .ASCIZ  'TMK (XSTO) Failed To Set After READ REVERSE Into Tape Mark'
                                TST29ID:        .ASCIZ  'Write Tape Mark Retry'
                                        .EVEN
                                ;*
                                ;
                                ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                ;WRITE SUBSYSTEM MEMORY COMMAND
                                ;
                                ;-
                                T29REST:
                                        SAVREG                          ;SAVE THE REGISTERS
                                        MOV     #T29PACKET,R1           ;START OF THE PACKET
```

```
031736  012721  140004                    MOV     #140004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK, CVC=1
031742  012721  026100'                   MOV     #T29DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
031746  005021                            CLR     (R1)+                   ;EXTENDED ADDRESS
031750  012721  000012                    MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
031754  012721  026112'                   MOV     #T29BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
031760  005021                            CLR     (R1)+
031762  012721  000024                    MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
031766  005021                            CLR     (R1)+
031770  012711  000000                    MOV     #0,(R1)                 ;SELECT DRIVE ZERO (0)
031774  012702  000030                    MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
032000  012762  177777  026112' 64$:      MOV     #177777,T29BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
032006  005742                            TST     -(R2)                   ;NEXT LOCATION
032010  020227  000000                    CMP     R2,#0                   ;CHECK FOR END OF LOOP
032014  001371                            BNE     64$                     ;KEEP GOING UNTIL DONE
032016  000207                            RTS     PC                      ;RETURN


032020                          T29RT2:
032020                                    SAVREG                          ;SAVE THE REGISTERS
032024  012701  026200'                   MOV     #T29PK2,R1              ;START OF THE PACKET
032030  012721  140006                    MOV     #140006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,CVC=1.
032034  012721  026230'                   MOV     #T29BF2,(R1)+           ;ADDRESS OF DATA BLOCK
032040  005021                            CLR     (R1)+                   ;EXTENDED ADDRESS
032042  012721  000006                    MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
032046  005021                            CLR     (R1)+
032050  012701  026230'                   MOV     #T29BF2,R1              ;POINT TO DATA SEL AREA
032054  005021                            CLR     (R1)+
032056  005011                            CLR     (R1)
032060  000207                            RTS     PC                      ;RETURN
032062                          T29RT3:
032062                                    SAVREG                          ;SAVE THE REGISTERS
032066  012701  026220'                   MOV     #T29PK3,R1              ;START OF THE PACKET
032072  012721  000000                    MOV     #0,(R1)+                ;WRITE SUBSYSTEM MEM. WITH ACK.
032076  012721  000000                    MOV     #0,(R1)+                ;ADDRESS OF DATA BLOCK
032102  005021                            CLR     (R1)+                   ;EXTENDED ADDRESS
032104  012711  000000                    MOV     #0,(R1)         ;SIZE OF DATA BLOCK IN BYTES
032110  000207                            RTS     PC                      ;RETURN
032112                                    ENDTST
032112                                                                    L10036:
032112  104401                                                                    TRAP    C$ETST

                                          .SBTTL  TEST  2: SKIP TAPE MARKS
                                ;+
                                ;
                                ;THIS TEST VERIFIES PROPER OPERATION OF THE SKIP TAPE MARKS
                                ;FORWARD AND SKIP TAPE MARKS REVERSE COMMANDS. PROPER OPERATION
                                ;UNDER CONTROL OF ALL COMBINATIONS OF THE ENABLE SKIP TAPE MARKS
                                ;STOP (ESS) AND ENABLE TAPE MARKS STOP OFF BOT (ENB) BITS SPECIFIED
                                ;BY THE WRITE CHARACTERISTICS COMMAND. THE TEST CONSISTS OF THE
                                ;FOLLOWING SUBTESTS (FOR EACH SUBTEST, THE TAPE IS FIRST WRITTEN
                                ;WITH AN APPROPRIATE SERIES OF DATA RECORDS AND/OR TAPE MARKS
                                ;AND/OR DOUBLE TAPE MARKS.
                                ;
                                ;
                                ;THE TEST CONSISTS OF THE FOLLOWING 11 SUBTESTS
                                ;
                                ;
```

```
    719                                             ;
    720                                             ;-
    721 032114                                              BGNTST
        032114                                                                                          T2::
    722 032114  012737  006166' 002172'                     MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
    727 032122  012700  041021'                             MOV     #TST30ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
    728 032126  004737  016402'                             JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
    729 032132  012737  000005  002210'                     MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
    730                                             ;+
    731                                             ;
    732                                             ;TEST 2, SUBTEST 1
    733                                             ;
    734                                             ;
    735                                             ;VERIFIES THAT A SKIP TAPE MARKS FORWARD COMMAND WITH
    736                                             ;A TAPE MARK COUNT OF 1 OPERATES OPERATES PROPERLY. THE TAPE
    737                                             ;IS FIRST REWOUND, THEN WRITTEN WITH SEVERAL "FILES";
    738                                             ;EACH FILE CONSISTS OF A NUMBER OF DATA RECORDS
    739                                             ;FOLLOWED BY A TAPE MARK. THE FINAL FILE IS
    740                                             ;TERMINATED BY A DOUBLE TAPE MARK. EACH DATA RECORD
    741                                             ;CONTAINS A FILE NUMBER AND THE RECORD NUMBER WITHIN
    742                                             ;THE FILE SO THAT TAPE POSITION CAN BE SUBSEQUENTLY
    743                                             ;VERIFIED BY READING THE DATA. THE TAPE IS AGAIN
    744                                             ;REWOUND AND A SERIES OF SKIP TAPE MARKS FORWARD
    745                                             ;COMMANDS ARE ISSUED AND THE RESULTS (TAPE STATUS ALERT
    746                                             ;TERMINATION, TMK=1 STATUS, TAPE POSITION VIA READ
    747                                             ;COMMAND) IS CHECKED. PRIOR TO ISSUANCE OF EACH SKIP
    748                                             ;COMMAND, A WRITE CHARACTERISTICS COMMAND IS ISSUED TO
    749                                             ;SET UP THE ESS AND ENB CONTROL BITS. ALL
    750                                             ;COMBINATIONS OF ESS AND ENB ARE USED (00,01,10,
    751                                             ;11); OPERATION SHOULD BE THE SAME IN EACH CASE FOR
    752                                             ;THIS SUBTEST.
    753                                             ;
    754                                             ;
    755                                             ;-
    756
    757 032140                                      T30LOOP:
    758 032140                                              BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
        032140                                                                                          T2.1:
        032140  104402                                                                                          TRAP    C$BSUB
    759 032142  004737  041042'                             JSR     PC,T30REST              ;SET COMMAND PACKET
    760 032146  005037  036444'                             CLR     T30FCN                  ;CLEAR FILE COUNTER
    761 032152  004737  041134'                             JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
    762 032156  004737  041176'                             JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
    763 032162  012737  176750  036446'                     MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
    764 032170  004737  015664'                 10$:        JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
    765 032174  103426                                      BCS     20$                     ;BR IF INIT WAS OK
    766 032176                                              DELAY   250                     ;DELAY ROUTINE CALL
        032176  012727  000250                                                                                  MOV     #250,(PC)+
        032202  000000                                                                                          .WORD   0
        032204  013727  002116'                                                                                 MOV     L$DLY,(PC)+
        032210  000000                                                                                          .WORD   0
        032212  005367  177772                                                                                  DEC     -6(PC)
        032216  001375                                                                                          BNE     .-4
        032220  005367  177756                                                                                  DEC     -22(PC)
        032224  001367                                                                                          BNE     .-20
    767 032226  005337  036446'                             DEC     T30DLY                  ;BUMP COUNTER
    768 032232  001356                                      BNE     10$                     ;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$ERDF
                                                                                .WORD   201
                                                                                .WORD   SFIERR
                                                                                .WORD   SFIMSG
                                20$:
                                        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$ERHRD
                                                                                .WORD   202
                                                                                .WORD   WRTMSG
                                                                                .WORD   SFIMSG
                                23$:    CKLOOP                          ;LOOP IF SELECTED
                                                                                TRAP    C$CLP1

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

                                        JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
                                        BCS     30$                     ;BR, IF NO PROBLEM
                                        MOV     R0,R4                   ;GET PACKET ADDRESS
                                        MOV     TSSR(R5),R1             ;GET STATUS REGISTER
                                        INC     FATFLG                          ;ERROR COUNT
                                        ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
                                                                                TRAP    C$ERHRD
                                                                                .WORD   203
                                                                                .WORD   T30RWN
                                                                                .WORD   PKTSSR
                                30$:    CKLOOP                          ;LOOP IF SELECTED
                                                                                TRAP    C$CLP1

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

                                        MOV     T30BFR+6,R1             ;PICK UP XST0
                                        MOV     R1,R2                   ;SET UP EXPECTED
                                        BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
```

```
821 032356  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
822 032360  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
823 032362  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
827 032366                                  ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
    032366  104456                                                                      TRAP    C$ERHRD
    032370  000314                                                                      .WORD   204
    032372  037631'                                                                     .WORD   T30BOT
    032374  015364'                                                                     .WORD   EXPREC
828 032376                          40$:    CKLOOP                          ;LOOP IF SELECTED
    032376  104406                                                                      TRAP    C$CLP1
829 032400  012737  000001  036444'          MOV     #1.,T30FCN              ;SET "FILE" COUNTER AT 1 DECIMAL
830 032406  012703  000001          64$:    MOV     #1,R3                   ;ONE RECORD  PER "FILE"
831 032412  013737  003116'  036412' 65$:    MOV     FREE,T30WB              ;SET UP PACKETS'S WRITE BUFFER
832 032420  012737  003720  036416'          MOV     #2000.,T30SZ            ;SET RECORD SIZE AT 2000 BYTES
833
834                                 ;*****************************************************************
835                                 ;
836                                 ;WRITE DATA,ACK,CVC=1 COMMAND
837                                 ;
838                                 ;*****************************************************************
839
840 032426  012737  140005  036410'          MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
841 032434  012704  036410'                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
842 032440  013702  036444'                  MOV     T30FCN,R2               ;GET FILE COUNTER
843 032444  000302                          SWAB    R2                      ;MOVE TO UPPER BYTE
844 032446  010301                          MOV     R3,R1                   ;GET RECORD COUNTER
845 032450  060201                          ADD     R2,R1                   ;FILE COUNTER IN UPPER, RECORD # LOW
846 032452  010177  150440                  MOV     R1,@FREE                ;MOV TO OUT PUT BUFFER
847 032456  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
848 032462  004737  016140'                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
849 032466  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
850 032472  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
851 032476  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
852 032500  001406                          BEQ     70$                     ;BR, IF OK
853 032502  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
857 032506                                  ERRHRD  ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
    032506  104456                                                                      TRAP    C$ERHRD
    032510  000315                                                                      .WORD   205
    032512  036760'                                                                     .WORD   T30WDD
    032514  011736'                                                                     .WORD   PKTSSR
858 032516                          70$:    CKLOOP                          ;LOOP IF SELECTED
    032516  104406                                                                      TRAP    C$CLP1
859 032520  005203                          INC     R3                      ;COUNT THE RECORD COUNTER DOWN
860 032522  020327  000021                  CMP     R3,#21                  ;AT 20 YET
861 032526  001331                          BNE     65$                     ;BR, IF NOT AT 20 RECORDS WRITTEN
862
863                                 ;*****************************************************************
864                                 ;
865                                 ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
866                                 ;
867                                 ;*****************************************************************
868
869 032530  012737  141011  036410'          MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
870 032536  012704  036410'                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
871 032542  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
872 032546  004737  016140'                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
873 032552  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
```

```
874 032556  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
875 032562  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
876 032564  001406                          BEQ     160$                    ;BR. IF TERMINATION WAS GOOD
877 032566  005237  002214'                INC     FATFLG                          ;ERROR COUNT
881 032572                                  ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
    032572  104456                                                              TRAP    C$ERHRD
    032574  000316                                                              .WORD   206
    032576  040152'                                                            .WORD   T30WDC
    032600  011736'                                                            .WORD   PKTSSR
882 032602                          160$:   CKLOOP                          ;LOOP IF SELECTED
    032602  104406                                                              TRAP    C$CLP1
883 032604  005237  036444'                INC     T30FCN                  ;COUNT THE "FILE" COUNTER DOWN
884 032610  023727  036444' 000006         CMP     T30FCN,#6               ;WRITE 5 FILE TO TAPE
885 032616  001273                          BNE     64$                     ;BR. IF NOT AT 5 FILES WRITTEN
886
887                                 ;*****************************************************************
888                                 ;
889                                 ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
890                                 ;
891                                 ;*****************************************************************
892
893 032620  012737  141011  036410'          MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
894 032626  012704  036410'                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
895 032632  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
896 032636  004737  016140'                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
897 032642  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
898 032646  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
899 032652  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
900 032654  001406                          BEQ     165$                    ;BR. IF TERMINATION WAS GOOD
901 032656  005237  002214'                INC     FATFLG                          ;ERROR COUNT
905 032662                                  ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
    032662  104456                                                              TRAP    C$ERHRD
    032664  000317                                                              .WORD   207
    032666  040152'                                                            .WORD   T30WDC
    032670  011736'                                                            .WORD   PKTSSR
906 032672                          165$:   CKLOOP                          ;LOOP IF SELECTED
    032672  104406                                                              TRAP    C$CLP1
907
908                                 ;*****************************************************************
909                                 ;
910                                 ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
911                                 ;
912                                 ;*****************************************************************
913
914 032674  004737  010704'                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
915 032700  103411                          BCS     170$                    ;BR. IF NO PROBLEM
916 032702  010004                          MOV     R0,R4                   ;GET PACKET ADDRESS
917 032704  016501  000002                  MOV     TSSR(R5),R1             ;GET STATUS REGISTER
918 032710  005237  002214'                INC     FATFLG                          ;ERROR COUNT
922 032714                                  ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
    032714  104456                                                              TRAP    C$ERHRD
    032716  000320                                                              .WORD   208
    032720  040030'                                                            .WORD   T30RWN
    032722  011736'                                                            .WORD   PKTSSR
923 032724                          170$:   CKLOOP                          ;LOOP IF SELECTED
    032724  104406                                                              TRAP    C$CLP1
924
```

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

032726  013701  036310'              MOV     T30BFR+6,R1             ;PICK UP XSTO
032732  010102                       MOV     R1,R2                   ;SET UP EXPECTED
032734  052702  000002               BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
032740  020102                       CMP     R1,R2                   ;DOES EXP = REC'D
032742  001406                       BEQ     180$                    ;BR. IF EQUAL (OK)
032744  005237  002214'               INC     FATFLG                          ;ERROR COUNT
032750                               ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
032750  104456                                                                   TRAP    C$ERHRD
032752  000321                                                                   .WORD   209
032754  037631'                                                                  .WORD   T30BOT
032756  015364'                                                                  .WORD   EXPREC
032760                          180$:   CKLOOP                          ;LOOP IF SELECTED
032760  104406                                                                   TRAP    C$CLP1
032762  012703  036426'               MOV     #T30IMV,R3              ;SET UP POINTER TO COMMAND TABLE
032766  013737  002174'  036300'       MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
032774  011337  036276'          182$:MOV     (R3),T30ETM             ;GET NEXT COMMAND
033000  012704  036260'               MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS

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

033004  004737  010552'               JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
033010  103407                       BCS     188$                    ;BR. IF COMMAND ISSUED OK
033012  005237  002214'               INC     FATFLG                          ;ERROR COUNT
033016  010001                       MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
033020                               ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
033020  104456                                                                   TRAP    C$ERHRD
033022  000322                                                                   .WORD   210
033024  005046'                                                                  .WORD   WRTMSG
033026  011724'                                                                  .WORD   SFIMSG
033030                          188$:   CKLOOP                          ;LOOP IF SELECTED
033030  104406                                                                   TRAP    C$CLP1

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

033032  012737  141010  036410'       MOV     #141010,T30PK3          ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
033040  012737  000001  036412'       MOV     #1,T30RB                ;SET UP NUMBER TO SKIP
033046  012704  036410'               MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
033052  010465  000000          189$:MOV     R4,TSDB(R5)             ;ISSUE COMMAND
033056  012737  176750  036446'       MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
033064  004737  016140'          190$:JSR     PC,WAITF                ;WAIT FOR SSR TO SET
033070  016501  000002               MOV     TSSR(R5),R1             ;PICK UP TSSR
033074  032701  000200               BIT     #SSR,R1                 ;IS SSR SET YET
033100  001017                       BNE     191$                    ;BR. IF SSR IS SET
```

```
 978 033102                                    DELAY   250                     ;CALL DELAY ROUTINE
     033102  012727  000250                                                    MOV     #250,(PC)+
     033106  000000                                                            .WORD   0
     033110  013727  002116'                                                   MOV     L$DLY,(PC)+
     033114  000000                                                            .WORD   0
     033116  005367  177772                                                   DEC     -6(PC)
     033122  001375                                                            BNE     .-4
     033124  005367  177756                                                   DEC     -22(PC)
     033130  001367                                                            BNE     .-20
 979 033132  005337  036446'                    DEC     T30DLY                  ;BUMP DELAY ROUTINE
 980 033136  001352                            BNE     190$                    ;BR, IF MORE DELAY TO GO
 981 033140  012702  000200          191$:     MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
 982 033144  020102                            CMP     R1,R2                   ;WAS STATUS GOOD
 983 033146  001406                            BEQ     192$                    ;BR, IF TERMINATION WAS GOOD
 984 033150  005237  002214'                    INC     FATFLG                          ;ERROR COUNT
 988 033154                                    ERRHRD  ERRNO,T30SKM,PKTSSR     ;TSSR NOT CORRECT AFTER SKIP TAPE M.
     033154  104456                                                            TRAP    C$ERHRD
     033156  000323                                                            .WORD   211
     033160  036704'                                                          .WORD   T30SKM
     033162  011736'                                                          .WORD   PKTSSR
 989 033164                                    192$:   CKLOOP                  ;LOOP IF SELECTED
     033164  104406                                                            TRAP    C$CLP1
 990
 991                                           ;*****************************************************************
 992                                           ;
 993                                           ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
 994                                           ;
 995                                           ;*****************************************************************
 996
 997 033166  013701  036310'                    MOV     T30BFR+6,R1             ;PICK UP XSTO
 998 033172  010102                            MOV     R1,R2                   ;SET UP EXPECTED
 999 033174  052702  100000                    BIS     #BIT15,R2               ;SET TMK BIT IN EXPECTED
1000 033200  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
1001 033202  001406                            BEQ     195$                    ;BR, IF EQUAL (OK)
1002 033204  005237  002214'                    INC     FATFLG                          ;ERROR COUNT
1006 033210                                    ERRHRD  ERRNO,T30TMK,EXPREC     ;TMK NOT SET AFTER WRT TAPE MARK
     033210  104456                                                            TRAP    C$ERHRD
     033212  000324                                                            .WORD   212
     033214  040304'                                                          .WORD   T30TMK
     033216  015364'                                                          .WORD   EXPREC
1007 033220                                    195$:   CKLOOP                  ;LOOP IF SELECTED
     033220  104406                                                            TRAP    C$CLP1
1008 033222  012700  177777                    MOV     #177777,R0              ;VALUE TO WRITTEN TO MEMORY
1009 033226  004737  017314'                    JSR     PC,FILLMEM              ;FILL MEM WITH ALL ONES
1010 033232  013737  003116'  036412'          MOV     FREE,T30RB              ;STARTING READ BUFFER ADDRESS
1011
1012                                           ;*****************************************************************
1013                                           ;
1014                                           ;READ FORWARD,ACK,CVC=1 COMMAND
1015                                           ;
1016                                           ;*****************************************************************
1017
1018 033240  012737  140001  036410'            MOV     #140001,T30PK3          ;READ FORWARD,ACK,CVC=1 COMMAND
1019 033246  012704  036410'                    MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
1020 033252  012737  003720  036416'            MOV     #2000.,T30SZ            ;SET UP RECORD SIZE IN PACKET
1021 033260  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
1022 033264  004737  016140'                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
```

```
1023 033270  016501  000002              MOV     TSSR(R5),R1          ;GET TSSR CONTENTS
1024 033274  012702  000200              MOV     #SSR,R2              ;SET UP EXPECTED
1025 033300  020102                      CMP     R1,R2                ;ARE THEY EQUAL
1026 033302  001406                      BEQ     200$                 ;BR, IF OK
1027 033304  005237  002214'              INC     FATFLG                       ;ERROR COUNT
1031 033310                              ERRHRD  ERRNO,T3ORDF,PKTSSR  ;TSSR INCORRECT AFTER WRITE DATA
     033310  104456                                                           TRAP    C$ERHRD
     033312  000325                                                           .WORD   213
     033314  037203'                                                         .WORD   T3ORDF
     033316  011736'                                                         .WORD   PKTSSR
1032 033320                      200$:   CKLOOP                       ;LOOP IF SELECTED
     033320  104406                                                           TRAP    C$CLP1
1033 033322  017701  147570              MOV     @FREE,R1             ;FIRST LOC IN READ BUFFER
1034 033326  012702  177777              MOV     #177777,R2           ;EXPECTED IF NO DATA TRANS.
1035 033332  020102                      CMP     R1,R2                ;DID ANY DATA GET TRANSFERRED
1036 033334  001006                      BNE     220$                 ;BR, IF NO DATA TRANS (GOOD)
1037 033336  005237  002214'              INC     FATFLG                       ;ERROR COUNT
1041 033342                              ERRHRD  ERRNO,T3ODTR,EXPREC  ;DATA TRANSFERRED ON READ TAPE MARK
     033342  104456                                                           TRAP    C$ERHRD
     033344  000326                                                           .WORD   214
     033346  040660'                                                         .WORD   T3ODTR
     033350  015364'                                                         .WORD   EXPREC
1042 033352                      220$:   CKLOOP                       ;LOOP IF SELECTED
     033352  104406                                                           TRAP    C$CLP1
1043 033354  012702  001001              MOV     #1001,R2             ;SET UP RECORD NUMBER EXPECTED (FILE 2)
1044 033360  017701  147532              MOV     @FREE,R1             ;GET INFO FROM BUFFER
1045 033364  020201                      CMP     R2,R1                ;ARE THEY EQUAL
1046 033366  001406                      BEQ     228$                 ;BR, IF EQUAL (OK)
1047 033370  005237  002214'              INC     FATFLG                       ;ERROR COUNT
1051 033374                              ERRHRD  ERRNO,T3OPTB,EXPREC  ;RECORD POSITION WAS NOT CORRECT
     033374  104456                                                           TRAP    C$ERHRD
     033376  000327                                                           .WORD   215
     033400  037032'                                                         .WORD   T3OPTB
     033402  015364'                                                         .WORD   EXPREC
1052 033404                      228$:   CKLOOP                       ;LOOP IF SELECTED
     033404  104406                                                           TRAP    C$CLP1
1053
1054                             ;*****************************************************************
1055                             ;
1056                             ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
1057                             ;
1058                             ;*****************************************************************
1059
1060 033406  004737  010704'              JSR     PC,REWIND            ;CALL TAPE REWIND COMMAND
1061 033412  103411                      BCS     230$                 ;BR, IF NO PROBLEM
1062 033414  010004                      MOV     R0,R4                ;SAVE PACKET ADDRESS
1063 033416  016501  000002              MOV     TSSR(R5),R1          ;GET TSSR STATUS
1064 033422  005237  002214'              INC     FATFLG                       ;ERROR COUNT
1068 033426                              ERRHRD  ERRNO,T3ORWN,PKTSSR  ;REWIND NOT ACCEPTED
     033426  104456                                                           TRAP    C$ERHRD
     033430  000330                                                           .WORD   216
     033432  040030'                                                         .WORD   T3ORWN
     033434  011736'                                                         .WORD   PKTSSR
1069 033436                      230$:   CKLOOP                       ;LOOP IF SELECTED
     033436  104406                                                           TRAP    C$CLP1
1070
1071                             ;*****************************************************************
```

```
1072                                    ;
1073                                    ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
1074                                    ;
1075                                    ;*************************************************************
1076
1077 033440  013701  036310'                   MOV     T30BFR+6,R1             ;PICK UP XSTO
1078 033444  010102                            MOV     R1,R2                   ;SET UP EXPECTED
1079 033446  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
1080 033452  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
1081 033454  001406                            BEQ     240$                    ;BR, IF EQUAL (OK)
1082 033456  005237  002214'                   INC     FATFLG                          ;ERROR COUNT
1086 033462                                    ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     033462  104456                                                                TRAP    C$ERHRD
     033464  000331                                                                .WORD   217
     033466  037631'                                                               .WORD   T30BOT
     033470  015364'                                                               .WORD   EXPREC
1087 033472                            240$:   CKLOOP                          ;LOOP IF SELECTED
     033472  104406                                                                TRAP    C$CLP1
1088 033474  005723                            TST     (R3)+                   ;POINT TO NEXT POSITION
1089 033476  011301                            MOV     (R3),R1                 ;GET NEXT COMMAND ETC.
1090 033500  020127  177777                    CMP     R1,#177777              ;END OF TABLE MARKER
1091 033504  001402                            BEQ     330$                    ;BR, IF AT END OF TABLE
1092 033506  000137  032774'                   JMP     182$                    ;JUMP TO MORE COMMANDS TO DO
1093 033512                            330$:   CKLOOP                          ;LOOP IF SELECTED
     033512  104406                                                                TRAP    C$CLP1
1094 033514                                    ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     033514                                                                         L10044:
     033514  104403                                                                TRAP    C$ESUB
1095 033516  023727  002214'  000017                CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
1096 033524  103402                                BLO     999$                            ;BR, IF LESS THAN 25
1097 033526  004737  017074'                       JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
1098 033532                            999$:
1099
1100                                    ;*
1101                                    ;
1102                                    ;TEST 2, SUBTEST 2
1103                                    ;
1104                                    ;VERIFIES THAT SKIP TAPE MARKS COMMANDS WITH A TAPE
1105                                    ;MARK COUNT GREATER THAN 1 OPERATE PROPERLY. COUNTS
1106                                    ;OF 2,3,8,64,256, AND 512 ARE TESTED. THE
1107                                    ;TESTING SEQUENCE IS SIMILAR TO THAT USED IN SUBTEST 1.
1108                                    ;
1109                                    ;
1110                                    ;
1111                                    ;-
1112
1113 033532                                    BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     033532                                                                         T2.2:
     033532  104402                                                                TRAP    C$BSUB
1114 033534  004737  041042'                   JSR     PC,T30REST              ;SET COMMAND PACKET
1115 033540  005037  036444'                   CLR     T30FCN                  ;CLEAR FILE COUNTER
1116 033544  004737  041134'                   JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
1117 033550  004737  041176'                   JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
1118 033554  012737  176750  036446'          MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
1119 033562  004737  015664'           10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
1120 033566  103426                            BCS     20$                     ;BR IF INIT WAS OK
1121 033570                                    DELAY   250                     ;DELAY ROUTINE CALL
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  01-FEB-84 18:55                                                    SEQ 110
TEST  2: SKIP TAPE MARKS

        033570  012727  000250                                                          MOV     #250,(PC)+
        033574  000000                                                                  .WORD   0
        033576  013727  002116'                                                        MOV     L$DLY,(PC)+
        033602  000000                                                                  .WORD   0
        033604  005367  177772                                                        DEC     -6(PC)
        033610  001375                                                                  BNE     .-4
        033612  005367  177756                                                        DEC     -22(PC)
        033616  001367                                                                  BNE     .-20
  1122  033620  005337  036446'             DEC     T30DLY                  ;BUMP COUNTER
  1123  033624  001356                     BNE     10$                     ;BR, IF MORE COUNTING TO DO
  1124  033626  005237  002214'             INC     FATFLG                          ;ERROR COUNT
  1128  033632  010001                     MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
  1129  033634                             ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
        033634  104455                                                                  TRAP    C$ERDF
        033636  000332                                                                  .WORD   218
        033640  003642'                                                                 .WORD   SFIERR
        033642  011724'                                                                 .WORD   SFIMSG
  1130  033644                     20$:
  1131  033644  013737  002174' 036300'     MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
  1132  033652  012704  036260'             MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
  1133
  1134                           ;*************************************************************
  1135                           ;
  1136                           ;ISSUE WRITE CHARACTERISTICS COMMAND
  1137                           ;
  1138                           ;*************************************************************
  1139
  1140  033656  004737  010552'             JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
  1141  033662  103407                     BCS     23$                     ;BR, IF COMMAND ISSUED OK
  1142  033664  005237  002214'             INC     FATFLG                          ;ERROR COUNT
  1146  033670  010001                     MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
  1147  033672                             ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        033672  104456                                                                  TRAP    C$ERHRD
        033674  000333                                                                  .WORD   219
        033676  005046'                                                                 .WORD   WRTMSG
        033700  011724'                                                                 .WORD   SFIMSG
  1148  033702                     23$:    CKLOOP                          ;LOOP IF SELECTED
        033702  104406                                                                  TRAP    C$CLP1
  1149
  1150                           ;*************************************************************
  1151                           ;
  1152                           ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
  1153                           ;
  1154                           ;*************************************************************
  1155
  1156  033704  004737  010704'             JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
  1157  033710  103411                     BCS     30$                     ;BR, IF NO PROBLEM
  1158  033712  010004                     MOV     R0,R4                   ;GET PACKET ADDRESS
  1159  033714  016501  000002             MOV     TSSR(R5),R1             ;GET STATUS REGISTER
  1160  033720  005237  002214'             INC     FATFLG                          ;ERROR COUNT
  1164  033724                             ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
        033724  104456                                                                  TRAP    C$ERHRD
        033726  000334                                                                  .WORD   220
        033730  040030'                                                                 .WORD   T30RWN
        033732  011736'                                                                 .WORD   PKTSSR
  1165  033734                     30$:    CKLOOP                          ;LOOP IF SELECTED
        033734  104406                                                                  TRAP    C$CLP1
```

```
1166
1167                                    ;*****************************************************************
1168                                    ;
1169                                    ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
1170                                    ;
1171                                    ;*****************************************************************
1172
1173 033736  013701  036310'                MOV     T30BFR+6,R1             ;PICK UP XSTO
1174 033742  010102                         MOV     R1,R2                   ;SET UP EXPECTED
1175 033744  052702  000002                 BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
1176 033750  020102                         CMP     R1,R2                   ;DOES EXP = REC'D
1177 033752  001406                         BEQ     40$                     ;BR, IF EQUAL (OK)
1178 033754  005237  002214'                INC     FATFLG                          ;ERROR COUNT
1182 033760                                 ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     033760  104456                                                                TRAP    C$ERHRD
     033762  000335                                                                .WORD   221
     033764  037631'                                                               .WORD   T30BOT
     033766  015364'                                                               .WORD   EXPREC
1183 033770                             40$:    CKLOOP                          ;LOOP IF SELECTED
     033770  104406                                                                TRAP    C$CLP1
1184 033772  012737  000001  036444'            MOV     #1.,T30FCN              ;SET "FILE" COUNTER AT 1 DECIMAL
1185 034000  012703  000001             64$:    MOV     #1,R3                   ;ONE RECORD  PER "FILE"
1186 034004  013737  003116'  036412'  65$:    MOV     FREE,T30WB              ;SET UP PACKETS'S WRITE BUFFER
1187 034012  012737  000024  036416'            MOV     #20.,T30SZ              ;SET RECORD SIZE AT 2000 BYTES
1188
1189                                    ;*****************************************************************
1190                                    ;
1191                                    ;WRITE DATA,ACK,CVC=1 COMMAND
1192                                    ;
1193                                    ;*****************************************************************
1194
1195 034020  012737  140005  036410'            MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
1196 034026  012704  036410'                    MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
1197 034032  013702  036444'                    MOV     T30FCN,R2               ;GET FILE COUNTER
1198 034036  000302                             SWAB    R2                      ;MOVE TO UPPER BYTE
1199 034040  010301                             MOV     R3,R1                   ;GET RECORD COUNTER
1200 034042  060201                             ADD     R2,R1                   ;FILE COUNTER IN UPPER, RECORD # LOW
1201 034044  010177  147046                     MOV     R1,@FREE                ;MOV TO OUT PUT BUFFER
1202 034050  010465  000000                     MOV     R4,TSDB(R5)             ;ISSUE COMMAND
1203 034054  004737  016140'                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1204 034060  016501  000002                     MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
1205 034064  012702  000200                     MOV     #SSR,R2                 ;SET UP EXPECTED
1206 034070  020102                             CMP     R1,R2                   ;ARE THEY EQUAL
1207 034072  001406                             BEQ     70$                     ;BR, IF OK
1208 034074  005237  002214'                    INC     FATFLG                          ;ERROR COUNT
1212 034100                                     ERRHRD  ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     034100  104456                                                                    TRAP    C$ERHRD
     034102  000336                                                                    .WORD   222
     034104  036760'                                                                   .WORD   T30WDD
     034106  011736'                                                                   .WORD   PKTSSR
1213 034110                             70$:    CKLOOP                          ;LOOP IF SELECTED
     034110  104406                                                                    TRAP    C$CLP1
1214 034112  005203                             INC     R3                      ;COUNT THE RECORD COUNTER DOWN
1215 034114  020327  000021                     CMP     R3,#21                  ;AT 20 YET
1216 034120  001331                             BNE     65$                     ;BR, IF NOT AT 20 RECORDS WRITTEN
1217
1218                                    ;*****************************************************************
```

```
                                        ;
                                        ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
                                        ;
                                        ;*************************************************************
1224 034122  012737  141011  036410'          MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
1225 034130  012704  036410'                   MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
1226 034134  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
1227 034140  004737  016140'                   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1228 034144  016501  000002                    MOV     TSSR(R5),R1             ;PICK UP TSSR
1229 034150  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
1230 034154  020102                            CMP     R1,R2                   ;WAS STATUS GOOD
1231 034156  001406                            BEQ     160$                    ;BR. IF TERMINATION WAS GOOD
1232 034160  005237  002214'                   INC     FATFLG                          ;ERROR COUNT
1236 034164                                    ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     034164  104456                                                                    TRAP    C$ERHRD
     034166  000337                                                                    .WORD   223
     034170  040152'                                                                   .WORD   T30WDC
     034172  011736'                                                                   .WORD   PKTSSR
1237 034174                            160$:   CKLOOP                          ;LOOP IF SELECTED
     034174  104406                                                                    TRAP    C$CLP1
1238 034176  005237  036444'                   INC     T30FCN                  ;COUNT THE "FILE" COUNTER DOWN
1239 034202  023727  036444'  000031          CMP     T30FCN,#25.             ;WRITE 25 FILES TO TAPE
1240 034210  001273                            BNE     64$                     ;BR. IF NOT AT 25 FILES WRITTEN
1241
1242                                    ;*************************************************************
1243                                    ;
1244                                    ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
1245                                    ;
1246                                    ;*************************************************************
1247
1248 034212  012737  141011  036410'          MOV     #141011,T30PK3          ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
1249 034220  012704  036410'                   MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
1250 034224  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
1251 034230  004737  016140'                   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1252 034234  016501  000002                    MOV     TSSR(R5),R1             ;PICK UP TSSR
1253 034240  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
1254 034244  020102                            CMP     R1,R2                   ;WAS STATUS GOOD
1255 034246  001406                            BEQ     165$                    ;BR. IF TERMINATION WAS GOOD
1256 034250  005237  002214'                   INC     FATFLG                          ;ERROR COUNT
1260 034254                                    ERRHRD  ERRNO,T30WDC,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     034254  104456                                                                    TRAP    C$ERHRD
     034256  000340                                                                    .WORD   224
     034260  040152'                                                                   .WORD   T30WDC
     034262  011736'                                                                   .WORD   PKTSSR
1261 034264                            165$:   CKLOOP                          ;LOOP IF SELECTED
     034264  104406                                                                    TRAP    C$CLP1
1262
1263                                    ;*************************************************************
1264                                    ;
1265                                    ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
1266                                    ;
1267                                    ;*************************************************************
1268
1269 034266  004737  010704'                   JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
1270 034272  103411                            BCS     170$                    ;BR. IF NO PROBLEM
1271 034274  010004                            MOV     R0,R4                   ;GET PACKET ADDRESS
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  01-FEB-84 18:55                                    SEQ 113
TEST  2: SKIP TAPE MARKS

 1272 034276  016501  000002                 MOV     TSSR(R5),R1             ;GET STATUS REGISTER
 1273 034302  005237  002214'                INC     FATFLG                          ;ERROR COUNT
 1277 034306                                 ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
      034306  104456                                                                 TRAP    C$ERHRD
      034310  000341                                                                 .WORD   225
      034312  040030'                                                               .WORD   T30RWN
      034314  011736'                                                               .WORD   PKTSSR
 1278 034316                         170$:   CKLOOP                          ;LOOP IF SELECTED
      034316  104406                                                                 TRAP    C$CLP1
 1279
 1280                                ;*****************************************************************
 1281                                ;
 1282                                ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
 1283                                ;
 1284                                ;*****************************************************************
 1285
 1286 034320  013701  036310'                MOV     T30BFR+6,R1             ;PICK UP XST0
 1287 034324  010102                         MOV     R1,R2                   ;SET UP EXPECTED
 1288 034326  052702  000002                 BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 1289 034332  020102                         CMP     R1,R2                   ;DOES EXP = REC'D
 1290 034334  001406                         BEQ     180$                    ;BR, IF EQUAL (OK)
 1291 034336  005237  002214'                INC     FATFLG                          ;ERROR COUNT
 1295 034342                                 ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      034342  104456                                                                 TRAP    C$ERHRD
      034344  000342                                                                 .WORD   226
      034346  037631'                                                               .WORD   T30BOT
      034350  015364'                                                               .WORD   EXPREC
 1296 034352                         180$:   CKLOOP                          ;LOOP IF SELECTED
      034352  104406                                                                 TRAP    C$CLP1
 1297 034354  012737  000002  036444'          MOV     #2,T30FCN               ;SET TO NUMBER OF SKIP "FILES"
 1298 034362  012703  036426'                MOV     #T30IMV,R3              ;SET UP POINTER TO COMMAND TABLE
 1299 034366  013737  002174'  036300'         MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
 1300 034374  011337  036276'                182$:   MOV     (R3),T30ETM             ;GET NEXT COMMAND
 1301 034400  012704  036260'                MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 1302
 1303                                ;*****************************************************************
 1304                                ;
 1305                                ;ISSUE WRITE CHARACTERISTICS COMMAND
 1306                                ;
 1307                                ;*****************************************************************
 1308
 1309 034404  004737  010552'                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 1310 034410  103407                         BCS     188$                    ;BR, IF COMMAND ISSUED OK
 1311 034412  005237  002214'                INC     FATFLG                          ;ERROR COUNT
 1315 034416  010001                         MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 1316 034420                                 ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      034420  104456                                                                 TRAP    C$ERHRD
      034422  000343                                                                 .WORD   227
      034424  005046'                                                               .WORD   WRTMSG
      034426  011724'                                                               .WORD   SFIMSG
 1317 034430                         188$:   CKLOOP                          ;LOOP IF SELECTED
      034430  104406                                                                 TRAP    C$CLP1
 1318
 1319                                ;*****************************************************************
 1320                                ;
 1321                                ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
 1322                                ;
```

```
1323                                    ;*************************************************************
1324
1325 034432  012737  141010  036410'          MOV     #141010,T30PK3          ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
1326 034440  013737  036444' 036412'          MOV     T30FCN,T30RB            ;SET UP NUMBER TO SKIP
1327 034446  012704  036410'                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
1328 034452  010465  000000          189$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
1329 034456  012737  176750  036446'          MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
1330 034464  004737  016140'          190$:   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1331 034470  016501  000002                  MOV     TSSR(R5),R1             ;PICK UP TSSR
1332 034474  032701  000200                  BIT     #SSR,R1                 ;IS SSR SET YET
1333 034500  001017                          BNE     191$                    ;BR, IF SSR IS SET
1334 034502                                   DELAY   250                     ;CALL DELAY ROUTINE
     034502  012727  000250                                                          MOV     #250,(PC)+
     034506  000000                                                                  .WORD   0
     034510  013727  002116'                                                        MOV     L$DLY,(PC)+
     034514  000000                                                                  .WORD   0
     034516  005367  177772                                                        DEC     -6(PC)
     034522  001375                                                                BNE     .-4
     034524  005367  177756                                                        DEC     -22(PC)
     034530  001367                                                                BNE     .-20
1335 034532  005337  036446'                  DEC     T30DLY                  ;BUMP DELAY ROUTINE
1336 034536  001352                          BNE     190$                    ;BR, IF MORE DELAY TO GO
1337 034540  012702  000200          191$:   MOV     #SSR,R2                 ;SET UP EXPECTED (SSR ONLY)
1338 034544  020102                          CMP     R1,R2                   ;WAS STATUS GOOD
1339 034546  001406                          BEQ     192$                    ;BR, IF TERMINATION WAS GOOD
1340 034550  005237  002214'                  INC     FATFLG                          ;ERROR COUNT
1344 034554                                   ERRHRD  ERRNO,T30SKM,PKTSSR     ;TSSR NOT CORRECT AFTER SKIP TAPE M.
     034554  104456                                                                  TRAP    C$ERHRD
     034556  000344                                                                  .WORD   228
     034560  036704'                                                                .WORD   T30SKM
     034562  011736'                                                                .WORD   PKTSSR
1345 034564                           192$:   CKLOOP                          ;LOOP IF SELECTED
     034564  104406                                                                  TRAP    C$CLP1
1346
1347                                    ;*************************************************************
1348                                    ;
1349                                    ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
1350                                    ;
1351                                    ;*************************************************************
1352
1353 034566  013701  036310'                  MOV     T30BFR+6,R1             ;PICK UP XST0
1354 034572  010102                          MOV     R1,R2                   ;SET UP EXPECTED
1355 034574  052702  100000                  BIS     #BIT15,R2               ;SET TMK BIT IN EXPECTED
1356 034600  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
1357 034602  001406                          BEQ     195$                    ;BR, IF EQUAL (OK)
1358 034604  005237  002214'                  INC     FATFLG                          ;ERROR COUNT
1362 034610                                   ERRHRD  ERRNO,T30TMK,EXPREC     ;TMK NOT SET AFTER WRT TAPE MARK
     034610  104456                                                                  TRAP    C$ERHRD
     034612  000345                                                                  .WORD   229
     034614  040304'                                                                .WORD   T30TMK
     034616  015364'                                                                .WORD   EXPREC
1363 034620                           195$:   CKLOOP                          ;LOOP IF SELECTED
     034620  104406                                                                  TRAP    C$CLP1
1364 034622  012700  177777                  MOV     #177777,R0              ;VALUE TO WRITTEN TO MEMORY
1365 034626  004737  017314'                  JSR     PC,FILLMEM              ;FILL MEM WITH ALL ONES
1366 034632  013737  003116' 036412'          MOV     FREE,T30RB              ;STARTING READ BUFFER ADDRESS
1367
```

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

034640  012737  140001  036410'          MOV     #140001,T30PK3          ;READ FORWARD,ACK,CVC=1 COMMAND
034646  012704  036410'                  MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
034652  012737  000024  036416'          MOV     #20.,T30SZ              ;SET UP RECORD SIZE IN PACKET
034660  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
034664  004737  016140'                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
034670  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
034674  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
034700  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
034702  001406                          BEQ     200$                    ;BR, IF OK
034704  005237  002214'                  INC     FATFLG                          ;ERROR COUNT
034710                                  ERRHRD  ERRNO,T30RDF,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
034710  104456                                                                  TRAP    C$ERHRD
034712  000346                                                                  .WORD   230
034714  037203'                                                                 .WORD   T30RDF
034716  011736'                                                                 .WORD   PKTSSR
034720                          200$:   CKLOOP                          ;LOOP IF SELECTED
034720  104406                                                                  TRAP    C$CLP1
034722  017701  146170                  MOV     @FREE,R1                ;FIRST LOC IN READ BUFFER
034726  012702  177777                  MOV     #177777,R2              ;EXPECTED IF NO DATA TRANS.
034732  020102                          CMP     R1,R2                   ;DID ANY DATA GET TRANSFERRED
034734  001006                          BNE     220$                    ;BR, IF NO DATA TRANS (GOOD)
034736  005237  002214'                  INC     FATFLG                          ;ERROR COUNT
034742                                  ERRHRD  ERRNO,T30DTR,EXPREC     ;DATA TRANSFERRED ON READ TAPE MARK
034742  104456                                                                  TRAP    C$ERHRD
034744  000347                                                                  .WORD   231
034746  040660'                                                                 .WORD   T30DTR
034750  015364'                                                                 .WORD   EXPREC
034752                          220$:   CKLOOP                          ;LOOP IF SELECTED
034752  104406                                                                  TRAP    C$CLP1
034754  013702  036444'                  MOV     T30FCN,R2               ;GET NUMBER OF SKIPS
034760  005202                          INC     R2                      ;SET TO CORRECT FILE VALUE
034762  000302                          SWAB    R2                      ;SWAP BYTE HALVES
034764  052702  000001                  BIS     #BIT0,R2                ;SET FOR RECORD #1
034770  017701  146122                  MOV     @FREE,R1                ;GET INFO FROM BUFFER
034774  020201                          CMP     R2,R1                   ;ARE THEY EQUAL
034776  001406                          BEQ     228$                    ;BR, IF EQUAL (OK)
035000  005237  002214'                  INC     FATFLG                          ;ERROR COUNT
035004                                  ERRHRD  ERRNO,T30PTB,EXPREC     ;RECORD POSITION WAS NOT CORRECT
035004  104456                                                                  TRAP    C$ERHRD
035006  000350                                                                  .WORD   232
035010  037032'                                                                 .WORD   T30PTB
035012  015364'                                                                 .WORD   EXPREC
035014                          228$:   CKLOOP                          ;LOOP IF SELECTED
035014  104406                                                                  TRAP    C$CLP1

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

```
1419 035016  004737  010704'                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
1420 035022  103411                         BCS     230$                    ;BR, IF NO PROBLEM
1421 035024  010004                         MOV     R0,R4                   ;SAVE PACKET ADDRESS
1422 035026  016501  000002                 MOV     TSSR(R5),R1             ;GET TSSR STATUS
1423 035032  005237  002214'                INC     FATFLG                          ;ERROR COUNT
1427 035036                                 ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     035036  104456                                                                TRAP    C$ERHRD
     035040  000351                                                                .WORD   233
     035042  040030'                                                               .WORD   T30RWN
     035044  011736'                                                               .WORD   PKTSSR
1428 035046                         230$:   CKLOOP                          ;LOOP IF SELECTED
     035046  104406                                                                TRAP    C$CLP1
1429
1430                                ;***************************************************************
1431                                ;
1432                                ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
1433                                ;
1434                                ;***************************************************************
1435
1436 035050  013701  036310'                MOV     T30BFR+6,R1             ;PICK UP XST0
1437 035054  010102                         MOV     R1,R2                   ;SET UP EXPECTED
1438 035056  052702  000002                 BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
1439 035062  020102                         CMP     R1,R2                   ;DOES EXP = REC'D
1440 035064  001406                         BEQ     240$                    ;BR, IF EQUAL (OK)
1441 035066  005237  002214'                INC     FATFLG                          ;ERROR COUNT
1445 035072                                 ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     035072  104456                                                                TRAP    C$ERHRD
     035074  000352                                                                .WORD   234
     035076  037631'                                                               .WORD   T30BOT
     035100  015364'                                                               .WORD   EXPREC
1446 035102                         240$:   CKLOOP                          ;LOOP IF SELECTED
     035102  104406                                                                TRAP    C$CLP1
1447 035104  005723                         TST     (R3)+                   ;POINT TO NEXT POSITION
1448 035106  011301                         MOV     (R3),R1                 ;GET NEXT COMMAND ETC.
1449 035110  020127  177777                 CMP     R1,#177777              ;END OF TABLE MARKER
1450 035114  001410                         BEQ     330$                    ;BR, IF AT END OF TABLE
1451 035116  013701  036444'                MOV     T30FCN,R1               ;GET NUMBER OF SKIPS
1452 035122  000241                         CLC                             ;CLEAR THE CARRY BIT
1453 035124  006101                         ROL     R1                      ;PUSH OVER ONE POSITION
1454 035126  010137  036444'                MOV     R1,T30FCN               ;PUT BACK IN COUNTER
1455 035132  000137  034374'                JMP     182$                    ;JUMP TO MORE COMMANDS TO DO
1456 035136                         330$:   CKLOOP                          ;LOOP IF SELECTED
     035136  104406                                                                TRAP    C$CLP1
1457 035140                                 ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     035140                                                                     L10045:
     035140  104403                                                                TRAP    C$ESUB
1458 035142  023727  002214'  000017                CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
1459 035150  103402                                BLO     999$                            ;BR, IF LESS THAN 25
1460 035152  004737  017074'                        JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
1461 035156                         999$:
1462                                ;+
1463                                ;
1464                                ;TEST 2, SUBTEST 3
1465                                ;
1466                                ;
1467                                ;VERIFIES THAT A SKIP TAPE MARKS REVERSE COMMAND
1468                                ;ISSUED WHILE THE TAPE IS POSITIONED AT BOT CAUSES
```

```
1469                                    ;FUNCTION REJECT TERMINATION, WITH THE NON-EXECUTABLE
1470                                    ;FUNCTION (NEF) ERROR BIT SET.
1471                                    ;
1472                                    ;
1473                                    ;
1474                                    ;
1475                                    ;
1476                                    ;-
1477 035156                                    BGNSUB                                  ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
      035156                                                                                    T2.3:
      035156  104402                                                                              TRAP    C$BSUB
1478 035160  004737  041042'                    JSR     PC,T30REST                      ;SET COMMAND PACKET
1479 035164  005037  036444'                    CLR     T30FCN                          ;CLEAR FILE COUNTER
1480 035170  004737  041134'                    JSR     PC,T30RT2                       ;SET UP OTHER COMMAND PACKET
1481 035174  004737  041176'                    JSR     PC,T30RT3                       ;SET UP OTHER COMMAND PACKET
1482 035200  012737  176750  036446'            MOV     #65000.,T30DLY                  ;SET UP DELAY COUNTER
1483 035206  004737  015664'              10$:  JSR     PC,SOFINIT                      ;DO INITIALIZE ON CONTROLLER
1484 035212  103426                             BCS     20$                             ;BR IF INIT WAS OK
1485 035214                                    DELAY   250                             ;DELAY ROUTINE CALL
      035214  012727  000250                                                                   MOV     #250,(PC)+
      035220  000000                                                                           .WORD   0
      035222  013727  002116'                                                                 MOV     L$DLY,(PC)+
      035226  000000                                                                           .WORD   0
      035230  005367  177772                                                                 DEC     -6(PC)
      035234  001375                                                                           BNE     .-4
      035236  005367  177756                                                                 DEC     -22(PC)
      035242  001367                                                                           BNE     .-20
1486 035244  005337  036446'                    DEC     T30DLY                          ;BUMP COUNTER
1487 035250  001356                             BNE     10$                             ;BR, IF MORE COUNTING TO DO
1488 035252  005237  002214'                    INC     FATFLG                                  ;ERROR COUNT
1492 035256  010001                             MOV     R0,R1                           ;CONTENTS OF TSSR REGISTER
1493 035260                                    ERRDF   ERRNO,SFIERR,SFIMSG             ;FATAL ERROR TSSR WAS NOT OK
      035260  104455                                                                           TRAP    C$ERDF
      035262  000353                                                                           .WORD   235
      035264  003642'                                                                         .WORD   SFIERR
      035266  011724'                                                                         .WORD   SFIMSG
1494 035270                                    20$:
1495 035270  013737  002174'  036300'                MOV     UNITN,T30DSW                    ;SET UP UNIT NUMBER
1496 035276  012704  036260'                    MOV     #T30PACKET,R4                   ;SUBROUTINE NEEDS PACKET ADDRESS
1497
1498                                    ;***************************************************************
1499                                    ;
1500                                    ;ISSUE WRITE CHARACTERISTICS COMMAND
1501                                    ;
1502                                    ;***************************************************************
1503
1504 035302  004737  010552'                    JSR     PC,WRTCHR                       ;ISSUE WRITE CHARACTERISTICS
1505 035306  103407                             BCS     23$                             ;BR, IF COMMAND ISSUED OK
1506 035310  005237  002214'                    INC     FATFLG                                  ;ERROR COUNT
1510 035314  010001                             MOV     R0,R1                           ;SAVE CONTENTS OF TSSR
1511 035316                                    ERRHRD  ERRNO,WRTMSG,SFIMSG             ;WRITE CHARACTERISTISC FAILED
      035316  104456                                                                           TRAP    C$ERHRD
      035320  000354                                                                           .WORD   236
      035322  005046'                                                                         .WORD   WRTMSG
      035324  011724'                                                                         .WORD   SFIMSG
1512 035326                                    23$:    CKLOOP                          ;LOOP IF SELECTED
      035326  104406                                                                           TRAP    C$CLP1
```

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

035330  004737  010704'              JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
035334  103411                       BCS     30$                     ;BR, IF NO PROBLEM
035336  010004                       MOV     R0,R4                   ;GET PACKET ADDRESS
035340  016501  000002               MOV     TSSR(R5),R1             ;GET STATUS REGISTER
035344  005237  002214'               INC     FATFLG                          ;ERROR COUNT
035350                               ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
035350  104456                                                               TRAP    C$ERHRD
035352  000355                                                               .WORD   237
035354  040030'                                                              .WORD   T30RWN
035356  011736'                                                              .WORD   PKTSSR
035360                          30$:    CKLOOP                          ;LOOP IF SELECTED
035360  104406                                                               TRAP    C$CLP1

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

035362  013701  036310'              MOV     T30BFR+6,R1             ;PICK UP XST0
035366  010102                       MOV     R1,R2                   ;SET UP EXPECTED
035370  052702  000002               BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
035374  020102                       CMP     R1,R2                   ;DOES EXP = REC'D
035376  001406                       BEQ     40$                     ;BR, IF EQUAL (OK)
035400  005237  002214'               INC     FATFLG                          ;ERROR COUNT
035404                               ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
035404  104456                                                               TRAP    C$ERHRD
035406  000356                                                               .WORD   238
035410  037631'                                                              .WORD   T30BOT
035412  015364'                                                              .WORD   EXPREC
035414                          40$:    CKLOOP                          ;LOOP IF SELECTED
035414  104406                                                               TRAP    C$CLP1
035416  012737  000001  036412'        MOV     #1,T30WB                ;SET # OF TM TO SKIP

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

035424  012737  141410  036410'        MOV     #141410,T30PK3          ;SKIP TAPE MARK REVERSE,ACK,CVC=1 CMD
035432  012704  036410'               MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
035436  010465  000000               MOV     R4,TSDB(R5)             ;ISSUE COMMAND
035442  004737  016140'               JSR     PC,WAITF                ;WAIT FOR SSR TO SET
035446  016501  000002               MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
035452  012702  100206               MOV     #SSR!SC!BIT1!BIT2,R2    ;SET UP EXPECTED
035456  020102                       CMP     R1,R2                   ;ARE THEY EQUAL
035460  001406                       BEQ     70$                     ;BR, IF OK
035462  005237  002214'               INC     FATFLG                          ;ERROR COUNT
035466                               ERRHRD  ERRNO,T30IBT,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
```

```
                035466  104456                                                          TRAP    C$ERHRD
                035470  000357                                                          .WORD   239
                035472  036621'                                                        .WORD   T30IBT
                035474  011736'                                                        .WORD   PKTSSR
   1569         035476                          70$:    CKLOOP                  ;LOOP IF SELECTED
                035476  104406                                                          TRAP    C$CLP1
   1570
   1571                                         ;*****************************************************************
   1572                                         ;
   1573                                         ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
   1574                                         ;
   1575                                         ;*****************************************************************
   1576
   1577         035500  013701  036310'                MOV     T30BFR+6,R1             ;PICK UP XST0
   1578         035504  010102                          MOV     R1,R2                   ;SET UP EXPECTED
   1579         035506  052702  002000                  BIS     #BIT10,R2               ;SET NEF BIT IN EXPECTED
   1580         035512  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
   1581         035514  001406                          BEQ     180$                    ;BR, IF EQUAL (OK)
   1582         035516  005237  002214'                INC     FATFLG                          ;ERROR COUNT
   1586         035522                                  ERRHRD  ERRNO,T30NEF,EXPREC     ;TAPE NOT AT NEF
                035522  104456                                                          TRAP    C$ERHRD
                035524  000360                                                          .WORD   240
                035526  040366'                                                        .WORD   T30NEF
                035530  015364'                                                        .WORD   EXPREC
   1587         035532                          180$:   CKLOOP                  ;LOOP IF SELECTED
                035532  104406                                                          TRAP    C$CLP1
   1588         035534                                  ENDSUB                  ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
                035534                                                                  L10046:
                035534  104403                                                          TRAP    C$ESUB
   1589         035536  023727  002214' 000017          CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
   1590         035544  103402                          BLO     999$                    ;BR, IF LESS THAN 25
   1591         035546  004737  017074'                JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
   1592         035552                          999$:
   1593
   1594                                         ;*
   1595                                         ;
   1596                                         ;TEST 2, SUBTEST 4
   1597                                         ;
   1598                                         ;
   1599                                         ;VERIFIES THAT A SKIP TAPE MARKS REVERSE COMMAND
   1600                                         ;ISSUED WHILE THE TAPE IS POSITIONED JUST BEFORE THE
   1601                                         ;FIRST RECORD ON ON TAPE (BUT NOT AT BOT) CAUSES TAPE
   1602                                         ;STATUS ALERT TERMINATION, WITH THE REVERSE INTO BOT
   1603                                         ;(RIB) STATUS BIT SET.
   1604                                         ;
   1605                                         ;
   1606                                         ;
   1607                                         ;
   1608                                         ;
   1609                                         ;-
   1610         035552                                  BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
                035552                                                                  T2.4:
                035552  104402                                                          TRAP    C$BSUB
   1611         035554  004737  041042'                JSR     PC,T30REST              ;SET COMMAND PACKET
   1612         035560  005037  036444'                CLR     T30FCN                  ;CLEAR FILE COUNTER
   1613         035564  004737  041134'                JSR     PC,T30RT2               ;SET UP OTHER COMMAND PACKET
   1614         035570  004737  041176'                JSR     PC,T30RT3               ;SET UP OTHER COMMAND PACKET
```

```
1615 035574  012737  176750  036446'          MOV     #65000.,T30DLY          ;SET UP DELAY COUNTER
1616 035602  004737  015664'          10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
1617 035606  103426                           BCS     20$                     ;BR IF INIT WAS OK
1618 035610                                    DELAY   250                     ;DELAY ROUTINE CALL
     035610  012727  000250                                                    MOV     #250,(PC)+
     035614  000000                                                            .WORD   0
     035616  013727  002116'                                                    MOV     L$DLY,(PC)+
     035622  000000                                                            .WORD   0
     035624  005367  177772                                                    DEC     -6(PC)
     035630  001375                                                            BNE     .-4
     035632  005367  177756                                                    DEC     -22(PC)
     035636  001367                                                            BNE     .-20
1619 035640  005337  036446'                   DEC     T30DLY                  ;BUMP COUNTER
1620 035644  001356                           BNE     10$                     ;BR, IF MORE COUNTING TO DO
1621 035646  005237  002214'                   INC     FATFLG                          ;ERROR COUNT
1625 035652  010001                           MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
1626 035654                                    ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     035654  104455                                                            TRAP    C$ERDF
     035656  000361                                                            .WORD   241
     035660  003642'                                                          .WORD   SFIERR
     035662  011724'                                                          .WORD   SFIMSG
1627 035664                           20$:
1628 035664  013737  002174'  036300'          MOV     UNITN,T30DSW            ;SET UP UNIT NUMBER
1629 035672  012704  036260'                   MOV     #T30PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
1630
1631                                  ;*****************************************************************
1632                                  ;
1633                                  ;ISSUE WRITE CHARACTERISTICS COMMAND
1634                                  ;
1635                                  ;*****************************************************************
1636
1637 035676  004737  010552'                   JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
1638 035702  103407                           BCS     23$                     ;BR, IF COMMAND ISSUED OK
1639 035704  005237  002214'                   INC     FATFLG                          ;ERROR COUNT
1643 035710  010001                           MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
1644 035712                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     035712  104456                                                            TRAP    C$ERHRD
     035714  000362                                                            .WORD   242
     035716  005046'                                                          .WORD   WRTMSG
     035720  011724'                                                          .WORD   SFIMSG
1645 035722                           23$:    CKLOOP                          ;LOOP IF SELECTED
     035722  104406                                                            TRAP    C$CLP1
1646
1647                                  ;*****************************************************************
1648                                  ;
1649                                  ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
1650                                  ;
1651                                  ;*****************************************************************
1652
1653 035724  004737  010704'                   JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
1654 035730  103411                           BCS     30$                     ;BR, IF NO PROBLEM
1655 035732  010004                           MOV     R0,R4                   ;GET PACKET ADDRESS
1656 035734  016501  000002                   MOV     TSSR(R5),R1             ;GET STATUS REGISTER
1657 035740  005237  002214'                   INC     FATFLG                          ;ERROR COUNT
1661 035744                                    ERRHRD  ERRNO,T30RWN,PKTSSR     ;REWIND NOT ACCEPTED
     035744  104456                                                            TRAP    C$ERHRD
     035746  000363                                                            .WORD   243
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  01-FEB-84 18:55                                                    SEQ 121
TEST  2: SKIP TAPE MARKS

      035750  040030'                                                                          .WORD   T30RWN
      035752  011736'                                                                          .WORD   PKTSSR
 1662 035754                          30$:    CKLOOP                          ;LOOP IF SELECTED
      035754  104406                                                                          TRAP    C$CLP1
 1663
 1664                                 ;*****************************************************************
 1665                                 ;
 1666                                 ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
 1667                                 ;
 1668                                 ;*****************************************************************
 1669
 1670 035756  013701  036310'                MOV     T30BFR+6,R1             ;PICK UP XST0
 1671 035762  010102                         MOV     R1,R2                   ;SET UP EXPECTED
 1672 035764  052702  000002                 BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 1673 035770  020102                         CMP     R1,R2                   ;DOES EXP = REC'D
 1674 035772  001406                         BEQ     40$                     ;BR, IF EQUAL (OK)
 1675 035774  005237  002214'                INC     FATFLG                          ;ERROR COUNT
 1679 036000                                 ERRHRD  ERRNO,T30BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      036000  104456                                                                          TRAP    C$ERHRD
      036002  000364                                                                          .WORD   244
      036004  037631'                                                                        .WORD   T30BOT
      036006  015364'                                                                        .WORD   EXPREC
 1680 036010                          40$:    CKLOOP                          ;LOOP IF SELECTED
      036010  104406                                                                          TRAP    C$CLP1
 1681 036012  013737  003116' 036412'        MOV     FREE,T30WB              ;SET UP GOOD WRITE BUFFER
 1682 036020  012737  000400  036416'        MOV     #256.,T30SZ             ;SET UP SIZE
 1683
 1684                                 ;*****************************************************************
 1685                                 ;
 1686                                 ;WRITE DATA,ACK,CVC=1 COMMAND
 1687                                 ;
 1688                                 ;*****************************************************************
 1689
 1690 036026  012737  140005  036410'        MOV     #140005,T30PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
 1691 036034  012704  036410'                MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 1692 036040  010465  000000                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 1693 036044  004737  016140'                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 1694 036050  016501  000002                 MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 1695 036054  012702  000200                 MOV     #SSR,R2                 ;SET UP EXPECTED
 1696 036060  020102                         CMP     R1,R2                   ;ARE THEY EQUAL
 1697 036062  001406                         BEQ     70$                     ;BR, IF OK
 1698 036064  005237  002214'                INC     FATFLG                          ;ERROR COUNT
 1702 036070                                 ERRHRD  ERRNO,T30WDD,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      036070  104456                                                                          TRAP    C$ERHRD
      036072  000365                                                                          .WORD   245
      036074  036760'                                                                        .WORD   T30WDD
      036076  011736'                                                                        .WORD   PKTSSR
 1703 036100                          70$:    CKLOOP                          ;LOOP IF SELECTED
      036100  104406                                                                          TRAP    C$CLP1
 1704
 1705                                 ;*****************************************************************
 1706                                 ;
 1707                                 ;SKIP TAPE MARK REVERSE,ACK,CVC=1 COMMAND
 1708                                 ;
 1709                                 ;*****************************************************************
 1710
 1711 036102  012737  000001  036412'        MOV     #1,T30WB                ;# OF TM TO SKIP
```

```
1712 036110  012737  141410  036410'          MOV     #141410,T30PK3          ;SKIP TAPE MARK REVERSE,ACK,CVC=1 CMD
1713 036116  012704  036410'                   MOV     #T30PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
1714 036122  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
1715 036126  004737  016140'                   JSR     PC,WAITF                ;WAIT FOR SSR TO SET
1716 036132  016501  000002                    MOV     TSSR(R5),R1             ;PICK UP TSSR
1717 036136  012702  100204                    MOV     #SSR!BIT2!SC,R2         ;SET UP EXPECTED (SSR AND SC ONLY)
1718 036142  020102                            CMP     R1,R2                   ;WAS STATUS GOOD
1719 036144  001406                            BEQ     160$                    ;BR, IF TERMINATION WAS GOOD
1720 036146  005237  002214'                   INC     FATFLG                          ;ERROR COUNT
1724 036152                                    ERRHRD  ERRNO,T30IBU,PKTSSR     ;TSSR NOT CORRECT AFTER WRT TAPE M.
     036152  104456                                                                   TRAP    C$ERHRD
     036154  000366                                                                   .WORD   246
     036156  036450'                                                                  .WORD   T30IBU
     036160  011736'                                                                  .WORD   PKTSSR
1725 036162                            160$:   CKLOOP                          ;LOOP IF SELECTED
     036162  104406                                                                   TRAP    C$CLP1
1726
1727                                   ;*****************************************************************
1728                                   ;
1729                                   ;GET EXTENDED STATUS REGISTER ZERO (XST3) FROM MESSAGE BUFFER
1730                                   ;
1731                                   ;*****************************************************************
1732
1733 036164  013701  036316'                   MOV     T30BFR+14,R1            ;PICK UP XST3
1734 036170  010102                            MOV     R1,R2                   ;SET UP EXPECTED
1735 036172  052702  000001                    BIS     #BIT0,R2                ;SET RIB BIT IN EXPECTED
1736 036176  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
1737 036200  001406                            BEQ     170$                    ;BR, IF EQUAL (OK)
1738 036202  005237  002214'                   INC     FATFLG                          ;ERROR COUNT
1742 036206                                    ERRHRD  ERRNO,T30RIB,EXPREC     ;TAPE NOT AT RIB
     036206  104456                                                                   TRAP    C$ERHRD
     036210  000367                                                                   .WORD   247
     036212  036535'                                                                  .WORD   T30RIB
     036214  015364'                                                                  .WORD   EXPREC
1743 036216                            170$:   CKLOOP                          ;LOOP IF SELECTED
     036216  104406                                                                   TRAP    C$CLP1
1744 036220                                    ENDSUB                          ;<<<<<<<<<<< END SUBTEST >>>>>>>>>>>
     036220                                                                         L10047:
     036220  104403                                                                   TRAP    C$ESUB
1745 036222  023727  002214'  000017                CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
1746 036230  103402                                BLO     999$                            ;BR, IF LESS THAN 25
1747 036232  004737  017074'                       JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
1748 036236                            999$:
1749
1750                                   ;SUBTEST END
1751                                   ;
1752                                   ;
1753 036236  004737  016350'                   JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
1754 036242  103002                            BCC     400$                    ;BR, IF NO LOOP REQUIRED
1755 036244  000137  032140'                   JMP     T30LOOP                 ;EXECUTE AGAIN
1756 036250                            400$:   EXIT    TST                     ;ALL DONE THIS TEST
     036250  104432                                                                   TRAP    C$EXIT
     036252  002746                                                                   .WORD   L10043-.
1757
1758                                   ;*
1759                                   ;LOCAL STORAGE FOR THIS TEST
1760                                   ;-
```

```
1762 036254                                     .BLKB   10-<.-TSV2&7>
1764 036260                             T30PACKET:                      ;COMMAND PACKET FOR TEST
1765 036260  100004                             .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
1766 036262  036270'                            .WORD   T30DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
1767 036264  000000                             .WORD   0
1768 036266  000012                             .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
1769 036270                             T30DATA:                        ;CHARACTERISTICS DATA BLOCK
1770 036270  036302'                            .WORD   T30BFR          ;ADDRESS OF MESSAGE BUFFER
1771 036272  000000                             .WORD   0
1772 036274  000024                             .WORD   20.             ;LENGTH OF MESSAGE BUFFER
1773 036276  000000                     T30ETM: .WORD   0               ;SKIP TAPE MARK CONTROL
1774 036300  000000                     T30DSW: .WORD   0               ;SELECT DRIVE 0
1775 036302                             T30BFR: .BLKW   25.             ;MESSAGE BUFFER
1776                                    ;
1777                                    ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
1778                                    ;
1780 036364                                     .BLKB   10-<.-TSV2&7>
1782 036370                             T30PK2:
1783 036370  100006                             .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
1784 036372  036420'                            .WORD   T30BF2          ;ADDRESS OF SELECT BLOCK DATA
1785 036374  000000                             .WORD   0
1786 036376  000006                             .WORD   6.              ;SIZE OF DATA PACKET
1787
1789 036400                                     .BLKB   10-<.-TSV2&7>
1791 036410                             T30PK3:
1792 036410  100205                             .WORD   100205          ;REREAD COMMAND, IE AND ACK
1793 036412                             T30RB:
1794 036412  003116'                    T30WB:  .WORD   FREE            ;ADDRESS OF WRITE BUFFER
1795 036414  000000                             .WORD   0
1796 036416  000000                     T30SZ:  .WORD   0               ;SIZE OF BUFFER (EXTENT)
1797                                            .EVEN
1798                                    ;
1799                                    ;
1800                                    ;
1801 036420                             T30BF2:
1802 036420     010                     T30BS0: .BYTE   10              ;BSEL0 AREA
1803 036421     200                     T30BS1: .BYTE   200             ;BSEL1 AREA
1804 036422  000000                     T30S2:  .WORD   0               ;SEL 2 AREA
1805 036424  000000                     T30S3:  .WORD   0               ;DATA AREA
1806                                    ;
1807                                    ;
1808                                            .EVEN
1809                                    ;TAPE MOTION PACKET COMMAND VALUES
1810
1811 036426                             T30IMV:
1812 036426                             T30RN:
1813 036426  000000                             .WORD   000000          ;NEITHER EWB NOR ESS
1814 036430  000100                             .WORD   000100          ;EWB SET
1815 036432  000200                             .WORD   000200          ;ESS SET
1816 036434  000300                             .WORD   000300          ;BOTH EWB AND ESS SET
1817 036436  177777                             .WORD   177777          ;END OF DATA
1818
1819                                    ;
1820 036440  000000                     T30CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
1821 036442  000000                     T30CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
1822 036444  000000                     T30FCN: .WORD   0               ;FILE NUMBER COUNTER
1823 036446  000000                     T30DLY: .WORD   0               ;DELAY COUNTER STORAGE
```

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

036450      124     123     123  T30IBU: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE Into BOT'
036535      122     111     102  T30RIB: .ASCIZ  'RIB Bit (XST3) Failed To Set After Reverse Into BOT'
036621      124     123     123  T30IBT: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE At BOT'
036704      124     123     123  T30SKM: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK Command'
036760      124     123     123  T30WDD: .ASCIZ  'TSSR Not Correct After WRITE DATA Command'
037032      124     141     160  T30PTB: .ASCIZ  'Tape Not Positioned On Correct Record After READ REVERSE'
037123      124     141     160  T30TPB: .ASCIZ  'Tape Not Positioned On Second File First Record'
037203      124     123     123  T30RDF: .ASCIZ  'TSSR Incorrect After READ FORWARD Into "File"'
037261      124     123     123  T30RDG: .ASCIZ  'TSSR Incorrect After SPACE Command Into TAPE MARK'
037343      124     123     123  T30WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
037420      111     154     154  T30LOG: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
037501      127     122     111  T30SSR: .ASCIZ  'WRITE MISCELLANEOUS Command Not Accepted'
037552      124     123     123  T30WDE: .ASCIZ  'TSSR Not Correct After SKIP TAPE MARKS, At BOT'
037631      124     141     160  T30BOT: .ASCIZ  'Tape Not At BOT After REWIND Command'
037676      124     123     123  T30TM:  .ASCIZ  'TSSR Not Correct After SPACE FORWARD Command'
037753      124     123     123  T30TM2: .ASCIZ  'TSSR Not Correct After SPACE REVERSE Command'
040030      122     145     167  T30RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
040077      104     162     151  T30OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
040152      124     123     123  T30WDC: .ASCIZ  'TSSR Not Correct After WRITE TAPE MARK Command'
040231      103     126     103  T30VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
040304      124     115     113  T30TMK: .ASCIZ  'TMK Not Set After WRITE TAPE MARK (RETRY) Command'
040366      123     113     111  T30NEF: .ASCIZ  'SKIP TAPE MARKS, At BOT, Failed To Set NEF Bit'
040445      124     115     113  T30RRM: .ASCIZ  'TMK Not Set After READ REVERSE Into TAPE MARK'
040523      124     115     113  T30RRN: .ASCIZ  'TMK Not Set After SPACE REVERSE Into TAPE MARK'
040602      124     115     113  T30RRP: .ASCIZ  'TMK Not Set After READ FORWARD Into TAPE MARK'
040660      116     117     040  T30DTR: .ASCIZ  'NO Data Transferred On READ FORWARD'
040724      104     141     164  T30DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
041021      123     153     151  TST30ID:        .ASCIZ  'Skip Tape Marks'
                                            .EVEN
                                        ;+
                                        ;
                                        ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                        ;WRITE SUBSYSTEM MEMORY COMMAND
                                        ;
                                        ;-

041042                                  T30REST:
041042                                          SAVREG                          ;SAVE THE REGISTERS
041046  012701  036260'                        MOV     @T30PACKET,R1           ;START OF THE PACKET
041052  012721  100004                        MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
041056  012721  036270'                        MOV     @T30DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
041062  005021                              CLR     (R1)+                   ;EXTENDED ADDRESS
041064  012721  000012                        MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
041070  012721  036302'                        MOV     @T30BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
041074  005021                              CLR     (R1)+
041076  012721  000024                        MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
041102  005021                              CLR     (R1)+
041104  012711  000000                        MOV     #0,(R1)                 ;SELECT DRIVE ZERO
041110  012702  000030                        MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
041114  012762  177777  036302'  64$:        MOV     #177777,T30BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
```

```
 1881 041122  005742                          TST     -(R2)                   ;NEXT LOCATION
 1882 041124  022702  000000                  CMP     #0.,R2                          ;CHECK R2 FOR DONE
 1883 041130  001371                          BNE     64$                     ;KEEP GOING UNTIL DONE
 1884 041132  000207                          RTS     PC                      ;RETURN
 1885
 1886
 1887 041134                          T30RT2:
 1888 041134                                  SAVREG                          ;SAVE THE REGISTERS
 1889 041140  012701  036370'                MOV     #T30PK2,R1              ;START OF THE PACKET
 1890 041144  012721  100006                  MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
 1891 041150  012721  036420'                MOV     #T30BF2,(R1)+           ;ADDRESS OF DATA BLOCK
 1892 041154  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
 1893 041156  012721  000006                  MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
 1894 041162  005021                          CLR     (R1)+
 1895 041164  012701  036420'                MOV     #T30BF2,R1              ;POINT TO DATA SEL AREA
 1896 041170  005021                          CLR     (R1)+
 1897 041172  005011                          CLR     (R1)
 1898 041174  000207                          RTS     PC                      ;RETURN
 1899 041176                          T30RT3:
 1900 041176                                  SAVREG                          ;SAVE REGISTERS
 1901 041202  012701  036410'                MOV     #T30PK3,R1              ;SET UP POINTER ADDRESS
 1902 041206  005021                          CLR     (R1)+                   ;COMMAND SPACE
 1903 041210  005021                          CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
 1904 041212  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
 1905 041214  005011                          CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
 1906 041216  000207                          RTS     PC                      ;RETURN
 1907 041220                                  ENDTST
      041220                                                                          L10043:
      041220  104401                                                                         TRAP    C$ETST
 1908
 1909                                 .SBTTL  TEST  3: NO-OP ("CLEAN TAPE") AND INITIALIZE
 1910                                 ;+
 1911                                 ;
 1912                                 ;THIS TEST VERIFIES PROPER OPERATION OF THE NO-OP ("CLEAN TAPE") AND INITIALIZE
 1913                                 ;COMMAND (SPACE REVERSE, ERASE, WRITE DATA)
 1914                                 ;
 1915                                 ;
 1916                                 ;THE TEST CONSISTS OF THE FOLLOWING 2 SUBTESTS
 1917                                 ;
 1918                                 ;
 1919                                 ;
 1920                                 ;-
 1921 041222                                  BGNTST
      041222                                                                          T3::
 1922 041222  012737  006166' 002172'         MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
 1927 041230  012700  046353'                MOV     #TST31ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
 1928 041234  004737  016402'                JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
 1929 041240  012737  000005  002210'        MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
 1930 041246  005037  043146'                CLR     T31CNT                  ;CLEAR TAPE RECORD COUNTER
 1931                                 ;
 1932                                 ;-
 1933
 1934 041252                          T31LOOP:
 1935
 1936                                 ;+
 1937                                 ;
 1938                                 ;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.
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-
1957 041252                             BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     041252                                                                             T3.1:
     041252  104402                                                                      TRAP    C$BSUB
1958 041254  004737  046420'            JSR     PC,T31REST              ;SET COMMAND PACKET
1959 041260  004737  046512'            JSR     PC,T31RT2               ;SET UP OTHER COMMAND PACKET
1960 041264  004737  046554'            JSR     PC,T31RT3               ;SET UP OTHER COMMAND PACKET
1961 041270  012737  176750  043152'    MOV     #65000.,T31DLY          ;SET UP DELAY COUNTER
1962 041276  004737  015664'      10$:  JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
1963 041302  103426                    BCS     20$                     ;BR IF INIT WAS OK
1964 041304                             DELAY   250                     ;DELAY ABOUT .25 SEC
     041304  012727  000250                                                          MOV     #250.,(PC)+
     041310  000000                                                                  .WORD   0
     041312  013727  002116'                                                        MOV     L$DLY,(PC)+
     041316  000000                                                                  .WORD   0
     041320  005367  177772                                                        DEC     -6(PC)
     041324  001375                                                                 BNE     .-4
     041326  005367  177756                                                        DEC     -22(PC)
     041332  001367                                                                 BNE     .-20
1965 041334  005337  043152'            DEC     T31DLY                  ;BUMP COUNTER
1966 041340  001356                    BNE     10$                     ;BR, IF COUNTER NOT DONE
1967 041342  005237  002214'            INC     FATFLG                          ;ERROR COUNT
1971 041346  010001                    MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
1972 041350                             ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     041350  104455                                                                 TRAP    C$ERDF
     041352  000455                                                                 .WORD   301
     041354  003642'                                                                .WORD   SFIERR
     041356  011724'                                                                .WORD   SFIMSG
1973 041360  013737  002174' 043010' 20$:  MOV     UNITN,T31DSW            ;SET UP UNIT NUMBER IN PACKET
1974 041366  012704  042770'            MOV     #T31PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
1975 041372  004737  010552'            JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
1976 041376  103407                    BCS     23$                     ;BR, IF COMMAND ISSUED OK
1977 041400  005237  002214'            INC     FATFLG                          ;ERROR COUNT
1981 041404  010001                    MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
1982 041406                             ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     041406  104456                                                                 TRAP    C$ERHRD
     041410  000456                                                                 .WORD   302
     041412  005046'                                                                .WORD   WRTMSG
     041414  011724'                                                                .WORD   SFIMSG
1983 041416                       23$:  CKLOOP                          ;LOOP IF SELECTED
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  01-FEB-84 18:55                                                    SEQ 127
TEST  3: NO-OP ("CLEAN TAPE") AND INITIALIZE

      041416  104406                                                                    TRAP    C$CLP1
1984  041420  004737  010704'                JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
1985  041424  103407                         BCS     30$             ;BR, IF NO PROBLEM
1986  041426  010004                         MOV     R0,R4           ;SET UP REWIND PACKET ADDRESS
1987  041430  005237  002214'                INC     FATFLG                  ;ERROR COUNT
1991  041434                                 ERRHRD  ERRNO,T31RWN,PKTSSR     ;REWIND NOT ACCEPTED
      041434  104456                                                           TRAP    C$ERHRD
      041436  000457                                                           .WORD   303
      041440  044504'                                                         .WORD   T31RWN
      041442  011736'                                                         .WORD   PKTSSR
1992  041444                 30$:    CKLOOP                  ;LOOP IF SELECTED
      041444  104406                                                           TRAP    C$CLP1
1993  041446  013701  043020'                MOV     T31BFR+6,R1     ;PICK UP XSTO
1994  041452  010102                         MOV     R1,R2           ;SET UP EXPECTED
1995  041454  052702  000002                BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
1996  041460  020102                         CMP     R1,R2           ;DOES EXP = REC'D
1997  041462  001406                         BEQ     40$             ;BR, IF EQUAL (OK)
1998  041464  005237  002214'                INC     FATFLG                  ;ERROR COUNT
2002  041470                                 ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      041470  104456                                                           TRAP    C$ERHRD
      041472  000460                                                           .WORD   304
      041474  044155'                                                         .WORD   T31BOT
      041476  015364'                                                         .WORD   EXPREC
2003  041500                 40$:    CKLOOP                  ;LOOP IF SELECTED
      041500  104406                                                           TRAP    C$CLP1
2004  041502  013737  003116'  043122'       MOV     FREE,T31WB      ;STARTING WRITE BUFFER ADDRESS
2005  041510  012737  140005  043120'  65$:  MOV     #140005,T31PK3  ;WRITE DATA,CVC=1,ACK COMMAND
2006  041516  012704  043120'                MOV     #T31PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
2007  041522  012700  000144                MOV     #100.,R0                ;SET PATTERN IN CORRECT REGISTER
2008  041526  004737  017314'                JSR     PC,FILLMEM      ;FILL MEMORY WITH RECORD SIZE
2009  041532  012737  000144  043126'       MOV     #100.,T31SZ     ;SET UP RECORD SIZE IN PACKET
2010  041540  010465  000000                MOV     R4,TSDB(R5)     ;ISSUE COMMAND
2011  041544  004737  016140'                JSR     PC,WAITF        ;WAIT FOR SSR TO SET
2012  041550  016501  000002                MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
2013  041554  012702  000200                MOV     #SSR,R2         ;SET UP EXPECTED
2014  041560  020102                         CMP     R1,R2           ;ARE THEY EQUAL
2015  041562  001406                         BEQ     80$             ;BR, IF OK
2016  041564  005237  002214'                INC     FATFLG                  ;ERROR COUNT
2020  041570                                 ERRHRD  ERRNO,T31WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      041570  104456                                                           TRAP    C$ERHRD
      041572  000461                                                           .WORD   305
      041574  045040'                                                         .WORD   T31WDC
      041576  011736'                                                         .WORD   PKTSSR
2021  041600                 80$:    CKLOOP                  ;LOOP IF SELECTED
      041600  104406                                                           TRAP    C$CLP1
2022  041602  004737  010704'                JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
2023  041606  103407                         BCS     230$            ;BR, IF NO PROBLEM
2024  041610  010001                         MOV     R0,R1           ;SAVE TSSR
2025  041612  005237  002214'                INC     FATFLG                  ;ERROR COUNT
2029  041616                                 ERRHRD  ERRNO,T31RWN,EXPREC     ;REWIND NOT ACCEPTED
      041616  104456                                                           TRAP    C$ERHRD
      041620  000462                                                           .WORD   306
      041622  044504'                                                         .WORD   T31RWN
      041624  015364'                                                         .WORD   EXPREC
2030  041626                 230$:   CKLOOP                  ;LOOP IF SELECTED
      041626  104406                                                           TRAP    C$CLP1
2031  041630  013701  043020'                MOV     T31BFR+6,R1     ;PICK UP XSTO
```

```
2032 041634  010102                          MOV     R1,R2                   ;SET UP EXPECTED
2033 041636  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2034 041642  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
2035 041644  001406                          BEQ     240$                    ;BR, IF EQUAL (OK)
2036 041646  005237  002214'                INC     FATFLG                          ;ERROR COUNT
2040 041652                                  ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     041652  104456                                                              TRAP    C$ERHRD
     041654  000463                                                              .WORD   307
     041656  044155'                                                            .WORD   T31BOT
     041660  015364'                                                            .WORD   EXPREC
2041 041662                          240$:   CKLOOP                          ;LOOP IF SELECTED
     041662  104406                                                              TRAP    C$CLP1
2042 041664  012737  041012  043120' 265$:   MOV     #041012,T31PK3          ;NO-OP,CVC=1 COMMAND
2043 041672  012704  043120'                 MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2044 041676  010337  043126'                 MOV     R3,T31SZ                ;SET UP RECORD SIZE IN PACKET
2045 041702  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2046 041706  004737  016140'                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2047 041712  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2048 041716  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
2049 041722  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
2050 041724  001406                          BEQ     280$                    ;BR, IF OK
2051 041726  005237  002214'                INC     FATFLG                          ;ERROR COUNT
2055 041732                                  ERRHRD  ERRNO,T31RDF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     041732  104456                                                              TRAP    C$ERHRD
     041734  000464                                                              .WORD   308
     041736  043353'                                                            .WORD   T31RDF
     041740  011736'                                                            .WORD   PKTSSR
2056 041742                          280$:   CKLOOP                          ;LOOP IF SELECTED
     041742  104406                                                              TRAP    C$CLP1
2057 041744  013701  043020'                 MOV     T31BFR+6,R1             ;PICK UP XSTO
2058 041750  010102                          MOV     R1,R2                   ;SET UP EXPECTED
2059 041752  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2060 041756  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
2061 041760  001406                          BEQ     285$                    ;BR, IF EQUAL (OK)
2062 041762  005237  002214'                INC     FATFLG                          ;ERROR COUNT
2066 041766                                  ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     041766  104456                                                              TRAP    C$ERHRD
     041770  000465                                                              .WORD   309
     041772  044155'                                                            .WORD   T31BOT
     041774  015364'                                                            .WORD   EXPREC
2067 041776                          285$:   CKLOOP                          ;LOOP IF SELECTED
     041776  104406                                                              TRAP    C$CLP1
2068 042000  012737  140001  043120' 290$:   MOV     #140001,T31PK3          ;READ,ACK,CVC=1 COMMAND
2069 042006  012704  043120'                 MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2070 042012  012737  000144  043126'         MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
2071 042020  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2072 042024  004737  016140'                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2073 042030  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2074 042034  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
2075 042040  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
2076 042042  001406                          BEQ     290$                    ;BR, IF OK
2077 042044  005237  002214'                INC     FATFLG                          ;ERROR COUNT
2081 042050                                  ERRHRD  ERRNO,T31RDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     042050  104456                                                              TRAP    C$ERHRD
     042052  000466                                                              .WORD   310
     042054  043154'                                                            .WORD   T31RDE
     042056  011736'                                                            .WORD   PKTSSR
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  01-FEB-84 18:55                                                    SEQ 129
TEST  3: NO-OP ("CLEAN TAPE") AND INITIALIZE

 2082 042060                            290$:   CKLOOP                          ;LOOP IF SELECTED
      042060  104406                                                                           TRAP    C$CLP1
 2083 042062  017701  141030                    MOV     @FREE,R1                ;GET DATA READ
 2084 042066  012702  000144                    MOV     #100.,R2                ;READ EXPECTED
 2085 042072  020102                            CMP     R1,R2                   ;DID TAPE STAY POSITIONED
 2086 042074  001406                            BEQ     330$                    ;BR, IF EXPD = RECD
 2087 042076  005237  002214'                    INC     FATFLG                          ;ERROR COUNT
 2091 042102                                    ERRHRD  ERRNO,T31WNG,EXPREC     ;TAPE DATA NOT CORRECT
      042102  104456                                                                           TRAP    C$ERHRD
      042104  000467                                                                           .WORD   311
      042106  043301'                                                                          .WORD   T31WNG
      042110  015364'                                                                          .WORD   EXPREC
 2092 042112                            330$:
 2093 042112                                    ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      042112                                                                                L10051:
      042112  104403                                                                           TRAP    C$ESUB
 2094 042114  023727  002214' 000017            CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
 2095 042122  103402                            BLO     999$                            ;BR, IF LESS THAN 25
 2096 042124  004737  017074'                    JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
 2097 042130                            999$:
 2098
 2099                                   ;+
 2100                                   ;
 2101                                   ;TEST 3, SUBTEST 2
 2102                                   ;
 2103                                   ;
 2104                                   ;       VERIFIES THAT THE INITIALIZE COMMAND OPERATES AS A NO-OP,
 2105                                   ;       ASSUMING NO MICRODIAGNOSTIC ERRORS ARE PRESENT (THEY WOULD
 2106                                   ;       ALREADY HAVE BEEN DETECTED IN PREVIOUS TESTS).  THE TEST
 2107                                   ;       SEQUENCE IS SIMILAR TO THAT USED IN SUBTEST 1.
 2108                                   ;
 2109                                   ;
 2110                                   ;
 2111                                   ;-
 2112 042130                                    BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      042130                                                                                T3.2:
      042130  104402                                                                           TRAP    C$BSUB
 2113 042132  004737  046420'                    JSR     PC,T31REST              ;SET COMMAND PACKET
 2114 042136  004737  046512'                    JSR     PC,T31RT2               ;SET UP OTHER COMMAND PACKET
 2115 042142  004737  046554'                    JSR     PC,T31RT3               ;SET UP OTHER COMMAND PACKET
 2116 042146  004737  015664'                    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 2117 042152  103407                            BCS     20$                     ;BR IF INIT WAS OK
 2118 042154  005237  002214'                    INC     FATFLG                          ;ERROR COUNT
 2122 042160  010001                            MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
 2123 042162                                    ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
      042162  104455                                                                           TRAP    C$ERDF
      042164  000470                                                                           .WORD   312
      042166  003642'                                                                          .WORD   SFIERR
      042170  011724'                                                                          .WORD   SFIMSG
 2124 042172  013737  002174' 043010'  20$:     MOV     UNITN,T31DSW            ;SET UP UNIT NUMBER IN PACKET
 2125 042200  012704  042770'                    MOV     #T31PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 2126 042204  004737  010552'                    JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 2127 042210  103407                            BCS     23$                     ;BR, IF COMMAND ISSUED OK
 2128 042212  005237  002214'                    INC     FATFLG                          ;ERROR COUNT
 2132 042216  010001                            MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 2133 042220                                    ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      042220  104456                                                                           TRAP    C$ERHRD
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  01-FEB-84 18:55                                                    SEQ 130
TEST  3: NO-OP ("CLEAN TAPE") AND INITIALIZE

        042222  000471                                                                          .WORD   313
        042224  005046'                                                                        .WORD   WRTMSG
        042226  011724'                                                                        .WORD   SFIMSG
  2134  042230                          23$:    CKLOOP                          ;LOOP IF SELECTED
        042230  104406                                                                          TRAP    C$CLP1
  2135  042232  004737  010704'                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
  2136  042236  103407                        BCS     30$                     ;BR, IF NO PROBLEM
  2137  042240  010004                        MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
  2138  042242  005237  002214'                INC     FATFLG                          ;ERROR COUNT
  2142  042246                                ERRHRD  ERRNO,T31RWN,PKTSSR     ;REWIND NOT ACCEPTED
        042246  104456                                                                          TRAP    C$ERHRD
        042250  000472                                                                          .WORD   314
        042252  044504'                                                                        .WORD   T31RWN
        042254  011736'                                                                        .WORD   PKTSSR
  2143  042256                          30$:    CKLOOP                          ;LOOP IF SELECTED
        042256  104406                                                                          TRAP    C$CLP1
  2144  042260  013701  043020'                MOV     T31BFR+6,R1             ;PICK UP XSTO
  2145  042264  010102                        MOV     R1,R2                   ;SET UP EXPECTED
  2146  042266  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
  2147  042272  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
  2148  042274  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
  2149  042276  005237  002214'                INC     FATFLG                          ;ERROR COUNT
  2153  042302                                ERRHRD  ERRNO,T31BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        042302  104456                                                                          TRAP    C$ERHRD
        042304  000473                                                                          .WORD   315
        042306  044155'                                                                        .WORD   T31BOT
        042310  015364'                                                                        .WORD   EXPREC
  2154  042312                          40$:    CKLOOP                          ;LOOP IF SELECTED
        042312  104406                                                                          TRAP    C$CLP1
  2155  042314  013737  003116'  043122'        MOV     FREE,T31WB              ;STARTING WRITE BUFFER ADDRESS
  2156  042322  012737  140005  043120'  65$:   MOV     #140005,T31PK3          ;WRITE DATA,CVC=1,ACK COMMAND
  2157  042330  012704  043120'                MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
  2158  042334  012700  000144                MOV     #100.,R0                        ;SET PATTERN IN CORRECT REGISTER
  2159  042340  004737  017314'                JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
  2160  042344  012737  000144  043126'        MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
  2161  042352  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
  2162  042356  004737  016140'                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
  2163  042362  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
  2164  042366  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
  2165  042372  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
  2166  042374  001406                        BEQ     80$                     ;BR, IF OK
  2167  042376  005237  002214'                INC     FATFLG                          ;ERROR COUNT
  2171  042402                                ERRHRD  ERRNO,T31WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        042402  104456                                                                          TRAP    C$ERHRD
        042404  000474                                                                          .WORD   316
        042406  045040'                                                                        .WORD   T31WDC
        042410  011736'                                                                        .WORD   PKTSSR
  2172  042412                          80$:    CKLOOP                          ;LOOP IF SELECTED
        042412  104406                                                                          TRAP    C$CLP1
  2173  042414  004737  010704'                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
  2174  042420  103407                        BCS     230$                    ;BR, IF NO PROBLEM
  2175  042422  010001                        MOV     R0,R1                   ;SAVE TSSR
  2176  042424  005237  002214'                INC     FATFLG                          ;ERROR COUNT
  2180  042430                                ERRHRD  ERRNO,T31RWN,EXPREC     ;REWIND NOT ACCEPTED
        042430  104456                                                                          TRAP    C$ERHRD
        042432  000475                                                                          .WORD   317
        042434  044504'                                                                        .WORD   T31RWN
```

```
                042436  015364'                                                                 .WORD   EXPREC
2181            042440                  230$:   CKLOOP                          ;LOOP IF SELECTED
                042440  104406                                                                  TRAP    C$CLP1
2182            042442  013701  043020'        MOV     T31BFR+6,R1             ;PICK UP XSTO
2183            042446  010102                  MOV     R1,R2                   ;SET UP EXPECTED
2184            042450  052702  000002          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2185            042454  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
2186            042456  001406                  BEQ     240$                    ;BR, IF EQUAL (OK)
2187            042460  005237  002214'        INC     FATFLG                          ;ERROR COUNT
2191            042464                  ERRHRD  ERRNO,T31BOT,EXPREC             ;TAPE NOT AT BOT AFTER REWIND
                042464  104456                                                                  TRAP    C$ERHRD
                042466  000476                                                                  .WORD   318
                042470  044155'                                                                 .WORD   T31BOT
                042472  015364'                                                                 .WORD   EXPREC
2192            042474                  240$:   CKLOOP                          ;LOOP IF SELECTED
                042474  104406                                                                  TRAP    C$CLP1
2193            042476  012737  041012  043120' 265$:   MOV     #041012,T31PK3          ;INITIALIZE,CVC=1 COMMAND
2194            042504  012704  043120'        MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2195            042510  010337  043126'        MOV     R3,T31SZ                ;SET UP RECORD SIZE IN PACKET
2196            042514  010465  000000          MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2197            042520  004737  016140'        JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2198            042524  016501  000002          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2199            042530  012702  000200          MOV     #SSR,R2                 ;SET UP EXPECTED
2200            042534  020102                  CMP     R1,R2                   ;ARE THEY EQUAL
2201            042536  001406                  BEQ     280$                    ;BR, IF OK
2202            042540  005237  002214'        INC     FATFLG                          ;ERROR COUNT
2206            042544                  ERRHRD  ERRNO,T31RDF,PKTSSR             ;TSSR INCORRECT AFTER READ DATA
                042544  104456                                                                  TRAP    C$ERHRD
                042546  000477                                                                  .WORD   319
                042550  043353'                                                                 .WORD   T31RDF
                042552  011736'                                                                 .WORD   PKTSSR
2207            042554                  280$:   CKLOOP                          ;LOOP IF SELECTED
                042554  104406                                                                  TRAP    C$CLP1
2208            042556  013701  043020'        MOV     T31BFR+6,R1             ;PICK UP XSTO
2209            042562  010102                  MOV     R1,R2                   ;SET UP EXPECTED
2210            042564  052702  000002          BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2211            042570  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
2212            042572  001406                  BEQ     285$                    ;BR, IF EQUAL (OK)
2213            042574  005237  002214'        INC     FATFLG                          ;ERROR COUNT
2217            042600                  ERRHRD  ERRNO,T31BOT,EXPREC             ;TAPE NOT AT BOT AFTER REWIND
                042600  104456                                                                  TRAP    C$ERHRD
                042602  000500                                                                  .WORD   320
                042604  044155'                                                                 .WORD   T31BOT
                042606  015364'                                                                 .WORD   EXPREC
2218            042610                  285$:   CKLOOP                          ;LOOP IF SELECTED
                042610  104406                                                                  TRAP    C$CLP1
2219            042612  012737  140001  043120' MOV     #140001,T31PK3          ;READ,ACK,CVC=1 COMMAND
2220            042620  012704  043120'        MOV     #T31PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2221            042624  012737  000144  043126' MOV     #100.,T31SZ             ;SET UP RECORD SIZE IN PACKET
2222            042632  010465  000000          MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2223            042636  004737  016140'        JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2224            042642  016501  000002          MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2225            042646  012702  000200          MOV     #SSR,R2                 ;SET UP EXPECTED
2226            042652  020102                  CMP     R1,R2                   ;ARE THEY EQUAL
2227            042654  001406                  BEQ     290$                    ;BR, IF OK
2228            042656  005237  002214'        INC     FATFLG                          ;ERROR COUNT
2232            042662                  ERRHRD  ERRNO,T31RDE,PKTSSR             ;TSSR INCORRECT AFTER READ DATA
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  01-FEB-84 18:55                                                    SEQ 132
TEST  3: NO-OP ("CLEAN TAPE") AND INITIALIZE

        042662  104456                                                                  TRAP    C$ERHRD
        042664  000501                                                                  .WORD   321
        042666  043154'                                                                .WORD   T31RDE
        042670  011736'                                                                .WORD   PKTSSR
   2233 042672                          290$:   CKLOOP                  ;LOOP IF SELECTED
        042672  104406                                                                  TRAP    C$CLP1
   2234 042674  017701  140216                  MOV     @FREE,R1        ;GET DATA READ
   2235 042700  012702  000144                  MOV     #100.,R2        ;READ EXPECTED
   2236 042704  020102                          CMP     R1,R2           ;DID TAPE STAY POSITIONED
   2237 042706  001406                          BEQ     330$            ;BR, IF EXPD = RECD
   2238 042710  005237  002214'                          INC     FATFLG          ;ERROR COUNT
   2242 042714                                  ERRHRD  ERRNO,T31WNH,EXPREC     ;TAPE POSITION NOT CORRECT AFTER INIT
        042714  104456                                                                  TRAP    C$ERHRD
        042716  000502                                                                  .WORD   322
        042720  043220'                                                                .WORD   T31WNH
        042722  015364'                                                                .WORD   EXPREC
   2243 042724                          330$:
   2244 042724                                  ENDSUB                  ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
        042724                                                                  L10052:
        042724  104403                                                                  TRAP    C$ESUB
   2245 042726  023727  002214' 000017          CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
   2246 042734  103402                          BLO     999$                    ;BR, IF LESS THAN 25
   2247 042736  004737  017074'                 JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
   2248 042742                          999$:
   2249                                 ;
   2250                                 ;
   2251                                 ;
   2252 042742  004737  016350'                 JSR     PC,TSTLOOP      ;DO WE NEED TO ITERATE TEST
   2253 042746  103002                          BCC     163$            ;BR, IF NO LOOP REQUIRED
   2254 042750  000137  041252'                 JMP     T31LOOP         ;EXECUTE AGAIN
   2255 042754                          163$:   EXIT    TST             ;ALL DONE THIS TEST
        042754  104432                                                                  TRAP    C$EXIT
        042756  003620                                                                  .WORD   L10050-.
   2256
   2257                                 ;+
   2258                                 ;LOCAL STORAGE FOR THIS TEST
   2259                                 ;-
   2261 042760                                  .BLKB   10-<.-TSV2&7>
   2263 042770                          T31PACKET:                      ;COMMAND PACKET FOR TEST
   2264 042770  100004                          .WORD   100004          ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
   2265 042772  043000'                         .WORD   T31DATA         ;ADDRESS OF CHARACTERISTICS BLOCK
   2266 042774  000000                          .WORD   0
   2267 042776  000012                          .WORD   10.             ;STARTING VALUE OF BLOCK SIZE
   2268 043000                          T31DATA:                        ;CHARACTERISTICS DATA BLOCK
   2269 043000  043012'                         .WORD   T31BFR          ;ADDRESS OF MESSAGE BUFFER
   2270 043002  000000                          .WORD   0
   2271 043004  000024                          .WORD   20.             ;LENGTH OF MESSAGE BUFFER
   2272 043006  000000                          .WORD   0
   2273 043010  000000                  T31DSW: .WORD   0               ;SELECT DRIVE 0
   2274 043012                          T31BFR: .BLKW   25.             ;MESSAGE BUFFER
   2275                                 ;
   2276                                 ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
   2277                                 ;
   2279 043074                                  .BLKB   10-<.-TSV2&7>
   2281 043100                          T31PK2:
   2282 043100  100006                          .WORD   100006          ;WRITE SUB SYS MEM COMMAND,  AND ACK
   2283 043102  043130'                         .WORD   T31BF2          ;ADDRESS OF SELECT BLOCK DATA
```

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2284 043104  000000                    .WORD   0
2285 043106  000006                    .WORD   6.                      ;SIZE OF DATA PACKET
2286
2288 043110                            .BLKB   10-<.-T3V2&7>
2290 043120                    T31PK3:
2291 043120  100005                    .WORD   100005                  ;REREAD COMMAND, AND ACK
2292 043122                    T31RB:
2293 043122  003116'           T31WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
2294 043124  000000                    .WORD   0
2295 043126  000000            T31SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
2296                                   .EVEN
2297                           ;
2298                           ;
2299                           ;
2300 043130                    T31BF2:
2301 043130     010            T31BS0: .BYTE   10                      ;BSEL0 AREA
2302 043131     200            T31BS1: .BYTE   200                     ;BSEL1 AREA
2303 043132  000000            T31S2:  .WORD   0                       ;SEL 2 AREA
2304 043134  000000            T31S3:  .WORD   0                       ;DATA AREA
2305                           ;
2306                           ;
2307                                   .EVEN
2308                           ;TAPE MOTION PACKET COMMAND VALUES
2309
2310 043136  100205            T31RN:  .WORD   100205                  ;REREAD DATA (NEXT)
2311 043140  100605            T31WDR: .WORD   100605                  ;REREAD DATA RETRY
2312 043142  102205            T31CON: .WORD   102205                  ;WRITE CONTINOUS
2313 043144  177777                    .WORD   177777                  ;END OF DATA
2314
2315                           ;
2316 043146  000000            T31CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
2317 043150  000000            T31CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
2318 043152  000000            T31DLY: .WORD   0                       ;DELAY COUNTER
2319
2320
2321                           ;+
2322                           ;LOCAL TEXT MESSAGES FOR TEST
2323                           ;-
2324
2325
2326
2327 043154     124     123     123   T31RDE: .ASCIZ  'TSSR Not Correct After READ Command'
2328 043220     124     141     160   T31WNH: .ASCIZ  'Tape Position Incorrect After INITIALIZE Command'
2329 043301     124     141     160   T31WNG: .ASCIZ  'Tape Position Incorrect After NOP Command'
2330 043353     124     123     123   T31RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
2331 043422     122     105     122   T31RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
2332 043517     120     117     123   T31SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
2333 043601     122     111     102   T31LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
2334 043651     124     123     123   T31WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
2335 043726     111     154     154   T31LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
2336 044007     122     105     122   T31SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
2337 044043     124     123     123   T31WDE: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE Command,At BOT'
2338 044155     124     141     160   T31BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XSTO)'
2339 044250     116     117     055   T31TIM: .ASCIZ  'NO-OP ("CLEAN TAPE") AND INITIALIZE''S Erase Tape Not Long Enough'
2340 044350     122     105     122   T31EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
2341 044427     124     123     123   T31TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
2342 044504     122     145     167   T31RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
```

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2343 044553      122     101     115  T31RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
2344 044626      124     123     123  T31AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
2345 044675      104     162     151  T31OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
2346 044750      124     123     123  T31WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
2347 045040      124     123     123  T31WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
2348 045113      103     126     103  T31VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
2349 045166      124     123     102  T31BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
2350 045241      127     122     111  T31WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
2351 045330      122     145     141  T31LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XSTO'
2352 045412      122     145     141  T31LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
2353 045474      122     145     163  T31PBP: .ASCIZ  'Residual Byte Cou.. Incorrect After Short Record Read'
2354 045562      122     145     141  T31TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
2355 045650      116     117     055  T31NEF: .ASCIZ  'NO-OP ("CLEAN TAPE") AND INITIALIZE, At First Record, Failed To Set RIB Bit
X
2356 045771      124     123     123  T31SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
2357 046046      124     123     123  T31TSA: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE, Into BOT'
2358 046153      124     123     123  T31WRF: .ASCIZ  'TSSR Not Correct After NO-OP ("CLEAN TAPE") AND INITIALIZE Command'
2359 046256      104     141     164  T31DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
2360 046353      116     117     055  TST31ID:        .ASCIZ  'NO-OP ("Clean Tape") And INITIALIZE'
2361                                          .EVEN
2362                                 ;+
2363                                 ;
2364                                 ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
2365                                 ;WRITE SUBSYSTEM MEMORY COMMAND
2366                                 ;
2367                                 ;-
2368
2369 046420                          T31REST:
2370 046420                          SAVREG                          ;SAVE THE REGISTERS
2371 046424  012701  042770'        MOV     #T31PACKET,R1           ;START OF THE PACKET
2372 046430  012721  100004         MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
2373 046434  012721  043000'        MOV     #T31DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
2374 046440  005021                 CLR     (R1)+                   ;EXTENDED ADDRESS
2375 046442  012721  000012         MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
2376 046446  012721  043012'        MOV     #T31BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
2377 046452  005021                 CLR     (R1)+
2378 046454  012721  000024         MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
2379 046460  005021                 CLR     (R1)+
2380 046462  012711  000000         MOV     #0,(R1)                 ;SELECT DRIVE ZERO
2381 046466  012702  000030         MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
2382 046472  012762  177777  043012' 64$:   MOV     #177777,T31BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
2383 046500  005742                 TST     -(R2)                   ;NEXT LOCATION
2384 046502  022702  000000         CMP     #0,R2                   ;AT END OF LOOP YET
2385 046506  001371                 BNE     64$                     ;KEEP GOING UNTIL DONE
2386 046510  000207                 RTS     PC                      ;RETURN
2387
2388
2389 046512                          T31RT2:
2390 046512                          SAVREG                          ;SAVE THE REGISTERS
2391 046516  012701  043100'        MOV     #T31PK2,R1              ;START OF THE PACKET
2392 046522  012721  100006         MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
2393 046526  012721  043130'        MOV     #T31BF2,(R1)+           ;ADDRESS OF DATA BLOCK
2394 046532  005021                 CLR     (R1)+                   ;EXTENDED ADDRESS
2395 046534  012721  000006         MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
2396 046540  005021                 CLR     (R1)+
2397 046542  012701  043130'        MOV     #T31BF2,R1              ;POINT TO DATA SEL AREA
2398 046546  005021                 CLR     (R1)+
2399 046550  005011                 CLR     (R1)
```

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                                        RTS     PC                      ;RETURN
                                T31RT3:
                                        SAVREG                          ;SAVE REGISTERS
                                        MOV     #T31PK3,R1              ;SET UP POINTER ADDRESS
                                        CLR     (R1)+                   ;COMMAND SPACE
                                        CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
                                        CLR     (R1)+                   ;EXTENDED ADDRESS
                                        CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
                                        RTS     PC                      ;RETURN
                                        ENDTST
                                                                                L10050:
                                                                                        TRAP    C$ETST

                                        .SBTTL  TEST  4: Erase And Operation Incomplete
                                ;+
                                ;
                                ;       VERIFIES THAT AN ERASE COMMAND ISSUED WHEN THE TAPE IS
                                ;       POSITIONED AT BOT OPERATES PROPERLY AND ACTUALLY ERASES TAPE.
                                ;       THE FOLLOWING TEST SEQUENCE IS PERFORMED:
                                ;
                                ;            1.  THE TAPE IS FIRST REWOUND, SEVERAL TEST RECORDS ARE
                                ;                WRITTEN, AND THE TAPE IS REWOUND AGAIN.
                                ;
                                ;            2.  AN ERASE COMMAND IS ISSUED, WHICH SHOULD ERASE A NUMBER
                                ;                OF THE TEST RECORDS.
                                ;
                                ;            3.  NORMAL TERMINATION IS VERIFIED AND STATUS IS CHECKED
                                ;                (BOT SHOULD BE 0).
                                ;
                                ;            4.  A READ REVERSE COMMAND IS ISSUED.  IT IS VERIFIED THAT
                                ;                THE COMMAND TERMINATES WITH TAPE STATUS ALERT, THAT THE
                                ;                REVERSE INTO BOT (RIB) STATUS BIT IS SET, AND THAT NO
                                ;                DATA IS TRANSFERRED.  THIS DEMONSTRATES THAT NO DATA
                                ;                WAS ENCOUNTERED IN THE AREA ERASED BY THE ERASE
                                ;                COMMAND.
                                ;
                                ;
                                ;
                                ;
                                ;
                                ;THE TEST CONSISTS OF THE FOLLOWING 3 SUBTESTS
                                ;
                                ;
                                ;
                                ;-
                                        BGNTST
                                                                                T4::
                                        MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
                                        MOV     #TST32ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
                                        JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
                                        MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
                                        CLR     T32CNT                  ;CLEAR TAPE RECORD COUNTER
                                ;+
                                ;
```

```
                                        ;TEST 4, SUBTEST 1
                                        ;
                                        ;
                                        ;VERIFIES THAT A Erase And Operation Incomplete COMMAND ISSUED WHILE
                                        ;THE TAPE IS POSITIONED AT BOT CAUSES FUNCTION REJECT
                                        ;TERMINATION, WITH THE NON-EXECUTABLE FUNCTION (NEF)
                                        ;ERROR BIT SET.
                                        ;
                                        ;
                                        ;-

046630                                  T32LOOP:

                                        ;
                                        ;
                                        ;-
046630                                          BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
046630                                                                                  T4.1:
046630  104402                                                                          TRAP    C$BSUB
046632  004737  052520'                          JSR     PC,T32REST              ;SET COMMAND PACKET
046636  004737  052612'                          JSR     PC,T32RT2               ;SET UP OTHER COMMAND PACKET
046642  004737  052642'                          JSR     PC,T32RT3               ;SET UP OTHER COMMAND PACKET
046646  012737  176750  051334'                 MOV     #65000.,T32DLY          ;SET UP DELAY COUNTER
046654  004737  015664'                10$:     JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
046660  103426                                  BCS     20$                     ;BR IF INIT WAS OK
046662                                          DELAY   250                     ;DELAY ABOUT .25 SEC
046662  012727  000250                                                                  MOV     #250.,(PC)+
046666  000000                                                                          .WORD   0
046670  013727  002116'                                                                 MOV     L$DLY,(PC)+
046674  000000                                                                          .WORD   0
046676  005367  177772                                                                 DEC     -6(PC)
046702  001375                                                                          BNE     .-4
046704  005367  177756                                                                 DEC     -22(PC)
046710  001367                                                                          BNE     .-20
046712  005337  051334'                          DEC     T32DLY                  ;BUMP COUNTER
046716  001356                                  BNE     10$                     ;BR. IF COUNTER NOT DONE
046720  005237  002214'                          INC     FATFLG                          ;ERROR COUNT
046724  010001                                  MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
046726                                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
046726  104455                                                                          TRAP    C$ERDF
046730  000621                                                                          .WORD   401
046732  003642'                                                                         .WORD   SFIERR
046734  011724'                                                                         .WORD   SFIMSG
046736  013737  002174'  051160'  20$:     MOV     UNITN,T32DSW            ;SET UP DRIVE NUMBER
046744  012704  051140'                          MOV     #T32PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
046750  004737  010552'                          JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
046754  103407                                  BCS     25$                     ;BR. IF COMMAND ISSUED OK
046756  005237  002214'                          INC     FATFLG                          ;ERROR COUNT
046762  010001                                  MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
046764                                          ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
046764  104456                                                                          TRAP    C$ERHRD
046766  000622                                                                          .WORD   402
046770  005046'                                                                         .WORD   WRTMSG
046772  011724'                                                                         .WORD   SFIMSG
046774                                  25$:    CKLOOP                          ;LOOP IF SELECTED
046774  104406                                                                          TRAP    C$CLP1
046776  004737  010704'                          JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
```

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2502 047002  103411                        BCS     26$                     ;BR, IF NO PROBLEM
2503 047004  010004                        MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
2504 047006  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2505 047012  005237  002214'                INC     FATFLG                          ;ERROR COUNT
2509 047016                                ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
     047016  104456                                                                TRAP    C$ERHRD
     047020  000623                                                                .WORD   403
     047022  051520'                                                               .WORD   T32RWN
     047024  011736'                                                               .WORD   PKTSSR
2510 047026                        26$:    CKLOOP                          ;LOOP IF SELECTED
     047026  104406                                                                TRAP    C$CLP1
2511 047030  012703  000400                MOV     #256.,R3                ;STARTING RECORD SIZE
2512 047034  013737  003116'  051272'      MOV     FREE,T32WB              ;STARTING WRITE BUFFER ADDRESS
2513 047042  012737  140005  051270'      MOV     #140005,T32PK3          ;WRITE DATA,CVC=1,ACK COMMAND
2514 047050  012704  051270'              MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2515 047054  010337  051276'      27$:    MOV     R3,T32SZ                ;SET UP RECORD SIZE IN PACKET
2516 047060  010465  000000              MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2517 047064  004737  016140'              JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2518 047070  016501  000002              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2519 047074  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED
2520 047100  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
2521 047102  001406                      BEQ     28$                     ;BR, IF OK
2522 047104  005237  002214'              INC     FATFLG                          ;ERROR COUNT
2526 047110                              ERRHRD  ERRNO,T32WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     047110  104456                                                                TRAP    C$ERHRD
     047112  000624                                                                .WORD   404
     047114  052356'                                                               .WORD   T32WDC
     047116  011736'                                                               .WORD   PKTSSR
2527 047120                        28$:    CKLOOP                          ;LOOP IF SELECTED
     047120  104406                                                                TRAP    C$CLP1
2528 047122  005723                      TST     (R3)+                   ;BUMP RECORD COUNTER
2529 047124  020327  001002              CMP     R3,#514.                ;AT MAX SIZE YET
2530 047130  001351                      BNE     27$                     ;BR, IF NOT AT END OF LOOP
2531 047132  004737  010704'              JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
2532 047136  103411                      BCS     30$                     ;BR, IF NO PROBLEM
2533 047140  016501  000002              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2534 047144  010004                      MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
2535 047146  005237  002214'              INC     FATFLG                          ;ERROR COUNT
2539 047152                              ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
     047152  104456                                                                TRAP    C$ERHRD
     047154  000625                                                                .WORD   405
     047156  051520'                                                               .WORD   T32RWN
     047160  011736'                                                               .WORD   PKTSSR
2540 047162                        30$:    CKLOOP                          ;LOOP IF SELECTED
     047162  104406                                                                TRAP    C$CLP1
2541 047164  013701  051170'              MOV     T32BFR+6,R1             ;PICK UP XSTO
2542 047170  010102                      MOV     R1,R2                   ;SET UP EXPECTED
2543 047172  052702  000002              BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2544 047176  020102                      CMP     R1,R2                   ;DOES EXP = REC'D
2545 047200  001406                      BEQ     40$                     ;BR, IF EQUAL (OK)
2546 047202  005237  002214'              INC     FATFLG                          ;ERROR COUNT
2550 047206                              ERRHRD  ERRNO,T32BOE,EXPREC     ;TAPE AT BOT AFTER ERASE
     047206  104456                                                                TRAP    C$ERHRD
     047210  000626                                                                .WORD   406
     047212  052206'                                                               .WORD   T32BOE
     047214  015364'                                                               .WORD   EXPREC
2551 047216                        40$:    CKLOOP                          ;LOOP IF SELECTED
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  01-FEB-84 18:55                                    SEQ 138
TEST  4: ERASE AND OPERATION INCOMPLETE

     047216  104406                                                              TRAP    C$CLP1
2552 047220  012737  140411  051270'        MOV     #140411,T32PK3      ;ERASE TAPE,CVC=1,ACK COMMAND
2553 047226  012704  051270'                MOV     #T32PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
2554 047232  010465  000000                MOV     R4,TSDB(R5)         ;ISSUE COMMAND
2555 047236  004737  016140'                JSR     PC,WAITF            ;WAIT FOR SSR TO SET
2556 047242  016501  000002                MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
2557 047246  012702  000200                MOV     #SSR,R2             ;SET UP EXPECTED
2558 047252  020102                        CMP     R1,R2               ;ARE THEY EQUAL
2559 047254  001406                        BEQ     50$                 ;BR, IF OK
2560 047256  005237  002214'                INC     FATFLG                      ;ERROR COUNT
2564 047262                                ERRHRD  ERRNO,T32ERA,PKTSSR ;TSSR INCORRECT AFTER ERASE DATA
     047262  104456                                                              TRAP    C$ERHRD
     047264  000627                                                              .WORD   407
     047266  051636'                                                             .WORD   T32ERA
     047270  011736'                                                             .WORD   PKTSSR
2565 047272                    50$:    CKLOOP                      ;LOOP IF SELECTED
     047272  104406                                                              TRAP    C$CLP1
2566 047274  013701  051170'                MOV     T32BFR+6,R1         ;PICK UP XSTO
2567 047300  010102                        MOV     R1,R2               ;SET UP EXPECTED
2568 047302  042702  000002                BIC     #BIT1,R2            ;SET BOT BIT IN EXPECTED
2569 047306  020102                        CMP     R1,R2               ;DOES EXP = REC'D
2570 047310  001406                        BEQ     55$                 ;BR, IF EQUAL (OK)
2571 047312  005237  002214'                INC     FATFLG                      ;ERROR COUNT
2575 047316                                ERRHRD  ERRNO,T32BOE,EXPREC ;TAPE NOT AT BOT AFTER REWIND
     047316  104456                                                              TRAP    C$ERHRD
     047320  000630                                                              .WORD   408
     047322  052206'                                                             .WORD   T32BOE
     047324  015364'                                                             .WORD   EXPREC
2576 047326                    55$:    CKLOOP                      ;LOOP IF SELECTED
     047326  104406                                                              TRAP    C$CLP1
2577 047330  013737  003116'  051272'        MOV     FREE,T32RB          ;ADDRESS OF BUFFER
2578 047336  012737  140401  051270'        MOV     #140401,T32PK3      ;READ REVERSE,ACK,CVC=1 COMMAND
2579 047344  012737  000400  051276'        MOV     #256.,T32SZ         ;SET UP THE SIZE OF RECORD
2580 047352  012704  051270'                MOV     #T32PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
2581 047356  010465  000000                MOV     R4,TSDB(R5)         ;ISSUE COMMAND
2582 047362  004737  016140'                JSR     PC,WAITF            ;WAIT FOR SSR TO SET
2583 047366  016501  000002                MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
2584 047372  012702  100204                MOV     #SSR!SC!BIT2,R2     ;SET UP EXPECTED TAPE STATUS ALERT
2585 047376  020102                        CMP     R1,R2               ;ARE THEY EQUAL
2586 047400  001406                        BEQ     180$                ;BR, IF OK
2587 047402  005237  002214'                INC     FATFLG                      ;ERROR COUNT
2591 047406                                ERRHRD  ERRNO,T32TSA,PKTSSR ;TSSR INCORRECT AFTER READ DATA
     047406  104456                                                              TRAP    C$ERHRD
     047410  000631                                                              .WORD   409
     047412  052131'                                                             .WORD   T32TSA
     047414  011736'                                                             .WORD   PKTSSR
2592 047416                    180$:   CKLOOP                      ;LOOP IF SELECTED
     047416  104406                                                              TRAP    C$CLP1
2593 047420  013701  051176'                MOV     T32BFR+14,R1        ;GET XST3 STATUS WORD
2594 047424  010102                        MOV     R1,R2               ;SET UP EXPECTED
2595 047426  052702  000001                BIS     #BIT0,R2            ;SET THE RIB BIT
2596 047432  020102                        CMP     R1,R2               ;ARE THEY EQUAL
2597 047434  001406                        BEQ     190$                ;BR, IF EQUAL (GOOD)
2598 047436  005237  002214'                INC     FATFLG                      ;ERROR COUNT
2602 047442                                ERRHRD  ERRNO,T32RIB,EXPREC ;RIB SHOULD BE SET
     047442  104456                                                              TRAP    C$ERHRD
     047444  000632                                                              .WORD   410
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      047446  051756'                                                          .WORD   T32RIB
      047450  015364'                                                          .WORD   EXPREC
 2603 047452                        190$:
 2604 047452                              ENDSUB                    ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
      047452                                                                    L10054:
      047452  104403                                                                    TRAP    C$ESUB
 2605 047454  023727  002214' 000017        CMP     FATFLG,#15.               ;IS ERROR COUNT AT 25
 2606 047462  103402                        BLO     999$                      ;BR, IF LESS THAN 25
 2607 047464  004737  017074'              JSR     PC,CKDROP                 ;TRY TO DROP THE UNIT
 2608 047470                        999$:
 2609
 2610                               ;*
 2611                               ;
 2612                               ;TEST 4, SUBTEST 2
 2613                               ;
 2614                               ;       VERIFIES THAT AN ERASE COMMAND EXECUTED WHEN THE TAPE IS NOT
 2615                               ;       POSITIONED AT BOT OPERATES PROPERLY AND DOES NOT CORRUPT
 2616                               ;       PREVIOUS TAPE RECORDS.  THE TEST SEQUENCE IS:
 2617                               ;
 2618                               ;            1.  THE TAPE IS FIRST REWOUND, SEVERAL TEST RECORDS ARE
 2619                               ;                WRITTEN, AND THE TAPE IS REWOUND AGAIN.
 2620                               ;
 2621
 2622                               ;            2.  A SPACE RECORDS FORWARD COMMAND IS ISSUED TO MOVE THE
 2623                               ;                TAPE OFF OF BOT AND SKIP OVER THE FIRST SEVERAL
 2624                               ;                RECORDS.
 2625                               ;
 2626                               ;            3.  AN ERASE COMMAND IS ISSUED, WHICH SHOULD ERASE A NUMBER
 2627                               ;                OF THE TEST RECORDS.
 2628                               ;
 2629                               ;            4.  NORMAL TERMINATION IS VERIFIED AND STATUS IS CHECKED.
 2630                               ;
 2631                               ;            5.  A READ REVERSE COMMAND IS ISSUED.  IT IS VERIFIED THAT
 2632                               ;                NORMAL TERMINATION IS ACCOMPLISHED AND THAT THE DATA
 2633                               ;                TRANSFERRED CORRESPONDS TO THAT FOR THE EXPECTED
 2634                               ;                RECORD.  THIS DEMONSTRATES THAT NO DATA WAS ENCOUNTERED
 2635                               ;                IN THE AREA ERASED BY THE ERASE COMMAND, AND THAT THE
 2636                               ;                PREVIOUS RECORD WAS NOT CORRUPTED.
 2637                               ;
 2638                               ;
 2639                               ;
 2640                               ;
 2641                               ;
 2642                               ;
 2643                               ;-
 2644 047470                              BGNSUB                    ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
      047470                                                                    T4.2:
      047470  104402                                                                    TRAP    C$BSUB
 2645 047472  004737  052520'              JSR     PC,T32REST                ;SET COMMAND PACKET
 2646 047476  004737  052612'              JSR     PC,T32RT2                 ;SET UP OTHER COMMAND PACKET
 2647 047502  004737  052642'              JSR     PC,T32RT3                 ;SET UP OTHER COMMAND PACKET
 2648 047506  004737  015664'              JSR     PC,SOFINIT                ;DO INITIALIZE ON CONTROLLER
 2649 047512  103407                        BCS     20$                       ;BR IF INIT WAS OK
 2650 047514  005237  002214'              INC     FATFLG                          ;ERROR COUNT
 2654 047520  010001                        MOV     R0,R1                     ;CONTENTS OF TSSR REGISTER
 2655 047522                                ERRDF   ERRNO,SFIERR,SFIMSG       ;FATAL ERROR TSSR WAS NOT OK
      047522  104455                                                                    TRAP    C$ERDF
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                047524  000633                                                          .WORD   411
                047526  003642'                                                         .WORD   SFIERR
                047530  011724'                                                         .WORD   SFIMSG
2656            047532  013737  002174' 051160' 20$:   MOV     UNITN,T32DSW            ;SET UP UNIT NUMBER IN PACKET
2657            047540  012704  051140'                MOV     #T32PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
2658            047544  004737  010552'                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
2659            047550  103407                          BCS     23$                     ;BR, IF COMMAND ISSUED OK
2660            047552  005237  002214'                INC     FATFLG                          ;ERROR COUNT
2664            047556  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
2665            047560                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
                047560  104456                                                          TRAP    C$ERHRD
                047562  000634                                                          .WORD   412
                047564  005046'                                                         .WORD   WRTMSG
                047566  011724'                                                         .WORD   SFIMSG
2666            047570                  23$:    CKLOOP                                  ;LOOP IF SELECTED
                047570  104406                                                          TRAP    C$CLP1
2667            047572  004737  010704'                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
2668            047576  103407                          BCS     30$                     ;BR, IF NO PROBLEM
2669            047600  010004                          MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
2670            047602  005237  002214'                INC     FATFLG                          ;ERROR COUNT
2674            047606                                  ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
                047606  104456                                                          TRAP    C$ERHRD
                047610  000635                                                          .WORD   413
                047612  051520'                                                         .WORD   T32RWN
                047614  011736'                                                         .WORD   PKTSSR
2675            047616                  30$:    CKLOOP                                  ;LOOP IF SELECTED
                047616  104406                                                          TRAP    C$CLP1
2676            047620  013701  051170'                MOV     T32BFR+6,R1             ;PICK UP XST0
2677            047624  010102                          MOV     R1,R2                   ;SET UP EXPECTED
2678            047626  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2679            047632  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
2680            047634  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
2681            047636  005237  002214'                INC     FATFLG                          ;ERROR COUNT
2685            047642                                  ERRHRD  ERRNO,T32BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                047642  104456                                                          TRAP    C$ERHRD
                047644  000636                                                          .WORD   414
                047646  051336'                                                         .WORD   T32BOT
                047650  015364'                                                         .WORD   EXPREC
2686            047652                  40$:    CKLOOP                                  ;LOOP IF SELECTED
                047652  104406                                                          TRAP    C$CLP1
2687            047654  012703  000144                MOV     #100.,R3                ;STARTING RECORD SIZE
2688            047660  010300                          MOV     R3,R0                   ;SET UP MEMORY FILL
2689            047662  004737  017314'                JSR     PC,FILLMEM              ;CALL MEMORY FILLER
2690            047666  013737  003116' 051272'        MOV     FREE,T32WB              ;STARTING WRITE BUFFER ADDRESS
2691            047674  012737  140005  051270' 65$:   MOV     #140005,T32PK3          ;WRITE DATA,CVC=1,ACK COMMAND
2692            047702  012704  051270'                MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2693            047706  010300                          MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
2694            047710  004737  017314'                JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
2695            047714  010337  051276'                MOV     R3,T32SZ                ;SET UP RECORD SIZE IN PACKET
2696            047720  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2697            047724  004737  016140'                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2698            047730  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2699            047734  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
2700            047740  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
2701            047742  001406                          BEQ     80$                     ;BR, IF OK
2702            047744  005237  002214'                INC     FATFLG                          ;ERROR COUNT
2706            047750                                  ERRHRD  ERRNO,T32WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
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                                                                                    TRAP    C$ERHRD
                                                                                    .WORD   415
                                                                                    .WORD   T32WDC
                                                                                    .WORD   PKTSSR
2707 047760                         80$:    CKLOOP                                  ;LOOP IF SELECTED
     047760 104406                                                                  TRAP    C$CLP1
2708 047762 005723                          TST     (R3)+                           ;BUMP RECORD SIZE COUNTER
2709 047764 020327  000156              CMP     R3,#110.                            ;AT 160 SIZE YET
2710 047770 001341                          BNE     65$                             ;BR, IF MORE RECORDS TO WRITE
2711 047772 004737  010704'             JSR     PC,REWIND                       ;CALL TAPE REWIND COMMAND
2712 047776 103407                          BCS     230$                            ;BR, IF NO PROBLEM
2713 050000 010001                          MOV     R0,R1                           ;SAVE TSSR
2714 050002 005237  002214'             INC     FATFLG                                  ;ERROR COUNT
2718 050006                             ERRHRD  ERRNO,T32RWN,EXPREC             ;REWIND NOT ACCEPTED
     050006 104456                                                                  TRAP    C$ERHRD
     050010 000640                                                                  .WORD   416
     050012 051520'                                                                 .WORD   T32RWN
     050014 015364'                                                                 .WORD   EXPREC
2719 050016                         230$:   CKLOOP                                  ;LOOP IF SELECTED
     050016 104406                                                                  TRAP    C$CLP1
2720 050020 013701  051170'             MOV     T32BFR+6,R1                     ;PICK UP XSTO
2721 050024 010102                          MOV     R1,R2                           ;SET UP EXPECTED
2722 050026 052702  000002              BIS     #BIT1,R2                        ;SET BOT BIT IN EXPECTED
2723 050032 020102                          CMP     R1,R2                           ;DOES EXP = REC'D
2724 050034 001406                          BEQ     240$                            ;BR, IF EQUAL (OK)
2725 050036 005237  002214'             INC     FATFLG                                  ;ERROR COUNT
2729 050042                             ERRHRD  ERRNO,T32BOT,EXPREC             ;TAPE NOT AT BOT AFTER REWIND
     050042 104456                                                                  TRAP    C$ERHRD
     050044 000641                                                                  .WORD   417
     050046 051336'                                                                 .WORD   T32BOT
     050050 015364'                                                                 .WORD   EXPREC
2730 050052                         240$:   CKLOOP                                  ;LOOP IF SELECTED
     050052 104406                                                                  TRAP    C$CLP1
2731 050054 012703  000001              MOV     #1,R3                           ;SET UP FOR SPACE COMMAND
2732 050060 004737  010356'             JSR     PC,SPACE                        ;ISSUE SPACE COMMAND 1 FORWARD
2733 050064 012737  140411  051270' 265$:   MOV     #140411,T32PK3                  ;ERASE DATA,ACK COMMAND
2734 050072 012704  051270'             MOV     #T32PK3,R4                      ;SET UP R4 WITH PACKET ADDRESS
2735 050076 010465  000000              MOV     R4,TSDB(R5)                     ;ISSUE COMMAND
2736 050102 004737  016140'             JSR     PC,WAITF                        ;WAIT FOR SSR TO SET
2737 050106 016501  000002              MOV     TSSR(R5),R1                     ;GET TSSR CONTENTS
2738 050112 012702  000200              MOV     #SSR,R2                         ;SET UP EXPECTED
2739 050116 020102                          CMP     R1,R2                           ;ARE THEY EQUAL
2740 050120 001406                          BEQ     280$                            ;BR, IF OK
2741 050122 005237  002214'             INC     FATFLG                                  ;ERROR COUNT
2745 050126                             ERRHRD  ERRNO,T32ERA,PKTSSR             ;TSSR INCORRECT AFTER READ DATA
     050126 104456                                                                  TRAP    C$ERHRD
     050130 000642                                                                  .WORD   418
     050132 051636'                                                                 .WORD   T32ERA
     050134 011736'                                                                 .WORD   PKTSSR
2746 050136                         280$:   CKLOOP                                  ;LOOP IF SELECTED
     050136 104406                                                                  TRAP    C$CLP1
2747 050140 013737  003116' 051272'     MOV     FREE,T32RB                      ;ADDRESS OF BUFFER
2748 050146 012737  140401  051270'     MOV     #140401,T32PK3                  ;READ REVERSE,ACK,CVC=1 COMMAND
2749 050154 012737  000144  051276'     MOV     #100.,T32SZ                     ;SET UP THE SIZE OF RECORD
2750 050162 012704  051270'             MOV     #T32PK3,R4                      ;SET UP R4 WITH PACKET ADDRESS
2751 050166 010465  000000              MOV     R4,TSDB(R5)                     ;ISSUE COMMAND
2752 050172 004737  016140'             JSR     PC,WAITF                        ;WAIT FOR SSR TO SET
```

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2753 050176  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2754 050202  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED TAPE STATUS ALERT
2755 050206  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
2756 050210  001406                        BEQ     290$                    ;BR, IF OK
2757 050212  005237  002214'                INC     FATFLG                          ;ERROR COUNT
2761 050216                                ERRHRD  ERRNO,T32TSA,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     050216  104456                                                                    TRAP    C$ERHRD
     050220  000643                                                                    .WORD   419
     050222  052131'                                                                   .WORD   T32TSA
     050224  011736'                                                                   .WORD   PKTSSR
2762 050226                        290$:   CKLOOP                          ;LOOP IF SELECTED
     050226  104406                                                                    TRAP    C$CLP1
2763 050230  017701  132662                MOV     @FREE,R1                ;GET DATA READ
2764 050234  012702  000144                MOV     #100.,R2                ;SHOULD BE 100
2765 050240  020102                        CMP     R1,R2                   ;CHECK'EM OUT
2766 050242  001406                        BEQ     300$                    ;BR, IF OK
2767 050244  005237  002214'                INC     FATFLG                          ;ERROR COUNT
2771 050250                                ERRHRD  ERRNO,T32ECF,EXPREC     ;ERASE COMMAND DIDN'T WORK
     050250  104456                                                                    TRAP    C$ERHRD
     050252  000644                                                                    .WORD   420
     050254  052275'                                                                   .WORD   T32ECF
     050256  015364'                                                                   .WORD   EXPREC
2772 050260                        300$:   CKLOOP                          ;LOOP IF SELECTED
     050260  104406                                                                    TRAP    C$CLP1
2773 050262                        330$:
2774 050262                                ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     050262                                                                     L10055:
     050262  104403                                                                    TRAP    C$ESUB
2775 050264  023727  002214'  000017        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
2776 050272  103402                        BLO     999$                            ;BR, IF LESS THAN 25
2777 050274  004737  017074'                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
2778 050300                        999$:
2779
2780                               ;*
2781                               ;
2782                               ;TEST 4, SUBTEST 3
2783                               ;
2784                               ;       VERIFIES THAT AN ERASE COMMAND ENCOUNTERING THE EOT MARKER, OR
2785                               ;       EXECUTED BEYOND THE EOT MARKER, CAUSES TAPE STATUS ALERT
2786                               ;       TERMINATION WITH THE EOT STATUS BIT SET.  ALSO VERIFIES THAT THE
2787                               ;       OTHER TAPE MOTION COMMANDS EXECUTED WHEN THE TAPE IS BLANK
2788                               ;       RESULT IN UNRECOVERABLE ERROR TERMINATION AND OPERATION
2789                               ;       INCOMPLETE STATUS.  THE FOLLOWING TEST SEQUENCE IS EXECUTED:
2790                               ;
2791                               ;            1.  THE TAPE IS REWOUND.
2792                               ;
2793                               ;            2.  ERASE COMMANDS ARE REPEATEDLY ISSUED UNTIL EOT STATUS
2794                               ;                IS SEEN.  AN ERROR IS REPORTED IF ANY TERMINATION OTHER
2795                               ;                THAN NORMAL (WITH EOT=0) OR TAPE STATUS ALERT (WITH
2796                               ;                EOT=1) IS ENCOUNTERED.  IF THE CONTROLLER OR TRANSPORT
2797                               ;                DOES NOT DETECT THE EOT, THE TRANSPORT WILL FAULT.
2798                               ;                THIS IS REPORTED AS A FATAL ERROR AND THE TEST IS
2799                               ;                ABORTED.
2800                               ;
2801                               ;            3.  AN ADDITIONAL ERASE COMMAND IS ISSUED AND IT IS
2802                               ;                VERIFIED THAT TAPE STATUS ALERT TERMINATION RESULTS,
2803                               ;                WITH EOT=1.
```

```
                                        ;
                                        ;          4.  IT IS VERIFIED THAT EACH OF THE FOLLOWING COMMANDS
                                        ;              (ISSUED IN THE ORDER GIVEN) RESULTS IN UNRECOVERABLE
                                        ;              ERROR TERMINATION WITH OPI=1:  SPACE RECORDS REVERSE
                                        ;              SKIP TAPE MARKS REVERSE READ REVERSE REREAD PREVIOUS
                                        ;              (OPP=0) REREAD PREVIOUS (OPP=1) REREAD NEXT (OPP=1)
                                        ;              REREAD NEXT (OPP=0) READ NEXT SKIP TAPE MARKS REVERSE
                                        ;              SKIP TAPE MARKS FORWARD SPACE RECORDS FORWARD WRITE
                                        ;              DATA RETRY
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-
050300                                  BGNSUB                                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
050300                                                                                      T4.3:
050300  104402                                                                              TRAP    C$BSUB
050302  004737  052520'                JSR     PC,T32REST                      ;SET COMMAND PACKET
050306  004737  052612'                JSR     PC,T32RT2                       ;SET UP OTHER COMMAND PACKET
050312  004737  052642'                JSR     PC,T32RT3                       ;SET UP OTHER COMMAND PACKET
050316  012737  176750  051334'       MOV     #65000.,T32DLY                  ;SET UP DELAY COUNTER
050324  004737  015664'        10$:    JSR     PC,SOFINIT                      ;DO INITIALIZE ON CONTROLLER
050330  103426                        BCS     20$                             ;BR IF INIT WAS OK
050332                                DELAY   250                             ;DELAY ABOUT .25 SEC
050332  012727  000250                                                                  MOV     #250,(PC)+
050336  000000                                                                          .WORD   0
050340  013727  002116'                                                                MOV     L$DLY,(PC)+
050344  000000                                                                          .WORD   0
050346  005367  177772                                                                DEC     -6(PC)
050352  001375                                                                        BNE     .-4
050354  005367  177756                                                                DEC     -22(PC)
050360  001367                                                                        BNE     .-20
050362  005337  051334'                DEC     T32DLY                          ;BUMP COUNTER
050366  001356                        BNE     10$                             ;BR, IF COUNTER NOT DONE
050370  005237  002214'                INC     FATFLG                                  ;ERROR COUNT
050374  010001                        MOV     R0,R1                           ;CONTENTS OF TSSR REGISTER
050376                                ERRDF   ERRNO,SFIERR,SFIMSG             ;FATAL ERROR TSSR WAS NOT OK
050376  104455                                                                          TRAP    C$ERDF
050400  000645                                                                          .WORD   421
050402  003642'                                                                       .WORD   SFIERR
050404  011724'                                                                       .WORD   SFIMSG
050406  013737  002174' 051160' 20$:    MOV     UNITN,T32DSW                    ;SET UP UNIT (DRIVE) NUMBER
050414  052737  000040  051160'       BIS     #BIT5,T32DSW                    ;TURN ON HIGH SPEED TO SAVE TIME
050422  012704  051140'                MOV     #T32PACKET,R4                   ;SUBROUTINE NEEDS PACKET ADDRESS
050426  004737  010552'                JSR     PC,WRTCHR                       ;ISSUE WRITE CHARACTERISTICS
050432  103407                        BCS     23$                             ;BR, IF COMMAND ISSUED OK
050434  005237  002214'                INC     FATFLG                                  ;ERROR COUNT
050440  010001                        MOV     R0,R1                           ;SAVE CONTENTS OF TSSR
050442                                ERRHRD  ERRNO,WRTMSG,SFIMSG             ;WRITE CHARACTERISTISC FAILED
050442  104456                                                                          TRAP    C$ERHRD
050444  000646                                                                          .WORD   422
050446  005046'                                                                       .WORD   WRTMSG
050450  011724'                                                                       .WORD   SFIMSG
050452                          23$:    CKLOOP                                  ;LOOP IF SELECTED
050452  104406                                                                          TRAP    C$CLP1
050454  004737  010704'                JSR     PC,REWIND                       ;CALL TAPE REWIND COMMAND
050460  103411                        BCS     30$                             ;BR, IF NO PROBLEM
```

```
2848 050462  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2849 050466  010004                            MOV     R0,R4                   ;GET PACKET ADDRESS
2850 050470  005237  002214'                    INC     FATFLG                          ;ERROR COUNT
2854 050474                                    ERRHRD  ERRNO,T32RWN,PKTSSR     ;REWIND NOT ACCEPTED
     050474  104456                                                                   TRAP    C$ERHRD
     050476  000647                                                                   .WORD   423
     050500  051520'                                                                  .WORD   T32RWN
     050502  011736'                                                                  .WORD   PKTSSR
2855 050504                            30$:    CKLOOP                          ;LOOP IF SELECTED
     050504  104406                                                                   TRAP    C$CLP1
2856 050506  013701  051170'                    MOV     T32BFR+6,R1             ;PICK UP XSTO
2857 050512  010102                            MOV     R1,R2                   ;SET UP EXPECTED
2858 050514  052702  000002                    BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
2859 050520  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
2860 050522  001406                            BEQ     40$                     ;BR, IF EQUAL (OK)
2861 050524  005237  002214'                    INC     FATFLG                          ;ERROR COUNT
2865 050530                                    ERRHRD  ERRNO,T32BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     050530  104456                                                                   TRAP    C$ERHRD
     050532  000650                                                                   .WORD   424
     050534  051336'                                                                  .WORD   T32BOT
     050536  015364'                                                                  .WORD   EXPREC
2866 050540                            40$:    CKLOOP                          ;LOOP IF SELECTED
     050540  104406                                                                   TRAP    C$CLP1
2867 050542  012737  140411  051270'  65$:    MOV     #140411,T32PK3          ;ERASE DATA,CVC=1,ACK COMMAND
2868 050550  012704  051270'                    MOV     #T32PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
2869 050554  010337  051276'                    MOV     R3,T32SZ                ;SET UP RECORD SIZE IN PACKET
2870 050560  010465  000000                    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
2871 050564  004737  016140'                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
2872 050570  016501  000002                    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
2873 050574  012702  000200                    MOV     #SSR,R2                 ;SET UP EXPECTED
2874 050600  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
2875 050602  001757                            BEQ     65$                     ;BR, IF OK
2876 050604  032701  000004                    BIT     #BIT2,R1                ;CHECK FOR TAPE STATUS ALERT
2877 050610  001006                            BNE     80$                     ;BR, IF TAPE STATUS ALERT SET
2878 050612  005237  002214'                    INC     FATFLG                          ;ERROR COUNT
2882 050616                                    ERRHRD  ERRNO,T32WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     050616  104456                                                                   TRAP    C$ERHRD
     050620  000651                                                                   .WORD   425
     050622  052356'                                                                  .WORD   T32WDC
     050624  011736'                                                                  .WORD   PKTSSR
2883 050626                            80$:    CKLOOP                          ;LOOP IF SELECTED
     050626  104406                                                                   TRAP    C$CLP1
2884 050630  013701  051170'                    MOV     T32BFR+6,R1             ;PICK UP XSTO
2885 050634  010102                            MOV     R1,R2                   ;SET UP EXPECTED
2886 050636  052702  000001                    BIS     #BIT0,R2                ;SET EOT BIT IN EXPECTED
2887 050642  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
2888 050644  001406                            BEQ     240$                    ;BR, IF EQUAL (OK)
2889 050646  005237  002214'                    INC     FATFLG                          ;ERROR COUNT
2893 050652                                    ERRHRD  ERRNO,T32EOT,EXPREC     ;TAPE NOT AT EOT AFTER ERASE COMMANDS
     050652  104456                                                                   TRAP    C$ERHRD
     050654  000652                                                                   .WORD   426
     050656  051431'                                                                  .WORD   T32EOT
     050660  015364'                                                                  .WORD   EXPREC
2894 050662                            240$:   CKLOOP                          ;LOOP IF SELECTED
     050662  104406                                                                   TRAP    C$CLP1
2895 050664  012703  051300'                    MOV     #T32CMD,R3              ;STARTING RECORD SIZE
2896 050670  013737  003116'  051272'           MOV     FREE,T32RB              ;STARTING READ BUFFER ADDRESS
```

```
2897 050676 011337 051270'        265$:  MOV     (R3),T32PK3              ;READ DATA,ACK COMMAND
2898 050702 012704 051270'               MOV     #T32PK3,R4               ;SET UP R4 WITH PACKET ADDRESS
2899 050706 012700 177777                MOV     #177777,R0               ;SET PATTERN IN CORRECT REGISTER
2900 050712 004737 017314'               JSR     PC,FILLMEM               ;FILL MEMORY WITH ALL ONES
2901 050716 012737 000144 051276'        MOV     #100.,T32SZ              ;SET UP RECORD SIZE IN PACKET
2902 050724 010465 000000                MOV     R4,TSDB(R5)              ;ISSUE COMMAND
2903 050730 012737 000062 051334'        MOV     #50.,T32DLY              ;SET UP DELAY COUNTER
2904 050736 004737 016140'        270$:  JSR     PC,WAITF                 ;WAIT FOR SSR TO SET
2905 050742 016501 000002                MOV     TSSR(R5),R1              ;GET TSSR CONTENTS
2906 050746 012702 100214                MOV     #SSR!SC!BIT2!BIT3,R2     ;SET UP EXPECTED
2907 050752 020102                       CMP     R1,R2                    ;ARE THEY EQUAL
2908 050754 001425                       BEQ     280$                     ;BR. IF OK
2909 050756                              DELAY   250                      ;DELAY FOR SSR TO BE SET
     050756 012727 000250                                                                MOV     #250.,(PC)+
     050762 000000                                                                       .WORD   0
     050764 013727 002116'                                                               MOV     L$DLY,(PC)+
     050770 000000                                                                       .WORD   0
     050772 005367 177772                                                                DEC     -6(PC)
     050776 001375                                                                       BNE     .-4
     051000 005367 177756                                                                DEC     -22(PC)
     051004 001367                                                                       BNE     .-20
2910 051006 005337 051334'               DEC     T32DLY                   ;COUNT DELAY ROUTINE DOWN
2911 051012 001351                       BNE     270$                     ;BR. IF DELAY HAS NOT ENDED
2912 051014 005237 002214'               INC     FATFLG                           ;ERROR COUNT
2916 051020                              ERRHRD  ERRNO,T32ECF,PKTSSR      ;TSSR INCORRECT AFTER READ DATA
     051020 104456                                                                       TRAP    C$ERHRD
     051022 000653                                                                       .WORD   427
     051024 052275'                                                                      .WORD   T32ECF
     051026 011736'                                                                      .WORD   PKTSSR
2917 051030                       280$:  CKLOOP                           ;LOOP IF SELECTED
     051030 104406                                                                       TRAP    C$CLP1
2918 051032 013701 051176'               MOV     T32BFR+14,R1             ;PICK UP XST3
2919 051036 010102                       MOV     R1,R2                    ;SET UP EXPECTED
2920 051040 052702 000100                BIS     #BIT6,R2                 ;SET OPI BIT IN EXPECTED
2921 051044 020102                       CMP     R1,R2                    ;IS OPI BIT SET
2922 051046 001406                       BEQ     290$                     ;BR. IF BIT IS SET
2923 051050 005237 002214'               INC     FATFLG                           ;ERROR COUNT
2927 051054                              ERRHRD  ERRNO,T320PI,EXPREC      ;OPI BIT NOT SET
     051054 104456                                                                       TRAP    C$ERHRD
     051056 000654                                                                       .WORD   428
     051060 052423'                                                                      .WORD   T320PI
     051062 015364'                                                                      .WORD   EXPREC
2928 051064                       290$:  CKLOOP                           ;LOOP IF SELECTED
     051064 104406                                                                       TRAP    C$CLP1
2929 051066 005723                       TST     (R3)+                    ;BUMP COMMAND POINTER
2930 051070 021327 177777                CMP     (R3),#177777            ;AT END OF TABLE YET
2931 051074 001300                       BNE     265$                     ;BR. KEEP TRYING COMMANDS
2932 051076                              ENDSUB                           ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>>
     051076                                                                                L10056:
     051076 104403                                                                       TRAP    C$ESUB
2933 051100 023727 002214' 000017        CMP     FATFLG,#15.                      ;IS ERROR COUNT AT 25
2934 051106 103402                       BLO     999$                             ;BR. IF LESS THAN 25
2935 051110 004737 017074'               JSR     PC,CKDROP                        ;TRY TO DROP THE UNIT
2936 051114                       999$:
2937
2938                              ;
2939                              ;
```

```
                                ;
051114  004737  016350'        JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
051120  103002                BCC     163$                    ;BR, IF NO LOOP REQUIRED
051122  000137  046630'        JMP     T32LOOP                 ;EXECUTE AGAIN
051126                  163$:   EXIT    TST                     ;ALL DONE THIS TEST
051126  104432                                                          TRAP    C$EXIT
051130  001534                                                          .WORD   L10053-.

                                ;+
                                ;LOCAL STORAGE FOR THIS TEST
                                ;-
051132                          .BLKB   10-<.-TSV2&7>
051140                  T32PACKET:                              ;COMMAND PACKET FOR TEST
051140  100004                .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
051142  051150'               .WORD   T32DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
051144  000000                .WORD   0
051146  000012                .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
051150                  T32DATA:                                ;CHARACTERISTICS DATA BLOCK
051150  051162'               .WORD   T32BFR                  ;ADDRESS OF MESSAGE BUFFER
051152  000000                .WORD   0
051154  000024                .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
051156  000000                .WORD   0
051160  000000          T32DSW: .WORD   0                       ;SELECT DRIVE 0
051162                  T32BFR: .BLKW   25.                     ;MESSAGE BUFFER
                                ;
                                ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                ;
051244                          .BLKB   10-<.-TSV2&7>
051250                  T32PK2:
051250  100006                .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
051252  000000                .WORD   0                       ;ADDRESS OF SELECT BLOCK DATA
051254  000000                .WORD   0
051256  000006                .WORD   6.                      ;SIZE OF DATA PACKET

051260                          .BLKB   10-<.-TSV2&7>
051270                  T32PK3:
051270  100005                .WORD   100005                  ;REREAD COMMAND, AND ACK
051272                  T32RB:
051272  003116'         T32WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
051274  000000                .WORD   0
051276  000000          T32SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
                                .EVEN
                                ;
                                ;
                                ;
                                ;
                                ;
                                .EVEN
                                ;TAPE MOTION PACKET COMMAND VALUES

051300                  T32CMD:
051300  140410                .WORD   140410                  ;SPACE RECORDS REVERSE
051302  141410                .WORD   141410                  ;SKIP TAPE MARKS REVERSE
051304  140401                .WORD   140401                  ;READ REVERSE
051306  141001                .WORD   141001                  ;REREAD PREVIOUS (OPP=0)
051310  161401                .WORD   161401                  ;REREAD NEXT (OPP=1)
051312  161001                .WORD   161001                  ;REREAD PREVIOUS (OPP=1)
```

```
3001 051314  141401                          .WORD   141401          ;REREAD NEXT (OPP=0)
3002 051316  140001                          .WORD   140001          ;READ NEXT
3003 051320  141410                          .WORD   141410          ;SKIP TAPE MARKS REVERSE
3004 051322  141010                          .WORD   141010          ;SKIP RECORDS FORWARD
3005 051324  141005                          .WORD   141005          ;WRITE DATA RETRY
3006 051326  177777                          .WORD   177777          ;END OF DATA
3007
3008                                 ;
3009 051330  000000                  T32CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
3010 051332  000000                  T32CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
3011 051334  000000                  T32DLY: .WORD   0               ;DELAY COUNTER
3012
3013
3014                                 ;+
3015                                 ;LOCAL TEXT MESSAGES FOR TEST
3016                                 ;-
3017
3018
3019 051336      124     141     160 T32BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
3020 051431      124     141     160 T32EOT: .ASCIZ  'Tape Status Alert During Erase To EOT, But EOT Not Set'
3021 051520      122     145     167 T32RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
3022 051567      124     123     123 T32AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
3023 051636      124     123     123 T32ERA: .ASCIZ  'TSSR Not Correct After ERASE Command'
3024 051703      124     123     102 T32BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
3025 051756      122     105     101 T32RIB: .ASCIZ  'READ REVERSE, After ERASE From BOT, Failed To Set RIB In XST3'
3026 052054      124     123     123 T32SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
3027 052131      124     123     123 T32TSA: .ASCIZ  'TSSR Not Correct After READ REVERSE Into BOT'
3028 052206      102     117     124 T32BOE: .ASCIZ 'BOT (XST0) Still Set After Erase From Tape''s BOT Marker'
3029 052275      105     122     101 T32ECF: .ASCIZ  'ERASE Failed To Clear Tape (Erase) Tape Properly'
3030
3031 052356      124     123     123 T32WDC: .ASCIZ  'TSSR Not Correct After ERASE Command'
3032 052423      117     120     111 T32OPI: .ASCIZ  'OPI Bit (XST3) Failed To Set'
3033 052460      105     162     141 TST32ID:        .ASCIZ  'Erase And Operation Incomplete'
3034                                         .EVEN
3035                                 ;+
3036                                 ;
3037                                 ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
3038                                 ;WRITE SUBSYSTEM MEMORY COMMAND
3039                                 ;
3040                                 ;-
3041
3042 052520                          T32REST:
3043 052520                                  SAVREG                          ;SAVE THE REGISTERS
3044 052524  012701  051140'                MOV     #T32PACKET,R1           ;START OF THE PACKET
3045 052530  012721  100004                  MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
3046 052534  012721  051150'                MOV     #T32DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
3047 052540  005021                          CLR     (R1)+                   ;EXTENDED ADDRESS
3048 052542  012721  000012                  MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
3049 052546  012721  051162'                MOV     #T32BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
3050 052552  005021                          CLR     (R1)+
3051 052554  012721  000024                  MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
3052 052560  005021                          CLR     (R1)+
3053 052562  012711  000000                  MOV     #0,(R1)                 ;SELECT DRIVE ZERO
3054 052566  012702  000030                  MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
3055 052572  012762  177777  051162' 64$:   MOV     #177777,T32BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
3056 052600  005742                          TST     -(R2)                   ;NEXT LOCATION
3057 052602  022702  000000                  CMP     #0,R2                   ;AT END OF LOOP YET
```

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3058 052606  001371                    BNE     64$                     ;KEEP GOING UNTIL DONE
3059 052610  000207                    RTS     PC                      ;RETURN
3060
3061
3062 052612                    T32RT2:
3063 052612                            SAVREG                          ;SAVE THE REGISTERS
3064 052616  012701  051250'           MOV     #T32PK2,R1              ;START OF THE PACKET
3065 052622  012721  100006            MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
3066 052626  005021                    CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
3067 052630  005021                    CLR     (R1)+                   ;EXTENDED ADDRESS
3068 052632  012721  000006            MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
3069 052636  005021                    CLR     (R1)+
3070 052640  000207                    RTS     PC                      ;RETURN
3071 052642                    T32RT3:
3072 052642                            SAVREG                          ;SAVE REGISTERS
3073 052646  012701  051270'           MOV     #T32PK3,R1              ;SET UP POINTER ADDRESS
3074 052652  005021                    CLR     (R1)+                   ;COMMAND SPACE
3075 052654  005021                    CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
3076 052656  005021                    CLR     (R1)+                   ;EXTENDED ADDRESS
3077 052660  005011                    CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
3078 052662  000207                    RTS     PC                      ;RETURN
3079 052664                            ENDTST
     052664                                                                    L10053:
     052664  104401                                                                      TRAP    C$ETST
3080
3081                                   .SBTTL  TEST  5: DATA PARITY TEST
3082                           ;+
3083                           ;
3084                           ;
3085                           ;
3086                           ;
3087
3088                           ;TEST 5 -- Data Parity Test
3089                           ;
3090                           ;
3091                           ;This test verifies that the data parity circuitry in both the controller and the
3092                           ;transport  is operating properly by forcing data records with wrong parity to be
3093                           ;written onto tape and checking the results obtained when the data is read.   The
3094                           ;following test sequence is performed:
3095                           ;
3096                           ;     1.  A Write Characteristics command is issued and the resulting  status  is
3097                           ;         examined to determine the states of the Extended Features and Buffering
3098                           ;         Enable switches on the controller module.  If buffering is disabled, no
3099                           ;         further  actions need be taken in this step and the program proceeds to
3100                           ;         the next step.  If buffering is enabled, it is disabled via the  Buffer
3101                           ;         Control  field  in the extended characteristics data word supplied by a
3102                           ;         Write Characteristics command.  (The module must be in  Extended  mode,
3103                           ;         so  if it is not already, a Write Subsystem Memory command is issued to
3104                           ;         change the logical sense of the Extended Features switch.)
3105                           ;
3106                           ;     2.  The Write Subsystem Memory command is  used  to  set  the  Force  Wrong
3107                           ;         Parity control flip-flop.
3108                           ;
3109                           ;     3.  The tape is rewound.
3110                           ;
3111                           ;     4.  A Write Data command is issued to write a data  record  containing  all
3112                           ;         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.
                        ;
                        ;
                        ;
                        ;-
052666                          BGNTST
                                                                        T5::
3146 052666 012737 006225' 002172'      MOV     #EPRT2,EPRTSW           ;SECONDARY ERROR MESSAGE
3151 052674 012700 055505'              MOV     #TST33ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
3152 052700 004737 016402'              JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
3153 052704 012737 000005  002210'      MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
3154 052712 005037 054556'              CLR     T33CNT                  ;CLEAR TAPE RECORD COUNTER
3155
3156                            ;*
                                ;
3157 052716                     T33LOOP:
3158
3159 052716                             BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>
052716                                                                          T5.1:
052716 104402                                                                   TRAP    C$BSUB
3160 052720                             RFLAGS  R0                      ;CHECK FOR THE ISR FLAG SET
052720 104421                                                                   TRAP    C$RFLA
3161 052722 032700 000100               BIT     #BIT6,R0                ;IF NOT SET WE WILL SKIP THE TEST
3162 052726 001002                      BNE     5$                      ;BR, IF SET
3163 052730 000137 054342'              JMP     220$                    ;SKIP OVER TEST UNTIL BOARD FIXED
3164 052734                     5$:
3165 052734 005037 002216'              CLR     INTRECV                 ;INTERRUPT INDICATOR
3166 052740 005037 054556'              CLR     T33CNT                  ;TIMER FOR WRITE DATA SPACING
3167 052744 005037 054560'              CLR     T33CNU                  ;TIMER FOR WRITE DATA RETRY SPACING
3168 052750 004737 055522'              JSR     PC,T33REST              ;SET COMMAND PACKET
3169 052754 004737 055614'              JSR     PC,T33RT2               ;SET UP OTHER COMMAND PACKET
```

```
3170 052760  004737  055656'                    JSR     PC,T33RT3          ;SET UP OTHER COMMAND PACKET
3171 052764  012737  176750  054562'            MOV     #65000.,T33DLY     ;SET UP DELAY COUNTER
3172 052772  004737  015664'          10$:      JSR     PC,SOFINIT         ;DO INITIALIZE ON CONTROLLER
3173 052776  103426                             BCS     20$                ;BR IF INIT WAS OK
3174 053000                                     DELAY   250                ;DELAY ABOUT .25 SEC
     053000  012727  000250                                                          MOV     #250,(PC)+
     053004  000000                                                                   .WORD   0
     053006  013727  002116'                                                         MOV     L$DLY,(PC)+
     053012  000000                                                                   .WORD   0
     053014  005367  177772                                                         DEC     -6(PC)
     053020  001375                                                                 BNE     .-4
     053022  005367  177756                                                         DEC     -22(PC)
     053026  001367                                                                 BNE     .-20
3175 053030  005337  054562'                    DEC     T33DLY             ;BUMP COUNTER
3176 053034  001356                             BNE     10$                ;BR, IF COUNTER NOT DONE
3177 053036  005237  002214'                    INC     FATFLG                     ;ERROR COUNT
3181 053042  010001                             MOV     R0,R1              ;CONTENTS OF TSSR REGISTER
3182 053044                                     ERRDF   ERRNO,SFIERR,SFIMSG ;FATAL ERROR TSSR WAS NOT OK
     053044  104455                                                                   TRAP    C$ERDF
     053046  000765                                                                   .WORD   501
     053050  003642'                                                                 .WORD   SFIERR
     053052  011724'                                                                 .WORD   SFIMSG
3183 053054  012737  002174'  054420'  20$:      MOV     UNITN,T33DSW       ;SET UP UNIT NUMBER
3184
3185 053062  012704  054400'                    MOV     #T33PACKET,R4      ;SUBROUTINE NEEDS PACKET ADDRESS
3186 053066  004737  010552'                    JSR     PC,WRTCHR          ;ISSUE WRITE CHARACTERISTICS
3187 053072  103407                             BCS     23$                ;BR, IF COMMAND ISSUED OK
3188 053074  005237  002214'                    INC     FATFLG                     ;ERROR COUNT
3192 053100  010001                             MOV     R0,R1              ;SAVE CONTENTS OF TSSR
3193 053102                                     ERRHRD  ERRNO,WRTMSG,SFIMSG ;WRITE CHARACTERISTISC FAILED
     053102  104456                                                                   TRAP    C$ERHRD
     053104  000766                                                                   .WORD   502
     053106  005046'                                                                 .WORD   WRTMSG
     053110  011724'                                                                 .WORD   SFIMSG
3194 053112                          23$:       CKLOOP                     ;LOOP IF SELECTED
     053112  104406                                                                   TRAP    C$CLP1
3195 053114  004737  010704'                    JSR     PC,REWIND          ;CALL TAPE REWIND COMMAND
3196 053120  103411                             BCS     30$                ;BR, IF NO PROBLEM
3197 053122  016501  000002                     MOV     TSSR(R5),R1        ;GET TSSR CONTENTS
3198 053126  010004                             MOV     R0,R4              ;GET PACKET ADDRESS
3199 053130  005237  002214'                    INC     FATFLG                     ;ERROR COUNT
3203 053134                                     ERRHRD  ERRNO,T33RWN,PKTSSR ;REWIND NOT ACCEPTED
     053134  104456                                                                   TRAP    C$ERHRD
     053136  000767                                                                   .WORD   503
     053140  055260'                                                                 .WORD   T33RWN
     053142  011736'                                                                 .WORD   PKTSSR
3204 053144                          30$:       CKLOOP                     ;LOOP IF SELECTED
     053144  104406                                                                   TRAP    C$CLP1
3205 053146  013701  054430'                    MOV     T33BFR+6,R1        ;PICK UP XSTO
3206 053152  010102                             MOV     R1,R2              ;SET UP EXPECTED
3207 053154  052702  000002                     BIS     #BIT1,R2           ;SET BOT BIT IN EXPECTED
3208 053160  020102                             CMP     R1,R2              ;DOES EXP = REC'D
3209 053162  001406                             BEQ     40$                ;BR, IF EQUAL (OK)
3210 053164  005237  002214'                    INC     FATFLG                     ;ERROR COUNT
3214 053170                                     ERRHRD  ERRNO,T33BOT,EXPREC ;TAPE NOT AT BOT AFTER REWIND
     053170  104456                                                                   TRAP    C$ERHRD
     053172  000770                                                                   .WORD   504
```

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TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  01-FEB-84 18:55                                                    SEQ 151
TEST  5: DATA PARITY TEST

     053174  055165'                                                                        .WORD   T33BOT
     053176  015364'                                                                        .WORD   EXPREC
3215 053200                          40$:    CKLOOP                          ;LOOP IF SELECTED
     053200  104406                                                                        TRAP    C$CLP1
3216
3217 053202  005737  002220'         42$:    TST     EXTFEA                  ;CHECK FOR EXTENDED FEATURES SW SWITCH
3218 053206  001025                         BNE     55$                     ;BR IF SWITCH IS ON
3219 053210  112737  000200  054541'        MOVB    #200,T33BS1             ;WRITE MISCELLANEOUS CONT/READ STATUS
3220 053216  112737  000010  054540'        MOVB    #10,T33BSO              ;FUNC. SEL. BIT (TURN ON EXTFEA SWITCH)
3221 053224  012704  054510'                MOV     #T33PK2,R4              ;WRITE SUBSYS MEM PACKET
3222 053230  010465  000000                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3223 053234  004737  016226'                JSR     PC,CHKTSSR              ;WAIT FOR SSR
3224 053240  103407                         BCS     50$                     ;BR, IF NO ERROR
3225 053242  010001                         MOV     R0,R1                   ;ERROR, SAVE TSSR
3226 053244  005237  002214'                INC     FATFLG                          ;ERROR COUNT
3230 053250                                 ERRHRD  ERRNO,T33SSR,PKTSSR     ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
     053250  104456                                                                    TRAP    C$ERHRD
     053252  000771                                                                    .WORD   505
     053254  055101'                                                                    .WORD   T33SSR
     053256  011736'                                                                    .WORD   PKTSSR
3231 053260                          50$:    CKLOOP                          ;LOOP IF SELECTED
     053260  104406                                                                    TRAP    C$CLP1
3232 053262  005737  002222'         55$:    TST     BENBSW                  ;CHECK FOR BUFFER ENABLED
3233 053266  001426                         BEQ     70$                     ;BR, IF BUFFERING NOT ENABLED
3234 053270  013737  002174'  054420'        MOV     UNITN,T33DSW            ;SET UP UNIT NUMBER
3235 053276  042737  000020  054420'        BIC     #BIT4,T33DSW            ;BUFFER DISABLE
3236 053304  052737  000010  054420'        BIS     #BIT3,T33DSW            ;BUFFER DISABLE SEND 01 TO BITS 4 AND 3
3237 053312  012704  054400'                MOV     #T33PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
3238 053316  004737  010552'                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
3239 053322  103407                         BCS     60$                     ;BR, IF COMMAND ISSUED OK
3240 053324  005237  002214'                INC     FATFLG                          ;ERROR COUNT
3244 053330  010001                         MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
3245 053332                                 ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     053332  104456                                                                    TRAP    C$ERHRD
     053334  000772                                                                    .WORD   506
     053336  005046'                                                                    .WORD   WRTMSG
     053340  011724'                                                                    .WORD   SFIMSG
3246 053342                          60$:    CKLOOP                          ;LOOP IF SELECTED
     053342  104406                                                                    TRAP    C$CLP1
3247 053344                          70$:
3248 053344  112737  000100  054541'        MOVB    #100,T33BS1             ;WRITE MISCELLANEOUS CONT/READ STATUS
3249 053352  112737  000011  054540'        MOVB    #11,T33BSO              ;FUNC. SEL. BIT (SET WRONG PARITY)
3250 053360  012704  054510'                MOV     #T33PK2,R4              ;WRITE SUBSYS MEM PACKET
3251 053364  010465  000000                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3252 053370  004737  016226'                JSR     PC,CHKTSSR              ;WAIT FOR SSR
3253 053374  103407                         BCS     80$                     ;BR, IF NO ERROR
3254 053376  010001                         MOV     R0,R1                   ;ERROR, SAVE TSSR
3255 053400  005237  002214'                INC     FATFLG                          ;ERROR COUNT
3259 053404                                 ERRHRD  ERRNO,T33SSR,PKTSSR     ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
     053404  104456                                                                    TRAP    C$ERHRD
     053406  000773                                                                    .WORD   507
     053410  055101'                                                                    .WORD   T33SSR
     053412  011736'                                                                    .WORD   PKTSSR
3260 053414                          80$:    CKLOOP                          ;LOOP IF SELECTED
     053414  104406                                                                    TRAP    C$CLP1
3261 053416  012703  000026                 MOV     #22.,R3         ;NUMBER OF RECORDS TO BE WRITTEN
3262 053422  013737  003116'  054532'        MOV     FREE,T33WB              ;STARTING WRITE BUFFER ADDRESS
```

```
3263 053430  005037  054560'                    CLR     T33CNU                  ;MAKE SURE ITS CLEAR
3264 053434  012737  140005  054530'  110$:     MOV     #140005,T33PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
3265 053442  012704  054530'                    MOV     #T33PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
3266 053446  012737  000024  054536'            MOV     #20.,T33SZ              ;SET UP RECORD SIZE IN PACKET
3267 053454  013777  054560'  127434            MOV     T33CNU,@FREE            ;MEMORY FILLED WITH DATA IN RECORD
3268 053462  005237  054560'                    INC     T33CNU                  ;READY FOR NEXT RECORD
3269 053466  010465  000000                     MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3270 053472  004737  016140'                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3271 053476  016501  000002                     MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3272 053502  012702  100210                     MOV     #SSR!SC!BIT3,R2         ;SET UP EXPECTED
3273 053506  020102                            CMP     R1,R2                   ;ARE THEY EQUAL
3274 053510  001406                            BEQ     120$                    ;BR, IF OK
3275 053512  005237  002214'                    INC     FATFLG                          ;ERROR COUNT
3279 053516                                     ERRHRD  ERRNO,T33WPW,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     053516  104456                                                                    TRAP    C$ERHRD
     053520  000774                                                                    .WORD   508
     053522  054642'                                                                   .WORD   T33WPW
     053524  011736'                                                                   .WORD   PKTSSR
3280 053526                             120$:   CKLOOP                          ;LOOP IF SELECTED
     053526  104406                                                                    TRAP    C$CLP1
3281 053530  013701  054432'                    MOV     T33BFR+10,R1            ;PICK UP XST1
3282 053534  010102                            MOV     R1,R2                   ;SET UP EXPECTED
3283 053536  052702  000002                     BIS     #BIT1,R2                ;SET UNC BIT IN EXPECTED
3284 053542  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
3285 053544  001406                            BEQ     130$                    ;BR, IF EQUAL (OK)
3286 053546  005237  002214'                    INC     FATFLG                          ;ERROR COUNT
3290 053552                                     ERRHRD  ERRNO,T33UNC,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     053552  104456                                                                    TRAP    C$ERHRD
     053554  000775                                                                    .WORD   509
     053556  054722'                                                                   .WORD   T33UNC
     053560  015364'                                                                   .WORD   EXPREC
3291 053562                             130$:   CKLOOP                          ;LOOP IF SELECTED
     053562  104406                                                                    TRAP    C$CLP1
3292 053564  005303                            DEC     R3                      ;DEC RECORD COUNTER
3293 053566  001322                            BNE     110$                    ;BR, IF MORE RECORDS TO WRITE
3294 053570  004737  010704'                    JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
3295 053574  103411                            BCS     140$                    ;BR, IF NO PROBLEM
3296 053576  016501  000002                     MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3297 053602  010004                            MOV     R0,R4                   ;GET PACKET ADDRESS
3298 053604  005237  002214'                    INC     FATFLG                          ;ERROR COUNT
3302 053610                                     ERRHRD  ERRNO,T33RWN,PKTSSR     ;REWIND NOT ACCEPTED
     053610  104456                                                                    TRAP    C$ERHRD
     053612  000776                                                                    .WORD   510
     053614  055260'                                                                   .WORD   T33RWN
     053616  011736'                                                                   .WORD   PKTSSR
3303 053620                             140$:   CKLOOP                          ;LOOP IF SELECTED
     053620  104406                                                                    TRAP    C$CLP1
3304 053622  013701  054430'                    MOV     T33BFR+6,R1             ;PICK UP XST0
3305 053626  010102                            MOV     R1,R2                   ;SET UP EXPECTED
3306 053630  052702  000002                     BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
3307 053634  020102                            CMP     R1,R2                   ;DOES EXP = REC'D
3308 053636  001406                            BEQ     150$                    ;BR, IF EQUAL (OK)
3309 053640  005237  002214'                    INC     FATFLG                          ;ERROR COUNT
3313 053644                                     ERRHRD  ERRNO,T33BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     053644  104456                                                                    TRAP    C$ERHRD
     053646  000777                                                                    .WORD   511
     053650  055165'                                                                   .WORD   T33BOT
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     053652  015364'                                                              .WORD   EXPREC
3314 053654                           150$:   CKLOOP                          ;LOOP IF SELECTED
     053654  104406                                                               TRAP    C$CLP1
3315 053656  005037  054560'                  CLR     T33CNU                  ;CLEAR DATA VALUE IN RECORD
3316 053662  012703  000024                   MOV     #20.,R3                 ;RECORD SIZE
3317 053666  013737  003116'  054532' 155$:   MOV     FREE,T33RB              ;STARTING WRITE BUFFER ADDRESS
3318 053674  012737  140001   054530'         MOV     #140001,T33PK3          ;READ DATA,CVC=1,ACK COMMAND
3319 053702  012704  054530'                  MOV     #T33PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
3320 053706  012737  000024   054536'         MOV     #20.,T33SZ              ;SET UP RECORD SIZE IN PACKET
3321 053714  010465  000000                   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3322 053720  004737  016140'                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3323 053724  016501  000002                   MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3324 053730  012702  100210                   MOV     #SSR!SC!BIT3,R2         ;SET UP EXPECTED
3325 053734  020102                           CMP     R1,R2                   ;ARE THEY EQUAL
3326 053736  001406                           BEQ     160$                    ;BR, IF OK
3327 053740  005237  002214'                  INC     FATFLG                          ;ERROR COUNT
3331 053744                                   ERRHRD  ERRNO,T33WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     053744  104456                                                               TRAP    C$ERHRD
     053746  001000                                                               .WORD   512
     053750  055327'                                                              .WORD   T33WDC
     053752  011736'                                                              .WORD   PKTSSR
3332 053754                           160$:   CKLOOP                          ;LOOP IF SELECTED
     053754  104406                                                               TRAP    C$CLP1
3333 053756  013701  054432'                  MOV     T33BFR+10,R1            ;PICK UP XST1
3334 053762  010102                           MOV     R1,R2                   ;SET UP EXPECTED
3335 053764  052702  000002                   BIS     #BIT1,R2                ;SET UNC BIT IN EXPECTED
3336 053770  020102                           CMP     R1,R2                   ;DOES EXP = REC'D
3337 053772  001406                           BEQ     170$                    ;BR, IF EQUAL (OK)
3338 053774  005237  002214'                  INC     FATFLG                          ;ERROR COUNT
3342 054000                                   ERRHRD  ERRNO,T33UND,EXPREC     ;UNC BIT NOT SET AFTER READ CMD.
     054000  104456                                                               TRAP    C$ERHRD
     054002  001001                                                               .WORD   513
     054004  055012'                                                              .WORD   T33UND
     054006  015364'                                                              .WORD   EXPREC
3343 054010                           170$:   CKLOOP                          ;LOOP IF SELECTED
     054010  104406                                                               TRAP    C$CLP1
3344 054012  013701  054432'                  MOV     T33BFR+10,R1            ;PICK UP XST1
3345 054016  010102                           MOV     R1,R2                   ;SET UP EXPECTED
3346 054020  052702  000400                   BIS     #BIT8,R2                ;SET RBP BIT IN EXPECTED
3347 054024  020102                           CMP     R1,R2                   ;DOES EXP = REC'D
3348 054026  001406                           BEQ     180$                    ;BR, IF EQUAL (OK)
3349 054030  005237  002214'                  INC     FATFLG                          ;ERROR COUNT
3353 054034                                   ERRHRD  ERRNO,T33RBP,EXPREC     ;READ BUS PARITY ERROR BIT NOT SET
     054034  104456                                                               TRAP    C$ERHRD
     054036  001002                                                               .WORD   514
     054040  054564'                                                              .WORD   T33RBP
     054042  015364'                                                              .WORD   EXPREC
3354 054044                           180$:   CKLOOP                          ;LOOP IF SELECTED
     054044  104406                                                               TRAP    C$CLP1
3355 054046  017701  127044                   MOV     @FREE,R1                ;GET DATA READ
3356 054052  013702  054560'                  MOV     T33CNU,R2                       ;GET PATTERN
3357 054056  020102                           CMP     R1,R2                   ;ARE THEY EQUAL
3358 054060  001406                           BEQ     182$                    ;BR, IF OK
3359 054062  005237  002214'                  INC     FATFLG                          ;ERROR COUNT
3363 054066                                   ERRHRD  ERRNO,T33DTA,EXPREC     ;DATA NOT CORRECT
     054066  104456                                                               TRAP    C$ERHRD
     054070  001003                                                               .WORD   515
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                                                                                .WORD   T33DTA
                                                                                .WORD   EXPREC
3364 054076                     182$:   CKLOOP                          ;LOOP IF SELECTED
     054076  104406                                                             TRAP    C$CLP1
3365 054100  013737  003116' 054532'      MOV     FREE,T33WB          ;STARTING WRITE BUFFER ADDRESS
3366 054106  012737  140401  054530' 195$: MOV     #140401,T33PK3      ;READ REVERSE DATA RETRY,ACK COMMAND
3367 054114  012704  054530'              MOV     #T33PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
3368 054120  012737  000024  054536'      MOV     #20.,T33SZ          ;SET UP RECORD SIZE IN PACKET
3369 054126  010465  000000              MOV     R4,TSDB(R5)         ;ISSUE COMMAND
3370 054132  004737  016140'              JSR     PC,WAITF            ;WAIT FOR SSR TO SET
3371 054136  016501  000002              MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
3372 054142  012702  100210              MOV     #SC!SSR!BIT3,R2             ;SET UP EXPECTED
3373 054146  020102                      CMP     R1,R2               ;ARE THEY EQUAL
3374 054150  001406                      BEQ     190$                ;BR, IF OK
3375 054152  005237  002214'              INC     FATFLG                      ;ERROR COUNT
3379 054156                              ERRHRD  ERRNO,T33WDC,PKTSSR ;TSSR INCORRECT AFTER WRITE DATA
     054156  104456                                                             TRAP    C$ERHRD
     054160  001004                                                             .WORD   516
     054162  055327'                                                           .WORD   T33WDC
     054164  011736'                                                           .WORD   PKTSSR
3380 054166                     190$:   CKLOOP                          ;LOOP IF SELECTED
     054166  104406                                                             TRAP    C$CLP1
3381 054170  013701  054432'              MOV     T33BFR+10,R1        ;PICK UP XST1
3382 054174  010102                      MOV     R1,R2               ;SET UP EXPECTED
3383 054176  052702  000002              BIS     #BIT1,R2            ;SET UNC BIT IN EXPECTED
3384 054202  020102                      CMP     R1,R2               ;DOES EXP = REC'D
3385 054204  001406                      BEQ     200$                ;BR, IF EQUAL (OK)
3386 054206  005237  002214'              INC     FATFLG                      ;ERROR COUNT
3390 054212                              ERRHRD  ERRNO,T33UND,EXPREC ;TAPE NOT AT BOT AFTER REWIND
     054212  104456                                                             TRAP    C$ERHRD
     054214  001005                                                             .WORD   517
     054216  055012'                                                           .WORD   T33UND
     054220  015364'                                                           .WORD   EXPREC
3391 054222                     200$:   CKLOOP                          ;LOOP IF SELECTED
     054222  104406                                                             TRAP    C$CLP1
3392 054224  013701  054432'              MOV     T33BFR+10,R1        ;PICK UP XST0
3393 054230  010102                      MOV     R1,R2               ;SET UP EXPECTED
3394 054232  052702  000400              BIS     #BIT8,R2            ;SET RBP BIT IN EXPECTED
3395 054236  020102                      CMP     R1,R2               ;DOES EXP = REC'D
3396 054240  001406                      BEQ     210$                ;BR, IF EQUAL (OK)
3397 054242  005237  002214'              INC     FATFLG                      ;ERROR COUNT
3401 054246                              ERRHRD  ERRNO,T33RBP,EXPREC ;READ BUS PARITY ERROR BIT NOT SET
     054246  104456                                                             TRAP    C$ERHRD
     054250  001006                                                             .WORD   518
     054252  054564'                                                           .WORD   T33RBP
     054254  015364'                                                           .WORD   EXPREC
3402 054256                     210$:   CKLOOP                          ;LOOP IF SELECTED
     054256  104406                                                             TRAP    C$CLP1
3403 054260  017701  126632              MOV     @FREE,R1            ;GET DATA READ
3404 054264  013702  054560'              MOV     T33CNU,R2                   ;GET PATTERN
3405 054270  020102                      CMP     R1,R2               ;ARE THEY EQUAL
3406 054272  001406                      BEQ     215$                ;BR, IF OK
3407 054274  005237  002214'              INC     FATFLG                      ;ERROR COUNT
3411 054300                              ERRHRD  ERRNO,T33DTA,EXPREC ;DATA NOT CORRECT
     054300  104456                                                             TRAP    C$ERHRD
     054302  001007                                                             .WORD   519
     054304  055410'                                                           .WORD   T33DTA
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054306  015364'                                                                     .WORD   EXPREC
054310                              215$:   CKLOOP                      ;LOOP IF SELECTED
054310  104406                                                                      TRAP    C$CLP1
054312  010302                              MOV     R3,R2               ;SAVE R3 FOR A MOMENT
054314  012703  000001                      MOV     #1,R3               ;SPACE FORWARD ONE RECORD
054320  004737  010356'                     JSR     PC,SPACE            ;CALL ROUTINE
054324  010203                              MOV     R2,R3               ;RESTORE R3
054326  005237  054560'                     INC     T33CNU              ;BUMP TO NEXT RECORD NUMBER
054332  005303                              DEC     R3                  ;BUMP COUNTER
054334  001402                              BEQ     220$                ;BR, IF DONE
054336  000137  053666'                     JMP     155$                ;BR, IF NOT DONE YET
054342                              220$:
054342                                      ENDSUB                      ;<<<<<<<<<<<<< END SUBTEST >>>>>>>>>>>>
054342                                                                              L10060:
054342  104403                                                                      TRAP    C$ESUB
054344  023727  002214' 000017              CMP     FATFLG,#15.                 ;IS ERROR COUNT AT 25
054352  103402                              BLO     999$                        ;BR, IF LESS THAN 25
054354  004737  017074'                     JSR     PC,CKDROP                   ;TRY TO DROP THE UNIT
054360                              999$:
                                    ;
                                    ;
                                    ;
054360  004737  016350'                     JSR     PC,TSTLOOP          ;DO WE NEED TO ITERATE TEST
054364  103002                              BCC     230$                ;BR, IF NO LOOP REQUIRED
054366  000137  052716'                     JMP     T33LOOP             ;EXECUTE AGAIN
054372                              230$:   EXIT    TST                 ;ALL DONE THIS TEST
054372  104432                                                                      TRAP    C$EXIT
054374  001304                                                                      .WORD   L10057-.


                                    ;+
                                    ;LOCAL STORAGE FOR THIS TEST
                                    ;-
054376                                      .BLKB   10-<.-TSV2&7>
054400                              T33PACKET:                          ;COMMAND PACKET FOR TEST
054400  100004                              .WORD   100004              ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
054402  054410'                             .WORD   T33DATA             ;ADDRESS OF CHARACTERISTICS BLOCK
054404  000000                              .WORD   0
054406  000012                              .WORD   10.                 ;STARTING VALUE OF BLOCK SIZE
054410                              T33DATA:                            ;CHARACTERISTICS DATA BLOCK
054410  054422'                             .WORD   T33BFR              ;ADDRESS OF MESSAGE BUFFER
054412  000000                              .WORD   0
054414  000024                              .WORD   20.                 ;LENGTH OF MESSAGE BUFFER
054416  000000                              .WORD   0
054420  000000                      T33DSW: .WORD   0                   ;SELECT DRIVE 0
054422                              T33BFR: .BLKW   25.                 ;MESSAGE BUFFER
                                    ;
                                    ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                    ;
054504                                      .BLKB   10-<.-TSV2&7>
054510                              T33PK2:
054510  100006                              .WORD   100006              ;WRITE SUB SYS MEM COMMAND,  AND ACK
054512  054540'                             .WORD   T33BF2              ;ADDRESS OF SELECT BLOCK DATA
054514  000000                              .WORD   0
054516  000006                              .WORD   6.                  ;SIZE OF DATA PACKET

054520                                      .BLKB   10-<.-TSV2&7>
054530                              T33PK3:
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3469 054530  100005                        .WORD   100005          ;REREAD COMMAND, AND ACK
3470 054532                          T33RB:
3471 054532  003116'                 T33WB: .WORD   FREE            ;ADDRESS OF WRITE BUFFER
3472 054534  000000                        .WORD   0
3473 054536  000000                  T33SZ: .WORD   0               ;SIZE OF BUFFER (EXTENT)
3474                                        .EVEN
3475                                 ;
3476                                 ;
3477                                 ;
3478 054540                          T33BF2:
3479 054540     010                 T33BS0: .BYTE  10              ;BSEL0 AREA
3480 054541     200                 T33BS1: .BYTE  200             ;BSEL1 AREA
3481 054542  000000                  T33S2: .WORD   0               ;SEL 2 AREA
3482 054544  000000                  T33S3: .WORD   0               ;DATA AREA
3483                                 ;
3484                                 ;
3485                                        .EVEN
3486                                 ;TAPE MOTION PACKET COMMAND VALUES
3487
3488 054546  100205                  T33RN: .WORD   100205          ;REREAD DATA (NEXT)
3489 054550  100605                 T33WDR: .WORD   100605          ;REREAD DATA RETRY
3490 054552  102205                 T33CON: .WORD   102205          ;WRITE CONTINOUS
3491 054554  177777                        .WORD   177777          ;END OF DATA
3492
3493                                 ;
3494 054556  000000                 T33CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
3495 054560  000000                 T33CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
3496 054562  000000                 T33DLY: .WORD   0               ;DELAY COUNTER
3497
3498
3499                                 ;+
3500                                 ;LOCAL TEXT MESSAGES FOR TEST
3501                                 ;-
3502
3503
3504 054564      122     145     141 T33RBP: .ASCIZ  'Read Bus Parity Bit Not Set (XST1), Should Be'
3505 054642      124     123     123 T33WPW: .ASCIZ  'TSSR Incorrect After Wrong Parity Write Command'
3506 054722      125     116     103 T33UNC: .ASCIZ  'UNC Bit (XST1) Not Set After Wrong Parity WRITE Command'
3507 055012      125     116     103 T33UND: .ASCIZ  'UNC Bit (XST1) Not Set After Wrong Parity READ Command'
3508 055101      127     122     111 T33SSR: .ASCIZ  'WRITE MISSCELLANEOUS CONT/READ COMMAND Not Accepted'
3509 055165      124     141     160 T33BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
3510 055260      122     145     167 T33RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
3511 055327      124     123     123 T33WDC: .ASCIZ  'TSSR Not Correct After READ Wrong Parity Command'
3512 055410      104     141     164 T33DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
3513 055505      104     141     164 TST33ID:        .ASCIZ  'Data Parity'
3514                                        .EVEN
3515                                 ;+
3516                                 ;
3517                                 ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
3518                                 ;WRITE SUBSYSTEM MEMORY COMMAND
3519                                 ;
3520                                 ;-
3521
3522 055522                          T33REST:
3523 055522                                 SAVREG                  ;SAVE THE REGISTERS
3524 055526  012701  054400'                MOV     #T33PACKET,R1   ;START OF THE PACKET
3525 055532  012721  100004                MOV     #100004,(R1)+   ;WRITE SUBSYSTEM MEM. WITH ACK,
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3526 055536  012721  054410'                    MOV     #T33DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
3527 055542  005021                             CLR     (R1)+                   ;EXTENDED ADDRESS
3528 055544  012721  000012                     MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
3529 055550  012721  054422'                    MOV     #T33BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
3530 055554  005021                             CLR     (R1)+
3531 055556  012721  000024                     MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
3532 055562  005021                             CLR     (R1)+
3533 055564  012711  000000                     MOV     #0,(R1)                 ;SELECT DRIVE ZERO
3534 055570  012702  000030                     MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
3535 055574  012762  177777  0544.2' 64$:      MOV     #177777,T33BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
3536 055602  005742                             TST     -(R2)                   ;NEXT LOCATION
3537 055604  022702  000000                     CMP     #0,R2                   ;AT END OF LOOP YET
3538 055610  001371                             BNE     64$                     ;KEEP GOING UNTIL DONE
3539 055612  000207                             RTS     PC                      ;RETURN
3540
3541
3542 055614                         T33RT2:
3543 055614                                 SAVREG                              ;SAVE THE REGISTERS
3544 055620  012701  054510'                    MOV     #T33PK2,R1              ;START OF THE PACKET
3545 055624  012721  100006                     MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
3546 055630  012721  054540'                    MOV     #T33BF2,(R1)+           ;ADDRESS OF DATA BLOCK
3547 055634  005021                             CLR     (R1)+                   ;EXTENDED ADDRESS
3548 055636  012721  000006                     MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
3549 055642  005021                             CLR     (R1)+
3550 055644  012701  054540'                    MOV     #T33BF2,R1              ;POINT TO DATA SEL AREA
3551 055650  005021                             CLR     (R1)+
3552 055652  005011                             CLR     (R1)
3553 055654  000207                             RTS     PC                      ;RETURN
3554 055656                         T33RT3:
3555 055656                                 SAVREG                              ;SAVE REGISTERS
3556 055662  012701  054530'                    MOV     #T33PK3,R1              ;SET UP POINTER ADDRESS
3557 055666  005021                             CLR     (R1)+                   ;COMMAND SPACE
3558 055670  005021                             CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
3559 055672  005021                             CLR     (R1)+                   ;EXTENDED ADDRESS
3560 055674  005011                             CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
3561 055676  000207                             RTS     PC                      ;RETURN
3562 055700                                 ENDTST
     055700                                                             L10057:
     055700  104401                                                           TRAP    C$ETST
3563
3564                                        .SBTTL  TEST  6: OPERATIONS AT EOT
3565                                ;+
3566                                ;
3567                                ;THIS TEST VERIFIES PROPER OPERATION OF THE WRITE DATA RETRY
3568                                ;COMMAND (SPACE REVERSE, ERASE, WRITE DATA)
3569                                ;
3570                                ;
3571                                ;THE TEST CONSISTS OF THE FOLLOWING 1 SUBTEST
3572                                ;
3573                                ;
3574                                ;
3575                                ;-
3576 055702                                 BGNTST
     055702                                                                 T6::
3577 055702  012737  006166' 002172'            MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
3582 055710  012700  063057'                    MOV     #TST34ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
3583 055714  004737  016402'                    JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
```

```
3584 055720  012737  000005  002210'          MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
3585 055726  005037  060542'                  CLR     T34CNT                  ;CLEAR TAPE RECORD COUNTER
3586                                ;*
3587                                ;
3588                                ;TEST 6, SUBTEST 1
3589                                ;
3590                                ;
3591                                ;       THIS TEST VERIFIES THAT THE EOT STATUS IS HANDLED PROPERLY BY
3592                                ;       THE VARIOUS TAPE MOTION COMMANDS.  THE FOLLOWING TEST SEQUENCE
3593                                ;       IS PERFORMED:
3594                                ;
3595                                ;            1.  THE TAPE IS REWOUND.
3596                                ;
3597                                ;            2.  WRITE DATA COMMANDS ARE REPEATEDLY ISSUED UNTIL TAPE
3598                                ;                STATUS ALERT TERMINATION IS SEEN WITH EOT=1.  ERRORS
3599                                ;                OTHER THAN OCCASIONAL CORRECTABLE OR UNCORRECTABLE DATA
3600                                ;                ERRORS CAUSE A FATAL ERROR REPORT.  RECORDS WITH DATA
3601                                ;                ERRORS ARE RETRIED, SO THE TAPE ENDS UP WITH GOOD DATA.
3602                                ;
3603                                ;            3.  ANOTHER WRITE DATA COMMAND IS ISSUED, AND IT IS CHECKED
3604                                ;                THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=1.
3605                                ;
3606                                ;            4.  A WRITE TAPE MARK COMMAND IS ISSUED, AND IT IS CHECKED
3607                                ;                THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=1.
3608                                ;
3609                                ;            5.  A SKIP TAPE MARKS REVERSE COMMAND IS ISSUED, AND IT IS
3610                                ;                CHECKED THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH
3611                                ;                EOT=1 AND TMK=1.
3612                                ;
3613                                ;            6.  A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF
3614                                ;                1, IS ISSUED, AND IT IS CHECKED THAT TAPE STATUS ALERT
3615                                ;                TERMINATION OCCURS, WITH EOT=1 AND TMK=1.
3616                                ;
3617                                ;            7.  A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF
3618                                ;                1, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
3619                                ;                OCCURS, WITH EOT=1.
3620                                ;
3621                                ;            8.  A SPACE RECORDS FORWARD COMMAND, WITH A RECORD COUNT OF
3622                                ;                1, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
3623                                ;                OCCURS, WITH EOT=1.
3624                                ;
3625                                ;            9.  A READ REVERSE COMMAND IS ISSUED, AND IT IS CHECKED
3626                                ;                THAT NORMAL TERMINATION OCCURS, WITH EOT=1.
3627                                ;
3628                                ;            10. A READ FORWARD COMMAND IS ISSUED, AND IT IS CHECKED
3629                                ;                THAT NORMAL TERMINATION OCCURS, WITH EOT=1.
3630                                ;
3631                                ;            11. A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF
3632                                ;                3, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
3633                                ;                OCCURS, WITH EOT=0.
3634                                ;
3635                                ;            12. A SPACE RECORDS FORWARD COMMAND, WITH A RECORD COUNT OF
3636                                ;                3, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION
3637                                ;                OCCURS, WITH EOT=1.
3638                                ;
3639                                ;            13. A SKIP FILE MARKS REVERSE COMMAND IS ISSUED, WHICH
3640                                ;                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.
                                ;
                                ;
                                ;
                                ;-

055732                          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.
                                ;
                                ;
                                ;
                                ;-

055732                          BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
055732                                                          T6.1:
055732  104402                                                          TRAP    C$BSUB
055734  004737  063102'                JSR     PC,T34REST      ;SET COMMAND PACKET
055740  004737  063236'                JSR     PC,T34RT3       ;RESTORE PACKET
055744  004737  063174'                JSR     PC,T34RT2       ;SET UP OTHER COMMAND PACKET
055750  012737  176750  060544'       MOV     #65000.,T34DLY  ;SET UP COUNTER
055756  004737  015664'        10$:    JSR     PC,SOFINIT      ;DO INITIALIZE ON CONTROLLER
055762  103433                        BCS     20$             ;BR IF INIT WAS OK
055764                                DELAY   250             ;DELAY A WHILE
055764  012727  000250                                                  MOV     #250.,(PC)+
055770  000000                                                          .WORD   0
055772  013727  002116'                                                  MOV     L$DLY,(PC)+
055776  000000                                                          .WORD   0
056000  005367  177772                                                  DEC     -6(PC)
056004  001375                                                          BNE     .-4
056006  005367  177756                                                  DEC     -22(PC)
056012  001367                                                          BNE     .-20
056014  016501  000002                MOV     TSSR(R5),R1     ;GET TSSR STATUS
056020  032701  000200                BIT     #SSR,R1         ;CHECK FOR SSR SET
056024  001012                        BNE     20$             ;BR, WHEN SSR IS SET
056026  005337  060544'               DEC     T34DLY          ;BUMP COUNTER DOWN
056032  001351                        BNE     10$             ;BR, IF MORE DELAY REQUIRED
056034  005237  002214'               INC     FATFLG                  ;ERROR COUNT
```

```
3691 056040  010001                          MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
3692 056042                                  ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     056042  104455                                                              TRAP    C$ERDF
     056044  001131                                                              .WORD   601
     056046  003642'                                                            .WORD   SFIERR
     056050  011724'                                                            .WORD   SFIMSG
3693 056052                          20$:    CKLOOP                          ;LOOP IF SELECTED
     056052  104406                                                              TRAP    C$CLP1
3694 056054  013737  002174'  060420'        MOV     UNITN,T34DSW            ;SET UP DRIVE NUMBER
3695 056062  052737  000040   060420'        BIS     #BIT5,T34DSW            ;TURN ON HIGH SPEED TO SAVE TIME
3696 056070  012704  060400'                 MOV     #T34PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
3697 056074  004737  010552'                 JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
3698 056100  103407                          BCS     30$                     ;BR, IF COMMAND ISSUED OK
3699 056102  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
3703 056106  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
3704 056110                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     056110  104456                                                              TRAP    C$ERHRD
     056112  001132                                                              .WORD   602
     056114  005046'                                                            .WORD   WRTMSG
     056116  011724'                                                            .WORD   SFIMSG
3705 056120                          30$:    CKLOOP                          ;LOOP IF SELECTED
     056120  104406                                                              TRAP    C$CLP1
3706 056122  004737  010704'                 JSR     PC,REWIND               ;REWIND CALL
3707 056126  103411                          BCS     35$                     ;BR, IF TSSR IS OK (GOOD)
3708 056130  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR
3709 056134  010004                          MOV     R0,R4                   ;SET UP PACKET
3710 056136  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
3714 056142                                  ERRHRD  ERRNO,T34RWN,PKTSSR     ;TSSR IS INCORRECT AFTER REWIND
     056142  104456                                                              TRAP    C$ERHRD
     056144  001133                                                              .WORD   603
     056146  062207'                                                            .WORD   T34RWN
     056150  011736'                                                            .WORD   PKTSSR
3715 056152                          35$:    CKLOOP                          ;LOOP IF SELECTED
     056152  104406                                                              TRAP    C$CLP1
3716 056154  012737  140005  060530'        MOV     #140005,T34PK3          ;WRITE DATA, ACK, CVC=1
3717 056162  012703  176750                 MOV     #65000.,R3              ;SET MAX NUMBER OF WRITES
3718 056166  013737  003116'  060532'        MOV     FREE,T34WB              ;SET UP WRITE BUFFER ADDRESS
3719 056174  012737  006654   060536'        MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (4K BYTES)
3720 056202  012704  060530'                 MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3721 056206  010465  000000          40$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3722 056212  004737  016140'                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3723 056216  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3724 056222  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
3725 056226  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3726 056230  001010                          BNE     50$                     ;BR, IT MIGHT BE END OF TAPE
3727 056232  005303                          DEC     R3                      ;DEC RECORD COUNTER
3728 056234  001364                          BNE     40$                     ;BR, IF MORE TO GO
3729 056236  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
3733 056242                                  ERRDF   ERRNO,T34ET,PKTSSR      ;EOT NOT FOUND (USE SHORTER TAPE?)
     056242  104455                                                              TRAP    C$ERDF
     056244  001134                                                              .WORD   604
     056246  061766'                                                            .WORD   T34ET
     056250  011736'                                                            .WORD   PKTSSR
3734 056252  032701  000004          50$:    BIT     #BIT2,R1                ;CHECK FOR TAPE STATUS ALERT
3735 056256  001001                          BNE     60$                     ;BR, IF SET
3736 056260  000752                          BR      40$                     ;KEEP GOING
3737 056262  013701  060430'          60$:    MOV     T34BFR+6,R1             ;PICK UP XSTO
```

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TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  01-FEB-84 18:55                                    SEQ 161
TEST  6: OPERATIONS AT EOT

 3738 056266  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 3739 056270  052702  000001                BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
 3740 056274  020102                        CMP     R1,R2                   ;WAS THE BIT ON
 3741 056276  001402                        BEQ     80$                     ;BR, IF EOT WAS FOUND
 3742 056300  000137  056206'               JMP     40$                     ;KEEP LOOKING
 3743 056304                        80$:    CKLOOP                          ;LOOP IF SELECTED
      056304  104406                                                                TRAP    C$CLP1
 3744 056306  012737  140005  060530'       MOV     #140005,T34PK3          ;WRITE DATA, ACK, CVC=1
 3745 056314  013737  003116' 060532'       MOV     FREE,T34WB              ;SET UP WRITE BUFFER ADDRESS
 3746 056322  012737  006654  060536'       MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (4K BYTES)
 3747 056330  012704  060530'               MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
 3748 056334  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 3749 056340  004737  016140'               JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 3750 056344  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 3751 056350  012702  100204                MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
 3752 056354  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 3753 056356  001406                        BEQ     90$                     ;BR, IF THEY ARE OK
 3754 056360  005237  002214'               INC     FATFLG                          ;ERROR COUNT
 3758 056364                                ERRHRD  ERRNO,T34ET2,PKTSSR     ;WRITE TAPE AT EOT FAILED TO SET TSA
      056364  104456                                                                TRAP    C$ERHRD
      056366  001135                                                                .WORD   605
      056370  061237'                                                               .WORD   T34ET2
      056372  011736'                                                               .WORD   PKTSSR
 3759 056374                        90$:    CKLOOP                          ;LOOP IF SELECTED
      056374  104406                                                                TRAP    C$CLP1
 3760 056376  013701  060430'               MOV     T34BFR+6,R1             ;PICK UP XSTO
 3761 056402  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 3762 056404  052702  000001                BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
 3763 056410  020102                        CMP     R1,R2                   ;WAS THE BIT ON
 3764 056412  001406                        BEQ     100$                    ;BR, IF EOT WAS FOUND
 3765 056414  005237  002214'               INC     FATFLG                          ;ERROR COUNT
 3769 056420                                ERRHRD  ERRNO,T34ETN,EXPREC     ;EOT BIT (XSTO) NOT SET
      056420  104456                                                                TRAP    C$ERHRD
      056422  001136                                                                .WORD   606
      056424  061321'                                                               .WORD   T34ETN
      056426  015364'                                                               .WORD   EXPREC
 3770 056430                        100$:   CKLOOP                          ;LOOP IF SELECTED
      056430  104406                                                                TRAP    C$CLP1
 3771 056432  012737  140011  060530'       MOV     #140011,T34PK3          ;WRITE TAPE MARK, ACK, CVC=1 COMMAND
 3772 056440  012704  060530'               MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
 3773 056444  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 3774 056450  004737  016140'               JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 3775 056454  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 3776 056460  012702  100204                MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
 3777 056464  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
 3778 056466  001406                        BEQ     110$                    ;BR, IF STATUS IS GOOD (OK)
 3779 056470  005237  002214'               INC     FATFLG                          ;ERROR COUNT
 3783 056474                                ERRHRD  ERRNO,T34WTM,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
      056474  104456                                                                TRAP    C$ERHRD
      056476  001137                                                                .WORD   607
      056500  061150'                                                               .WORD   T34WTM
      056502  011736'                                                               .WORD   PKTSSR
 3784 056504                        110$:   CKLOOP                          ;LOOP IF SELECTED
      056504  104406                                                                TRAP    C$CLP1
 3785 056506  013701  060430'               MOV     T34BFR+6,R1             ;PICK UP XSTO
 3786 056512  010102                        MOV     R1,R2                   ;SET UP EXPECTED
 3787 056514  052702  000001                BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
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3788 056520  020102                          CMP     R1,R2                   ;WAS THE BIT ON
3789 056522  001406                          BEQ     120$                    ;BR, IF EOT WAS FOUND
3790 056524  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
3794 056530                                  ERRHRD  ERRNO,T34ETO,EXPREC     ;EOT BIT (XSTO) NOT SET
     056530  104456                                                                  TRAP    C$ERHRD
     056532  001140                                                                  .WORD   608
     056534  060652'                                                                 .WORD   T34ETO
     056536  015364'                                                                 .WORD   EXPREC
3795 056540                          120$:   CKLOOP                          ;LOOP IF SELECTED
     056540  104406                                                                  TRAP    C$CLP1
3796 056542  012737  141410  060530'         MOV     #141410,T34PK3          ;SKIP TAPE MARK REVERSE ACK,CVC=1 COMMAND
3797 056550  012737  000001  060532'         MOV     #1,T34WB                ;SET NUMBER (1) OF TMS TO SKIP
3798 056556  012704  060530'                 MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3799 056562  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3800 056566  004737  016140'                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3801 056572  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3802 056576  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
3803 056602  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
3804 056604  001406                          BEQ     130$                    ;BR, IF STATUS IS GOOD (OK)
3805 056606  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
3809 056612                                  ERRHRD  ERRNO,T34STM,PKTSSR     ;SKIP TAPE MARK REV. DIDN'T SET TSA
     056612  104456                                                                  TRAP    C$ERHRD
     056614  001141                                                                  .WORD   609
     056616  061550'                                                                 .WORD   T34STM
     056620  011736'                                                                 .WORD   PKTSSR
3810 056622                          130$:   CKLOOP                          ;LOOP IF SELECTED
     056622  104406                                                                  TRAP    C$CLP1
3811 056624  013701  060430'                 MOV     T34BFR+6,R1             ;PICK UP XSTO
3812 056630  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3813 056632  052702  000001                  BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
3814 056636  020102                          CMP     R1,R2                   ;WAS THE BIT ON
3815 056640  001406                          BEQ     140$                    ;BR, IF EOT WAS FOUND
3816 056642  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
3820 056646                                  ERRHRD  ERRNO,T34ETN,EXPREC     ;EOT BIT (XSTO) NOT SET
     056646  104456                                                                  TRAP    C$ERHRD
     056650  001142                                                                  .WORD   610
     056652  061321'                                                                 .WORD   T34ETN
     056654  015364'                                                                 .WORD   EXPREC
3821 056656                          140$:   CKLOOP                          ;LOOP IF SELECTED
     056656  104406                                                                  TRAP    C$CLP1
3822 056660  013701  060430'                 MOV     T34BFR+6,R1             ;PICK UP XSTO
3823 056664  010102                          MOV     R1,R2                   ;SET UP EXPECTED
3824 056666  052702  100000                  BIS     #BIT15,R2               ;SET THE TMK BIT ON IN EXPECTED
3825 056672  020102                          CMP     R1,R2                   ;WAS THE BIT ON
3826 056674  001406                          BEQ     150$                    ;BR, IF TMK WAS FOUND
3827 056676  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
3831 056702                                  ERRHRD  ERRNO,T34TMK,EXPREC     ;EOT BIT (XSTO) NOT SET
     056702  104456                                                                  TRAP    C$ERHRD
     056704  001143                                                                  .WORD   611
     056706  061633'                                                                 .WORD   T34TMK
     056710  015364'                                                                 .WORD   EXPREC
3832 056712                          150$:   CKLOOP                          ;LOOP IF SELECTED
     056712  104406                                                                  TRAP    C$CLP1
3833 056714  012737  140410  060530'         MOV     #140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD
3834 056722  012737  000001  060532'         MOV     #1,T34WB                ;SPACE ONE RECORD REVERSE
3835 056730  012704  060530'                 MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3836 056734  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
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3837 056740  004737  016140'              JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3838 056744  016501  000002              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3839 056750  012702  100204              MOV     #SC!SSR!BIT2,R2         ;SET UP EXPECTED
3840 056754  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
3841 056756  001006                      BNE     160$                    ;BR, IT MIGHT BE END OF TAPE
3842 056760  005237  002214'                  INC     FATFLG                          ;ERROR COUNT
3846 056764                              ERRHRD  ERRNO,T34POS,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     056764  104456                                                              TRAP    C$ERHRD
     056766  001144                                                              .WORD   612
     056770  060564'                                                            .WORD   T34POS
     056772  011736'                                                            .WORD   PKTSSR
3847 056774                      160$:   CKLOOP                          ;LOOP IF SELECTED
     056774  104406                                                              TRAP    C$CLP1
3848 056776  013701  060430'            MOV     T34BFR+6,R1             ;PICK UP XSTO
3849 057002  010102                      MOV     R1,R2                   ;SET UP EXPECTED
3850 057004  052702  000001              BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
3851 057010  020102                      CMP     R1,R2                   ;WAS THE BIT ON
3852 057012  001406                      BEQ     163$                    ;BR, IF EOT WAS FOUND
3853 057014  005237  002214'                  INC     FATFLG                          ;ERROR COUNT
3857 057020                              ERRHRD  ERRNO,T34ETN,EXPREC     ;EOT BIT (XSTO) NOT SET
     057020  104456                                                              TRAP    C$ERHRD
     057022  001145                                                              .WORD   613
     057024  061321'                                                            .WORD   T34ETN
     057026  015364'                                                            .WORD   EXPREC
3858 057030                      163$:   CKLOOP                          ;LOOP IF SELECTED
     057030  104406                                                              TRAP    C$CLP1
3859 057032  013701  060430'            MOV     T34BFR+6,R1             ;PICK UP XSTO
3860 057036  010102                      MOV     R1,R2                   ;SET UP EXPECTED
3861 057040  042702  100000              BIC     #BIT15,R2               ;CLEAR THE TMK BIT ON IN EXPECTED
3862 057044  020102                      CMP     R1,R2                   ;WAS THE BIT ON
3863 057046  001406                      BEQ     165$                    ;BR, IF TMK WAS FOUND
3864 057050  005237  002214'                  INC     FATFLG                          ;ERROR COUNT
3868 057054                              ERRHRD  ERRNO,T34TMK,EXPREC     ;EOT BIT (XSTO) NOT SET
     057054  104456                                                              TRAP    C$ERHRD
     057056  001146                                                              .WORD   614
     057060  061633'                                                            .WORD   T34TMK
     057062  015364'                                                            .WORD   EXPREC
3869 057064                      165$:   CKLOOP                          ;LOOP IF SELECTED
     057064  104406                                                              TRAP    C$CLP1
3870 057066  012737  140410  060530'    MOV     #140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD
3871 057074  012737  000001  060532'    MOV     #1,T34WB                ;SPACE ONE RECORD REVERSE
3872 057102  012704  060530'            MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3873 057106  010465  000000              MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3874 057112  004737  016140'            JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3875 057116  016501  000002              MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3876 057122  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED
3877 057126  020102                      CMP     R1,R2                   ;ARE THEY EQUAL
3878 057130  001406                      BEQ     167$                    ;BR, IT MIGHT BE END OF TAPE
3879 057132  005237  002214'                  INC     FATFLG                          ;ERROR COUNT
3883 057136                              ERRHRD  ERRNO,T34POS,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     057136  104456                                                              TRAP    C$ERHRD
     057140  001147                                                              .WORD   615
     057142  060564'                                                            .WORD   T34POS
     057144  011736'                                                            .WORD   PKTSSR
3884 057146                      167$:   CKLOOP                          ;LOOP IF SELECTED
     057146  104406                                                              TRAP    C$CLP1
3885 057150  013701  060430'            MOV     T34BFR+6,R1             ;PICK UP XSTO
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 3886 057154  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 3887 057156  042702  000001                  BIC     #BIT0,R2                ;CLEAR THE EOT BIT ON IN EXPECTED
 3888 057162  020102                          CMP     R1,R2                   ;WAS THE BIT OFF
 3889 057164  001400                          BEQ     170$                    ;BR, IF EOT WAS FOUND
 3890 057166                          170$:   CKLOOP                          ;LOOP IF SELECTED
      057166  104406                                                                  TRAP    C$CLP1
 3891 057170  012737  140010  060530'        MOV     #140010,T34PK3          ;SPACE RECORDS FORWARD, ACK, CVC=1
 3892 057176  012737  000002  060532'        MOV     #2,T34WB                ;SPACE TWO RECORDS
 3893 057204  012704  060530'                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
 3894 057210  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 3895 057214  004737  016140'                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 3896 057220  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 3897 057224  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 3898 057230  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 3899 057232  001406                          BEQ     190$                    ;BR, IT MIGHT BE END OF TAPE
 3900 057234  005237  002214'                INC     FATFLG                          ;ERROR COUNT
 3904 057240                                  ERRHRD  ERRNO,T34POS,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
      057240  104456                                                                  TRAP    C$ERHRD
      057242  001150                                                                  .WORD   616
      057244  060564'                                                                 .WORD   T34POS
      057246  011736'                                                                 .WORD   PKTSSR
 3905 057250                          190$:   CKLOOP                          ;LOOP IF SELECTED
      057250  104406                                                                  TRAP    C$CLP1
 3906 057252  013701  060430'                MOV     T34BFR+6,R1             ;PICK UP XSTO
 3907 057256  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 3908 057260  052702  000001                  BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
 3909 057264  020102                          CMP     R1,R2                   ;WAS THE BIT ON
 3910 057266  001406                          BEQ     200$                    ;BR, IF EOT WAS FOUND
 3911 057270  005237  002214'                INC     FATFLG                          ;ERROR COUNT
 3915 057274                                  ERRHRD  ERRNO,T34ETS,EXPREC     ;EOT BIT (XSTO) NOT SET
      057274  104456                                                                  TRAP    C$ERHRD
      057276  001151                                                                  .WORD   617
      057300  061400'                                                                 .WORD   T34ETS
      057302  015364'                                                                 .WORD   EXPREC
 3916 057304                          200$:   CKLOOP                          ;LOOP IF SELECTED
      057304  104406                                                                  TRAP    C$CLP1
 3917 057306  012737  140401  060530'        MOV     #140401,T34PK3          ;READ REVERSE, ACK, CVC=1
 3918 057314  013737  003116'  060532'        MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
 3919 057322  012704  060530'                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
 3920 057326  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 3921 057332  004737  016140'                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 3922 057336  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 3923 057342  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 3924 057346  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 3925 057350  001406                          BEQ     205$                    ;BR, ONLY SSR IS SET
 3926 057352  005237  002214'                INC     FATFLG                          ;ERROR COUNT
 3930 057356                                  ERRHRD  ERRNO,T34RRE,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
      057356  104456                                                                  TRAP    C$ERHRD
      057360  001152                                                                  .WORD   618
      057362  060736'                                                                 .WORD   T34RRE
      057364  011736'                                                                 .WORD   PKTSSR
 3931 057366                          205$:   CKLOOP                          ;LOOP IF SELECTED
      057366  104406                                                                  TRAP    C$CLP1
 3932 057370  012737  140401  060530'        MOV     #140401,T34PK3          ;READ REVERSE, ACK, CVC=1
 3933 057376  013737  003116'  060532'        MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
 3934 057404  012704  060530'                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
 3935 057410  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
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3936 057414  004737  016140'                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3937 057420  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3938 057424  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
3939 057430  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
3940 057432  001406                        BEQ     210$                    ;BR, IT MIGHT BE END OF TAPE
3941 057434  005237  002214'                INC     FATFLG                          ;ERROR COUNT
3945 057440                                ERRHRD  ERRNO,T34RRE,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     057440  104456                                                                TRAP    C$ERHRD
     057442  001153                                                                .WORD   619
     057444  060736'                                                               .WORD   T34RRE
     057446  011736'                                                               .WORD   PKTSSR
3946 057450                        210$:   CKLOOP                          ;LOOP IF SELECTED
     057450  104406                                                                TRAP    C$CLP1
3947 057452  012737  140001  060530'        MOV     #140001,T34PK3          ;READ DATA, ACK, CVC=1
3948 057460  013737  003116'  060532'        MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
3949 057466  012737  006654  060536'        MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (4K BYTES)
3950 057474  012704  060530'                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3951 057500  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3952 057504  004737  016140'                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3953 057510  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3954 057514  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
3955 057520  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
3956 057522  001406                        BEQ     230$                    ;BR, IT MIGHT BE END OF TAPE
3957 057524  005237  002214'                INC     FATFLG                          ;ERROR COUNT
3961 057530                                ERRHRD  ERRNO,T34RRE,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     057530  104456                                                                TRAP    C$ERHRD
     057532  001154                                                                .WORD   620
     057534  060736'                                                               .WORD   T34RRE
     057536  011736'                                                               .WORD   PKTSSR
3962 057540                        230$:   CKLOOP                          ;LOOP IF SELECTED
     057540  104406                                                                TRAP    C$CLP1
3963 057542  012737  140001  060530'        MOV     #140001,T34PK3          ;READ DATA, ACK, CVC=1
3964 057550  013737  003116'  060532'        MOV     FREE,T34RB              ;SET UP WRITE BUFFER ADDRESS
3965 057556  012737  006654  060536'        MOV     #3500.,T34SZ            ;SET UP BUFFER SIZE (4K BYTES)
3966 057564  012704  060530'                MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
3967 057570  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
3968 057574  004737  016140'                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
3969 057600  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
3970 057604  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
3971 057610  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
3972 057612  001406                        BEQ     235$                    ;BR, IT MIGHT BE END OF TAPE
3973 057614  005237  002214'                INC     FATFLG                          ;ERROR COUNT
3977 057620                                ERRHRD  ERRNO,T34RRE,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     057620  104456                                                                TRAP    C$ERHRD
     057622  001155                                                                .WORD   621
     057624  060736'                                                               .WORD   T34RRE
     057626  011736'                                                               .WORD   PKTSSR
3978 057630                        235$:   CKLOOP                          ;LOOP IF SELECTED
     057630  104406                                                                TRAP    C$CLP1
3979 057632  013701  060430'                MOV     T34BFR+6,R1             ;PICK UP XSTO
3980 057636  010102                        MOV     R1,R2                   ;SET UP EXPECTED
3981 057640  052702  000001                BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
3982 057644  020102                        CMP     R1,R2                   ;WAS THE BIT ON
3983 057646  001406                        BEQ     240$                    ;BR, IF EOT WAS FOUND
3984 057650  005237  002214'                INC     FATFLG                          ;ERROR COUNT
3988 057654                                ERRHRD  ERRNO,T34ETZ,EXPREC     ;EOT BIT (XSTO) NOT SET
     057654  104456                                                                TRAP    C$ERHRD
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                057656  001156                                                          .WORD   622
                057660  061472'                                                         .WORD   T34ETZ
                057662  015364'                                                         .WORD   EXPREC
   3989         057664                          240$:   CKLOOP                          ;LOOP IF SELECTED
                057664  104406                                                          TRAP    C$CLP1
   3990         057666  012737  140410  060530'         MOV     #140410,T34PK3          ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD.
   3991         057674  012737  000005  060532'         MOV     #5,T34RB                ;NUMBER OF RECORDS TO SPACE
   3992         057702  012704  060530'                 MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
   3993         057706  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
   3994         057712  004737  016140'                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
   3995         057716  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
   3996         057722  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
   3997         057726  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
   3998         057730  001406                          BEQ     250$                    ;BR, IT MIGHT BE END OF TAPE
   3999         057732  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
   4003         057736                                  ERRHRD  ERRNO,T34POS,PKTSSR     ;POSITION COMMAND DIDN'T WORK
                057736  104456                                                          TRAP    C$ERHRD
                057740  001157                                                          .WORD   623
                057742  060564'                                                         .WORD   T34POS
                057744  011736'                                                         .WORD   PKTSSR
   4004         057746                          250$:   CKLOOP                          ;LOOP IF SELECTED
                057746  104406                                                          TRAP    C$CLP1
   4005         057750  013701  060430'                 MOV     T34BFR+6,R1             ;PICK UP XSTO
   4006         057754  010102                          MOV     R1,R2                   ;SET UP EXPECTED
   4007         057756  042702  000001                  BIC     #BIT0,R2                ;CLEAR THE EOT BIT ON IN EXPECTED
   4008         057762  020102                          CMP     R1,R2                   ;WAS THE BIT ON
   4009         057764  001406                          BEQ     260$                    ;BR, IF EOT WAS FOUND
   4010         057766  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
   4014         057772                                  ERRHRD  ERRNO,T34ETC,EXPREC     ;EOT BIT (XSTO) NOT CLEAR
                057772  104456                                                          TRAP    C$ERHRD
                057774  001160                                                          .WORD   624
                057776  061027'                                                         .WORD   T34ETC
                060000  015364'                                                         .WORD   EXPREC
   4015         060002                          260$:   CKLOOP                          ;LOOP IF SELECTED
                060002  104406                                                          TRAP    C$CLP1
   4016         060004  012737  140010  060530'         MOV     #140010,T34PK3          ;SPACE RECORDS FORWARD, ACK, CVC=1 CMD.
   4017         060012  012737  000005  060532'         MOV     #5,T34RB                ;NUMBER OF RECORDS TO SPACE
   4018         060020  012704  060530'                 MOV     #T34PK3,R4              ;R4 = POINTER TO PACKET
   4019         060024  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
   4020         060030  004737  016140'                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
   4021         060034  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
   4022         060040  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
   4023         060044  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
   4024         060046  001406                          BEQ     270$                    ;BR, IT MIGHT BE END OF TAPE
   4025         060050  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
   4029         060054                                  ERRHRD  ERRNO,T34ET,PKTSSR      ;TSSR NOT CORRECT
                060054  104456                                                          TRAP    C$ERHRD
                060056  001161                                                          .WORD   625
                060060  061766'                                                         .WORD   T34ET
                060062  011736'                                                         .WORD   PKTSSR
   4030         060064                          270$:   CKLOOP                          ;LOOP IF SELECTED
                060064  104406                                                          TRAP    C$CLP1
   4031         060066  013701  060430'                 MOV     T34BFR+6,R1             ;PICK UP XSTO
   4032         060072  010102                          MOV     R1,R2                   ;SET UP EXPECTED
   4033         060074  052702  000001                  BIS     #BIT0,R2                ;SET THE EOT BIT ON IN EXPECTED
   4034         060100  020102                          CMP     R1,R2                   ;WAS THE BIT ON
   4035         060102  001400                          BEQ     280$                    ;BR, IF EOT WAS FOUND
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4036 060104                          280$:  CKLOOP                          ;LOOP IF SELECTED
     060104  104406                                                                 TRAP    C$CLP1
4037 060106  012737  141410  060530'        MOV     #141410,T34PK3         ;SKIP FILE MARKS REVERSE,ACK,CVC=1 COMMAND
4038 060114  012737  000003  060532'        MOV     #3,T34RB               ;NUMBER OF FILE MARKS
4039 060122  012704  060530'                MOV     #T34PK3,R4             ;R4 = POINTER TO PACKET
4040 060126  010465  000000                 MOV     R4,TSDB(R5)            ;ISSUE COMMAND
4041 060132  012737  176750  060544'        MOV     #65000.,T34DLY         ;SET UP DELAY COUNTER
4042 060140  004737  016140'          285$:  JSR     PC,WAITF               ;WAIT FOR SSR TO SET
4043 060144  016501  000002                 MOV     TSSR(R5),R1            ;GET TSSR CONTENTS
4044 060150  032701  000200                 BIT     #SSR,R1                ;CHECK FOR SSR SET
4045 060154  001017                         BNE     286$                   ;BR, WHEN SSR IS SET
4046 060156                                 DELAY   250                    ;WAIT ABOUT .25 SECONDS
     060156  012727  000250                                                         MOV     #250.,(PC)+
     060162  000000                                                                 .WORD   0
     060164  013727  002116'                                                       MOV     L$DLY,(PC)+
     060170  000000                                                                 .WORD   0
     060172  005367  177772                                                       DEC     -6(PC)
     060176  001375                                                               BNE     .-4
     060200  005367  177756                                                       DEC     -22(PC)
     060204  001367                                                               BNE     .-20
4047 060206  005337  060544'                DEC     T34DLY                 ;BUMP COUNTER
4048 060212  001352                         BNE     285$                   ;BR, IF MORE TO COUNT
4049 060214  012702  000200          286$:  MOV     #SSR,R2                ;SET UP EXPECTED
4050 060220  020102                         CMP     R1,R2                  ;ARE THEY EQUAL
4051 060222  001007                         BNE     290$                   ;BR, IT MIGHT BE END OF TAPE
4052 060224  005303                         DEC     R3                     ;DEC RECORD COUNTER
4053 060226  005237  002214'                INC     FATFLG                         ;ERROR COUNT
4057 060232                                 ERRHRD  ERRNO,T34ET,PKTSSR     ;EOT NOT FOUND (USE SHORTER TAPE?)
     060232  104456                                                                 TRAP    C$ERHRD
     060234  001162                                                                 .WORD   626
     060236  061766'                                                               .WORD   T34ET
     060240  011736'                                                               .WORD   PKTSSR
4058 060242  032701  000004          290$:  BIT     #BIT2,R1               ;CHECK FOR TAPE STATUS ALERT
4059 060246  013701  060430'                MOV     T34BFR+6,R1            ;PICK UP XSTO
4060 060252  010102                         MOV     R1,R2                  ;SET UP EXPECTED
4061 060254  042702  000001                 BIC     #BIT0,R2               ;CLEAR THE EOT BIT IN EXPECTED
4062 060260  020102                         CMP     R1,R2                  ;WAS THE BIT ON
4063 060262  001406                         BEQ     300$                   ;BR, IF EOT WAS FOUND
4064 060264  005237  002214'                INC     FATFLG                         ;ERROR COUNT
4068 060270                                 ERRHRD  ERRNO,T34ETC,EXPREC    ;EOT BIT (XSTO) NOT CLEAR
     060270  104456                                                                 TRAP    C$ERHRD
     060272  001163                                                                 .WORD   627
     060274  061027'                                                               .WORD   T34ETC
     060276  015364'                                                               .WORD   EXPREC
4069 060300                          300$:  CKLOOP                          ;LOOP IF SELECTED
     060300  104406                                                                 TRAP    C$CLP1
4070 060302  013701  060430'                MOV     T34BFR+6,R1            ;PICK UP XSTO
4071 060306  010102                         MOV     R1,R2                  ;SET UP EXPECTED
4072 060310  052702  000002                 BIS     #BIT1,R2               ;SET THE BOT BIT ON IN EXPECTED
4073 060314  020102                         CMP     R1,R2                  ;WAS THE BIT ON
4074 060316  001406                         BEQ     320$                   ;BR, IF BOT WAS FOUND
4075 060320  005237  002214'                INC     FATFLG                         ;ERROR COUNT
4079 060324                                 ERRHRD  ERRNO,T34BOT,EXPREC    ;EOT BIT (XSTO) NOT CLEAR
     060324  104456                                                                 TRAP    C$ERHRD
     060326  001164                                                                 .WORD   628
     060330  061104'                                                               .WORD   T34BOT
     060332  015364'                                                               .WORD   EXPREC
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4080 060334                          320$:   CKLOOP                          ;LOOP IF SELECTED
     060334  104406                                                                      TRAP    C$CLP1
4081 060336                          600$:
4082 060336                                  ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     060336                                                                          L10062:
     060336  104403                                                                      TRAP    C$ESUB
4083 060340  023727  002214' 000017         CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
4084 060346  103402                         BLO     999$                            ;BR, IF LESS THAN 25
4085 060350  004737  017074'                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
4086 060354                          999$:
4087 060354  004737  016350'                JSR     PC,TSTLOOP                      ;DO WE NEED TO ITERATE TEST
4088 060360  103002                         BCC     163$                            ;BR, IF NO LOOP REQUIRED
4089 060362  000137  055732'                JMP     T34LOOP                         ;EXECUTE AGAIN
4090 060366                          163$:   EXIT    TST                             ;ALL DONE THIS TEST
     060366  104432                                                                      TRAP    C$EXIT
     060370  002672                                                                      .WORD   L10061-.
4091
4092                                 ;+
4093                                 ;LOCAL STORAGE FOR THIS TEST
4094                                 ;-
4096 060372                                  .BLKB   10-<.-TSV2&7>
4098 060400                          T34PACKET:
4099 060400  100004                         .WORD   100004                  ;COMMAND PACKET FOR TEST
4100 060402  060410'                        .WORD   T34DATA                 ;WRITE CHARACTERISTICS COMMAND, WITH ACK
4101 060404  000000                         .WORD   0                       ;ADDRESS OF CHARACTERISTICS BLOCK
4102 060406  000010                         .WORD   8.                      ;STARTING VALUE OF BLOCK SIZE
4103 060410                          T34DATA:                               ;CHARACTERISTICS DATA BLOCK
4104 060410  060422'                        .WORD   T34BFR                  ;ADDRESS OF MESSAGE BUFFER
4105 060412  000000                         .WORD   0
4106 060414  000012                         .WORD   10.                     ;LENGTH OF MESSAGE BUFFER
4107 060416  000000                         .WORD   0
4108 060420  000000                  T34DSW: .WORD   0                       ;SELECT DRIVE 0
4109 060422                          T34BFR: .BLKW   25.                     ;MESSAGE BUFFER
4110                                 ;
4111                                 ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
4112                                 ;
4114 060504                                  .BLKB   10-<.-TSV2&7>
4116 060510                          T34PK2:
4117 060510  100006                         .WORD   100006                  ;WRITE SUB SYS MEM COMMAND, AND ACK
4118 060512  060546'                        .WORD   T34BF2                  ;ADDRESS OF SELECT BLOCK DATA
4119 060514  000000                         .WORD   0
4120 060516  000006                         .WORD   6.                      ;SIZE OF DATA PACKET
4121
4123 060520                                  .BLKB   10-<.-TSV2&7>
4125 060530                          T34PK3:
4126 060530  100005                         .WORD   100005                  ;WRITE COMMAND,  AND ACK
4127 060532                          T34RB:
4128 060532  000000                  T34WB:  .WORD   0                       ;ADDRESS OF WRITE/READ BUFFER
4129 060534  000000                         .WORD   0
4130 060536  000000                  T34SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
4131                                         .EVEN
4132                                 ;
4133 060540  000000                  T34RSZ: .WORD   0                       ;LARGEST TAPE RECORD IN BYTES
4134 060542  000000                  T34CNT: .WORD   0                       ;TAPE RECORD COUNTER
4135 060544  000000                  T34DLY: .WORD   0                       ;DELAY COUNTER
4136                                 ;
4137                                 ;
```

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                                T34BF2:
                                T34BS0: .BYTE   10                      ;BSEL0 AREA
                                T34BS1: .BYTE   200                     ;BSEL1 AREA
                                T34S2:  .WORD   0                       ;SEL 2 AREA
                                T34S3:  .WORD   0                       ;DATA AREA
                                ;
                                ;
                                        .EVEN
                                ;TAPE MOTION PACKET COMMAND VALUES

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


                                ;+
                                ;LOCAL TEXT MESSAGES FOR TEST
                                ;-


                                T34POS: .ASCIZ  'TSSR Incorrect After Position (SPACE RECORDS) Command'
                                T34ETO: .ASCIZ  'WRITE TAPE MARK At EOT Failed To Set EOT Bit (XSTO)'
                                T34RRE: .ASCIZ  'READ Command At EOT Didn''t Give Normal Termination (TSSR)'
                                T34ETC: .ASCIZ  'Unable To Clear EOT Indication, (XSTO) Bit 0'
                                T34BOT: .ASCIZ  'REWIND Failed To Set BOT (XSTO) Bit'
                                T34WTM: .ASCIZ  'WRITE TAPE MARK At EOT Failed To Set Tape Status Alert'
                                T34ET2: .ASCIZ  'WRITE DATA At EOT Failed To Set Tape Status Alert'
                                T34ETN: .ASCIZ  'WRITE DATA At EOT Failed To Set EOT Bit (XSTO)'
                                T34ETS: .ASCIZ  'SPACE RECORDS FORWARD At EOT Failed To Set EOT Bit (XSTO)'
                                T34ETZ: .ASCIZ  'READ DATA At EOT Failed To Set EOT Bit (XSTO)'
                                T34STM: .ASCIZ  'TSSR Incorrect After SKIP TAPE MARK REVERSE At EOT'
                                T34TMK: .ASCIZ  'POSITION Command At EOT Onto Tape Mark Failed To Set TMK (XSTO)'
                                T34SSR: .ASCIZ  'WRITE Command Not Accepted'
                                T34ET:  .ASCIZ  'EOT Not Found In 65000 3.5K Writes, (Use Shorter Tape)'
                                T34EOT: .ASCIZ  'WRITE DATA OVER EOT GAVE NO TAPE STATUS ALERT'
                                T34TM:  .ASCIZ  'TSSR Not Correct After WRITE Command Reject'
                                T34RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
                                T34RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
                                T34AM3: .ASCIZ  'TSSR Init. Failed After WRITE Command'
                                T34OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
                                T34WDD: .ASCIZ  'TSSR Not Correct After WRITE DATA Command, SWB Bit Set'
                                T34WDC: .ASCIZ  'TSSR Not Correct After WRITE DATA Command, Check For Tape Offline'
                                T34VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
                                T34BA:  .ASCIZ  'TSBA Not Correct After WRITE DATA Command'
                                T34WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
                                TST34ID:        .ASCIZ  'Operations At EOT'
                                        .EVEN
                                ;+
                                ;
                                ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
                                ;WRITE SUBSYSTEM MEMORY COMMAND
                                ;
                                ;-

                                T34REST:
                                        SAVREG                          ;SAVE THE REGISTERS
```

```
4195 063106  012701  060400'                    MOV     @T34PACKET,R1          ;START OF THE PACKET
4196 063112  012721  100004                     MOV     @100004,(R1)+          ;WRITE SUBSYSTEM MEM. WITH ACK
4197 063116  012721  060410'                    MOV     @T34DATA,(R1)+         ;ADDRESS OF CHARAISTICS DATA BLOCK
4198 063122  005021                             CLR     (R1)+                  ;EXTENDED ADDRESS
4199 063124  012721  000012                     MOV     #10.,(R1)+             ;SIZE OF DATA BLOCK IN BYTES
4200 063130  012721  060422'                    MOV     @T34BFR,(R1)+          ;ADDRESS OF MESSAGE BUFFER
4201 063134  005021                             CLR     (R1)+
4202 063136  012721  000024                     MOV     #20.,(R1)+             ;LENGTH OF MESSAGE BUFFER
4203 063142  005021                             CLR     (R1)+
4204 063144  012711  000000                     MOV     #0,(R1)                ;SELECT DRIVE ZERO
4205 063150  012702  000030                     MOV     #24.,R2                ;NUMBER OF LOCATIONS TO BE CLEARED
4206 063154  012762  177777  060422'  64$:     MOV     #177777,T34BFR(R2)     ;ALL ONES TO MESSAGE BUFFER
4207 063162  005742                             TST     -(R2)                  ;BUMP DOWN TO NEXT LOCATION
4208 063164  020227  000000                     CMP     R2,#0                  ;R2 AT ZERO YET
4209 063170  001371                             BNE     64$                    ;KEEP GOING UNTIL DONE
4210 063172  000207                             RTS     PC                     ;RETURN
4211
4212
4213 063174                          T34RT2:
4214 063174                                     SAVREG                         ;SAVE THE REGISTERS
4215 063200  012701  060510'                    MOV     @T34PK2,R1             ;START OF THE PACKET
4216 063204  012721  100006                     MOV     #100006,(R1)+          ;WRITE SUBSYSTEM MEM. WITH ACK
4217 063210  012721  060546'                    MOV     @T34BF2,(R1)+          ;ADDRESS OF DATA BLOCK
4218 063214  005021                             CLR     (R1)+                  ;EXTENDED ADDRESS
4219 063216  012721  000006                     MOV     #6.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
4220 063222  012701  060546'                    MOV     @T34BF2,R1             ;POINT TO DATA SEL AREA
4221 063226  005021                             CLR     (R1)+
4222 063230  005021                             CLR     (R1)+
4223 063232  005011                             CLR     (R1)
4224 063234  000207                             RTS     PC                     ;RETURN
4225 063236                          T34RT3:
4226 063236                                     SAVREG                         ;SAVE THE REGISTERS
4227 063242  012701  060530'                    MOV     @T34PK3,R1             ;START OF THE PACKET
4228 063246  012721  100005                     MOV     #100005,(R1)+          ;WRITE  TAPE. WITH ACK
4229 063252  005021                             CLR     (R1)+                  ;ADDRESS OF DATA BLOCK
4230 063254  005021                             CLR     (R1)+                  ;EXTENDED ADDRESS
4231 063256  005011                             CLR     (R1)                   ;SIZE OF DATA BLOCK
4232 063260  000207                             RTS     PC                             ;RETURN
4233 063262                                     ENDTST
     063262                                                                         L10061:
     063262  104401                                                                     TRAP    C$ETST
4234
4235                                    .SBTTL  TEST  7: EXTENDED MODE FEATURES
4236                                ;+
4237                                ;
4238                                ;       THIS TEST VERIFIES THE OPERATION OF COMMANDS ONLY AVAILABLE WHEN
4239                                ;       THE CONTROLLER IS IN THE EXTENDED FEATURES MODE.  THESE COMMANDS
4240                                ;       ARE:
4241                                ;
4242                                ;               REWIND WITH IMMEDIATE INTERRUPT
4243                                ;
4244                                ;       IF THE CONTROLLER IS NOT ALREADY IN EXTENDED FEATURES MODE, IT
4245                                ;       IS PLACED THERE VIA A WRITE SUBSYSTEM MEMORY COMMAND.
4246                                ;
4247                                ;
4248                                ;
4249                                ;THE TEST CONSISTS OF THE FOLLOWING 7 SUBTESTS
```

```
                                        ;
                                        ;
                                        ;
                                        ;-
063264                                              BGNTST
063264                                                                                      T7::
063264  012737  006166' 002172'                     MOV     #EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
063272  012700  073013'                             MOV     #TST35ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
063276  004737  016402'                             JSR     PC,TSTS:TUP             ;DO INITIAL TEST SETUP
063302  012737  000005  002210'                     MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
063310  005037  067416'                             CLR     T35CNT                  ;CLEAR TAPE RECORD COUNTER
                                        ;+
                                        ;
                                        ;TEST 7, SUBTEST 1
                                        ;
                                        ;
                                        ;           VERIFIES THAT A REWIND WITH IMMEDIATE INTERRUPT COMMAND, ISSUED
                                        ;           WITH THE INTERRUPT ENABLE (IE) BIT CLEAR (0), CAUSES ALMOST
                                        ;           IMMEDIATE TERMINATION BUT NO INTERRUPT.  STATUS IN THE MESSAGE
                                        ;           BUFFER IS CHECKED TO VERIFY THAT THE MOTION (MOT) AND OPERATION
                                        ;           IN PROGRESS (OPM) STATUS BITS ARE BOTH SET.
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;
                                        ;-

063314                                  T35LOOP:
063314                                              BGNSUB                          ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
063314                                                                                      T7.1:
063314  104402                                                                              TRAP    C$BSUB
063316  004737  073044'                             JSR     PC,T35REST              ;SET COMMAND PACKET
063322  005037  002216'                             CLR     INTRECV                 ;CLEAR INTERRUPT RECEIVED FLAG
063326  004737  073136'                             JSR     PC,T35RT2               ;SET UP OTHER COMMAND PAC' T
063332  004737  073200'                             JSR     PC,T35RT3               ;SET UP OTHER COMMAND PAC .ET
063336  012737  176750  067422'                     MOV     #65000.,T35DLY          ;SET UP DELAY COUNTER
063344  005037  067416'                             CLR     T35CNT                  ;CLEAR COUNTER
063350  004737  015664'                 10$:        JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
063354  103426                                      BCS     20$                     ;BR IF INIT WAS OK
063356                                              DELAY   250                     ;DELAY ABOUT .25 SEC
063356  012727  000250                                                                      MOV     #250,(PC)+
063362  000000                                                                              .WORD   0
063364  013727  002116'                                                                     MOV     L$DLY,(PC)+
063370  000000                                                                              .WORD   0
063372  005367  177772                                                                      DEC     -6(PC)
063376  001375                                                                              BNE     .-4
063400  005367  177756                                                                      DEC     -22(PC)
063404  001367                                                                              BNE     .-20
063406  005337  067422'                             DEC     T35DLY                  ;BUMP COUNTER
063412  001356                                      BNE     10$                     ;BR, IF COUNTER NOT DONE
063414  005237  002214'                             INC     FATFLG                          ;ERROR COUNT
063420  010001                                      MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
063422                                              ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
063422  104455                                                                              TRAP    C$ERDF
063424  001275                                                                              .WORD   701
063426  003642'                                                                             .WORD   SFIERR
```

```
     063430  011724'                                                                              .WORD   SFIMSG
     063432  013737  002174' 067260'  20$:    MOV     UNITN,T35DSW            ;SET UP DRIVE NUMBER
     063440  012704  067240'                  MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
     063444  004737  010552'                  JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
     063450  103407                           BCS     25$                     ;BR, IF COMMAND ISSUED OK
     063452  005237  002214'                  INC     FATFLG                          ;ERROR COUNT
     063456  010001                           MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
     063460                                   ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     063460  104456                                                                               TRAP    C$ERHRD
     063462  001276                                                                               .WORD   702
     063464  005046'                                                                              .WORD   WRTMSG
     063466  011724'                                                                              .WORD   SFIMSG
     063470                           25$:    CKLOOP                          ;LOOP IF SELECTED
     063470  104406                                                                               TRAP    C$CLP1
     063472  004737  010704'                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
     063476  103411                           BCS     30$                     ;BR, IF NO PROBLEM
     063500  010004                           MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
     063502  016501  000002                   MOV     TSSR(R5),R1             ;GET TSSR FOR PRINTOUT
     063506  005237  002214'                  INC     FATFLG                          ;ERROR COUNT
     063512                                   ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
     063512  104456                                                                               TRAP    C$ERHRD
     063514  001277                                                                               .WORD   703
     063516  070524'                                                                              .WORD   T35RWN
     063520  011736'                                                                              .WORD   PKTSSR
     063522                           30$:    CKLOOP                          ;LOOP IF SELECTED
     063522  104406                                                                               TRAP    C$CLP1
     063524  013701  067270'                  MOV     T35BFR+6,R1             ;PICK UP XST0
     063530  010102                           MOV     R1,R2                   ;SET UP EXPECTED
     063532  052702  000002                   BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
     063536  020102                           CMP     R1,R2                   ;DOES EXP = REC'D
     063540  001406                           BEQ     40$                     ;BR, IF EQUAL (OK)
     063542  005237  002214'                  INC     FATFLG                          ;ERROR COUNT
     063546                                   ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     063546  104456                                                                               TRAP    C$ERHRD
     063550  001300                                                                               .WORD   704
     063552  070220'                                                                              .WORD   T35BOT
     063554  015364'                                                                              .WORD   EXPREC
     063556                           40$:    CKLOOP                          ;LOOP IF SELECTED
     063556  104406                                                                               TRAP    C$CLP1
     063560  012703  000024                   MOV     #20.,R3                 ;NUMBER OF RECORDS
     063564  012737  000400  067376'          MOV     #256.,T35SZ             ;SET UP RECORD SIZE
     063572  013737  003116' 067372'          MOV     FREE,T35WB              ;ADDRESS OF WRITE BUFFER

                                      ;*****************************************
                                      ;
                                      ;WRITE DATA,ACK,CVC=1 COMMAND
                                      ;
                                      ;*****************************************

     063600  012737  140005  067370'          MOV     #140005,T35PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
     063606  012704  067370'                  MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
     063612  010465  000000           50$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
     063616  004737  016140'                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
     063622  016501  000002                   MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
     063626  012702  000200                   MOV     #SSR,R2                 ;SET UP EXPECTED
     063632  020102                           CMP     R1,R2                   ;ARE THEY EQUAL
     063634  001406                           BEQ     60$                     ;BR, IF OK
```

```
4350 063636  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
4354 063642                                  ERRSOFT ERRNO,T35WDE,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     063642  104457                                                                  TRAP    C$ERSOFT
     063644  001301                                                                  .WORD   705
     063646  070146'                                                                 .WORD   T35WDE
     063650  011736'                                                                 .WORD   PKTSSR
4355 063652                          60$:    CKLOOP                          ;LOOP IF SELECTED
     063652  104406                                                                  TRAP    C$CLP1
4356 063654  005303                         DEC     R3                      ;BUMP RECORD COUNTER
4357 063656  001355                         BNE     50$                     ;BR, IF MORE RRECORDS TO COUNT
4358
4359                                 ;*****************************************
4360                                 ;
4361                                 ;WAIT FOR TAPE TO STOP ALL MOTION
4362                                 ;
4363                                 ;*****************************************
4364
4365 063660  012737  000012  067422'         MOV     #10.,T35DLY             ;SET UP DELAY COUNTER
4366 063666                          70$:    DELAY   250                     ;WAIT ABOUT .25 SEC
     063666  012727  000250                                                          MOV     #250.,(PC)+
     063672  000000                                                                  .WORD   0
     063674  013727  002116'                                                         MOV     L$DLY,(PC)+
     063700  000000                                                                  .WORD   0
     063702  005367  177772                                                         DEC     -6(PC)
     063706  001375                                                                  BNE     .-4
     063710  005367  177756                                                         DEC     -22(PC)
     063714  001367                                                                  BNE     .-20
4367 063716  005337  067422'                 DEC     T35DLY                  ;BUMP COUNTER DOWN
4368 063722  001361                         BNE     70$                     ;BR, IF MORE TO DELAY
4369 063724  005737  002220'                 TST     EXTFEA                  ;CHECK FOR EXTENDED FEATURES SW SWITCH
4370 063730  001042                         BNE     110$                    ;BR IF SWITCH IS ON
4371 063732  112737  000200  067401'         MOVB    #200,T35BS1             ;WRITE MISCELLANEOUS CONT/READ STATUS
4372 063740  112737  000010  067400'         MOVB    #10,T35BSO              ;FUNCTION SELECTION BIT (TURN ON EXTFEA HW SWITCH)
4373 063746  012704  067350'                 MOV     #T35PK2,R4              ;WRITE SUBSYS MEM PACKET
4374 063752  010465  000000                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4375 063756  004737  016226'                 JSR     PC,CHKTSSR              ;WAIT FOR SSR
4376 063762  103407                         BCS     90$                     ;BR, IF NO ERROR
4377 063764  010001                         MOV     R0,R1                   ;ERROR, SAVE TSSR
4378 063766  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
4382 063772                                  ERRHRD  ERRNO,T35SSR,PKTSSR     ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
     063772  104456                                                                  TRAP    C$ERHRD
     063774  001302                                                                  .WORD   706
     063776  072302'                                                                 .WORD   T35SSR
     064000  011736'                                                                 .WORD   PKTSSR
4383 064002                          90$:    CKLOOP                          ;LOOP IF SELECTED
     064002  104406                                                                  TRAP    C$CLP1
4384 064004  012704  067240'                 MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4385 064010  004737  010552'                 JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4386 064014  103407                         BCS     100$                    ;BR, IF COMMAND ISSUED OK
4387 064016  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
4391 064022  010001                         MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4392 064024                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     064024  104456                                                                  TRAP    C$ERHRD
     064026  001303                                                                  .WORD   707
     064030  005046'                                                                 .WORD   WRTMSG
     064032  011724'                                                                 .WORD   SFIMSG
4393 064034                          100$:   CKLOOP                          ;SCOPE LOOP
```

```
TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  01-FEB-84 18:55                                                    SEQ 174
TEST  7: EXTENDED MODE FEATURES

      064034  104406                                                                          TRAP    C$CLP1
 4394 064036  012737  176750  067422' 110$:   MOV     #65000.,T35DLY          ;SET UP DELAY COUNTER
 4395 064044  005037  067416'                 CLR     T35CNT                  ;DELAY COUNTER
 4396
 4397                                 ;****************************************
 4398                                 ;
 4399                                 ;REWIND IMED. INTERRUPT,ACK,CVC=1,IE=0 COMMAND
 4400                                 ;
 4401                                 ;****************************************
 4402
 4403 064050  012737  142012  067370'         MOV     #142012,T35PK3          ;REWIND IMED. INTERRUPT,ACK,CVC=1,IE=0 COMMAND
 4404 064056  012704  067370'                 MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 4405 064062  010465  000000                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 4406 064066  016501  000002         120$:   MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 4407 064072  032701  000200                 BIT     #SSR,R1                 ;CHECK FOR SSR SET
 4408 064076  001021                         BNE     130$                    ;BR, WHEN SSR IS SET
 4409 064100  005237  067416'                INC     T35CNT                  ;BUMP THE CYCLE COUNTER
 4410 064104                                 DELAY   1                       ;DELAY TO KEEP COUNTER DOWN
      064104  012727  000001                                                                 MOV     #1,(PC)+
      064110  000000                                                                         .WORD   0
      064112  013727  002116'                                                                 MOV     L$DLY,(PC)+
      064116  000000                                                                         .WORD   0
      064120  005367  177772                                                                 DEC     -6(PC)
      064124  001375                                                                         BNE     .-4
      064126  005367  177756                                                                 DEC     -22(PC)
      064132  001367                                                                         BNE     .-20
 4411 064134  005337  067422'                 DEC     T35DLY                  ;DROP DEAD TIMER BUMP DOWN
 4412 064140  001352                         BNE     120$                    ;BR, IF MORE TIME TO GO
 4413 064142  012702  000200         130$:   MOV     #SSR,R2                 ;SET UP EXPECTED
 4414 064146  020102                         CMP     R1,R2                   ;ARE THEY EQUAL
 4415 064150  001406                         BEQ     140$                    ;BR, IF OK
 4416 064152  005237  002214'                INC     FATFLG                          ;ERROR COUNT
 4420 064156                                 ERRHRD  ERRNO,T35RWE,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      064156  104456                                                                         TRAP    C$ERHRD
      064160  001304                                                                         .WORD   708
      064162  072650'                                                                       .WORD   T35RWE
      064164  011736'                                                                       .WORD   PKTSSR
 4421 064166                         140$:   CKLOOP                          ;LOOP IF SELECTED
      064166  104406                                                                         TRAP    C$CLP1
 4422 064170  005737  002216'                TST     INTRECV                 ;CHECK FOR INTERRUPTS
 4423 064174  001410                         BEQ     150$                    ;BR, IF NO INTERRUPTS DETECTED
 4424 064176  016501  000002                 MOV     TSSR(R5),R1             ;GET TSSR STATUS FOR PRINTOUT
 4425 064202  005237  002214'                INC     FATFLG                          ;ERROR COUNT
 4429 064206                                 ERRHRD  ERRNO,T35INT,PKTSSR     ;INTERRUPT RECEIVED (BAD)
      064206  104456                                                                         TRAP    C$ERHRD
      064210  001305                                                                         .WORD   709
      064212  072461'                                                                       .WORD   T35INT
      064214  011736'                                                                       .WORD   PKTSSR
 4430 064216                         150$:   CKLOOP                          ;LOOP IF SELECTED
      064216  104406                                                                         TRAP    C$CLP1
 4431
 4432                                 ;****************************************
 4433                                 ;
 4434                                 ;NOW CHECK FOR THE MOTION BITS SET
 4435                                 ;
 4436                                 ;****************************************
 4437
```

```
4438 064220  013701  067270'                MOV     T35BFR+6,R1             ;PICK UP XSTO
4439 064224  010102                         MOV     R1,R2                   ;SET UP EXPECTED
4440 064226  052702  000200                BIS     #BIT7,R2                ;SET MOT BIT IN EXPECTED
4441 064232  020102                         CMP     R1,R2                   ;DOES EXP = REC'D
4442 064234  001406                         BEQ     160$                    ;BR, IF EQUAL (OK)
4443 064236  005237  002214'                INC     FATFLG                          ;ERROR COUNT
4447 064242                                 ERRHRD  ERRNO,T35MOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     064242  104456                                                                TRAP    C$ERHRD
     064244  001306                                                                .WORD   710
     064246  072363'                                                               .WORD   T35MOT
     064250  015364'                                                               .WORD   EXPREC
4448 064252                         160$:   CKLOOP                          ;LOOP IF SELECTED
     064252  104406                                                                TRAP    C$CLP1
4449 064254  013701  067274'                MOV     T35BFR+12,R1            ;PICK UP XST2
4450 064260  010102                         MOV     R1,R2                   ;SET UP EXPECTED
4451 064262  052702  100000                BIS     #BIT15,R2               ;SET OPM BIT IN EXPECTED
4452 064266  020102                         CMP     R1,R2                   ;DOES EXP = REC'D
4453 064270  001406                         BEQ     170$                    ;BR, IF EQUAL (OK)
4454 064272  005237  002214'                INC     FATFLG                          ;ERROR COUNT
4458 064276                                 ERRHRD  ERRNO,T350PM,EXPREC     ;OPM BIT NOT SET
     064276  104456                                                                TRAP    C$ERHRD
     064300  001307                                                                .WORD   711
     064302  072552'                                                               .WORD   T350PM
     064304  015364'                                                               .WORD   EXPREC
4459 064306                         170$:   CKLOOP                          ;LOOP IF SELECTED
     064306  104406                                                                TRAP    C$CLP1
4460 064310  012737  000027  067422'        MOV     #23.,T35DLY             ;SET UP DELAY COUNTER
4461 064316                         175$:   DELAY   250                     ;START DELAY
     064316  012727  000250                                                        MOV     #250.,(PC)+
     064322  000000                                                                .WORD   0
     064324  013727  002116'                                                       MOV     L$DLY,(PC)+
     064330  000000                                                                .WORD   0
     064332  005367  177772                                                       DEC     -6(PC)
     064336  001375                                                                BNE     .-4
     064340  005367  177756                                                       DEC     -22(PC)
     064344  001367                                                                BNE     .-20
4462 064346  005337  067422'                DEC     T35DLY                  ;BUMP DELAY COUNTER
4463 064352  001361                         BNE     175$                    ;BR, IF MORE DELAY
4464 064354                                 ENDSUB
     064354                                                                  L10064:
     064354  104403                                                                TRAP    C$ESUB
4465 064356  023727  002214'  000017        CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
4466 064364  103402                         BLO     999$                            ;BR, IF LESS THAN 25
4467 064366  004737  017074'                JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
4468 064372                         999$:
4469
4470                                ;*
4471                                ;
4472                                ;TEST 7: SUBTEST 2
4473                                ;
4474                                ;       WITH THE INTERRUPT ENABLE (IE) BIT SET (1), CAUSES ALMOST
4475                                ;       IMMEDIATE TERMINATION AND AN INTERRUPT.  STATUS IN THE MESSAGE
4476                                ;       BUFFER IS CHECKED TO VERIFY THAT THE MOTION (MOT) AND OPERATION
4477                                ;       IN PROGRESS (OPM) STATUS BITS ARE BOTH SET.
4478                                ;
4479                                ;
4480                                ;
```

```
4481                                    ;
4482                                    ;
4483                                    ;
4484                                    ;
4485                                    ;-
4486 064372                             BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     064372                                                                             T7.2:
     064372  104402                                                                      TRAP    C$BSUB
4487 064374                             SETPRI  #PRI00          ;ENABLE INTERRUPTS.
     064374  012700  000000                                                             MOV     #PRI00,R0
     064400  104441                                                                      TRAP    C$SPRI
4488 064402  004737  073044'                   JSR     PC,T35REST              ;SET COMMAND PACKET
4489 064406  005037  002216'                   CLR     INTRECV                 ;CLEAR INTERRUPT RECEIVED FLAG
4490 064412  004737  073136'                   JSR     PC,T35RT2               ;SET UP OTHER COMMAND PACKET
4491 064416  004737  073200'                   JSR     PC,T35RT3               ;SET UP OTHER COMMAND PACKET
4492 064422  012737  176750  067422'           MOV     #65000.,T35DLY          ;SET UP DELAY COUNTER
4493 064430  005037  067416'                   CLR     T35CNT                  ;CLEAR COUNTER
4494 064434  004737  015664'           10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
4495 064440  103426                           BCS     20$                     ;BR IF INIT WAS OK
4496 064442                             DELAY   250                     ;DELAY ABOUT .25 SEC
     064442  012727  000250                                                             MOV     #250,(PC)+
     064446  000000                                                                     .WORD   0
     064450  013727  002116'                                                           MOV     L$DLY,(PC)+
     064454  000000                                                                     .WORD   0
     064456  005367  177772                                                           DEC     -6(PC)
     064462  001375                                                                   BNE     .-4
     064464  005367  177756                                                           DEC     -22(PC)
     064470  001367                                                                   BNE     .-20
4497 064472  005337  067422'                   DEC     T35DLY                  ;BUMP COUNTER
4498 064476  001356                           BNE     10$                     ;BR, IF COUNTER NOT DONE
4499 064500  005237  002214'                   INC     FATFLG                          ;ERROR COUNT
4503 064504  010001                           MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
4504 064506                             ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
     064506  104455                                                                   TRAP    C$ERDF
     064510  001310                                                                   .WORD   712
     064512  003642'                                                                  .WORD   SFIERR
     064514  011724'                                                                  .WORD   SFIMSG
4505 064516  013737  002174'  067260'  20$:    MOV     UNITN,T35DSW            ;SET UP DRIVE NUMBER
4506 064524  012704  067240'                   MOV     #T35PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
4507 064530  004737  010552'                   JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
4508 064534  103407                           BCS     25$                     ;BR, IF COMMAND ISSUED OK
4509 064536  005237  002214'                   INC     FATFLG                          ;ERROR COUNT
4513 064542  010001                           MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
4514 064544                             ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     064544  104456                                                                   TRAP    C$ERHRD
     064546  001311                                                                   .WORD   713
     064550  005046'                                                                  .WORD   WRTMSG
     064552  011724'                                                                  .WORD   SFIMSG
4515 064554                     25$:    CKLOOP                          ;LOOP IF SELECTED
     064554  104406                                                                   TRAP    C$CLP1
4516 064556  004737  010704'                   JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4517 064562  103411                           BCS     30$                     ;BR, IF NO PROBLEM
4518 064564  010004                           MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
4519 064566  016501  000002                   MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4520 064572  005237  002214'                   INC     FATFLG                          ;ERROR COUNT
4524 064576                             ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
     064576  104456                                                                   TRAP    C$ERHRD
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TEST 1 - HARDWARE TEST 1-8 TEST MACRO M1113  01-FEB-84 18:55                                                    SEQ 177
TEST  7: EXTENDED MODE FEATURES

        064600  001312                                                                          .WORD   714
        064602  070524'                                                                         .WORD   T35RWN
        064604  011736'                                                                         .WORD   PKTSSR
4525    064606                          30$:    CKLOOP                          ;LOOP IF SELECTED
        064606  104406                                                                          TRAP    C$CLP1
4526    064610  013701  067270'                MOV     T35BFR+6,R1             ;PICK UP XSTO
4527    064614  010102                  MOV     R1,R2                           ;SET UP EXPECTED
4528    064616  052702  000002          BIS     #BIT1,R2                        ;SET BOT BIT IN EXPECTED
4529    064622  020102                  CMP     R1,R2                           ;DOES EXP = REC'D
4530    064624  001406                  BEQ     40$                             ;BR, IF EQUAL (OK)
4531    064626  005237  002214'         INC     FATFLG                                  ;ERROR COUNT
4535    064632                          ERRHRD  ERRNO,T35BOT,EXPREC             ;TAPE NOT AT BOT AFTER REWIND
        064632  104456                                                                          TRAP    C$ERHRD
        064634  001313                                                                          .WORD   715
        064636  070220'                                                                         .WORD   T35BOT
        064640  015364'                                                                         .WORD   EXPREC
4536    064642                          40$:    CKLOOP                          ;LOOP IF SELECTED
        064642  104406                                                                          TRAP    C$CLP1
4537    064644  012703  000024                MOV     #20.,R3                 ;NUMBER OF RECORDS
4538    064650  012737  000400  067376'       MOV     #256.,T35SZ             ;SET UP RECORD SIZE
4539    064656  013737  003116'  067372'       MOV     FREE,T35WB              ;ADDRESS OF WRITE BUFFER
4540
4541                                    ;*****************************************
4542                                    ;
4543                                    ;WRITE DATA,ACK,CVC=1 COMMAND
4544                                    ;
4545                                    ;*****************************************
4546
4547    064664  012737  140005  067370'       MOV     #140005,T35PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
4548    064672  012704  067370'               MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4549    064676  010465  000000          50$:    MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4550    064702  004737  016140'               JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4551    064706  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4552    064712  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
4553    064716  020102                  CMP     R1,R2                           ;ARE THEY EQUAL
4554    064720  001406                  BEQ     60$                             ;BR, IF OK
4555    064722  005237  002214'         INC     FATFLG                                  ;ERROR COUNT
4559    064726                          ERRHRD  ERRNO,T35WDE,PKTSSR             ;TSSR INCORRECT AFTER WRITE DATA
        064726  104456                                                                          TRAP    C$ERHRD
        064730  001314                                                                          .WORD   716
        064732  070146'                                                                         .WORD   T35WDE
        064734  011736'                                                                         .WORD   PKTSSR
4560    064736                          60$:    CKLOOP                          ;LOOP IF SELECTED
        064736  104406                                                                          TRAP    C$CLP1
4561
4562                                    ;*****************************************
4563                                    ;
4564                                    ;WAIT FOR TAPE TO STOP ALL MOTION
4565                                    ;
4566                                    ;*****************************************
4567
4568    064740  012737  000012  067422'       MOV     #10.,T35DLY             ;SET UP DELAY COUNTER
4569    064746                          70$:    DELAY   250                     ;WAIT ABOUT .25 SEC
        064746  012727  000250                                                                  MOV     #250.,(PC)+
        064752  000000                                                                          .WORD   0
        064754  013727  002116'                                                                 MOV     L$DLY,(PC)+
        064760  000000                                                                          .WORD   0
```

```
        064762  005367  177772                                                          DEC     -6(PC)
        064766  001375                                                                   BNE     .-4
        064770  005367  177756                                                          DEC     -22(PC)
        064774  001367                                                                   BNE     .-20
4570    064776  005337  067422'         DEC     T35DLY          ;BUMP COUNTER DOWN
4571    065002  001361                  BNE     70$             ;BR, IF MORE TO DELAY
4572    065004  005737  002220'         TST     EXTFEA          ;CHECK FOR EXTENDED FEATURES SW SWITCH
4573    065010  001042                  BNE     110$            ;BR IF SWITCH IS ON
4574    065012  112737  000200  067401' MOVB    #200,T35BS1     ;WRITE MISCELLANEOUS CONT/READ STATUS
4575    065020  112737  000010  067400' MOVB    #10,T35BSO      ;FUNCTION SELECTION BIT (TURN ON EXTFEA HW SWITCH)
4576    065026  012704  067350'         MOV     #T35PK2,R4      ;WRITE SUBSYS MEM PACKET
4577    065032  010465  000000          MOV     R4,TSDB(R5)     ;ISSUE COMMAND
4578    065036  004737  016226'         JSR     PC,CHKTSSR      ;WAIT FOR SSR
4579    065042  103407                  BCS     90$             ;BR, IF NO ERROR
4580    065044  010001                  MOV     R0,R1           ;ERROR, SAVE TSSR
4581    065046  005237  002214'         INC     FATFLG                  ;ERROR COUNT
4585    065052                  ERRHRD  ERRNO,T35SSR,PKTSSR     ;TSSR NOT CORRECT AFTER WRT. MISCELLANEOUS
        065052  104456                                                          TRAP    C$ERHRD
        065054  001315                                                          .WORD   717
        065056  072302'                                                        .WORD   T35SSR
        065060  011736'                                                        .WORD   PKTSSR
4586    065062          90$:    CKLOOP                          ;LOOP IF SELECTED
        065062  104406                                                          TRAP    C$CLP1
4587    065064  012704  067240'         MOV     #T35PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
4588    065070  004737  010552'         JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
4589    065074  103407                  BCS     100$            ;BR, IF COMMAND ISSUED OK
4590    065076  005237  002214'         INC     FATFLG                  ;ERROR COUNT
4594    065102  010001                  MOV     R0,R1           ;SAVE CONTENTS OF TSSR
4595    065104                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
        065104  104456                                                          TRAP    C$ERHRD
        065106  001316                                                          .WORD   718
        065110  005046'                                                        .WORD   WRTMSG
        065112  011724'                                                        .WORD   SFIMSG
4596    065114          100$:   CKLOOP                          ;SCOPE LOOP
        065114  104406                                                          TRAP    C$CLP1
4597    065116  012737  176750  067422' 110$:   MOV     #65000.,T35DLY  ;SET UP DELAY COUNTER
4598    065124  005037  067416'         CLR     T35CNT          ;DELAY COUNTER
4599
4600                            ;*****************************************
4601                            ;
4602                            ;REWIND IMMEDIATE,ACK,CVC=1,IE=1 COMMAND
4603                            ;
4604                            ;*****************************************
4605
4606    065130  012737  142212  067370'         MOV     #142212,T35PK3  ;REWIND IMMEDIATE,ACK,CVC=1,IE=1 COMMAND
4607    065136  012704  067370'         MOV     #T35PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
4608    065142  010465  000000          MOV     R4,TSDB(R5)     ;ISSUE COMMAND
4609    065146  016501  000002  120$:   MOV     TSSR(R5),R1     ;GET TSSR CONTENTS
4610    065152  032701  000200          BIT     #SSR,R1         ;CHECK FOR SSR SET
4611    065156  001021                  BNE     130$            ;BR, WHEN SSR IS SET
4612    065160  005237  067416'         INC     T35CNT          ;BUMP THE CYCLE COUNTER
4613    065164                  DELAY   1                       ;DELAY TO KEEP COUNTER DOWN
        065164  012727  000001                                                  MOV     #1,(PC)+
        065170  000000                                                          .WORD   0
        065172  013727  002116'                                                MOV     L$DLY,(PC)+
        065176  000000                                                          .WORD   0
        065200  005367  177772                                                  DEC     -6(PC)
```

```
        065204  001375                                                          BNE     .-4
        065206  005367  177756                                                  DEC     -22(PC)
        065212  001367                                                          BNE     .-20
4614    065214  005337  067422'         DEC     T35DLY          ;DROP DEAD TIMER BUMP DOWN
4615    065220  001352                  BNE     120$            ;BR, IF MORE TIME TO GO
4616    065222  012702  000200  130$:   MOV     #SSR,R2         ;SET UP EXPECTED
4617    065226  020102                  CMP     R1,R2           ;ARE THEY EQUAL
4618    065230  001406                  BEQ     140$            ;BR, IF OK
4619    065232  005237  002214'                 INC     FATFLG                  ;ERROR COUNT
4623    065236                          ERRHRD  ERRNO,T35RWE,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
        065236  104456                                                          TRAP    C$ERHRD
        065240  001317                                                          .WORD   719
        065242  072650'                                                         .WORD   T35RWE
        065244  011736'                                                         .WORD   PKTSSR
4624    065246          140$:   CKLOOP                          ;LOOP IF SELECTED
        065246  104406                                                          TRAP    C$CLP1
4625    065250  005737  002216'         TST     INTRECV         ;CHECK FOR INTERRUPTS
4626    065254  001010                  BNE     150$            ;BR, IF INTERRUPTS DETECTED
4627    065256  016501  000002          MOV     TSSR(R5),R1     ;GET TSSR STATUS FOR PRINTOUT
4628    065262  005237  002214'                 INC     FATFLG                  ;ERROR COUNT
4632    065266                          ERRHRD  ERRNO,T35NIN,PKTSSR     ;INTERRUPT NOT RECEIVED (BAD)
        065266  104456                                                          TRAP    C$ERHRD
        065270  001320                                                          .WORD   720
        065272  072736'                                                         .WORD   T35NIN
        065274  011736'                                                         .WORD   PKTSSR
4633    065276          150$:   CKLOOP                          ;LOOP IF SELECTED
        065276  104406                                                          TRAP    C$CLP1
4634
4635                            ;*****************************************
4636                            ;
4637                            ;NOW CHECK FOR THE MOTION BITS SET
4638                            ;
4639                            ;*****************************************
4640
4641    065300  013701  067270'         MOV     T35BFR+6,R1             ;PICK UP XSTO
4642    065304  010102                  MOV     R1,R2                   ;SET UP EXPECTED
4643    065306  052702  000200          BIS     #BIT7,R2                ;SET MOT BIT IN EXPECTED
4644    065312  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
4645    065314  001406                  BEQ     160$                    ;BR, IF EQUAL (OK)
4646    065316  005237  002214'                 INC     FATFLG                  ;ERROR COUNT
4650    065322                          ERRHRD  ERRNO,T35MOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
        065322  104456                                                          TRAP    C$ERHRD
        065324  001321                                                          .WORD   721
        065326  072363'                                                         .WORD   T35MOT
        065330  015364'                                                         .WORD   EXPREC
4651    065332          160$:   CKLOOP                          ;LOOP IF SELECTED
        065332  104406                                                          TRAP    C$CLP1
4652    065334  013701  067274'         MOV     T35BFR+12,R1            ;PICK UP XST2
4653    065340  010102                  MOV     R1,R2                   ;SET UP EXPECTED
4654    065342  052702  100000          BIS     #BIT15,R2               ;SET OPM BIT IN EXPECTED
4655    065346  020102                  CMP     R1,R2                   ;DOES EXP = REC'D
4656    065350  001406                  BEQ     170$                    ;BR, IF EQUAL (OK)
4657    065352  005237  002214'                 INC     FATFLG                  ;ERROR COUNT
4661    065356                          ERRHRD  ERRNO,T350PM,EXPREC     ;OPM BIT NOT SET
        065356  104456                                                          TRAP    C$ERHRD
        065360  001322                                                          .WORD   722
        065362  072552'                                                         .WORD   T350PM
```

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     065364  015364'                                                                        .WORD   EXPREC
     065366                          170$:   CKLOOP                         ;LOOP IF SELECTED
     065366  104406                                                                         TRAP    C$CLP1
     065370  012737  000027  067422'         MOV     #23.,T35DLY            ;SET UP DELAY COUNTER
     065376                          175$:   DELAY   250                    ;START DELAY
     065376  012727  000250                                                                 MOV     #250,(PC)+
     065402  000000                                                                         .WORD   0
     065404  013727  002116'                                                                MOV     L$DLY,(PC)+
     065410  000000                                                                         .WORD   0
     065412  005367  177772                                                                 DEC     -6(PC)
     065416  001375                                                                         BNE     .-4
     065420  005367  177756                                                                 DEC     -22(PC)
     065424  001367                                                                         BNE     .-20
     065426  005337  067422'                 DEC     T35DLY                 ;BUMP DELAY COUNTER
     065432  001361                          BNE     175$                   ;BR, IF MORE DELAY
     065434                                  ENDSUB
     065434                                                                           L10065:
     065434  104403                                                                         TRAP    C$ESUB
     065436  023727  002214' 000017         CMP     FATFLG,#15.                    ;IS ERROR COUNT AT 25
     065444  103402                          BLO     999$                           ;BR, IF LESS THAN 25
     065446  004737  017074'                 JSR     PC,CKDROP                      ;TRY TO DROP THE UNIT
     065452                          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.
                                     ;
                                     ;
                                     ;
                                     ;
                                     ;-
     065452                                  BGNSUB                         ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     065452                                                                           T7.3:
     065452  104402                                                                         TRAP    C$BSUB
     065454  004737  073044'                 JSR     PC,T35REST             ;SET COMMAND PACKET
     065460  004737  073136'                 JSR     PC,T35RT2              ;SET UP OTHER COMMAND PACKET
     065464  004737  073200'                 JSR     PC,T35RT3              ;SET UP OTHER COMMAND PACKET
     065470  004737  015664'                 JSR     PC,SOFINIT             ;DO INITIALIZE ON CONTROLLER
     065474  103407                          BCS     20$                    ;BR IF INIT WAS OK
     065476  005237  002214'                 INC     FATFLG                         ;ERROR COUNT
     065502  010001                          MOV     R0,R1                  ;CONTENTS OF TSSR REGISTER
     065504                                  ERRDF   ERRNO,SFIERR,SFIMSG    ;FATAL ERROR TSSR WAS NOT OK
     065504  104455                                                                         TRAP    C$ERDF
     065506  001323                                                                         .WORD   723
     065510  003642'                                                                        .WORD   SFIERR
```

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     065512  011724'                                                          .WORD   SFIMSG
4705 065514  013737  002174' 067260' 20$:    MOV     UNITN,T35DSW        ;SET UP UNIT NUMBER IN PACKET
4706 065522  012704  067240'                 MOV     #T35PACKET,R4       ;SUBROUTINE NEEDS PACKET ADDRESS
4707 065526  004737  010552'                 JSR     PC,WRTCHR           ;ISSUE WRITE CHARACTERISTICS
4708 065532  103407                         BCS     23$                 ;BR, IF COMMAND ISSUED OK
4709 065534  005237  002214'                 INC     FATFLG                      ;ERROR COUNT
4713 065540  010001                         MOV     R0,R1               ;SAVE CONTENTS OF TSSR
4714 065542                                  ERRHRD  ERRNO,WRTMSG,SFIMSG ;WRITE CHARACTERISTISC FAILED
     065542  104456                                                          TRAP    C$ERHRD
     065544  001324                                                          .WORD   724
     065546  005046'                                                        .WORD   WRTMSG
     065550  011724'                                                        .WORD   SFIMSG
4715 065552                          23$:    CKLOOP                      ;LOOP IF SELECTED
     065552  104406                                                          TRAP    C$CLP1
4716 065554  004737  010704'                 JSR     PC,REWIND           ;CALL TAPE REWIND COMMAND
4717 065560  103411                         BCS     30$                 ;BR, IF NO PROBLEM
4718 065562  010004                         MOV     R0,R4               ;SET UP REWIND PACKET ADDRESS
4719 065564  016501  000002                 MOV     TSSR(R5),R1         ;GET CONTENTS FOR CALL
4720 065570  005237  002214'                 INC     FATFLG                      ;ERROR COUNT
4724 065574                                  ERRHRD  ERRNO,T35RWN,PKTSSR ;REWIND NOT ACCEPTED
     065574  104456                                                          TRAP    C$ERHRD
     065576  001325                                                          .WORD   725
     065600  070524'                                                        .WORD   T35RWN
     065602  011736'                                                        .WORD   PKTSSR
4725 065604                          30$:    CKLOOP                      ;LOOP IF SELECTED
     065604  104406                                                          TRAP    C$CLP1
4726 065606  013701  067270'                 MOV     T35BFR+6,R1         ;PICK UP XSTO
4727 065612  010102                         MOV     R1,R2               ;SET UP EXPECTED
4728 065614  052702  000002                 BIS     #BIT1,R2            ;SET BOT BIT IN EXPECTED
4729 065620  020102                         CMP     R1,R2               ;DOES EXP = REC'D
4730 065622  001406                         BEQ     40$                 ;BR, IF EQUAL (OK)
4731 065624  005237  002214'                 INC     FATFLG                      ;ERROR COUNT
4735 065630                                  ERRHRD  ERRNO,T35BOT,EXPREC ;TAPE NOT AT BOT AFTER REWIND
     065630  104456                                                          TRAP    C$ERHRD
     065632  001326                                                          .WORD   726
     065634  070220'                                                        .WORD   T35BOT
     065636  015364'                                                        .WORD   EXPREC
4736 065640                          40$:    CKLOOP                      ;LOOP IF SELECTED
     065640  104406                                                          TRAP    C$CLP1
4737 065642  012703  000024                 MOV     #20.,R3             ;STARTING RECORD SIZE
4738 065646  013737  003116' 067372'         MOV     FREE,T35WB          ;STARTING WRITE BUFFER ADDRESS
4739
4740                                 ;*****************************************
4741                                 ;
4742                                 ;WRITE DATA,CVC=1,ACK COMMAND
4743                                 ;
4744                                 ;*****************************************
4745
4746 065654  012737  140005  067370' 65$:    MOV     #140005,T35PK3      ;WRITE DATA,CVC=1,ACK COMMAND
4747 065662  012704  067370'                 MOV     #T35PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
4748 065666  010300                         MOV     R3,R0               ;SET PATTERN IN CORRECT REGISTER
4749 065670  004737  017314'                 JSR     PC,FILLMEM          ;FILL MEMORY WITH RECORD SIZE
4750 065674  010337  067376'                 MOV     R3,T35SZ            ;SET UP RECORD SIZE IN PACKET
4751 065700  010465  000000                 MOV     R4,TSDB(R5)         ;ISSUE COMMAND
4752 065704  004737  016140'                 JSR     PC,WAITF            ;WAIT FOR SSR TO SET
4753 065710  016501  000002                 MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
4754 065714  012702  000200                 MOV     #SSR,R2             ;SET UP EXPECTED
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4755 065720  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
4756 065722  001406                        BEQ     80$                     ;BR, IF OK
4757 065724  005237  002214'                INC     FATFLG                          ;ERROR COUNT
4761 065730                                ERRHRD  ERRNO,T35WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
     065730  104456                                                               TRAP    C$ERHRD
     065732  001327                                                               .WORD   727
     065734  071060'                                                              .WORD   T35WDC
     065736  011736'                                                              .WORD   PKTSSR
4762 065740                         80$:    CKLOOP                          ;LOOP IF SELECTED
     065740  104406                                                               TRAP    C$CLP1
4763
4764                                ;*****************************************
4765                                ;
4766                                ;WRITE DATA RETRY,CVC=1,ACK COMMAND
4767                                ;
4768                                ;*****************************************
4769
4770 065742  012737  141005  067370'        MOV     #141005,T35PK3          ;WRITE DATA RETRY,CVC=1,ACK COMMAND
4771 065750  010465  000000                MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4772 065754  004737  016140'                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4773 065760  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4774 065764  012702  000200                MOV     #SSR,R2                 ;SET UP EXPECTED
4775 065770  020102                        CMP     R1,R2                   ;ARE THEY EQUAL
4776 065772  001406                        BEQ     90$                     ;BR, IF OK
4777 065774  005237  002214'                INC     FATFLG                          ;ERROR COUNT
4781 066000                                ERRHRD  ERRNO,T35WRF,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA RETRY
     066000  104456                                                               TRAP    C$ERHRD
     066002  001330                                                               .WORD   728
     066004  072125'                                                              .WORD   T35WRF
     066006  011736'                                                              .WORD   PKTSSR
4782 066010                         90$:    CKLOOP                          ;LOOP IF SELECTED
     066010  104406                                                               TRAP    C$CLP1
4783 066012  005723                        TST     (R3)+                   ;BUMP RECORD SIZE COUNTER
4784 066014  020327  000052                CMP     R3,#42.                 ;AT 42 SIZE YET
4785 066020  001315                        BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
4786 066022  004737  010704'                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4787 066026  103411                        BCS     230$                    ;BR, IF NO PROBLEM
4788 066030  010001                        MOV     R0,R1                   ;SAVE TSSR
4789 066032  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4790 066036  005237  002214'                INC     FATFLG                          ;ERROR COUNT
4794 066042                                ERRHRD  ERRNO,T35RWN,EXPREC     ;REWIND NOT ACCEPTED
     066042  104456                                                               TRAP    C$ERHRD
     066044  001331                                                               .WORD   729
     066046  070524'                                                              .WORD   T35RWN
     066050  015364'                                                              .WORD   EXPREC
4795 066052                         230$:   CKLOOP                          ;LOOP IF SELECTED
     066052  104406                                                               TRAP    C$CLP1
4796 066054  013701  067270'                MOV     T35BFR+6,R1             ;PICK UP XSTO
4797 066060  010102                        MOV     R1,R2                   ;SET UP EXPECTED
4798 066062  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4799 066066  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
4800 066070  001406                        BEQ     240$                    ;BR, IF EQUAL (OK)
4801 066072  005237  002214'                INC     FATFLG                          ;ERROR COUNT
4805 066076                                ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     066076  104456                                                               TRAP    C$ERHRD
     066100  001332                                                               .WORD   730
     066102  070220'                                                              .WORD   T35BOT
```

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066104  015364'                                                                             .WORD   EXPREC
066106                             240$:   CKLOOP                               ;LOOP IF SELECTED
066106  104406                                                                              TRAP    C$CLP1
066110  012703  000024                     MOV     #20.,R3                      ;STARTING RECORD SIZE
066114  013737  003116' 067372'            MOV     FREE,T35RB                   ;STARTING READ BUFFER ADDRESS


                                   ;*****************************************
                                   ;
                                   ;READ DATA,ACK COMMAND
                                   ;
                                   ;*****************************************

066122  012737  100001  067370'    265$:   MOV     #100001,T35PK3               ;READ DATA,ACK COMMAND
066130  012704  067370'                    MOV     #T35PK3,R4                   ;SET UP R4 WITH PACKET ADDRESS
066134  012700  177777                     MOV     #177777,R0                   ;SET PATTERN IN CORRECT REGISTER
066140  004737  017314'                    JSR     PC,FILLMEM                   ;FILL MEMORY WITH RECORD SIZE
066144  010337  067376'                    MOV     R3,T35SZ                     ;SET UP RECORD SIZE IN PACKET
066150  010465  000000                     MOV     R4,TSDB(R5)                  ;ISSUE COMMAND
066154  004737  016140'                    JSR     PC,WAITF                     ;WAIT FOR SSR TO SET
066160  016501  000002                     MOV     TSSR(R5),R1                  ;GET TSSR CONTENTS
066164  012702  000200                     MOV     #SSR,R2                      ;SET UP EXPECTED
066170  020102                             CMP     R1,R2                        ;ARE THEY EQUAL
066172  001406                             BEQ     280$                         ;BR, IF OK
066174  005237  002214'                    INC     FATFLG                               ;ERROR COUNT
066200                                     ERRHRD  ERRNO,T35RDF,PKTSSR          ;TSSR INCORRECT AFTER READ DATA
066200  104456                                                                              TRAP    C$ERHRD
066202  001333                                                                              .WORD   731
066204  067512'                                                                             .WORD   T35RDF
066206  011736'                                                                             .WORD   PKTSSR
066210                             280$:   CKLOOP                               ;LOOP IF SELECTED
066210  104406                                                                              TRAP    C$CLP1
066212  013702  003116'                    MOV     FREE,R2                      ;GET BUFFER ADDRESS
066216  010304                             MOV     R3,R4                        ;GET RECORD SIZE
066220  162704  000024                     SUB     #20.,R4                      ;POINT BACK TO 1ST RECORD
066224  060204                     285$:   ADD     R2,R4                        ;POINT TO 1ST LOC IN BUFFER
066226  021403                             CMP     (R4),R3                      ;DATA WRITTEN = READ
066230  001410                             BEQ     290$                         ;BR, IF DATA OK (GOOD)
066232  011401                             MOV     (R4),R1                      ;PICK UP BAD DATA
066234  010302                             MOV     R3,R2                        ;SET UP EXPECTED
066236  005237  002214'                    INC     FATFLG                               ;ERROR COUNT
066242                                     ERRHRD  ERRNO,T35DTA,EXPREC          ;DATA IN BUFFER NOT CORRECT
066242  104456                                                                              TRAP    C$ERHRD
066244  001334                                                                              .WORD   732
066246  072205'                                                                             .WORD   T35DTA
066250  015364'                                                                             .WORD   EXPREC
066252                             290$:   CKLOOP                               ;LOOP IF SELECTED
066252  104406                                                                              TRAP    C$CLP1
066254  005724                             TST     (R4)+                        ;BUMP TO NEXT ADDRESS
066256  160204                             SUB     R2,R4                        ;BACK TO RECORD SIZE
066260  020403                             CMP     R4,R3                        ;AT END OF RECORD YET
066262  001360                             BNE     285$                         ;BR, IF MORE DATA TO CHECK
066264  005723                             TST     (R3)+                        ;BUMP RECORD SIZE
066266  020327  000050                     CMP     R3,#40.                      ;DONE YET
066272  001313                             BNE     265$                         ;BR, IF NOT DONE YET (MORE READS)
066274                             300$:   CKLOOP                               ;LOOP IF SELECTED
066274  104406                                                                              TRAP    C$CLP1
066276                             330$:
```

```
4856 066276                              ENDSUB                              ;>>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
     066276                                                                         L10066:
     066276  104403                                                                        TRAP     C$ESUB
4857 066300  023727  002214' 000017      CMP     FATFLG,#15.                 ;IS ERROR COUNT AT 25
4858 066306  103402                      BLO     999$                        ;BR, IF LESS THAN 25
4859 066310  004737  017074'             JSR     PC,CKDROP                   ;TRY TO DROP THE UNIT
4860 066314                     999$:
4861
4862                            ;*
4863                            ;
4864                            ;TEST 7, SUBTEST 4
4865                            ;
4866                            ;        VERIFIES THAT A TAPE-MOTION COMMAND (READ, WRITE, POSITION),
4867                            ;        ISSUED IMMEDIATATELY AFTER TERMINATION OF A REWIND WITH
4868                            ;        IMMEDIATE INTERRUPT COMMAND, IS "QUEUED" BY THE CONTROLLER AND
4869                            ;        THEN EXECUTES PROPERLY.
4870                            ;
4871                            ;
4872                            ;
4873                            ;-
4874 066314                              BGNSUB                              ;>>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
     066314                                                                         T7.4:
     066314  104402                                                                        TRAP     C$BSUB
4875 066316  004737  073044'             JSR     PC,T35REST                  ;SET COMMAND PACKET
4876 066322  004737  073136'             JSR     PC,T35RT2                   ;SET UP OTHER COMMAND PACKET
4877 066326  004737  073200'             JSR     PC,T35RT3                   ;SET UP OTHER COMMAND PACKET
4878 066332  012737  176750  067422'     MOV     #65000.,T35DLY              ;SET UP DELAY COUNTER
4879 066340  004737  015664'    10$:     JSR     PC,SOFINIT                  ;DO INITIALIZE ON CONTROLLER
4880 066344  103426                      BCS     20$                         ;BR IF INIT WAS OK
4881 066346                              DELAY   250                         ;DELAY ABOUT .25 SEC
     066346  012727  000250                                                                MOV      #250,(PC)+
     066352  000000                                                                        .WORD    0
     066354  013727  002116'                                                               MOV      L$DLY,(PC)+
     066360  000000                                                                        .WORD    0
     066362  005367  177772                                                                DEC      -6(PC)
     066366  001375                                                                        BNE      .-4
     066370  005367  177756                                                                DEC      -22(PC)
     066374  001367                                                                        BNE      .-20
4882 066376  005337  067422'             DEC     T35DLY                      ;BUMP COUNTER
4883 066402  001356                      BNE     10$                         ;BR, IF COUNTER NOT DONE
4884 066404  005237  002214'             INC     FATFLG                            ;ERROR COUNT
4888 066410  010001                      MOV     R0,R1                       ;CONTENTS OF TSSR REGISTER
4889 066412                              ERRDF   ERRNO,SFIERR,SFIMSG         ;FATAL ERROR TSSR WAS NOT OK
     066412  104455                                                                        TRAP     C$ERDF
     066414  001335                                                                        .WORD    733
     066416  003642'                                                                       .WORD    SFIERR
     066420  011724'                                                                       .WORD    SFIMSG
4890 066422  013737  002174' 067260' 20$: MOV     UNITN,T35DSW                ;SET UP UNIT (DRIVE) NUMBER
4891 066430  012704  067240'             MOV     #T35PACKET,R4               ;SUBROUTINE NEEDS PACKET ADDRESS
4892 066434  004737  010552'             JSR     PC,WRTCHR                   ;ISSUE WRITE CHARACTERISTICS
4893 066440  103407                      BCS     23$                         ;BR, IF COMMAND ISSUED OK
4894 066442  005237  002214'             INC     FATFLG                            ;ERROR COUNT
4898 066446  010001                      MOV     R0,R1                       ;SAVE CONTENTS OF TSSR
4899 066450                              ERRHRD  ERRNO,WRTMSG,SFIMSG         ;WRITE CHARACTERISTISC FAILED
     066450  104456                                                                        TRAP     C$ERHRD
     066452  001336                                                                        .WORD    734
     066454  005046'                                                                       .WORD    WRTMSG
```

```
                066456  011724'
4900            066460                          23$:    CKLOOP                                  ;LOOP IF SELECTED
                                                                                                .WORD   SFIMSG
                066460  104406                                                                  TRAP    C$CLP1
4901            066462  004737  010704'                        JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4902            066466  103411                                  BCS     30$                     ;BR, IF NO PROBLEM
4903            066470  016501  000002                         MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4904            066474  010004                                  MOV     R0,R4                   ;GET PACKET ADDRESS
4905            066476  005237  002214'                        INC     FATFLG
                                                                                                        ;ERROR COUNT
4909            066502                                          ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
                066502  104456                                                                  TRAP    C$ERHRD
                066504  001337                                                                  .WORD   735
                066506  070524'                                                                .WORD   T35RWN
                066510  011736'                                                                .WORD   PKTSSR
4910            066512                          30$:    CKLOOP                                  ;LOOP IF SELECTED
                066512  104406                                                                  TRAP    C$CLP1
4911            066514  013701  067270'                        MOV     T35BFR+6,R1             ;PICK UP XSTO
4912            066520  010102                                  MOV     R1,R2                   ;SET UP EXPECTED
4913            066522  052702  000002                         BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4914            066526  020102                                  CMP     R1,R2                   ;DOES EXP = REC'D
4915            066530  001406                                  BEQ     40$                     ;BR, IF EQUAL (OK)
4916            066532  005237  002214'                        INC     FATFLG
                                                                                                        ;ERROR COUNT
4920            066536                                          ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                066536  104456                                                                  TRAP    C$ERHRD
                066540  001340                                                                  .WORD   736
                066542  070220'                                                                .WORD   T35BOT
                066544  015364'                                                                .WORD   EXPREC
4921            066546                          40$:    CKLOOP                                  ;LOOP IF SELECTED
                066546  104406                                                                  TRAP    C$CLP1
4922            066550  012703  000024                         MOV     #20.,R3                 ;STARTING RECORD SIZE
4923            066554  013737  003116' 067372'                MOV     FREE,T35WB              ;STARTING WRITE BUFFER ADDRESS
4924
4925                                                    ;*****************************************
4926                                                    ;
4927                                                    ;WRITE DATA,CVC=1,ACK COMMAND
4928                                                    ;
4929                                                    ;*****************************************
4930
4931            066562  012737  140005  067370' 65$:    MOV     #140005,T35PK3          ;WRITE DATA,CVC=1,ACK COMMAND
4932            066570  012704  067370'                        MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
4933            066574  010300                                  MOV     R3,R0                   ;SET PATTERN IN CORRECT REGISTER
4934            066576  004737  017314'                        JSR     PC,FILLMEM              ;FILL MEMORY WITH RECORD SIZE
4935            066602  010337  067376'                        MOV     R3,T35SZ                ;SET UP RECORD SIZE IN PACKET
4936            066606  010465  000000                         MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4937            066612  004737  016140'                        JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4938            066616  016501  000002                         MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4939            066622  012702  000200                         MOV     #SSR,R2                 ;SET UP EXPECTED
4940            066626  020102                                  CMP     R1,R2                   ;ARE THEY EQUAL
4941            066630  001406                                  BEQ     80$                     ;BR, IF OK
4942            066632  005237  002214'                        INC     FATFLG
                                                                                                        ;ERROR COUNT
4946            066636                                          ERRHRD  ERRNO,T35WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
                066636  104456                                                                  TRAP    C$ERHRD
                066640  001341                                                                  .WORD   737
                066642  071060'                                                                .WORD   T35WDC
                066644  011736'                                                                .WORD   PKTSSR
4947            066646                          80$:    CKLOOP                                  ;LOOP IF SELECTED
                066646  104406                                                                  TRAP    C$CLP1
4948
```

```
4949                                    ;*****************************************
4950                                    ;
4951                                    ;WRITE DATA RETRY,ACK,SWB=1 COMMAND
4952                                    ;
4953                                    ;*****************************************
4954
4955 066650  012737  111005  067370'          MOV     #111005,T35PK3          ;WRITE DATA RETRY,ACK,SWB=1 COMMAND
4956 066656  010465  000000                   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
4957 066662  004737  016140'                  JSR     PC,WAITF                ;WAIT FOR SSR TO SET
4958 066666  016501  000002                   MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4959 066672  012702  000200                   MOV     #SSR,R2                 ;SET UP EXPECTED
4960 066676  020102                           CMP     R1,R2                   ;ARE THEY EQUAL
4961 066700  001406                           BEQ     90$                     ;BR, IF OK
4962 066702  005237  002214'                  INC     FATFLG                          ;ERROR COUNT
4966 066706                                   ERRHRD  ERRNO,T35WRF,EXPREC     ;TSSR INCORRECT AFTER WRITE DATA RETRY
     066706  104456                                                                   TRAP    C$ERHRD
     066710  001342                                                                   .WORD   738
     066712  072125'                                                                  .WORD   T35WRF
     066714  015364'                                                                  .WORD   EXPREC
4967 066716                           90$:    CKLOOP                          ;LOOP IF SELECTED
     066716  104406                                                                   TRAP    C$CLP1
4968 066720  005723                           TST     (R3)+                   ;BUMP RECORD SIZE COUNTER
4969 066722  020327  000052                   CMP     R3,#42.                 ;AT 42 SIZE YET
4970 066726  001315                           BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
4971 066730  004737  010704'                  JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
4972 066734  103411                           BCS     230$                    ;BR, IF NO PROBLEM
4973 066736  016501  000002                   MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
4974 066742  010004                           MOV     R0,R4                   ;GET PACKET ADDRESS
4975 066744  005237  002214'                  INC     FATFLG                          ;ERROR COUNT
4979 066750                                   ERRHRD  ERRNO,T35RWN,PKTSSR     ;REWIND NOT ACCEPTED
     066750  104456                                                                   TRAP    C$ERHRD
     066752  001343                                                                   .WORD   739
     066754  070524'                                                                  .WORD   T35RWN
     066756  011736'                                                                  .WORD   PKTSSR
4980 066760                           230$:   CKLOOP                          ;LOOP IF SELECTED
     066760  104406                                                                   TRAP    C$CLP1
4981 066762  013701  067270'                  MOV     T35BFR+6,R1             ;PICK UP XSTO
4982 066766  010102                           MOV     R1,R2                   ;SET UP EXPECTED
4983 066770  052702  000002                   BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
4984 066774  020102                           CMP     R1,R2                   ;DOES EXP = REC'D
4985 066776  001406                           BEQ     240$                    ;BR, IF EQUAL (OK)
4986 067000  005237  002214'                  INC     FATFLG                          ;ERROR COUNT
4990 067004                                   ERRHRD  ERRNO,T35BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
     067004  104456                                                                   TRAP    C$ERHRD
     067006  001344                                                                   .WORD   740
     067010  070220'                                                                  .WORD   T35BOT
     067012  015364'                                                                  .WORD   EXPREC
4991 067014                           240$:   CKLOOP                          ;LOOP IF SELECTED
     067014  104406                                                                   TRAP    C$CLP1
4992 067016  012703  000024                   MOV     #20.,R3                 ;STARTING RECORD SIZE
4993 067022  013737  003116'  067372'         MOV     FREE,T35RB              ;STARTING READ BUFFER ADDRESS
4994
4995                                    ;*****************************************
4996                                    ;
4997                                    ;READ DATA,ACK COMMAND
4998                                    ;
4999                                    ;*****************************************
```

```
 5000
 5001 067030  012737  100001  067370' 265$:  MOV     #100001,T35PK3          ;READ DATA,ACK COMMAND
 5002 067036  012704  067370'                MOV     #T35PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 5003 067042  010337  067376'                MOV     R3,T35SZ                ;SET UP RECORD SIZE IN PACKET
 5004 067046  010465  000000                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 5005 067052  004737  016140'                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 5006 067056  016501  000002                 MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 5007 067062  012702  000200                 MOV     #SSR,R2                 ;SET UP EXPECTED
 5008 067066  020102                         CMP     R1,R2                   ;ARE THEY EQUAL
 5009 067070  001406                         BEQ     280$                    ;BR, IF OK
 5010 067072  005237  002214'                INC     FATFLG                          ;ERROR COUNT
 5014 067076                                 ERRHRD  ERRNO,T35RDF,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      067076  104456                                                                    TRAP    C$ERHRD
      067100  001345                                                                    .WORD   741
      067102  067512'                                                                   .WORD   T35RDF
      067104  011736'                                                                   .WORD   PKTSSR
 5015 067106                         280$:   CKLOOP                          ;LOOP IF SELECTED
      067106  104406                                                                    TRAP    C$CLP1
 5016 067110  013702  003116'                MOV     FREE,R2                 ;GET BUFFER ADDRESS
 5017 067114  010304                         MOV     R3,R4                   ;GET RECORD SIZE
 5018 067116  162704  000024                 SUB     #20.,R4                 ;POINT BACK TO 1ST RECORD
 5019 067122  060204                 285$:   ADD     R2,R4                   ;POINT TO 1ST LOC IN BUFFER
 5020 067124  000303                         SWAB    R3                      ;SWAP BYTES SWB=1 ETC.
 5021 067126  021403                         CMP     (R4),R3                 ;DATA WRITTEN = READ
 5022 067130  001410                         BEQ     290$                    ;BR, IF DATA OK (GOOD)
 5023 067132  011401                         MOV     (R4),R1                 ;PICK UP BAD DATA
 5024 067134  010302                         MOV     R3,R2                   ;SET UP EXPECTED
 5025 067136  005237  002214'                INC     FATFLG                          ;ERROR COUNT
 5029 067142                                 ERRHRD  ERRNO,T35DTA,EXPREC     ;DATA IN BUFFER NOT CORRECT
      067142  104456                                                                    TRAP    C$ERHRD
      067144  001346                                                                    .WORD   742
      067146  072205'                                                                   .WORD   T35DTA
      067150  015364'                                                                   .WORD   EXPREC
 5030 067152                         290$:   CKLOOP                          ;LOOP IF SELECTED
      067152  104406                                                                    TRAP    C$CLP1
 5031 067154  005724                         TST     (R4)+                   ;BUMP TO NEXT ADDRESS
 5032 067156  160204                         SUB     R2,R4                   ;BACK TO RECORD SIZE
 5033 067160  000303                         SWAB    R3                      ;PUT R3 BACK INTO SHAPE
 5034 067162  020403                         CMP     R4,R3                   ;AT END OF RECORD YET
 5035 067164  001356                         BNE     285$                    ;BR, IF MORE DATA TO CHECK
 5036 067166  005723                         TST     (R3)+                   ;BUMP RECORD SIZE
 5037 067170  020327  000050                 CMP     R3,#40.                 ;DONE YET
 5038 067174  001315                         BNE     265$                    ;BR, IF NOT DONE YET (MORE READS)
 5039 067176                         300$:   CKLOOP                          ;LOOP IF SELECTED
      067176  104406                                                                    TRAP    C$CLP1
 5040 067200                                 ENDSUB                          ;>>>>>>>>>>>> END SUBTEST >>>>>>>>>>>>
      067200                                                                        L10067:
      067200  104403                                                                    TRAP    C$ESUB
 5041 067202  023727  002214'  000017             CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
 5042 067210  103402                             BLO     999$                    ;BR, IF LESS THAN 25
 5043 067212  004737  017074'                    JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
 5044 067216                         999$:
 5045                                ;
 5046                                ;
 5047                                ;
 5048 067216  004737  016350'                JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
 5049 067222  103002                         BCC     163$                    ;BR, IF NO LOOP REQUIRED
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5050 067224  000137  063314'                JMP     T35LOOP                 ;EXECUTE AGAIN
5051 067230                         163$:   EXIT    TST                     ;ALL DONE THIS TEST
     067230  104432                                                                TRAP    C$EXIT
     067232  003770                                                                .WORD   L10063-.
5052
5053                                        ;+
5054                                        ;LOCAL STORAGE FOR THIS TEST
5055                                        ;-
5057 067234                                         .BLKB   10-<.-TSV2&7>
5059 067240                                 T35PACKET:                          ;COMMAND PACKET FOR TEST
5060 067240  100004                                 .WORD   100004              ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
5061 067242  067250'                                .WORD   T35DATA             ;ADDRESS OF CHARACTERISTICS BLOCK
5062 067244  000000                                 .WORD   0
5063 067246  000012                                 .WORD   10.                 ;STARTING VALUE OF BLOCK SIZE
5064 067250                                 T35DATA:                            ;CHARACTERISTICS DATA BLOCK
5065 067250  067262'                                .WORD   T35BFR              ;ADDRESS OF MESSAGE BUFFER
5066 067252  000000                                 .WORD   0
5067 067254  000024                                 .WORD   20.                 ;LENGTH OF MESSAGE BUFFER
5068 067256  000000                                 .WORD   0
5069 067260  000000                         T35DSW: .WORD   0                   ;SELECT DRIVE 0
5070 067262                                 T35BFR: .BLKW   25.                 ;MESSAGE BUFFER
5071                                        ;
5072                                        ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
5073                                        ;
5075 067344                                         .BLKB   10-<.-TSV2&7>
5077 067350                                 T35PK2:
5078 067350  100006                                 .WORD   100006              ;WRITE SUB SYS MEM COMMAND,  AND ACK
5079 067352  067400'                                .WORD   T35BF2              ;ADDRESS OF SELECT BLOCK DATA
5080 067354  000000                                 .WORD   0
5081 067356  000006                                 .WORD   6.                  ;SIZE OF DATA PACKET
5082
5084 067360                                         .BLKB   10-<.-TSV2&7>
5086 067370                                 T35PK3:
5087 067370  100005                                 .WORD   100005              ;REREAD COMMAND, AND ACK
5088 067372                                 T35RB:
5089 067372  003116'                        T35WB:  .WORD   FREE                ;ADDRESS OF WRITE BUFFER
5090 067374  000000                                 .WORD   0
5091 067376  000000                         T35SZ:  .WORD   0                   ;SIZE OF BUFFER (EXTENT)
5092                                                .EVEN
5093                                        ;
5094                                        ;
5095                                        ;
5096 067400                                 T35BF2:
5097 067400     010                         T35BS0: .BYTE   10                  ;BSEL0 AREA
5098 067401     200                         T35BS1: .BYTE   200                 ;BSEL1 AREA
5099 067402  000000                         T35S2:  .WORD   0                   ;SEL 2 AREA
5100 067404  000000                         T35S3:  .WORD   0                   ;DATA AREA
5101                                        ;
5102                                        ;
5103                                                .EVEN
5104                                        ;TAPE MOTION PACKET COMMAND VALUES
5105
5106 067406  100205                         T35RN:  .WORD   100205              ;REREAD DATA (NEXT)
5107 067410  100605                         T35WDR: .WORD   100605              ;REREAD DATA RETRY
5108 067412  102205                         T35CON: .WORD   102205              ;WRITE CONTINOUS
5109 067414  177777                                 .WORD   177777              ;END OF DATA
5110
```

```
5111                                    ;
5112 067416  000000                     T35CNT: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
5113 067420  000000                     T35CNU: .WORD   0               ;TAPE TIMER COUNTER STORAGE AREA
5114 067422  000000                     T35DLY: .WORD   0               ;DELAY COUNTER
5115
5116
5117                                    ;+
5118                                    ;LOCAL TEXT MESSAGES FOR TEST
5119                                    ;-
5120
5121
5122 067424      124     141     160    T35WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
5123 067512      124     123     123    T35RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
5124 067561      122     105     122    T35RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
5125 067656      120     117     123    T35SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
5126 067740      122     111     102    T35LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
5127 070010      124     123     123    T35WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
5128 070065      111     154     154    T35LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
5129 070146      124     123     123    T35WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA Command'
5130 070220      124     141     160    T35BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
5131 070313      127     122     111    T35TIM: .ASCIZ  'WRITE DATA RETRY''S Erase Tape Not Long Enough'
5132 070370      122     105     122    T35EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
5133 070447      124     123     123    T35TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
5134 070524      122     145     167    T35RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
5135 070573      122     101     115    T35RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
5136 070646      124     123     123    T35AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
5137 070715      104     162     151    T35OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
5138 070770      124     123     123    T35WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
5139 071060      124     123     123    T35WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
5140 071133      103     126     103    T35VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
5141 071206      124     123     102    T35BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
5142 071261      127     122     111    T35WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
5143 071350      122     145     141    T35LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XST0'
5144 071432      122     145     141    T35LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XST0'
5145 071514      122     145     163    T35PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
5146 071602      122     145     141    T35TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
5147 071670      127     122     111    T35NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
5148 071766      124     123     123    T35SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
5149 072043      124     123     123    T35TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
5150 072125      124     123     123    T35WRF: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command'
5151 072205      104     141     164    T35DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
5152 072302      124     123     123    T35SSR: .ASCIZ  'TSSR Incorrect After WRITE MISCELLANEOUS Command'
5153 072363      115     117     124    T35MOT: .ASCIZ  'MOT Bit (XST0) Not Set During Rewind (Extended Features Mode)'
5154 072461      111     156     164    T35INT: .ASCIZ  'Interrupt Received After REWIND Command (IE Bit Not Set)'
5155 072552      117     120     115    T35OPM: .ASCIZ  'OPM Bit (XST2) Not Set During Rewind (Extended Features Mode)'
5156 072650      124     123     123    T35RWE: .ASCIZ  'TSSR Incorrect After Extended Features REWIND Command'
5157 072736      116     157     040    T35NIN: .ASCIZ  'No Interrupt Detected After REWIND IMMEDIATE'
5158 073013      105     170     164    TST35ID:        .ASCIZ  'Extended Mode Functions'
5159                                            .EVEN
5160                                    ;+
5161                                    ;
5162                                    ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
5163                                    ;WRITE SUBSYSTEM MEMORY COMMAND
5164                                    ;
5165                                    ;-
5166
5167 073044                             T35REST:
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5168 073044                                    SAVREG                          ;SAVE THE REGISTERS
5169 073050  012701  067240'                   MOV     #T35PACKET,R1           ;START OF THE PACKET
5170 073054  012721  100004                    MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
5171 073060  012721  067250'                   MOV     #T35DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
5172 073064  005021                            CLR     (R1)+                   ;EXTENDED ADDRESS
5173 073066  012721  000012                    MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
5174 073072  012721  067262'                   MOV     #T35BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
5175 073076  005021                            CLR     (R1)+
5176 073100  012721  000024                    MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
5177 073104  005021                            CLR     (R1)+
5178 073106  012711  000000                    MOV     #0,(R1)                 ;SELECT DRIVE ZERO
5179 073112  012702  000030                    MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
5180 073116  012762  177777  067262'  64$:     MOV     #177777,T35BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
5181 073124  005742                            TST     -(R2)                   ;NEXT LOCATION
5182 073126  022702  000000                    CMP     #0,R2                   ;AT END OF LOOP YET
5183 073132  001371                            BNE     64$                     ;KEEP GOING UNTIL DONE
5184 073134  000207                            RTS     PC                      ;RETURN
5185
5186
5187 073136                            T35RT2:
5188 073136                                    SAVREG                          ;SAVE THE REGISTERS
5189 073142  012701  067350'                   MOV     #T35PK2,R1              ;START OF THE PACKET
5190 073146  012721  100006                    MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
5191 073152  012721  067400'                   MOV     #T35BF2,(R1)+           ;ADDRESS OF DATA BLOCK
5192 073156  005021                            CLR     (R1)+                   ;EXTENDED ADDRESS
5193 073160  012721  000006                    MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
5194 073164  005021                            CLR     (R1)+
5195 073166  012701  067400'                   MOV     #T35BF2,R1              ;POINT TO DATA SEL AREA
5196 073172  005021                            CLR     (R1)+
5197 073174  005011                            CLR     (R1)
5198 073176  000207                            RTS     PC                      ;RETURN
5199 073200                            T35RT3:
5200 073200                                    SAVREG                          ;SAVE REGISTERS
5201 073204  012701  067370'                   MOV     #T35PK3,R1              ;SET UP POINTER ADDRESS
5202 073210  005021                            CLR     (R1)+                   ;COMMAND SPACE
5203 073212  005021                            CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
5204 073214  005021                            CLR     (R1)+                   ;EXTENDED ADDRESS
5205 073216  005011                            CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
5206 073220  000207                            RTS     PC                      ;RETURN
5207 073222                                    ENDTST
     073222                                                            L10063:
     073222  104401                                                            TRAP    C$ETST
5208
5209                                           .SBTTL  TEST  8: RECORD BUFFERING
5210                                   ;+
5211                                   ;
5212                                   ;
5213                                   ;       THIS TEST VERIFIES THAT RECORD BUFFERING, USED FOR WRITE DATA
5214                                   ;       AND READ NEXT COMMANDS, OPERATES PROPERLY AND IS PROPERLY
5215                                   ;       CONTROLLED BY THE EXTENDED CHARACTERISTICS DATA WORD.  IF THE
5216                                   ;       M7455 CONTROLLER MODULE IS NOT ALREADY IN EXTENDED FEATURES MODE
5217                                   ;       (AS CONTROLLED BY THE DIP SWITCH ON THE MODULE), IT IS PLACED
5218                                   ;       INTO THAT MODE BY INVERTING THE SENSE OF THE SWITCH USING THE
5219                                   ;       WRITE SUBSYSTEM MEMORY COMMAND.  NOTE THAT RECORD BUFFERING HAS
5220                                   ;       BEEN ENABLED IN PREVIOUS TESTS OF READ AND WRITE AND SO HAS BEEN
5221                                   ;       PARTIALLY TESTED ALREADY.  THIS TEST VERIFIES THAT BUFFERING IS
5222                                   ;       ACTUALLY OPERATING.  THE FOLLOWING SUBTESTS ARE PERFORMED:
```

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                                ;
                                ;       VERIFIES THAT NORMAL BUFFERING ON WRITE DATA COMMANDS OPERATES
                                ;       PROPERLY AT LOW TAPE SPEED.  THE FOLLOWING SEQUENCE IS
                                ;       PERFORMED:
                                ;
                                ;            1.  THE TAPE IS REWOUND.
                                ;
                                ;            2.  BUFFERING IS DISABLED AND LOW TAPE SPEED IS SELECTED
                                ;                (VIA WRITE CHARACTERISTICS COMMAND).
                                ;
                                ;            3.  AN INITIAL RECORD IS WRITTEN ONTO THE TAPE IN ORDER TO
                                ;                MOVE THE TAPE OFF BOT.
                                ;
                                ;            4.  THE PROGRAM DELAYS FOR A TIME SUFFICIENT TO ALLOW THE
                                ;                TAPE TO REPOSITION AND COME TO REST.
                                ;
                                ;            5.  A WRITE DATA COMMAND, WITH A BYTE COUNT LESS THAN 3.5K,
                                ;                IS ISSUED, AND THE PROGRAM COUNTS, IN A WAIT LOOP, THE
                                ;                TIME IT TAKES TO RECEIVE COMMAND TERMINATION.  THIS
                                ;                SHOULD BE A RELATIVELY LONG TIME SINCE BUFFERING IS
                                ;                DISABLED.
                                ;
                                ;            6.  BUFFERING IS ENABLED.
                                ;
                                ;            7.  THE WRITE DATA COMMAND IS AGAIN ISSUED, WITH THE SAME
                                ;                BYTE COUNT AS THAT USED PREVIOUSLY.  THE TIME TO
                                ;                COMPLETION IS AGAIN MEASURED.
                                ;
                                ;            8.  THE COMPLETION TIMES MEASURED FOR THE NON-BUFFERED AND
                                ;                BUFFERED CASES ARE COMPARED.  IT IS VERIFIED THAT THE
                                ;                TIME MEASURED FOR THE NON-BUFFERED CASE IS MUCH LARGER
                                ;                THAN THAT MEASURED FOR THE BUFFERED CASE.
                                ;
                                ;            9.  THE PREVIOUS STEPS, EXCEPT FOR REWINDING AND WRITING A
                                ;                RECORD OFF BOT, ARE REPEATED FOR VARIOUS BYTE COUNTS IN
                                ;                THE RANGE 20 THROUGH 3.5K.
                                ;
                                ;
                                ;THE TEST CONSISTS OF THE FOLLOWING 2 SUBTESTS
                                ;
                                ;
                                ;-
                                        BGNTST
                                                                                        T8::
073224  012737  006166' 002172'        MOV     @EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
073232  004737  017166'                JSR     PC,KTOFF                ;TURN OFF KT11
073236  012700  100607'                MOV     #TST36ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
073242  004737  016402'                JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
073246  012737  000005  002210'        MOV     #5,LOOPCNT              ;PERFORM 5 ITERATIONS
073254  005037  075616'                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:
073260  104402                                                                                  TRAP    C$BSUB
073262  004737  100630'                       JSR     PC,T36REST              ;SET COMMAND PACKET
073266  004737  100722'                       JSR     PC,T36RT2               ;SET UP OTHER COMMAND PACKET
073272  004737  100764'                       JSR     PC,T36RT3               ;SET UP OTHER COMMAND PACKET
073276  012737  176750  075622'               MOV     #65000.,T36DLY          ;SET UP DELAY COUNTER
073304  005037  075616'                       CLR     T36CNT                  ;CLEAR COUNTER
073310  004737  015664'               10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
073314  103426                               BCS     20$                     ;BR IF INIT WAS OK
073316                                       DELAY   250                     ;DELAY ABOUT .25 SEC
073316  012727  000250                                                                    MOV     #250.,(PC)+
073322  000000                                                                          .WORD   0
073324  013727  002116'                                                                  MOV     L$DLY,(PC)+
073330  000000                                                                          .WORD   0
073332  005367  177772                                                                  DEC     -6(PC)
073336  001375                                                                          BNE     .-4
073340  005367  177756                                                                  DEC     -22(PC)
073344  001367                                                                          BNE     .-20
073346  005337  075622'                       DEC     T36DLY                  ;BUMP COUNTER
073352  001356                               BNE     10$                     ;BR, IF COUNTER NOT DONE
073354  005237  002214'                       INC     FATFLG                          ;ERROR COUNT
073360  010001                               MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
073362                                       ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
073362  104455                                                                          TRAP    C$ERDF
073364  001441                                                                          .WORD   801
073366  003642'                                                                         .WORD   SFIERR
073370  011724'                                                                         .WORD   SFIMSG
073372  013737  002174'  075460'  20$:       MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
073400  012704  075440'                       MOV     #T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
073404  004737  010552'                       JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
073410  103407                               BCS     25$                     ;BR, IF COMMAND ISSUED OK
073412  005237  002214'                       INC     FATFLG                          ;ERROR COUNT
073416  010001                               MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
073420                                       ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
073420  104456                                                                          TRAP    C$ERHRD
073422  001442                                                                          .WORD   802
073424  005046'                                                                         .WORD   WRTMSG
073426  011724'                                                                         .WORD   SFIMSG
073430                                  25$:    CKLOOP                          ;LOOP IF SELECTED
073430  104406                                                                          TRAP    C$CLP1
073432  004737  010704'                       JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
073436  103407                               BCS     30$                     ;BR, IF NO PROBLEM
073440  010004                               MOV     R0,R4                   ;SET UP REWIND PACKET ADDRESS
073442  005237  002214'                       INC     FATFLG                          ;ERROR COUNT
073446                                       ERRHRD  ERRNO,T36RWN,PKTSSR     ;REWIND NOT ACCEPTED
073446  104456                                                                          TRAP    C$ERHRD
073450  001443                                                                          .WORD   803
073452  077031'                                                                         .WORD   T36RWN
```

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      073454  011736'                                                                    .WORD   PKTSSR
 5327 073456                          30$:    CKLOOP                          ;LOOP IF SELECTED
      073456  104406                                                                     TRAP    C$CLP1
 5328 073460  013701  075470'                 MOV     T36BFR+6,R1             ;PICK UP XSTO
 5329 073464  010102                          MOV     R1,R2                   ;SET UP EXPECTED
 5330 073466  052702  000002                  BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 5331 073472  020102                          CMP     R1,R2                   ;DOES EXP = REC'D
 5332 073474  001406                          BEQ     40$                     ;BR, IF EQUAL (OK)
 5333 073476  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
 5337 073502                                  ERRHRD  ERRNO,T36BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      073502  104456                                                                     TRAP    C$ERHRD
      073504  001444                                                                     .WORD   804
      073506  076525'                                                                    .WORD   T36BOT
      073510  015364'                                                                    .WORD   EXPREC
 5338 073512                          40$:    CKLOOP                          ;LOOP IF SELECTED
      073512  104406                                                                     TRAP    C$CLP1
 5339 073514  013737  002174' 075460'         MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
 5340 073522  052737  000030  075460'         BIS     #BIT3!BIT4,T36DSW       ;25-APR-83 REV B - TURN ON THE BUFFERING
 5341 073530  012704  075440'                 MOV     #T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
 5342 073534  004737  010552'                 JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
 5343 073540  103407                          BCS     50$                     ;BR, IF COMMAND ISSUED OK
 5344 073542  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
 5348 073546  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
 5349 073550                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
      073550  104456                                                                     TRAP    C$ERHRD
      073552  001445                                                                     .WORD   805
      073554  005046'                                                                    .WORD   WRTMSG
      073556  011724'                                                                    .WORD   SFIMSG
 5350 073560                          50$:    CKLOOP                          ;LOOP IF SELECTED
      073560  104406                                                                     TRAP    C$CLP1
 5351 073562  012737  003720  075576'         MOV     #2000.,T36SZ            ;SET UP RECORD SIZE
 5352 073570  013737  003116' 075572'         MOV     FREE,T36WB              ;ADDRESS OF WRITE BUFFER
 5353 073576  012737  140005  075570'         MOV     #140005,T36PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
 5354 073604  012704  075570'                 MOV     #T36PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 5355 073610  010465  000000                  MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 5356 073614  004737  016140'                 JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 5357 073620  016501  000002                  MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 5358 073624  012702  000200                  MOV     #SSR,R2                 ;SET UP EXPECTED
 5359 073630  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
 5360 073632  001406                          BEQ     60$                     ;BR, IF OK
 5361 073634  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
 5365 073640                                  ERRHRD  ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
      073640  104456                                                                     TRAP    C$ERHRD
      073642  001446                                                                     .WORD   806
      073644  005103'                                                                    .WORD   WRTERR
      073646  011736'                                                                    .WORD   PKTSSR
 5366 073650                          60$:    CKLOOP                          ;LOOP IF SELECTED
      073650  104406                                                                     TRAP    C$CLP1
 5367 073652  012737  000005  075622'         MOV     #05.,T36DLY             ;25-APR-83 REV B - DELAY FOR TAPE TO STOP
 5368 073660                          70$:    DELAY   1                       ;25-APR-83 REV B - DELAY ROUTINE CALL
      073660  012727  000001                                                             MOV     #1,(PC)+
      073664  000000                                                                     .WORD   0
      073666  013727  002116'                                                            MOV     L$DLY,(PC)+
      073672  000000                                                                     .WORD   0
      073674  005367  177772                                                             DEC     -6(PC)
      073700  001375                                                                     BNE     .-4
      073702  005367  177756                                                             DEC     -22(PC)
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                073706  001367                                                          BNE     .-20
5369            073710  005337  075622'                 DEC     T36DLY                  ;BUMP COUNTER DOWN
5370            073714  001361                          BNE     70$                     ;BR, IF MORE DELAY TO GO
5371            073716  012737  006642  075576'         MOV     #3490.,T36SZ            ;SET SIZE OF TRANSFER
5372            073724  012737  140005  075570'         MOV     #140005,T36PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
5373            073732  012704  075570'                 MOV     #T36PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5374            073736  005037  075616'                 CLR     T36CNT                  ;CLEAR COUNTER
5375            073742  012737  001750  075622'         MOV     #1000.,T36DLY           ;SET DROP DEAD COUNTER VALUE
5376            073750  010465  000000                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5377            073754  016501  000002          80$:    MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5378            073760  032701  000200                 BIT     #SSR,R1                 ;CHECK FOR SSR SET
5379            073764  001021                          BNE     90$                     ;BR, IF SSR IS SET
5380            073766  005237  075616'                 INC     T36CNT                  ;BUMP CYCLE COUNTER
5381            073772                                  DELAY   1                       ;CUT NUMBER OF LOOPS DOWN
                073772  012727  000001                                                  MOV     #1,(PC)+
                073776  000000                                                          .WORD   0
                074000  013727  002116'                                                  MOV     L$DLY,(PC)+
                074004  000000                                                          .WORD   0
                074006  005367  177772                                                  DEC     -6(PC)
                074012  001375                                                          BNE     .-4
                074014  005367  177756                                                  DEC     -22(PC)
                074020  001367                                                          BNE     .-20
5382            074022  005337  075622'                 DEC     T36DLY                  ;BUMP DROP DEAD COUNTER
5383            074026  001352                          BNE     80$                     ;BR, IF THERE IS STILL TIME
5384            074030  012702  000200          90$:    MOV     #SSR,R2                 ;SET UP EXPECTED
5385            074034  020102                          CMP     R1,R2                   ;ARE THEY EQUAL
5386            074036  001406                          BEQ     100$                    ;BR, IF OK
5387            074040  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
5391            074044                                  ERRHRD  ERRNO,T36WDE,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
                074044  104456                                                          TRAP    C$ERHRD
                074046  001447                                                          .WORD   807
                074050  076453'                                                        .WORD   T36WDE
                074052  011736'                                                        .WORD   PKTSSR
5392            074054                          100$:   CKLOOP                          ;LOOP IF SELECTED
                074054  104406                                                          TRAP    C$CLP1
5393            074056  013737  002174'  075460'         MOV     UNITN,T36DSW            ;SET UP DRIVE NUMBER
5394            074064  052737  000010  075460'         BIS     #BIT3,T36DSW            ;25-APR-83 REV B - TURN OFF BUFFERING
5395                                                                                    ;TURN OFF BUFFERING CAPABILITY
5396            074072  012704  075440'                 MOV     #T36PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5397            074076  004737  010552'                 JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5398            074102  103407                          BCS     110$                    ;BR, IF COMMAND ISSUED OK
5399            074104  005237  002214'                 INC     FATFLG                          ;ERROR COUNT
5403            074110  010001                          MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5404            074112                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
                074112  104456                                                          TRAP    C$ERHRD
                074114  001450                                                          .WORD   808
                074116  005046'                                                        .WORD   WRTMSG
                074120  011724'                                                        .WORD   SFIMSG
5405            074122                          110$:   CKLOOP                          ;LOOP IF SELECTED
                074122  104406                                                          TRAP    C$CLP1
5406            074124  012737  006642  075576'         MOV     #3490.,T36SZ            ;SET SIZE OF TRANSFER
5407            074132  012737  140005  075570'         MOV     #140005,T36PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
5408            074140  012704  075570'                 MOV     #T36PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5409            074144  005037  075620'                 CLR     T36CNU                  ;CLEAR COUNTER
5410            074150  012737  001750  075622'         MOV     #1000.,T36DLY           ;SET DROP DEAD COUNTER VALUE
5411            074156  010465  000000                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5412            074162  016501  000002          120$:   MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
```

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5413 074166  032701  000200              BIT     #SSR,R1          ;CHECK FOR SSR SET
5414 074172  001021                      BNE     130$             ;BR, IF SSR IS SET
5415 074174  005237  075620'              INC     T36CNU           ;BUMP CYCLE COUNTER
5416 074200                              DELAY   1                ;CUT NUMBER OF LOOPS DOWN
     074200  012727  000001                                               MOV     #1,(PC)+
     074204  000000                                                       .WORD   0
     074206  013727  002116'                                             MOV     L$DLY,(PC)+
     074212  000000                                                       .WORD   0
     074214  005367  177772                                             DEC     -6(PC)
     074220  001375                                                       BNE     .-4
     074222  005367  177756                                             DEC     -22(PC)
     074226  001367                                                       BNE     .-20
5417 074230  005337  075622'              DEC     T36DLY           ;BUMP DROP DEAD COUNTER
5418 074234  001352                      BNE     120$             ;BR, IF THERE IS STILL TIME
5419 074236  012702  000200      130$:   MOV     #SSR,R2          ;SET UP EXPECTED
5420 074242  020102                      CMP     R1,R2            ;ARE THEY EQUAL
5421 074244  001406                      BEQ     140$             ;BR, IF OK
5422 074246  005237  002214'              INC     FATFLG                   ;ERROR COUNT
5426 074252                              ERRHRD  ERRNO,WRTERR,PKTSSR      ;TSSR INCORRECT AFTER WRITE DATA
     074252  104456                                                       TRAP    C$ERHRD
     074254  001451                                                       .WORD   809
     074256  005103'                                                     .WORD   WRTERR
     074260  011736'                                                     .WORD   PKTSSR
5427 074262                      140$:   CKLOOP                   ;LOOP IF SELECTED
     074262  104406                                                       TRAP    C$CLP1
5428 074264  013701  075616'              MOV     T36CNT,R1        ;GET FIRST COUNTER
5429 074270  013702  075620'              MOV     T36CNU,R2        ;GET SECOND COUNTER
5430 074274  020102                      CMP     R1,R2            ;25-APR-83 REV B - COMPARE EM
5431 074276  003406                      BLE     300$             ;BR, IF VALUES ARE CORRECT (OK)
5432 074300  005237  002214'              INC     FATFLG                   ;ERROR COUNT
5436 074304                              ERRHRD  ERRNO,T36NAS,EXPREC      ;TAPE NOT AT CORRECT SPEED
     074304  104456                                                       TRAP    C$ERHRD
     074306  001452                                                       .WORD   810
     074310  075624'                                                     .WORD   T36NAS
     074312  015364'                                                     .WORD   EXPREC
5437 074314                      300$:   CKLOOP                   ;LOOP IF SELECTED
     074314  104406                                                       TRAP    C$CLP1
5438 074316                              ENDSUB
     074316                                                       L10071:
     074316  104403                                                       TRAP    C$ESUB
5439 074320  023727  002214'  000017              CMP     FATFLG,#15.      ;IS ERROR COUNT AT 25
5440 074326  103402                              BLO     999$             ;BR, IF LESS THAN 25
5441 074330  004737  017074'                      JSR     PC,CKDROP        ;TRY TO DROP THE UNIT
5442 074334                      999$:
5443
5444                             ;*
5445                             ;
5446                             ;TEST 8, SUBTEST 2
5447                             ;
5448                             ;
5449                             ;       THIS TEST VERIFIES THAT RECORD BUFFERING, USED FOR WRITE DATA
5450                             ;       AND READ NEXT COMMANDS, OPERATES PROPERLY AND IS PROPERLY
5451                             ;       CONTROLLED BY THE EXTENDED CHARACTERISTICS DATA WORD.  IF THE
5452                             ;       M7455 CONTROLLER MODULE IS NOT ALREADY IN EXTENDED FEATURES MODE
5453                             ;       (AS CONTROLLED BY THE DIP SWITCH ON THE MODULE), IT IS PLACED
5454                             ;       INTO THAT MODE BY INVERTING THE SENSE OF THE SWITCH USING THE
5455                             ;       WRITE SUBSYSTEM MEMORY COMMAND.  NOTE THAT RECORD BUFFERING HAS
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                        ;       BEEN ENABLED IN PREVIOUS TESTS OF READ AND WRITE AND SO HAS BEEN
                        ;       PARTIALLY TESTED ALREADY.  THIS TEST VERIFIES THAT BUFFERING IS
                        ;       ACTUALLY OPERATING.  THE FOLLOWING SUBTESTS ARE PERFORMED:
                        ;
                        ;       VERIFIES THAT NORMAL BUFFERING ON WRITE DATA COMMANDS OPERATES
                        ;       PROPERLY AT LOW TAPE SPEED.  THE FOLLOWING SEQUENCE IS
                        ;       PERFORMED:
                        ;
                        ;            1.  THE TAPE IS REWOUND.
                        ;
                        ;            2.  BUFFERING IS DISABLED AND LOW TAPE SPEED IS SELECTED
                        ;                (VIA WRITE CHARACTERISTICS COMMAND).
                        ;
                        ;            3.  AN INITIAL RECORD IS WRITTEN ONTO THE TAPE IN ORDER TO
                        ;                MOVE THE TAPE OFF BOT.
                        ;
                        ;            4.  THE PROGRAM DELAYS FOR A TIME SUFFICIENT TO ALLOW THE
                        ;                TAPE TO REPOSITION AND COME TO REST.
                        ;
                        ;            5.  A WRITE DATA COMMAND, WITH A BYTE COUNT LESS THAN 3.5K,
                        ;                IS ISSUED, AND THE PROGRAM COUNTS, IN A WAIT LOOP, THE
                        ;                TIME IT TAKES TO RECEIVE COMMAND TERMINATION.  THIS
                        ;                SHOULD BE A RELATIVELY LONG TIME SINCE BUFFERING IS
                        ;                DISABLED.
                        ;
                        ;            6.  BUFFERING IS ENABLED.
                        ;
                        ;            7.  THE WRITE DATA COMMAND IS AGAIN ISSUED, WITH THE SAME
                        ;                BYTE COUNT AS THAT USED PREVIOUSLY.  THE TIME TO
                        ;                COMPLETION IS AGAIN MEASURED.
                        ;
                        ;            8.  THE COMPLETION TIMES MEASURED FOR THE NON-BUFFERED AND
                        ;                BUFFERED CASES ARE COMPARED.  IT IS VERIFIED THAT THE
                        ;                TIME MEASURED FOR THE NON-BUFFERED CASE IS MUCH LARGER
                        ;                THAN THAT MEASURED FOR THE BUFFERED CASE.
                        ;
                        ;            9.  THE PREVIOUS STEPS, EXCEPT FOR REWINDING AND WRITING A
                        ;                RECORD OFF BOT, ARE REPEATED FOR VARIOUS BYTE COUNTS IN
                        ;                THE RANGE 20 THROUGH 3.5K.
                        ;
                        ;
                        ;-
074334                          BGNSUB                  ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
                                                                T8.2:
074334  104402                                                  TRAP    C$BSUB
074336  004737  100630'        JSR     PC,T36REST      ;SET COMMAND PACKET
074342  004737  100722'        JSR     PC,T36RT2       ;SET UP OTHER COMMAND PACKET
074346  004737  100764'        JSR     PC,T36RT3       ;SET UP OTHER COMMAND PACKET
074352  012737  176750  075622' MOV     #65000.,T36DLY  ;SET UP DELAY COUNTER
074360  005037  075616'        CLR     T36CNT          ;CLEAR COUNTER
074364  004737  015664'  10$:   JSR     PC,$OFINIT      ;DO INITIALIZE ON CONTROLLER
074370  103426                  BCS     20$             ;BR IF INIT WAS OK
074372                          DELAY   250             ;DELAY ABOUT .25 SEC
074372  012727  000250                                          MOV     #250.,(PC)+
074376  000000                                                  .WORD   0
074400  013727  002116'                                         MOV     L$DLY,(PC)+
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                074404  000000                                                          .WORD   0
                074406  005367  177772                                                  DEC     -6(PC)
                074412  001375                                                          BNE     .-4
                074414  005367  177756                                                  DEC     -22(PC)
                074420  001367                                                          BNE     .-20
5508            074422  005337  075622'         DEC     T36DLY          ;BUMP COUNTER
5509            074426  001356                  BNE     10$             ;BR, IF COUNTER NOT DONE
5510            074430  005237  002214'         INC     FATFLG                  ;ERROR COUNT
5514            074434  010001                  MOV     R0,R1           ;CONTENTS OF TSSR REGISTER
5515            074436                          ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
                074436  104455                                                          TRAP    C$ERDF
                074440  001453                                                          .WORD   811
                074442  003642'                                                        .WORD   SFIERR
                074444  011724'                                                        .WORD   SFIMSG
5516            074446  013737  002174' 075460' 20$:    MOV     UNITN,T36DSW    ;SET UP DRIVE NUMBER
5517            074454  052737  000040  075460'        BIS     #BIT5,T36DSW    ;TURN ON HIGH SPEED
5518            074462  012704  075440'                MOV     #T36PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
5519            074466  004737  010552'                JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
5520            074472  103407                          BCS     25$             ;BR, IF COMMAND ISSUED OK
5521            074474  005237  002214'                INC     FATFLG                  ;ERROR COUNT
5525            074500  010001                          MOV     R0,R1           ;SAVE CONTENTS OF TSSR
5526            074502                                  ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
                074502  104456                                                          TRAP    C$ERHRD
                074504  001454                                                          .WORD   812
                074506  005046'                                                        .WORD   WRTMSG
                074510  011724'                                                        .WORD   SFIMSG
5527            074512                  25$:    CKLOOP                          ;LOOP IF SELECTED
                074512  104406                                                          TRAP    C$CLP1
5528            074514  004737  010704'                JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
5529            074520  103407                          BCS     30$             ;BR, IF NO PROBLEM
5530            074522  010004                          MOV     R0,R4           ;SET UP REWIND PACKET ADDRESS
5531            074524  005237  002214'                INC     FATFLG                  ;ERROR COUNT
5535            074530                                  ERRHRD  ERRNO,T36RWN,PKTSSR     ;REWIND NOT ACCEPTED
                074530  104456                                                          TRAP    C$ERHRD
                074532  001455                                                          .WORD   813
                074534  077031'                                                        .WORD   T36RWN
                074536  011736'                                                        .WORD   PKTSSR
5536            074540                  30$:    CKLOOP                          ;LOOP IF SELECTED
                074540  104406                                                          TRAP    C$CLP1
5537            074542  013701  075470'                MOV     T36BFR+6,R1     ;PICK UP XSTO
5538            074546  010102                          MOV     R1,R2           ;SET UP EXPECTED
5539            074550  052702  000002                 BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
5540            074554  020102                          CMP     R1,R2           ;DOES EXP = REC'D
5541            074556  001406                          BEQ     40$             ;BR, IF EQUAL (OK)
5542            074560  005237  002214'                INC     FATFLG                  ;ERROR COUNT
5546            074564                                  ERRHRD  ERRNO,T36BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                074564  104456                                                          TRAP    C$ERHRD
                074566  001456                                                          .WORD   814
                074570  076525'                                                        .WORD   T36BOT
                074572  015364'                                                        .WORD   EXPREC
5547            074574                  40$:    CKLOOP                          ;LOOP IF SELECTED
                074574  104406                                                          TRAP    C$CLP1
5548            074576  013737  002174' 075460'        MOV     UNITN,T36DSW    ;SET UP DRIVE NUMBER
5549            074604  052737  000030  075460'        BIS     #BIT3!BIT4,T36DSW       ;25-APR-83 REV B - TURN ON THE BUFFERING
5550            074612  012704  075440'                MOV     #T36PACKET,R4   ;SUBROUTINE NEEDS PACKET ADDRESS
5551            074616  004737  010552'                JSR     PC,WRTCHR       ;ISSUE WRITE CHARACTERISTICS
5552            074622  103407                          BCS     50$             ;BR, IF COMMAND ISSUED OK
```

```
5553 074624  005237  002214'                    INC     FATFLG                          ;ERROR COUNT
5557 074630  010001                             MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5558 074632                                     ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
     074632  104456                                                                    TRAP    C$ERHRD
     074634  001457                                                                    .WORD   815
     074636  005046'                                                                   .WORD   WRTMSG
     074640  011724'                                                                   .WORD   SFIMSG
5559 074642                          50$:       CKLOOP                          ;LOOP IF SELECTED
     074642  104406                                                                    TRAP    C$CLP1
5560 074644  012737  003720  075576'            MOV     #2000.,T36SZ            ;SET UP RECORD SIZE
5561 074652  013737  003116' 075572'            MOV     FREE,T36WB              ;ADDRESS OF WRITE BUFFER
5562 074660  012737  140005  075570'            MOV     #140005,T36PK3          ;WRITE DATA,ACK,CYC=1 COMMAND
5563 074666  012704  075570'                    MOV     #T36PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5564 074672  010465  000000                     MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5565 074676  004737  016140'                    JSR     PC,WAITF                ;WAIT FOR SSR TO SET
5566 074702  016501  000002                     MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5567 074706  012702  000200                     MOV     #SSR,R2                 ;SET UP EXPECTED
5568 074712  020102                             CMP     R1,R2                   ;ARE THEY EQUAL
5569 074714  001406                             BEQ     60$                     ;BR, IF OK
5570 074716  005237  002214'                    INC     FATFLG                          ;ERROR COUNT
5574 074722                                     ERRHRD  ERRNO,WRTERR,PKTSSR     ;TSSR INCORRECT AFTER READ DATA
     074722  104456                                                                    TRAP    C$ERHRD
     074724  001460                                                                    .WORD   816
     074726  005103'                                                                   .WORD   WRTERR
     074730  011736'                                                                   .WORD   PKTSSR
5575 074732                          60$:       CKLOOP                          ;LOOP IF SELECTED
     074732  104406                                                                    TRAP    C$CLP1
5576 074734  012737  000005  075622'            MOV     #05.,T36DLY             ;25-APR-83 REV B - DELAY FOR TAPE TO STOP
5577 074742                          70$:       DELAY   1                       ;25-APR-83 REV B - DELAY ROUTINE CALL
     074742  012727  000001                                                            MOV     #1,(PC)+
     074746  000000                                                                    .WORD   0
     074750  013727  002116'                                                           MOV     L$DLY,(PC)+
     074754  000000                                                                    .WORD   0
     074756  005367  177772                                                           DEC     -6(PC)
     074762  001375                                                                    BNE     .-4
     074764  005367  177756                                                           DEC     -22(PC)
     074770  001367                                                                    BNE     .-20
5578 074772  005337  075622'                    DEC     T36DLY                  ;BUMP COUNTER DOWN
5579 074776  001361                             BNE     70$                     ;BR, IF MORE DELAY TO GO
5580 075000  012737  006642  075576'            MOV     #3490.,T36SZ            ;SET SIZE OF TRANSFER
5581 075006  012737  140005  075570'            MOV     #140005,T36PK3          ;WRITE DATA,ACK,CYC=1 COMMAND
5582 075014  012704  075570'                    MOV     #T36PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
5583 075020  005037  075616'                    CLR     T36CNT                  ;CLEAR COUNTER
5584 075024  012737  001750  075622'            MOV     #1000.,T36DLY           ;SET DROP DEAD COUNTER VALUE
5585 075032  010465  000000                     MOV     R4,TSDB(R5)             ;ISSUE COMMAND
5586 075036  016501  000002          80$:       MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5587 075042  032701  000200                     BIT     #SSR,R1                 ;CHECK FOR SSR SET
5588 075046  001021                             BNE     90$                     ;BR, IF SSR IS SET
5589 075050  005237  075616'                    INC     T36CNT                  ;BUMP CYCLE COUNTER
5590 075054                                     DELAY   1                       ;CUT NUMBER OF LOOPS DOWN
     075054  012727  000001                                                            MOV     #1,(PC)+
     075060  000000                                                                    .WORD   0
     075062  013727  002116'                                                           MOV     L$DLY,(PC)+
     075066  000000                                                                    .WORD   0
     075070  005367  177772                                                           DEC     -6(PC)
     075074  001375                                                                    BNE     .-4
     075076  005367  177756                                                           DEC     -22(PC)
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     075102  001367                                                                       BNE     .-20
5591 075104  005337  075622'          DEC     T36DLY              ;BUMP DROP DEAD COUNTER
5592 075110  001352                   BNE     80$                 ;BR, IF THERE IS STILL TIME
5593 075112  012702  000200    90$:   MOV     #SSR,R2             ;SET UP EXPECTED
5594 075116  020102                   CMP     R1,R2               ;ARE THEY EQUAL
5595 075120  001406                   BEQ     100$                ;BR, IF OK
5596 075122  005237  002214'          INC     FATFLG                      ;ERROR COUNT
5600 075126                           ERRHRD  ERRNO,T36WDE,PKTSSR ;TSSR INCORRECT AFTER READ DATA
     075126  104456                                                                       TRAP    C$ERHRD
     075130  001461                                                                       .WORD   817
     075132  076453'                                                                      .WORD   T36WDE
     075134  011736'                                                                      .WORD   PKTSSR
5601 075136                    100$:  CKLOOP                      ;LOOP IF SELECTED
     075136  104406                                                                       TRAP    C$CLP1
5602 075140  013737  002174' 075460'  MOV     UNITN,T36DSW        ;SET UP DRIVE NUMBER
5603 075146  052737  000010  075460'  BIS     #BIT3,T36DSW        ;25-APR-83 REV B - TURN OFF BUFFERING
5604 075154  012704  075440'          MOV     #T36PACKET,R4       ;SUBROUTINE NEEDS PACKET ADDRESS
5605 075160  004737  010552'          JSR     PC,WRTCHR           ;ISSUE WRITE CHARACTERISTICS
5606 075164  103407                   BCS     110$                ;BR, IF COMMAND ISSUED OK
5607 075166  005237  002214'          INC     FATFLG                      ;ERROR COUNT
5611 075172  010001                   MOV     R0,R1               ;SAVE CONTENTS OF TSSR
5612 075174                           ERRHRD  ERRNO,WRTMSG,SFIMSG ;WRITE CHARACTERISTISC FAILED
     075174  104456                                                                       TRAP    C$ERHRD
     075176  001462                                                                       .WORD   818
     075200  005046'                                                                      .WORD   WRTMSG
     075202  011724'                                                                      .WORD   SFIMSG
5613 075204                    110$:  CKLOOP                      ;LOOP IF SELECTED
     075204  104406                                                                       TRAP    C$CLP1
5614 075206  012737  006642  075576'  MOV     #3490.,T36SZ        ;SET SIZE OF TRANSFER
5615 075214  012737  140005  075570'  MOV     #140005,T36PK3      ;WRITE DATA,ACK,CVC=1 COMMAND
5616 075222  012704  075570'          MOV     #T36PK3,R4          ;SET UP R4 WITH PACKET ADDRESS
5617 075226  005037  075620'          CLR     T36CNU              ;CLEAR COUNTER
5618 075232  012737  001750  075622'  MOV     #1000.,T36DLY       ;SET DROP DEAD COUNTER VALUE
5619 075240  010465  000000           MOV     R4,TSDB(R5)         ;ISSUE COMMAND
5620 075244  016501  000002    120$:  MOV     TSSR(R5),R1         ;GET TSSR CONTENTS
5621 075250  032701  000200           BIT     #SSR,R1             ;CHECK FOR SSR SET
5622 075254  001021                   BNE     130$                ;BR, IF SSR IS SET
5623 075256  005237  075620'          INC     T36CNU              ;BUMP CYCLE COUNTER
5624 075262                           DELAY   1                   ;CUT NUMBER OF LOOPS DOWN
     075262  012727  000001                                                               MOV     #1,(PC)+
     075266  000000                                                                       .WORD   0
     075270  013727  002116'                                                              MOV     L$DLY,(PC)+
     075274  000000                                                                       .WORD   0
     075276  005367  177772                                                               DEC     -6(PC)
     075302  001375                                                                       BNE     .-4
     075304  005367  177756                                                               DEC     -22(PC)
     075310  001367                                                                       BNE     .-20
5625 075312  005337  075622'          DEC     T36DLY              ;BUMP DROP DEAD COUNTER
5626 075316  001352                   BNE     120$                ;BR, IF THERE IS STILL TIME
5627 075320  012702  000200    130$:  MOV     #SSR,R2             ;SET UP EXPECTED
5628 075324  020102                   CMP     R1,R2               ;ARE THEY EQUAL
5629 075326  001406                   BEQ     140$                ;BR, IF OK
5630 075330  005237  002214'          INC     FATFLG                      ;ERROR COUNT
5634 075334                           ERRHRD  ERRNO,WRTERR,PKTSSR ;TSSR INCORRECT AFTER WRITE DATA
     075334  104456                                                                       TRAP    C$ERHRD
     075336  001463                                                                       .WORD   819
     075340  005103'                                                                      .WORD   WRTERR
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075342  011736'                                                                           .WORD   PKTSSR
075344                            140$:   CKLOOP                          ;LOOP IF SELECTED
075344  104406                                                                            TRAP    C$CLP1
075346  013701  075616'                   MOV     T36CNT,R1               ;GET FIRST COUNTER
075352  013702  075620'                   MOV     T36CNU,R2               ;GET SECOND COUNTER
075356  020102                            CMP     R1,R2                   ;25-APR-83 REV B - COMPARE EM
075360  003406                            BLE     300$                    ;BR, IF VALUES ARE CORRECT (OK)
075362  005237  002214'                   INC     FATFLG                          ;ERROR COUNT
075366                                    ERRHRD  ERRNO,T36NAS,EXPREC     ;TAPE NOT AT CORRECT SPEED
075366  104456                                                                            TRAP    C$ERHRD
075370  001464                                                                            .WORD   820
075372  075624'                                                                           .WORD   T36NAS
075374  015364'                                                                           .WORD   EXPREC
075376                            300$:   CKLOOP                          ;LOOP IF SELECTED
075376  104406                                                                            TRAP    C$CLP1
075400                                    ENDSUB
075400                                                                            L10072:
075400  104403                                                                            TRAP    C$ESUB
075402  023727  002214' 000017            CMP     FATFLG,#15.                     ;IS ERROR COUNT AT 25
075410  103402                            BLO     999$                            ;BR, IF LESS THAN 25
075412  004737  017074'                   JSR     PC,CKDROP                       ;TRY TO DROP THE UNIT
075416                            999$:

                                  ;
                                  ;
                                  ;
075416  004737  016350'                   JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
075422  103002                            BCC     163$                    ;BR, IF NO LOOP REQUIRED
075424  000137  073260'                   JMP     T36LOOP                 ;EXECUTE AGAIN
075430                            163$:
075430                                    EXIT    TST                     ;ALL DONE THIS TEST
075430  104432                                                                            TRAP    C$EXIT
075432  003354                                                                            .WORD   L10070-.

                                  ;+
                                  ;LOCAL STORAGE FOR THIS TEST
                                  ;-
075434                                    .BLKB   10-<.-TSV2&7>
075440                            T36PACKET:                              ;COMMAND PACKET FOR TEST
075440  100004                            .WORD   100004                  ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
075442  075450'                           .WORD   T36DATA                 ;ADDRESS OF CHARACTERISTICS BLOCK
075444  000000                            .WORD   0
075446  000012                            .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
075450                            T36DATA:                                ;CHARACTERISTICS DATA BLOCK
075450  075462'                           .WORD   T36BFR                  ;ADDRESS OF MESSAGE BUFFER
075452  000000                            .WORD   0
075454  000024                            .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
075456  000000                            .WORD   0
075460  000000                    T36DSW: .WORD   0                       ;SELECT DRIVE 0
075462                            T36BFR: .BLKW   25.                     ;MESSAGE BUFFER
                                  ;
                                  ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
                                  ;
075544                                    .BLKB   10-<.-TSV2&7>
075550                            T36PK2:
075550  100006                            .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
075552  075600'                           .WORD   T36BF2                  ;ADDRESS OF SELECT BLOCK DATA
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5688 075554  000000                    .WORD   0
5689 075556  000006                    .WORD   6.                      ;SIZE OF DATA PACKET
5690
5692 075560                            .BLKB   10-<.-T36V2&7>
5694 075570                     T36PK3:
5695 075570  100005                    .WORD   100005                  ;REREAD COMMAND, AND ACK
5696 075572                     T36RB:
5697 075572  003116'             T36WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
5698 075574  000000                    .WORD   0
5699 075576  000000             T36SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
5700                                    .EVEN
5701                             ;
5702                             ;
5703                             ;
5704 075600                     T36BF2:
5705 075600     010             T36BS0: .BYTE   10                      ;BSEL0 AREA
5706 075601     200             T36BS1: .BYTE   200                     ;BSEL1 AREA
5707 075602  000000             T36S2:  .WORD   0                       ;SEL 2 AREA
5708 075604  000000             T36S3:  .WORD   0                       ;DATA AREA
5709                             ;
5710                             ;
5711                                    .EVEN
5712                             ;TAPE MOTION PACKET COMMAND VALUES
5713
5714 075606  100205             T36RN:  .WORD   100205                  ;REREAD DATA (NEXT)
5715 075610  100605             T36WDR: .WORD   100605                  ;REREAD DATA RETRY
5716 075612  102205             T36CON: .WORD   102205                  ;WRITE CONTINOUS
5717 075614  177777                    .WORD   177777                  ;END OF DATA
5718
5719                             ;
5720 075616  000000             T36CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
5721 075620  000000             T36CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
5722 075622  000000             T36DLY: .WORD   0                       ;DELAY COUNTER
5723
5724
5725                             ;+
5726                             ;LOCAL TEXT MESSAGES FOR TEST
5727                             ;-
5728
5729
5730 075624      111     155     160    T36NAS: .ASCIZ  'Improper Tape Controller Buffering Speed'
5731 075675      124     141     160    T36WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
5732 075763      124     123     123    T36RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
5733 076032      122     105     122    T36RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
5734 076127      120     117     123    T36SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
5735 076211      122     111     102    T36LOR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
5736 076261      124     123     123    T36WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
5737 076336      111     154     154    T36LOQ: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
5738 076417      122     105     122    T36SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
5739 076453      124     123     123    T36WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA Command'
5740 076525      124     141     160    T36BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XSTO)'
5741 076620      127     122     111    T36TIM: .ASCIZ  'WRITE DATA RETRY''S Erase Tape Not Long Enough'
5742 076675      122     105     122    T36EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
5743 076754      124     123     123    T36TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
5744 077031      122     145     167    T36RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
5745 077100      122     101     115    T36RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
5746 077153      124     123     123    T36AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
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5747 077222      104      162      151  T36OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
5748 077275      124      123      123  T36WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
5749 077365      124      123      123  T36WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
5750 077440      103      126      103  T36VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
5751 077513      124      123      102  T36BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
5752 077566      127      122      111  T36WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
5753 077655      122      145      141  T36LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XSTO'
5754 077737      122      145      141  T36LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XSTO'
5755 100021      122      145      163  T36PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
5756 100107      122      145      141  T36TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
5757 100175      127      122      111  T36NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
5758 100273      124      123      123  T36SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
5759 100350      124      123      123  T36TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
5760 100432      124      123      123  T36WRF: .ASCIZ  'TSSR Not Correct After WRITE DATA RETR  Command'
5761 100512      104      141      164  T36DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
5762 100607      122      145      143  TST36ID:        .ASCIZ  'Record Buffering'
5763                                                   .EVEN
5764                                                ;+
5765                                                ;
5766                                                ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
5767                                                ;WRITE SUBSYSTEM MEMORY COMMAND
5768                                                ;
5769                                                ;-
5770
5771 100630                                         T36REST:
5772 100630                                                 SAVREG                          ;SAVE THE REGISTERS
5773 100634  012701  075440'                                MOV     #T36PACKET,R1           ;START OF THE PACKET
5774 100640  012721  100004                                MOV     #100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
5775 100644  012721  075450'                                MOV     #T36DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
5776 100650  005021                                        CLR     (R1)+                   ;EXTENDED ADDRESS
5777 100652  012721  000012                                MOV     #10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
5778 100656  012721  075462'                                MOV     #T36BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
5779 100662  005021                                        CLR     (R1)+
5780 100664  012721  000024                                MOV     #20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
5781 100670  005021                                        CLR     (R1)+
5782 100672  012711  000000                                MOV     #0,(R1)                 ;SELECT DRIVE ZERO
5783 100676  012702  000030                                MOV     #24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
5784 100702  012762  177777  075462'  64$:                 MOV     #177777,T36BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
5785 100710  005742                                        TST     -(R2)                   ;NEXT LOCATION
5786 100712  022702  000000                                CMP     #0,R2                   ;AT END OF LOOP YET
5787 100716  001371                                        BNE     64$                     ;KEEP GOING UNTIL DONE
5788 100720  000207                                        RTS     PC                      ;RETURN
5789
5790
5791 100722                                         T36RT2:
5792 100722                                                 SAVREG                          ;SAVE THE REGISTERS
5793 100726  012701  075550'                                MOV     #T36PK2,R1              ;START OF THE PACKET
5794 100732  012721  100006                                MOV     #100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK.
5795 100736  012721  075600'                                MOV     #T36BF2,(R1)+           ;ADDRESS OF DATA BLOCK
5796 100742  005021                                        CLR     (R1)+                   ;EXTENDED ADDRESS
5797 100744  012721  000006                                MOV     #6.,(R1)+               ;SIZE OF DATA BLOCK IN BYTES
5798 100750  005021                                        CLR     (R1)+
5799 100752  012701  075600'                                MOV     #T36BF2,R1              ;POINT TO DATA SEL AREA
5800 100756  005021                                        CLR     (R1)+
5801 100760  005011                                        CLR     (R1)
5802 100762  000207                                        RTS     PC                      ;RETURN
5803 100764                                         T36RT3:
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 5804 100764                                    SAVREG                          ;SAVE REGISTERS
 5805 100770  012701  075570'                   MOV     @T36PK3,R1              ;SET UP POINTER ADDRESS
 5806 100774  005021                            CLR     (R1)+                   ;COMMAND SPACE
 5807 100776  005021                            CLR     (R1)+                   ;ADDRESS OF DATA BLOCK
 5808 101000  005021                            CLR     (R1)+                   ;EXTENDED ADDRESS
 5809 101002  005011                            CLR     (R1)                    ;SIZE OF DATA TRANSFER BLOCK
 5810 101004  000207                            RTS     PC                      ;RETURN
 5811 101006                                    ENDTST
      101006                                                                      L10070:
      101006  104401                                                                     TRAP    C$ETST
 5812
 5813                                           .SBTTL  TEST  9: FUNCTION TIMING
 5814                                   ;+
 5815                                   ;
 5816                                   ;THIS TEST VERIFIES THAT THE TAPE TRANSPORT SEEMS TO BE WRITING
 5817                                   ;RECORDS, GAPS, AND EXTENDED GAPS OF THE PROPER LENGTH. BOTH LOW
 5818                                   ;AND HIGH SPEED MODES ARE TESTED. IT IS ALSO VERIFIED THAT A
 5819                                   ;SPACE RECORDS COMMAND WITH A RECORD COUNT OF 80 OR MORE, AND A
 5820                                   ;SKIP TAPE MARKS COMMAND WITH A COUNT OF 2 OF MORE, OPERATE THE
 5821                                   ;TAPE IN HIGH-SPEED MODE. THIS TEST CAN ONLY BE RUN IF A
 5822                                   ;REAL-TIME CLOCK IS AVAILIABLE ON THE SYSTEM. THE TEST OPERATES BY
 5823                                   ;TIMING VARIOUS TAPE-MOTION OPERATIONS, USING A NUMBER OF
 5824                                   ;DIFFERENT TEST RECORD LENGTHS.
 5825                                   ;
 5826                                   ;
 5827                                   ;-
 5828 101010                                    BGNTST
      101010                                                                      T9::
 5829 101010  012737  006166'  002172'          MOV     @EPRT1,EPRTSW           ;PRIMARY ERROR MESSAGE
 5830 101016  004737  017166'                   JSR     PC,KTOFF                        ;TURN KT OFF
 5835 101022  012700  105243'                   MOV     @TST37ID,R0             ;ASCII MESSAGE TO IDENTIFY TEST
 5836 101026  004737  016402'                   JSR     PC,TSTSETUP             ;DO INITIAL TEST SETUP
 5837 101032  012737  000005  002210'          MOV     @5,LOOPCNT              ;PERFORM 5 ITERATIONS
 5838 101040  005037  102306'                   CLR     T37CNT                  ;CLEAR TAPE RECORD COUNTER
 5839                                   ;+
 5840                                   ;
 5841                                   ;TEST 9, SUBTEST 1
 5842                                   ;
 5843                                   ;
 5844                                   ;
 5845                                   ;
 5846                                   ;-
 5847
 5848 101044                            T37LOOP:
 5849
 5850 101044                                    BGNSUB                          ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
      101044                                                                              T9.1:
      101044  104402                                                                      TRAP    C$BSUB
 5851 101046  005037  002216'                   CLR     INTRECV                 ;INTERRUPT INDICATOR
 5852 101052  005037  102306'                   CLR     T37CNT                  ;TIMER FOR WRITE DATA SPACING
 5853 101056  005037  102310'                   CLR     T37CNT                  ;TIMER FOR WRITE DATA RETRY SPACING
 5854 101062  004737  105264'                   JSR     PC,T37REST              ;SET COMMAND PACKET
 5855 101066  004737  105356'                   JSR     PC,T37RT2               ;SET UP OTHER COMMAND PACKET
 5856 101072  004737  105420'                   JSR     PC,T37RT3               ;SET UP OTHER COMMAND PACKET
 5857 101076  012737  176750  102312           MOV     #65000.,T37DLY          ;SET UP DELAY COUNTER
 5858 101104  004737  015664'           10$:    JSR     PC,SOFINIT              ;DO INITIALIZE ON CONTROLLER
 5859 101110  103426                            BCS     20$                     ;BR IF INIT WAS OK
```

```
                                        DELAY   250                     ;DELAY ABOUT .25 SEC
 101112  012727  000250                                                           MOV     #250,(PC)+
 101116  000000                                                                   .WORD   0
 101120  013727  002116'                                                          MOV     L$DLY,(PC)+
 101124  000000                                                                   .WORD   0
 101126  005367  177772                                                          DEC     -6(PC)
 101132  001375                                                                   BNE     .-4
 101134  005367  177756                                                          DEC     -22(PC)
 101140  001367                                                                   BNE     .-20
5861 101142  005337  102312'                DEC     T37DLY                  ;BUMP COUNTER
5862 101146  001356                        BNE     10$                     ;BR, IF COUNTER NOT DONE
5863 101150  005237  002214'                INC     FATFLG                          ;ERROR COUNT
5867 101154  010001                        MOV     R0,R1                   ;CONTENTS OF TSSR REGISTER
5868 101156                                 ERRDF   ERRNO,SFIERR,SFIMSG     ;FATAL ERROR TSSR WAS NOT OK
 101156  104455                                                                   TRAP    C$ERDF
 101160  001605                                                                   .WORD   901
 101162  003642'                                                                  .WORD   SFIERR
 101164  011724'                                                                  .WORD   SFIMSG
5869 101166  013737  002174' 102150' 20$:   MOV     UNITN,T37DSW            ;SET UP UNIT NUMBER
5870
5871 101174  012704  102130'                MOV     #T37PACKET,R4           ;SUBROUTINE NEEDS PACKET ADDRESS
5872 101200  004737  010552'                JSR     PC,WRTCHR               ;ISSUE WRITE CHARACTERISTICS
5873 101204  103407                        BCS     23$                     ;BR, IF COMMAND ISSUED OK
5874 101206  005237  002214'                INC     FATFLG                          ;ERROR COUNT
5878 101212  010001                        MOV     R0,R1                   ;SAVE CONTENTS OF TSSR
5879 101214                                 ERRHRD  ERRNO,WRTMSG,SFIMSG     ;WRITE CHARACTERISTISC FAILED
 101214  104456                                                                   TRAP    C$ERHRD
 101216  001606                                                                   .WORD   902
 101220  005046'                                                                  .WORD   WRTMSG
 101222  011724'                                                                  .WORD   SFIMSG
5880 101224                         23$:    CKLOOP                          ;LOOP IF SELECTED
 101224  104406                                                                   TRAP    C$CLP1
5881 101226  004737  010704'                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
5882 101232  103411                        BCS     30$                     ;BR, IF NO PROBLEM
5883 101234  016501  000002                MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
5884 101240  010004                        MOV     R0,R4                   ;GET PACKET ADDRESS
5885 101242  005237  002214'                INC     FATFLG                          ;ERROR COUNT
5889 101246                                 ERRHRD  ERRNO,T37RWN,PKTSSR     ;REWIND NOT ACCEPTED
 101246  104456                                                                   TRAP    C$ERHRD
 101250  001607                                                                   .WORD   903
 101252  103465'                                                                  .WORD   T37RWN
 101254  011736'                                                                  .WORD   PKTSSR
5890 101256                         30$:    CKLOOP                          ;LOOP IF SELECTED
 101256  104406                                                                   TRAP    C$CLP1
5891 101260  013701  102160'                MOV     T37BFR+6,R1             ;PICK UP XSTO
5892 101264  010102                        MOV     R1,R2                   ;SET UP EXPECTED
5893 101266  052702  000002                BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
5894 101272  020102                        CMP     R1,R2                   ;DOES EXP = REC'D
5895 101274  001406                        BEQ     40$                     ;BR, IF EQUAL (OK)
5896 101276  005237  002214'                INC     FATFLG                          ;ERROR COUNT
5900 101302                                 ERRHRD  ERRNO,T37BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
 101302  104456                                                                   TRAP    C$ERHRD
 101304  001610                                                                   .WORD   904
 101306  103161'                                                                  .WORD   T37BOT
 101310  015364'                                                                  .WORD   EXPREC
5901 101312                         40$:    CKLOOP                          ;LOOP IF SELECTED
 101312  104406                                                                   TRAP    C$CLP1
```

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 5902 101314  012703  000144                 MOV     #100.,R3                ;NUMBER OF RECORDS TO BE WRITTEN
 5903 101320  013737  003116' 102262'        MOV     FREE,T37WB              ;STARTING WRITE BUFFER ADDRESS
 5904 101326  012737  140005  102260' 65$:   MOV     #140005,T37PK3          ;WRITE DATA,ACK,CVC=1 COMMAND
 5905 101334  012704  102260'                MOV     #T37PK3,R4              ;SET UP R4 WITH PACKET ADDRESS
 5906 101340  012737  001130  102266'        MOV     #600.,T37SZ             ;SET UP RECORD SIZE IN PACKET
 5907 101346  010465  000000                 MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 5908 101352  004737  016140'                JSR     PC,WAITF                ;WAIT FOR SSR TO SET
 5909 101356  016501  000002                 MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 5910 101362  012702  000200                 MOV     #SSR,R2                 ;SET UP EXPECTED
 5911 101366  020102                         CMP     R1,R2                   ;ARE THEY EQUAL
 5912 101370  001406                         BEQ     70$                     ;BR, IF OK
 5913 101372  005237  002214'                INC     FATFLG                          ;ERROR COUNT
 5917 101376                                 ERRHRD  ERRNO,T37WDC,PKTSSR     ;TSSR INCORRECT AFTER WRITE DATA
      101376  104456                                                                    TRAP    C$ERHRD
      101400  001611                                                                    .WORD   905
      101402  104021'                                                                   .WORD   T37WDC
      101404  011736'                                                                   .WORD   PKTSSR
 5918 101406                         70$:    CKLOOP                          ;LOOP IF SELECTED
      101406  104406                                                                    TRAP    C$CLP1
 5919 101410  005303                         DEC     R3                      ;DEC RECORD COUNTER
 5920 101412  001345                         BNE     65$                     ;BR, IF MORE RECORDS TO WRITE
 5921 101414  004737  010704'                JSR     PC,REWIND               ;CALL TAPE REWIND COMMAND
 5922 101420  103411                         BCS     130$                    ;BR, IF NO PROBLEM
 5923 101422  016501  000002                 MOV     TSSR(R5),R1             ;GET TSSR CONTENTS
 5924 101426  010004                         MOV     R0,R4                   ;GET PACKET ADDRESS
 5925 101430  005237  002214'                INC     FATFLG                          ;ERROR COUNT
 5929 101434                                 ERRHRD  ERRNO,T37RWN,PKTSSR     ;REWIND NOT ACCEPTED
      101434  104456                                                                    TRAP    C$ERHRD
      101436  001612                                                                    .WORD   906
      101440  103465'                                                                   .WORD   T37RWN
      101442  011736'                                                                   .WORD   PKTSSR
 5930 101444                         130$:   CKLOOP                          ;LOOP IF SELECTED
      101444  104406                                                                    TRAP    C$CLP1
 5931 101446  013701  102160'                MOV     T37BFR+6,R1             ;PICK UP XSTO
 5932 101452  010102                         MOV     R1,R2                   ;SET UP EXPECTED
 5933 101454  052702  000002                 BIS     #BIT1,R2                ;SET BOT BIT IN EXPECTED
 5934 101460  020102                         CMP     R1,R2                   ;DOES EXP = REC'D
 5935 101462  001406                         BEQ     140$                    ;BR, IF EQUAL (OK)
 5936 101464  005237  002214'                INC     FATFLG                          ;ERROR COUNT
 5940 101470                                 ERRHRD  ERRNO,T37BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
      101470  104456                                                                    TRAP    C$ERHRD
      101472  001613                                                                    .WORD   907
      101474  103161'                                                                   .WORD   T37BOT
      101476  015364'                                                                   .WORD   EXPREC
 5941 101500                         140$:   CKLOOP                          ;LOOP IF SELECTED
    . 101500  104406                                                                    TRAP    C$CLP1
 5942 101502  012704  102260'                MOV     #T37PK3,R4              ;SET UP PACKET ADDRESS
 5943 101506  012737  000037  102262'        MOV     #31.,T37RB              ;SET UP RECORDS TO SPACE OVER
 5944 101514  012737  140010  102260'        MOV     #140010,T37PK3          ;ACK,CVC=1,SPACE FORWARD COMMAND
 5945 101522  010465  000000         150$:   MOV     R4,TSDB(R5)             ;ISSUE COMMAND
 5946 101526  005237  102306'         152$:   INC     T37CNT                  ;BUMP TIMER
 5947 101532                                 DELAY   1                       ;DELAY ABOUT 100US
      101532  012727  000001                                                            MOV     #1,(PC)+
      101536  000000                                                                    .WORD   0
      101540  013727  002116'                                                          MOV     L$DLY,(PC)+
      101544  000000                                                                    .WORD   0
      101546  005367  177772                                                          DEC     -6(PC)
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                101552  001375                                                          BNE     .-4
                101554  005367  177756                                                  DEC     -22(PC)
                101560  001367                                                          BNE     .-20
5948            101562  016501  000002          MOV     TSSR(R5),R1     ;GET TSSR
5949            101566  032701  000200          BIT     #SSR,R1         ;CHECK FOR TSSR'S SSR SET
5950            101572  001755                  BEQ     152$            ;KEEP COUNTING UNTIL SET
5951            101574  012702  000200          MOV     #SSR,R2         ;SET UP EXPECTED
5952            101600  020201                  CMP     R2,R1           ;WAS EVERYTHING OK
5953            101602  001406                  BEQ     160$            ;BR, IF ALL IS WELL
5954            101604  005237  002214'                INC     FATFLG                  ;ERROR COUNT
5958            101610                          ERRHRD  ERRNO,T37SCF,PKTSSR     ;SPACE FORWARD DIDN'T WORK OUT
                101610  104456                                                          TRAP    C$ERHRD
                101612  001614                                                          .WORD   908
                101614  104727'                                                        .WORD   T37SCF
                101616  011736'                                                        .WORD   PKTSSR
5959            101620                  160$:   CKLOOP                  ;LOOP IF SELECTED
                101620  104406                                                          TRAP    C$CLP1
5960            101622  004737  010704'        JSR     PC,REWIND       ;CALL TAPE REWIND COMMAND
5961            101626  103411                  BCS     170$            ;BR, IF NO PROBLEM
5962            101630  010004                  MOV     R0,R4           ;GET PACKET ADDRESS
5963            101632  016501  000002          MOV     TSSR(R5),R1     ;GET STATUS FROM TSSR
5964            101636  005237  002214'                INC     FATFLG                  ;ERROR COUNT
5968            101642                          ERRHRD  ERRNO,T37RWN,PKTSSR     ;REWIND NOT ACCEPTED
                101642  104456                                                          TRAP    C$ERHRD
                101644  001615                                                          .WORD   909
                101646  103465'                                                        .WORD   T37RWN
                101650  011736'                                                        .WORD   PKTSSR
5969            101652                  170$:   CKLOOP                  ;LOOP IF SELECTED
                101652  104406                                                          TRAP    C$CLP1
5970            101654  013701  102160'        MOV     T37BFR+6,R1     ;PICK UP XSTO
5971            101660  010102                  MOV     R1,R2           ;SET UP EXPECTED
5972            101662  052702  000002          BIS     #BIT1,R2        ;SET BOT BIT IN EXPECTED
5973            101666  020102                  CMP     R1,R2           ;DOES EXP = REC'D
5974            101670  001406                  BEQ     175$            ;BR, IF EQUAL (OK)
5975            101672  005237  002214'                INC     FATFLG                  ;ERROR COUNT
5979            101676                          ERRHRD  ERRNO,T37BOT,EXPREC     ;TAPE NOT AT BOT AFTER REWIND
                101676  104456                                                          TRAP    C$ERHRD
                101700  001616                                                          .WORD   910
                101702  103161'                                                        .WORD   T37BOT
                101704  015364'                                                        .WORD   EXPREC
5980            101706                  175$:   CKLOOP                  ;LOOP IF SELECTED
                101706  104406                                                          TRAP    C$CLP1
5981            101710  012704  102260'        MOV     #T37PK3,R4      ;SET UP PACKET ADDRESS
5982            101714  012737  000121  102262' MOV     #81.,T37RB      ;SET UP RECORDS TO SPACE OVER
5983            101722  012737  140010  102260' MOV     #140010,T37PK3  ;ACK,CVC=1,SPACE FORWARD COMMAND
5984            101730  010465  000000          250$:   MOV     R4,TSDB(R5)     ;ISSUE COMMAND
5985            101734  005237  102310'         252$:   INC     T37CNU          ;BUMP TIMER
5986            101740                          DELAY   1               ;DELAY ABOUT 100US
                101740  012727  000001                                                  MOV     #1,(PC)+
                101744  000000                                                          .WORD   0
                101746  013727  002116'                                                MOV     L$DLY,(PC)+
                101752  000000                                                          .WORD   0
                101754  005367  177772                                                  DEC     -6(PC)
                101760  001375                                                          BNE     .-4
                101762  005367  177756                                                  DEC     -22(PC)
                101766  001367                                                          BNE     .-20
5987            101770  016501  000002          MOV     TSSR(R5),R1     ;GET TSSR
```

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 5988 101774  032701  000200              BIT     #SSR,R1                 ;CHECK FOR TSSR'S SSR SET
 5989 102000  001755                      BEQ     252$                    ;KEEP COUNTING UNTIL SET
 5990 102002  012702  000200              MOV     #SSR,R2                 ;SET UP EXPECTED
 5991 102006  020201                      CMP     R2,R1                   ;WAS EVERYTHING OK
 5992 102010  001406                      BEQ     260$                    ;BR, IF ALL IS WELL
 5993 102012  005237  002214'                    INC     FATFLG                          ;ERROR COUNT
 5997 102016                              ERRHRD  ERRNO,T37SCF,PKTSSR     ;SPACE FORWARD DIDN'T WORK OUT
      102016  104456                                                                     TRAP    C$ERHRD
      102020  001617                                                                     .WORD   911
      102022  104727'                                                                    .WORD   T37SCF
      102024  011736'                                                                    .WORD   PKTSSR
 5998 102026                      260$:   CKLOOP                          ;LOOP IF SELECTED
      102026  104406                                                                     TRAP    C$CLP1
 5999 102030  013701  102306'             MOV     T37CNT,R1               ;TIME FOR WRITE SPACING
 6000 102034  013702  102310'             MOV     T37CNU,R2               ;TIME FOR WRITE RETRY SPACING
 6001 102040  042701  000077              BIC     #000077,R1              ;SETTING UP CONSTANTS
 6002 102044  042702  000077              BIC     #000077,R2              ;SETTING UP CONSTANTS
 6003 102050  020102                      CMP     R1,R2                   ;CHECK FOR DIFFERENCE
 6004 102052  003406                      BLE     300$                    ;BR, IF GOOD aaaa CHECK aaaa
 6005 102054  005237  002214'                    INC     FATFLG                          ;ERROR COUNT
 6009 102060                              ERRHRD  ERRNO,T37TIM,EXPREC     ;TIME WAS NOT DIFFERENT ENOUGH
      102060  104456                                                                     TRAP    C$ERHRD
      102062  001620                                                                     .WORD   912
      102064  103254'                                                                    .WORD   T37TIM
      102066  015364'                                                                    .WORD   EXPREC
 6010 102070                      300$:   CKLOOP                          ;LOOP IF SELECTED
      102070  104406                                                                     TRAP    C$CLP1
 6011 102072                              ENDSUB                          ;<<<<<<<<<<<<< END SUBTEST >>>>>>>>>>>>>
      102072                                                                          L10074:
      102072  104403                                                                     TRAP    C$ESUB
 6012 102074  023727  002214'  000017              CMP     FATFLG,#15.             ;IS ERROR COUNT AT 25
 6013 102102  103402                              BLO     999$                    ;BR, IF LESS THAN 25
 6014 102104  004737  017074'                    JSR     PC,CKDROP               ;TRY TO DROP THE UNIT
 6015 102110                      999$:
 6016                             ;
 6017                             ;
 6018                             ;
 6019 102110  004737  016350'             JSR     PC,TSTLOOP              ;DO WE NEED TO ITERATE TEST
 6020 102114  103002                      BCC     163$                    ;BR, IF NO LOOP REQUIRED
 6021 102116  000137  101044'             JMP     T37LOOP                 ;EXECUTE AGAIN
 6022 102122                      163$:
 6023 102122                              EXIT    TST                     ;ALL DONE THIS TEST
      102122  104432                                                                     TRAP    C$EXIT
      102124  003316                                                                     .WORD   L10073-.
 6024
 6025                             ;+
 6026                             ;LOCAL STORAGE FOR THIS TEST
 6027                             ;-
 6029 102126                              .BLKB   10-<.-TSV2&7>
 6031 102130                      T37PACKET:
 6032 102130  100004                      .WORD   100004                  ;COMMAND PACKET FOR TEST
 6033 102132  102140'                     .WORD   T37DATA                 ;WRITE CHARACTERISTICS COMMAND, WITH , ACK
 6034 102134  000000                      .WORD   0                       ;ADDRESS OF CHARACTERISTICS BLOCK
 6035 102136  000012                      .WORD   10.                     ;STARTING VALUE OF BLOCK SIZE
 6036 102140                      T37DATA:                                ;CHARACTERISTICS DATA BLOCK
 6037 102140  102152'                     .WORD   T37BFR                  ;ADDRESS OF MESSAGE BUFFER
 6038 102142  000000                      .WORD   0
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6039 102144  000024                    .WORD   20.                     ;LENGTH OF MESSAGE BUFFER
6040 102146  000000                    .WORD   0
6041 102150  000000            T37DSW: .WORD   0                       ;SELECT DRIVE 0
6042 102152                    T37BFR: .BLKW   25.                     ;MESSAGE BUFFER
6043                           ;
6044                           ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
6045                           ;
6047 102234                            .BLKB   10-<.-T5V2&7>
6049 102240                    T37PK2:
6050 102240  100006                    .WORD   100006                  ;WRITE SUB SYS MEM COMMAND,  AND ACK
6051 102242  102270'                   .WORD   T37BF2                  ;ADDRESS OF SELECT BLOCK DATA
6052 102244  000000                    .WORD   0
6053 102246  000006                    .WORD   6.                      ;SIZE OF DATA PACKET
6054
6056 102250                            .BLKB   10-<.-T5V2&7>
6058 102260                    T37PK3:
6059 102260  100005                    .WORD   100005                  ;REREAD COMMAND, AND ACK
6060 102262                    T37RB:
6061 102262  003116'            T37WB:  .WORD   FREE                    ;ADDRESS OF WRITE BUFFER
6062 102264  000000                    .WORD   0
6063 102266  000000            T37SZ:  .WORD   0                       ;SIZE OF BUFFER (EXTENT)
6064                                   .EVEN
6065                           ;
6066                           ;
6067                           ;
6068 102270                    T37BF2:
6069 102270     010            T37BS0: .BYTE   10                      ;BSEL0 AREA
6070 102271     200            T37BS1: .BYTE   200                     ;BSEL1 AREA
6071 102272  000000            T37S2:  .WORD   0                       ;SEL 2 AREA
6072 102274  000000            T37S3:  .WORD   0                       ;DATA AREA
6073                           ;
6074                           ;
6075                                   .EVEN
6076                           ;TAPE MOTION PACKET COMMAND VALUES
6077
6078 102276  100205            T37RN:  .WORD   100205                  ;REREAD DATA (NEXT)
6079 102300  100605            T37WDR: .WORD   100605                  ;REREAD DATA RETRY
6080 102302  102205            T37CON: .WORD   102205                  ;WRITE CONTINOUS
6081 102304  177777                    .WORD   177777                  ;END OF DATA
6082
6083                           ;
6084 102306  000000            T37CNT: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
6085 102310  000000            T37CNU: .WORD   0                       ;TAPE TIMER COUNTER STORAGE AREA
6086 102312  000000            T37DLY: .WORD   0                       ;DELAY COUNTER
6087
6088                           ;+
6089                           ;LOCAL TEXT MESSAGES FOR TEST
6090                           ;-
6091
6092
6093 102314     124     141     160   T37WNG: .ASCIZ  'Tape Position Incorrect After REREAD Previous (OPP=1)'
6094 102402     124     123     123   T37RDF: .ASCIZ  'TSSR Incorrect After READ DATA Command'
6095 102451     122     105     122   T37RRF: .ASCIZ  'REREAD Previous (Space Reverse, Read Forward) Command Failed'
6096 102546     120     117     123   T37SC:  .ASCIZ  'POSITION (Space Command) Failed, TSSR Not Correct'
6097 102630     122     111     102   T37LGR: .ASCIZ  'RIB NOT SET AFTER READ REVERSE INTO BOT'
6098 102700     124     123     123   T37WDF: .ASCIZ  'TSSR Not Correct After Illegal Mode Bits Set'
6099 102755     111     154     154   T37LOG: .ASCIZ  'Illegal Mode Bits, Failed To Set ILC Bit In XSTO'
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6100 103036      122     105     122  T37SSR: .ASCIZ  'REREAD COMMAND Not Accepted'
6101 103072      124     123     123  T37WDE: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command,At BOT'
6102 103161      124     141     160  T37BOT: .ASCIZ  'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
6103 103254      127     122     111  T37TIM: .ASCIZ  'WRITE DATA RETRY''S Erase Tape Not Long Enough'
6104 103331      122     105     122  T37EOT: .ASCIZ  'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
6105 103410      124     123     123  T37TM:  .ASCIZ  'TSSR Not Correct After REREAD COMMAND Reject'
6106 103465      122     145     167  T37RWN: .ASCIZ  'Rewind (POSITION) Command Not Accepted'
6107 103534      122     101     115  T37RNC: .ASCIZ  'RAM Error, Correct Data Pattern Not In Ram'
6108 103607      124     123     123  T37AM3: .ASCIZ  'TSSR Init. Failed After REREAD COMMAND'
6109 103656      104     162     151  T37OFL: .ASCIZ  'Drive 7 Select Failed To Set "OFL" In TSSR'
6110 103731      124     123     123  T37WDD: .ASCIZ  'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
6111 104021      124     123     123  T37WDC: .ASCIZ  'TSSR Not Correct After REREAD DATA Command'
6112 104074      103     126     103  T37VCK: .ASCIZ  'CVC Set, Didn''t Reset VCK In Message Buffer'
6113 104147      124     123     102  T37BA:  .ASCIZ  'TSBA Not Correct After REREAD DATA Command'
6114 104222      127     122     111  T37WSS: .ASCIZ  'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
6115 104311      122     145     141  T37LON: .ASCIZ  'Reading Long Record Failed To Set RLL Bit In XST0'
6116 104373      122     145     141  T37LOP: .ASCIZ  'Reading Long Record Failed To Set RLS Bit In XST0'
6117 104455      122     145     163  T37PBP: .ASCIZ  'Residual Byte Count Incorrect After Short Record Read'
6118 104543      122     145     141  T37TRL: .ASCIZ  'Reading Long Record  Failed To Give Tape Status Alert'
6119 104631      127     122     111  T37NEF: .ASCIZ  'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
6120 104727      124     123     123  T37SCF: .ASCIZ  'TSSR Not Correct After SPACE RECORDS Command'
6121 105004      124     123     123  T37TSA: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
6122 105066      124     123     123  T37WRF: .ASCIZ  'TSSR Not Correct After WRITE DATA RETRY Command'
6123 105146      104     141     164  T37DTA: .ASCIZ  'Data Compare Error, Data Read From Tape Not Equal To Written'
6124 105243      106     165     156  TST37ID:        .ASCIZ  'Function Timing'
6125                                                  .EVEN
6126                                 ;*
6127                                 ;
6128                                 ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
6129                                 ;WRITE SUBSYSTEM MEMORY COMMAND
6130                                 ;
6131                                 ;-
6132
6133 105264                         T37REST:
6134 105264                                 SAVREG                          ;SAVE THE REGISTERS
6135 105270  012701  102130'                MOV     @T37PACKET,R1           ;START OF THE PACKET
6136 105274  012721  100004                 MOV     @100004,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
6137 105300  012721  102140'                MOV     @T37DATA,(R1)+          ;ADDRESS OF CHARAISTICS DATA BLOCK
6138 105304  005021                         CLR     (R1)+                   ;EXTENDED ADDRESS
6139 105306  012721  000012                 MOV     @10.,(R1)+              ;SIZE OF DATA BLOCK IN BYTES
6140 105312  012721  102152'                MOV     @T37BFR,(R1)+           ;ADDRESS OF MESSAGE BUFFER
6141 105316  005021                         CLR     (R1)+
6142 105320  012721  000024                 MOV     @20.,(R1)+              ;LENGTH OF MESSAGE BUFFER
6143 105324  005021                         CLR     (R1)+
6144 105326  012711  000000                 MOV     @0,(R1)                 ;SELECT DRIVE ZERO
6145 105332  012702  000030                 MOV     @24.,R2                 ;NUMBER OF LOCATIONS TO BE CLEARED
6146 105336  012762  177777  102152' 64$:   MOV     @177777,T37BFR(R2)      ;ALL ONES TO MESSAGE BUFFER
6147 105344  005742                         TST     -(R2)                   ;NEXT LOCATION
6148 105346  022702  000000                 CMP     @0,R2                   ;AT END OF LOOP YET
6149 105352  001371                         BNE     64$                     ;KEEP GOING UNTIL DONE
6150 105354  000207                         RTS     PC                      ;RETURN
6151
6152
6153 105356                         T37RT2:
6154 105356                                 SAVREG                          ;SAVE THE REGISTERS
6155 105362  012701  102240'                MOV     @T37PK2,R1              ;START OF THE PACKET
6156 105366  012721  100006                 MOV     @100006,(R1)+           ;WRITE SUBSYSTEM MEM. WITH ACK,
```

```
 6157 105372  012721  102270'                MOV     #T37BF2,(R1)+       ;ADDRESS OF DATA BLOCK
 6158 105376  005021                         CLR     (R1)+               ;EXTENDED ADDRESS
 6159 105400  012721  000006                 MOV     #6.,(R1)+           ;SIZE OF DATA BLOCK IN BYTES
 6160 105404  005021                         CLR     (R1)+
 6161 105406  012701  102270'                MOV     #T37BF2,R1          ;POINT TO DATA SEL AREA
 6162 105412  005021                         CLR     (R1)+
 6163 105414  005011                         CLR     (R1)
 6164 105416  000207                         RTS     PC                  ;RETURN
 6165 105420                        T37RT3:
 6166 105420                                 SAVREG                      ;SAVE REGISTERS
 6167 105424  012701  102260'                MOV     #T37PK3,R1          ;SET UP POINTER ADDRESS
 6168 105430  005021                         CLR     (R1)+               ;COMMAND SPACE
 6169 105432  005021                         CLR     (R1)+               ;ADDRESS OF DATA BLOCK
 6170 105434  005021                         CLR     (R1)+               ;EXTENDED ADDRESS
 6171 105436  005011                         CLR     (R1)                ;SIZE OF DATA TRANSFER BLOCK
 6172 105440  000207                         RTS     PC                  ;RETURN
 6173 105442                                 ENDTST
      105442                                                     L10073:
      105442  104401                                                 TRAP    C$ETST
 6174 105444                                 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.
                                ;--
105444                                  BGNHRD
105444  000010                          .WORD L10075-L$HARD/2
105446                          L$HARD::
105446                                  GPRMA   HPM1,0,0,160010,177776,YES      ;GET TSBA/TSDB REGISTER ADDRESS.
105446  000031                          .WORD   T$CODE
105450  105466'                         .WORD   HPM1
105452  160010                          .WORD   T$LOLIM
105454  177776                          .WORD   T$HILIM
105456                                  GPRMA   HPM2,2,0,0,776,YES              ;GET VECTOR ADDRESS.
105456  001031                          .WORD   T$CODE
105460  105522'                         .WORD   HPM2
105462  000000                          .WORD   T$LOLIM
105464  000776                          .WORD   T$HILIM
                                        ;GPRMD  HPM3,4,0,340,0,7,YES            ;GET INTERRUPT PRIORITY.
105466                                  ENDHRD
                                        .EVEN
105466                          L10075:
105466  104     105     126     HPM1:   .ASCIZ  'DEVICE ADDRESS (TSBA/TSDB) '
105522  111     116     124     HPM2:   .ASCIZ  'INTERRUPT VECTOR    '
105546  111     116     124     HPM3:   .ASCIZ  'INTERRUPT PRIORITY      '
                                        .EVEN

                                        .SBTTL  SOFTWARE PARAMETER CODING SECTION

                                ;++
                                ; THE SOFTWARE PARAMETER CODING SECTION CONTAINS MACROS
                                ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
                                ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
                                ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
                                ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
                                ; WITH THE OPERATOR.
                                ;--
105576                                  BGNSFT
105576  000003                          .WORD L10076-L$SOFT/2
105600                          L$SOFT::
                                ;       GPRML   SPM1,0,-1,YES                   ; GET TRANSPORT TEST FLAG.
105600                                  GPRML   SPM4,2,-1,YES                   ; GET ITERATION CONTROL.
105600  001130                          .WORD   T$CODE
```

```
                105602  105636'                         .WORD   SPM4
                105604  177777                          .WORD   -1
     56                                         ;       GPRMD   SPM6,4,D,7777,0,7777,YES        ; GET LOCAL ERROR LIMIT
     57                                         ;       GPRMD   SPM7,6,D,7777,0,7777,YES        ; GET GLOBAL ERROR LIMIT
     58 105606                                          ENDSFT
                105606                                  .EVEN
                105606                          L10076:
     59
     60
     61 105606      105     116     101         SPM1:   .ASCIZ  'ENABLE TRANSPORT TESTS '
     62 105636      111     116     110         SPM4:   .ASCIZ  'INHIBIT ITERATIONS     '
     63                                         ;SPM6:  .ASCIZ  'PER TEST ERROR LIMIT   '
     64                                         ;SPM7:  .ASCIZ  'PER UNIT ERROR LIMIT   '
     65                                                 .SBTTL  PATCH AREA
     66
     67                                         ;
     68                                         ; FINALLY A GENEROUS PATCH AREA.
     69                                         ;
     70                                         ; AND AN ADJUSTMENT TO ACCOUNT FOR THE "LASTAD BIT7" HACK
     71                                         ; DESCRIBED IN "SUPPRG.MEM" (FOR REV C).
     72                                         ;
     73
     74 105666                                  PATCH::
     75
     76                                         ;       .BLKW   32.
     77 105666                                          .BLKW   1.
     78
     79                                         ;       .IF     NZ,.&377
     80                                         ;       .=.!377+1
     81                                         ;       .ENDC
     82 105670                                          LASTAD          ;SET LAST USED ADDRESS.
                105670  000000                          .EVEN
                105672  000000                          .WORD   0
                105674                                  .WORD   0
                105674                          L$LAST::
     83 105674                                          ENDMOD
     84                                                 .SBTTL  HARD CODED P-TABLE
     85                                         ;++
     86                                         ;       DIAGNOSTIC IS PRE-PARAMETERIZED PER THIS TABLE
     87                                         ;--
     88 105674                                          BGNSETUP        1
     89 105674                                          BGNPTAB
                105674  000000                          .WORD   0
                105676  000003                          .WORD   L10101-./2-1
                105700                          L10077:
     90 105700  172522                                  .WORD           172522
     91 105702  000224                                  .WORD           224
     92 105704  000240                                  .WORD           PRIO5
     93 105706                                          ENDPTAB
                105706                          L10101:
     94 105706                                          ENDSETUP
     95
     96                 000001                          .END
```

TSV6 - PARAMETER CODING MACRO M1113 01-FEB-84 18:55 SEQ 213
SYMBOL TABLE

```
ADDSSR  012016RG    002 C$AU   = 000052        DEVDRO  023226R     002 FRESIZ  003120RG    002 INTFLA  016035R     002
ADR    = 000020 G       C$AUTO= 000061        DEVNRD  023145R     002 FUSI    004107R     002 INTMAS  016034R     002
AMBTSS  006525R     002 C$BRK  = 000022        DEVNXR  023063R     002 F$AU   = 000015         INTR    016106RG    002
ASSEMB= 000010           C$BSEG= 000004        DEVONL  023013R     002 F$AUTO= 000020         INTREC  002216RG    002
A1716  = 000003          C$BSUB= 000002        DEVSUM  022756R     002 F$BGN  = 000040         INTVEC  016036R     002
BADDAT  003150RG    002 C$CEFG= 000045        DFPTBL  002150RG    002 F$CLEA= 000007         INTX    004270R     002
BADSSR  015570RG    002 C$CLCK= 000062        DIAGMC= 000000          F$DU   = 000016         INVERT  021014RG    002
BDVPCR= 177520 G         C$CLEA= 000012        DICED  = 000001          F$END  = 000041         IOKCKI= 000200
BENBSW  002222RG    002 C$CLOS= 000035        DSBINT  016074R     002 F$HARD= 000004         IOKSTP= 000001
BIE    = 040000          C$CLP1= 000006        DUAD12  004633R     002 F$HW   = 000013         IPRI    002204RG    002
BIT0   = 000001 G        C$CVEC= 000036        DUFLG   003104RG    002 F$INIT= 000006         ISR    = 000100 G
BIT00  = 000001 G        C$DCLN= 000044        DUMMY   003054R     002 F$JMP  = 000050         IVEC    002202RG    002
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$ERHR= 000056        EMAXDU  016671R     002 F$SEG  = 000003         I$HRD  = 000041
BIT07  = 000200 G        C$ERRO= 000060        EN     = 000000         F$SOFT= 000005          I$INIT= 000041
BIT08  = 000400 G        C$ERSF= 000054        ENAINT  016042R     002 F$SRV  = 000010         I$MOD  = 000041
BIT09  = 001000 G        C$ERSO= 000057        ENVIRN  020530R     002 F$SUB  = 000002         I$MSG  = 000041
BIT1   = 000002 G        C$ESCA= 000010        EPRTSW  002172RG    002 F$SW   = 000014         I$PROT= 000040
BIT10  = 002000 G        C$ESEG= 000005        EPRT1   006166R     002 F$TEST= 000001          I$PTAB= 000041
BIT11  = 004000 G        C$ESUB= 000003        EPRT2   006225R     002 GDDAT   003152RG    002 I$PWR  = 000041
BIT12  = 010000 G        C$ETST= 000001        ERCM    011623R     002 GERRMA  002166RG    002 I$RPT  = 000041
BIT13  = 020000 G        C$EXIT= 000032        ERRHI   002230RG    002 GETPAT  020074RG    002 I$SEG  = 000041
BIT14  = 040000 G        C$GETB= 000026        ERRK    016650R     002 GETSEL  020156RG    002 I$SETU= 000041
BIT15  = 100000 G        C$GETW= 000027        ERRLO   002232RG    002 G$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  003370R     002 G$EXCP= 000400          I$TST  = 000041
BIT5   = 000040 G        C$GPRI= 000040        ERTABL  003170R     002 G$HILI= 000002          J$JMP  = 000167
BIT6   = 000100 G        C$INIT= 000011        ESUM    016652R     002 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  015372RG    002 G$OFSI= 000376          KIPAR3= 172346
BOE    = 000400 G        C$MSG  = 000023       EXPD    002224RG    002 G$PRMA= 000001          KIPAR4= 172350
BRINIT  004447R     002 C$OPEN= 000034        EXPGOT  004523R     002 G$PRMD= 000002          KIPAR5= 172352
BSEL0  = 000000          C$PNTB= 000014        EXPGT2  004557R     002 G$PRML= 000000          KIPAR6= 172354
BSEL1  = 000001          C$PNTF= 000017        EXPMSG  002314RG    002 G$RADA= 000140          KIPAR7= 172356
CHKAMB  015734R     002 C$PNTS= 000016        EXPREC  015364RG    002 G$RADB= 000000          KIPDR0= 172300
CHKMAN  020400RG    002 C$PNTX= 000015        EXTA    005600R     002 G$RADD= 000040          KIPDR1= 172302
CHKTSS  016226R     002 C$QIO  = 000377       EXTEND  005576R     002 G$RADL= 000120          KIPDR2= 172304
CKDROP  017074R     002 C$RDBU= 000007        EXTFEA  002220RG    002 G$RADO= 000020          KIPDR3= 172306
CKEMAX  016774R     002 C$REFG= 000047        E$END  = 002100          G$XFER= 000004          KIPDR4= 172310
CKMSG   011250RG    002 C$RESE= 000033        E$LOAD= 000035          G$YES  = 000010         KIPDR5= 172312
CKMSG2  011370RG    002 C$REVI= 000003        FATERR= 000060          HIADDR= 001400          KIPDR6= 172314
CKRAM   011004RG    002 C$RFLA= 000021        FATFLG  002214RG    002 HOE    = 100000 G       KIPDR7= 172316
CKRAM2  011114RG    002 C$RPT  = 000025       FERCM   011612R     002 HPM1    105466R     002 KTENAB  003126RG    002
CMDPKT  021070RG    002 C$SEFG= 000046        FIFEXP  012060RG    002 HPM2    105522R     002 KTFLG   003124RG    002
CMPMEM  017560R     002 C$SPRI= 000041        FIF1MS  012132R     002 HPM3    105546R     002 KTINIT  020616R     002
CONFIG  017142R     002 C$SVEC= 000037        FIF2MS  012201R     002 IBE    = 010000 G       KTOFF   017166R     002
COUNT   002302RG    002 C$TPRI= 000013        FILLME  017314R     002 IDU    = 000040 G       KTON    017150R     002
CSRADD  002200RG    002 DATA    002304RG  002 FNOINT  004205R     002 IER    = 020000 G       LERRMA  002164RG    002
CTAB    003156RG    002 DATASC  020132R     002 FORCER  002170RG    002 IFAULT  004246R     002 LISTAL= 000001
CTABE   003170RG    002 DEBUGM  011522R     002 FREE    003116RG    002 INCERR  016736R     002 LOE    = 040000 G
CTABM   003156RG    002 DEVCNT  002212RG    002 FREEHI  003122R     002 INTCPC  016040R     002 LOOPCN  002210RG    002
```

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SYMBOL TABLE

```
LOOPCO  013016R     002 L10001  002170R     002 L10073  105442R     002 O$DU   = 000001        PR1ASC  014355R     002
LOOPFL  003154RG    002 L10002  005574R     002 L10074  102072R     002 O$ERRT= 000000         PST32W  003144RG    002
LOT     = 000010 G      L10003  011734R     002 L10075  105466R     002 O$GNSW= 000001         PUNIT   022134R     002
L$ACP   002110RG    002 L10004  011752R     002 L10076  105606R     002 O$POIN= 000001         PW.D11= 000021
L$APT   002036RG    002 L10005  011770R     002 L10077  105700R     002 O$SETU= 000000         PW.D13= 000022
L$AU    022202RG    002 L10006  011776R     002 L10101  105706R     002 PASRPT  021704R     002 PW.D22= 000020
L$AUT   002070RG    002 L10007  012014R     002 MEMADD  013644RG    002 PATCH   105666RG    002 PW.NOP= 000000
L$AUTO  022406RG    002 L10010  012032R     002 MEMCK   021106RG    002 PATDAT  020130R     002 PW.NO1= 000023
L$CCP   002106RG    002 L10011  012056R     002 MENASC  020347R     002 PC.ERA= 002400         PW.RDE= 000024
L$CLEA  022466RG    002 L10012  012130R     002 MENERR  020274R     002 PC.IER= 002000         PW.RDR= 000001
L$CO    002032RG    002 L10013  012300R     002 MENRES  020376R     002 PC.NOO= 001000         PW.RDS= 000005
L$DEPO  002011RG    002 L10014  013014R     002 MMRO   = 170200        PC.REL= 000000         PW.RFI= 000003
L$DESC  003402RG    002 L10015  013642R     002 MMVEC  = 000250        PC.REW= 000400         PW.WCT= 000006
L$DESP  002076RG    002 L10016  013664R     002 MSA.FR= 000006         PKBCNT= 000006         PW.WFI= 000004
L$DEVP  002060RG    002 L10017  015370R     002 MSA.NO= 000000         PKHI   = 000004         PW.WFM= 000007
L$DISP  002124RG    002 L10020  015376R     002 MSA.NR= 000004         PKLOW  = 000002         PW.WMI= 000010
L$DLY   002116RG    002 L10021  015404R     002 MSA.VO= 000002         PKTADD  007444R     002 PW.WNP= 000011
L$DTP   002040RG    002 L10022  015416R     002 MSGEXP  012034RG    002 PKTFRM  007406R     002 PW.WTR= 000002
L$DTYP  002034RG    002 L10023  015440R     002 MSGLOO  012754RG    002 PKTGET  011754RG    002 P.ACK  = 100000
L$DU    022300RG    002 L10024  015466R     002 MSGSTA  012240RG    002 PKTMES  012000RG    002 P.CMD  = 000037
L$DUT   002072RG    002 L10025  015626R     002 MSGSUB  013632RG    002 PKTRAM  004735RG    002 P.CONT= 000012
L$DVTY  003374RG    002 L10026  016136R     002 MS.ATT= 000006         PKTSSR  011736RG    002 P.CVC  = 040000
L$EF    002052RG    002 L10030  022132R     002 MS.EXT= 000200         PNT    = 001000 G          P.FMT  = 000140
L$ENVI  002044RG    002 L10031  022276R     002 MS.RSD= 000001         PRAMPK  013666R     002 P.FORM= 000011
L$ETP   002102RG    002 L10032  022404R     002 MS.RSF= 000020         PRASC   014413R     002 P.GETS= 000017
L$EXP1  002046RG    002 L10033  022464R     002 MS.RST= 000010         PRBEXP  015360R     002 P.IE   = 000200
L$EXP4  002064RG    002 L10034  022512R     002 NBA    = 002000        PRBMSG  015226R     002 P.INIT= 000013
L$EXP5  002066RG    002 L10035  022754R     002 NEWPAS  021640R     002 PRBREC  015362R     002 P.MODE= 007400
L$HARD  105446RG    002 L10036  032112R     002 NODEV   003106RG    002 PRBTOT  015313R     002 P.OPP  = 020000
L$HIME  002120RG    002 L10037  023740R     002 NOINIT  004325R     002 PRBYTE  015012RG    002 P.POSI= 000010
L$HPCP  002016RG    002 L10040  024462R     002 NOINTR  004211R     002 PRI    = 002000 G          P.READ= 000001
L$HPTP  002022RG    002 L10041  025206R     002 NOITS   002162RG    002 PRIADD  010050R     002 P.SWB  = 010000
L$HW    002150RG    002 L10042  026030R     002 NOMAN   020434R     002 PRIAO   010120R     002 P.WRIT= 000005
L$ICP   002104RG    002 L10043  041220R     002 NOMEM   005450R     002 PRIBXO  007502RG    002 P.WRTC= 000004
L$INIT  021406RG    002 L10044  033514R     002 NP.IR  = 000200        PRIEQU  007750R     002 P.WRTS= 000006
L$LADP  002026RG    002 L10045  035140R     002 NP.LOO= 000040         PRIPKT  007260RG    002 QVP     002176RG    002
L$LAST  105674RG    002 L10046  035534R     002 NP.OUT= 000100         PRIRAM  007756R     002 RAMASC  014046R     002
L$LOAD  002100RG    002 L10047  036220R     002 NP.WRP= 000020         PRITAD  010164R     002 RAMDAT  002234RG    002
L$LUN   002074RG    002 L10050  046576R     002 NSI     004142R     002 PRITSS  005632R     002 RAMERR  015400RG    002
L$MREV  002050RG    002 L10051  042112R     002 NSINIT  004377R     002 PRIT0   010246R     002 RAMEXP  015420RG    002
L$NAME  002000RG    002 L10052  042724R     002 NUL     004517R     002 PRIT1   010311R     002 RAMFOR  010006R     002
L$PRIO  002042RG    002 L10053  052664R     002 NULCR   004520R     002 PRIXOR  007632RG    002 RAMSIZ  002274RG    002
L$PROT  021376RG    002 L10054  047452R     002 NXM    = 004000        PRIO0  = 000000 G          RAMTAD  015406RG    002
L$PRT   002112RG    002 L10055  050262R     002 NXMFLG  003130RG    002 PRIO1  = 000040 G          RCVHIA  002276RG    002
L$REPP  002062RG    002 L10056  051076R     002 NXMHI   003134RG    002 PRIO2  = 000100 G          RCVLOA  002300RG    002
L$REV   002010RG    002 L10057  055700R     002 NXMLO   003132RG    002 PRIO3  = 000140 G          RDERR   C05176R     002
L$RPT   022514RG    002 L10060  054342R     002 NXMTST  021302R     002 PRIO4  = 000200 G          RECMSG  002460RG    002
L$SOFT  105600RG    002 L10061  063262R     002 NXR     003730R     002 PRIO5  = 000240 G          RECV    002226RG    002
L$SPC   002056RG    002 L10062  060336R     002 NXRERR  005544RG    002 PRIO6  = 000300 G          REGSAV  020040R     002
L$SPCP  002020RG    002 L10063  073222R     002 NXRX    003767R     002 PRIO7  = 000340 G          RETERR  005362R     002
L$SPTP  002024RG    002 L10064  064354R     002 NXTU    021652R     002 PRMESS  014132R     002 REWIND  010704RG    002
L$STA   002030RG    002 L10065  065434R     002 OFL    = 000100        PRMNO   002312RG    002 RMCHBE= 000167
L$SW    002160RG    002 L10066  066276R     002 ONEFIL= 000000         PRMSGE  014442RG    002 RMCHEN= 000200
L$TEST  002114RG    002 L10067  067200R     002 O$APTS= 000000         PRMSG0  014622R     002 RMMSGB= 000215
L$TIML  002014RG    002 L10070  101006R     002 O$AU   = 000001        PRMSG1  014667R     002 RMMSGE= 000234
L$UNIT  002012RG    002 L10071  074316R     002 O$BGNR= 000001         PRMSG2  014725R     002 RMPKTB= 000201
L10000  002156R     002 L10072  075400R     002 O$BGNS= 000001         PROASC  014310R     002 RMPKTE= 000210
```

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SYMBOL TABLE

```
RMR    = 010000
RWPACK  011000R     002
SC     = 100000
SCE    = 020000
SCHERR  005270R     002
SCME    005003R     002
SDELAY  010550R     002
SELASC  020342R     002
SELDAT= 000004
SEL2   = 000002
SETMAP  017210R     002
SETU    021736R     002
SFFMSG  011772RG    002
SFHERR  003675R     002
SFIERR  003642R     002
SFIMSG  011724RG    002
SFPTBL  002160RG    002
SIFLAG  003146RG    002
SIMSG   011656R     002
SKIPT   003372R     002
SOFINI  015664RG    002
SPACE   010356RG    002
SPM1    105606R     002
SPM4    105636R     002
SR0    = 177572
SR1    = 177574
SR2    = 177576
SR3    = 172516
SSR    = 000200
STATCO  012302R     002
SVCGBL= 000000
SVCINS= 000000
SVCSUB= 000001
SVCTAG= 000000
SVCTST= 000001
S$LSYM= 010000
S0.IDB= 000010
S0.IFB= 000002
S0.IFP= 000001
S0.ILD= 000020
S0.ION= 000040
S0.IRD= 000100
S0.IRW= 000004
S0.ISP= 000200
S1.ICE= 002000
S1.IEO= 010000
S1.IFM= 001000
S1.IHE= 000400
S1.IID= 004000
S1.I1R= 020000
S1.I2R= 040000
S1.PAR= 100000
S2.ATI= 000010
S2.BTI= 000004
S2.DIM= 000200
S2.ILW= 000100
S2.INR= 000020

S2.OUT= 000040
S2.UND= 000003
TBLEND= 003054RG    002
TCOASC  006366R     002
TCOCOD  006566R     002
TEMP1   003110RG    002
TEMP2   003112RG    002
TERCLS= 000016
TESTNO= 000011
TEXASC  006325R     002
TFCASC  006427R     002
TIMEXP  015442RG    002
TIMSGO  015470R     002
TINERR  011711R     002
TMPBFR  002624RG    002
TNAM    016576R     002
TRANST  002160RG    002
TSBA   = 000000 G
TSBAH  = 000001 G
TSDB   = 000000 G
TSDBH  = 000001 G
TSFCOD  007126R     002
TSREJ  = 000006
TSSDEF  006476R     002
TSSR   = 000002 G
TSSRBI  003472RG    002
TSSRFO  006305R     002
TSSRH  = 000003 G
TSSX    004010R     002
TSTBLK  002744RG    002
TSTCNT  002206RG    002
TSTEND  016612R     002
TSTFLA  002306RG    002
TSTLOO  016350RG    002
TSTPTR  002310RG    002
TSTSET  016402RG    002
TST29I  031677R     002
TST30I  041021R     002
TST31I  046353R     002
TST32I  052460R     002
TST33I  055505R     002
TST34I  063057R     002
TST35I  073013R     002
TST36I  100607R     002
TST37I  105243R     002
TSV2    002000RG    002
TSV3    002170RG    002
TSV4    021376RG    002
TSV6    105444RG    002
TSV7B   023276RG    002
TTIBFR= 177562 G
TTICSR= 177560 G
TTIVEC= 000060 G
T$ARGC= 000003
T$CODE= 001130
T$ERRN= 001620
T$EXCP= 000000

T$FLAG= 000040
T$FREE= 105706R     002
T$GMAN= 000000
T$HILI= 000776
T$LAST= 000001
T$LOLI= 000000
T$LSYM= 010000
T$LTNO= 000011
T$NEST= 177777
T$NS0  = 000000
T$NS1  = 000005
T$NS2  = 000002
T$PCNT= 000000
T$PTAB= 010100
T$PTHV= 000001
T$PTNU= 000001
T$SAVL= 177777
T$SEGL= 177777
T$SIZE= 000005
T$SUBN= 000001
T$TAGL= 177777
T$TAGN= 010102
T$TEMP= 000000
T$TEST= 000011
T$TSTM= 177777
T$TSTS= 000001
T$$AU  = 010031
T$$AUT= 010033
T$$CLE= 010034
T$$DAT= 010101
T$$DU  = 010032
T$$HAR= 010075
T$$HW  = 010000
T$$INI= 010030
T$$MSG= 010025
T$$PC  = 000001
T$$PRO= 010027
T$$PTA= 010100
T$$RPT= 010035
T$$SOF= 010076
T$$SRV= 010026
T$$SUB= 010074
T$$SW  = 010001
T$$TES= 010073
T1      023276RG    002
T1.1    023326R     002
T1.2    023756R     002
T1.3    024500R     002
T1.4    025224R     002
T2      032114RG    002
T2.1    032140R     002
T2.2    033532R     002
T2.3    035156R     002
T2.4    035552R     002
T23A    003136RG    002
T23B    003140RG    002
T29AM3  030207R     002

T29BA   030624R     002
T29BFR  026112R     002
T29BF2  026230R     002
T29BOT  027556R     002
T29BS0  026230R     002
T29BS1  026231R     002
T29CNT  026254R     002
T29CON  026242R     002
T29DAT  026100R     002
T29DLY  026260R     002
T29DSW  026110R     002
T29DTA  027623R     002
T29EOT  027711R     002
T29LON  031005R     002
T29LOO  023326R     002
T29LOP  031067R     002
T29LOQ  027206R     002
T29LOR  027061R     002
T29NEF  026410R     002
T29NEQ  031325R     002
T29OFL  026262R     002
T29OF7  030275R     002
T29PAC  026070R     002
T29PBP  031151R     002
T29PK2  026200R     002
T29PK3  026220R     002
T29RB   026222R     002
T29RDF  026500R     002
T29RDG  031423R     002
T29RES  031726R     002
T29RIB  031504R     002
T29RN   026236R     002
T29RNC  030134R     002
T29RRF  026547R     002
T29RRG  026663R     002
T29RRN  031604R     002
T29RSZ  026256R     002
T29RT2  032020R     002
T29RT3  032062R     002
T29RWN  030065R     002
T29SC   026777R     002
T29SSR  027267R     002
T29SZ   026226R     002
T29S2   026232R     002
T29S3   026234R     002
T29TM   030007R     002
T29TRL  031237R     002
T29VCK  030551R     002
T29WB   026222R     002
T29WDC  030457R     002
T29WDD  030350R     002
T29WDE  027342R     002
T29WDF  027131R     002
T29WDR  026240R     002
T29WLK  027424R     002
T29WNG  026303R     002
T29WRT  027511R     002

T29WSS  030716R     002
T3      041222RG    002
T3BFLG  003142RG    002
T3.1    041252R     002
T3.2    042130R     002
T30BFR  036302R     002
T30BF2  036420R     002
T30BOT  037631R     002
T30BS0  036420R     002
T30BS1  036421R     002
T30CNT  036440R     002
T30CNU  036442R     002
T30DAT  036270R     002
T30DLY  036446R     002
T30DSW  036300R     002
T30DTA  040724R     002
T30DTR  040660R     002
T30ETM  036276R     002
T30FCN  036444R     002
T30IBT  036621R     002
T30IBU  036450R     002
T30IMV  036426R     002
T30LOO  032140R     002
T30LOQ  037420R     002
T30NEF  040366R     002
T30OFL  040077R     002
T30PAC  036260R     002
T30PK2  036370R     002
T30PK3  036410R     002
T30PTB  037032R     002
T30RB   036412R     002
T30RDF  037203R     002
T30RDG  037261R     002
T30RES  041042R     002
T30RIB  036535R     002
T30RN   036426R     002
T30RRM  040445R     002
T30RRN  040523R     002
T30RRP  040602R     002
T30RT2  041134R     002
T30RT3  041176R     002
T30RWN  040030R     002
T30SKM  036704R     002
T30SSR  037501R     002
T30SZ   036416R     002
T30S2   036422R     002
T30S3   036424R     002
T30TM   037676R     002
T30TMK  040304R     002
T30TM2  037753R     002
T30TPB  037123R     002
T30VCK  040231R     002
T30WB   036412R     002
T30WDC  040152R     002
T30WDD  036760R     002
T30WDE  037552R     002
T30WDF  037343R     002
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TSV6 - PARAMETER CODING MACRO M1113 01-FEB-84 18:55 SEQ 216
SYMBOL TABLE

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T31AM3  044626R  002 T32AM3  051567R  002 T33UNC  054722R  002 T35BFR  067262R  002 T35WSS  071261R  002
T31BA   045166R  002 T32BA   051703R  002 T33UND  055012R  002 T35BF2  067400R  002 T36AM3  077153R  002
T31BFR  043012R  002 T32BFR  051162R  002 T33WB   054532R  002 T35BOT  070220R  002 T36BA   077513R  002
T31BF2  043130R  002 T32BOE  052206R  002 T33WDC  055327R  002 T35BSO  067400R  002 T36BFR  075462R  002
T31BOT  044155R  002 T32BOT  051336R  002 T33WDR  054550R  002 T35BS1  067401R  002 T36BF2  075600R  002
T31BSO  043130R  002 T32CMD  051300R  002 T33WPW  054642R  002 T35CNT  067416R  002 T36BOT  076525R  002
T31BS1  043131R  002 T32CNT  051330R  002 T34AM3  062331R  002 T35CNU  067420R  002 T36BSO  075600R  002
T31CNT  043146R  002 T32CNU  051332R  002 T34BA   062716R  002 T35CON  067412R  002 T36BS1  075601R  002
T31CNU  043150R  002 T32DAT  051150R  002 T34BFR  060422R  002 T35DAT  067250R  002 T36CNT  075616R  002
T31CON  043142R  002 T32DLY  051334R  002 T34BF2  060546R  002 T35DLY  067422R  002 T36CNU  075620R  002
T31DAT  043000R  002 T32DSW  051160R  002 T34BOT  061104R  002 T35DSW  067260R  002 T36CON  075612R  002
T31DLY  043152R  002 T32ECF  052275R  002 T34BSO  060546R  002 T35DTA  072205R  002 T36DAT  075450R  002
T31DSW  043010R  002 T32EOT  051431R  002 T34BS1  060547R  002 T35EOT  070370R  002 T36DLY  075622R  002
T31DTA  046256R  002 T32ERA  051636R  002 T34CNT  060542R  002 T35INT  072461R  002 T36DSW  075460R  002
T31EOT  044350R  002 T32LOO  046630R  002 T34CON  060560R  002 T35LON  071350R  002 T36DTA  100512R  002
T31LON  045330R  002 T32OPI  052423R  002 T34DAT  060410R  002 T35LOO  063314R  002 T36EOT  076675R  002
T31LOO  041252R  002 T32PAC  051140R  002 T34DLY  060544R  002 T35LOP  071432R  002 T36LON  077655R  002
T31LOP  045412R  002 T32PK2  051250R  002 T34DSW  060420R  002 T35LOQ  070065R  002 T36LOO  073260R  002
T31LOQ  043726R  002 T32PK3  051270R  002 T34EOT  062055R  002 T35LOR  067740R  002 T36LOP  077737R  002
T31LOR  043601R  002 T32RB   051272R  002 T34ET   061766R  002 T35MOT  072363R  002 T36LOQ  076336R  002
T31NEF  045650R  002 T32RES  052520R  002 T34ETC  061027R  002 T35NEF  071670R  002 T36LOR  076211R  002
T31OFL  044675R  002 T32RIB  051756R  002 T34ETN  061321R  002 T35NIN  072736R  002 T36NAS  075624R  002
T31PAC  042770R  002 T32RT2  052612R  002 T34ETO  060652R  002 T35OFL  070715R  002 T36NEF  100175R  002
T31PBP  045474R  002 T32RT3  052642R  002 T34ETS  061400R  002 T35OPM  072552R  002 T36OFL  077222R  002
T31PK2  043100R  002 T32RWN  051520R  002 T34ETZ  061472R  002 T35PAC  067240R  002 T36PAC  075440R  002
T31PK3  043120R  002 T32SCF  052054R  002 T34ET2  061237R  002 T35PBP  071514R  002 T36PBP  100021R  002
T31RB   043122R  002 T32SZ   051276R  002 T34LOO  055732R  002 T35PK2  067350R  002 T36PK2  075550R  002
T31RDE  043154R  002 T32TSA  052131R  002 T34OFL  062377R  002 T35PK3  067370R  002 T36PK3  075570R  002
T31RDF  043353R  002 T32WB   051272R  002 T34PAC  060400R  002 T35RB   067372R  002 T36RB   075572R  002
T31RES  046420R  002 T32WDC  052356R  002 T34PK2  060510R  002 T35RDF  067512R  002 T36RDF  075763R  002
T31RN   043136R  002 T33BFR  054422R  002 T34PK3  060530R  002 T35RES  073044R  002 T36RES  100630R  002
T31RNC  044553R  002 T33BF2  054540R  002 T34POS  060564R  002 T35RN   067406R  002 T36RN   075606R  002
T31RRF  043422R  002 T33BOT  055165R  002 T34RB   060532R  002 T35RNC  070573R  002 T36RNC  077100R  002
T31RT2  046512R  002 T33BSO  054540R  002 T34RES  063102R  002 T35RRF  067561R  002 T36RRF  076032R  002
T31RT3  046554R  002 T33BS1  054541R  002 T34RNC  062256R  002 T35RT2  073136R  002 T36RT2  100722R  002
T31RWN  044504R  002 T33CNT  054556R  002 T34RRE  060736R  002 T35RT3  073200R  002 T36RT3  100764R  002
T31SC   043517R  002 T33CNU  054560R  002 T34RSZ  060540R  002 T35RWE  072650R  002 T36RWN  077031R  002
T31SCF  045771R  002 T33CON  054552R  002 T34RT2  063174R  002 T35RWN  070524R  002 T36SC   076127R  002
T31SSR  044007R  002 T33DAT  054410R  002 T34RT3  063236R  002 T35SC   067656R  002 T36SCF  100273R  002
T31SZ   043126R  002 T33DLY  054562R  002 T34RWN  062207R  002 T35SCF  071766R  002 T36SSR  076417R  002
T31S2   043132R  002 T33DSW  054420R  002 T34SSR  061733R  002 T35SSR  072302R  002 T36SZ   075576R  002
T31S3   043134R  002 T33DTA  055410R  002 T34STM  061550R  002 T35SZ   067376R  002 T36S2   075602R  002
T31TIM  044250R  002 T33LOO  052716R  002 T34SZ   060536R  002 T35S2   067402R  002 T36S3   075604R  002
T31TM   044427R  002 T33PAC  054400R  002 T34S2   060550R  002 T35S3   067404R  002 T36TIM  076620R  002
T31TRL  045562R  002 T33PK2  054510R  002 T34S3   060552R  002 T35TIM  070313R  002 T36TM   076754R  002
T31TSA  046046R  002 T33PK3  054530R  002 T34TM   062133R  002 T35TM   070447R  002 T36TRL  100107R  002
T31VCK  045113R  002 T33RB   054532R  002 T34TMK  061633R  002 T35TRL  071602R  002 T36TSA  100350R  002
T31WB   043122R  002 T33RBP  054564R  002 T34VCK  062643R  002 T35TSA  072043R  002 T36VCK  077440R  002
T31WDC  045040R  002 T33RES  055522R  002 T34WB   060532R  002 T35VCK  071133R  002 T36WB   075572R  002
T31WDD  044750R  002 T33RN   054546R  002 T34WD   060554R  002 T35WB   067372R  002 T36WDC  077365R  002
T31WDE  044043R  002 T33RT2  055614R  002 T34WDC  062541R  002 T35WDC  071060R  002 T36WDD  077275R  002
T31WDF  043651R  002 T33RT3  055656R  002 T34WDD  062452R  002 T35WDD  070770R  002 T36WDE  076453R  002
T31WDR  043140R  002 T33RWN  055260R  002 T34WDR  060556R  002 T35WDE  070146R  002 T36WDF  076261R  002
T31WNG  043301R  002 T33SSR  055101R  002 T34WSS  062770R  002 T35WDF  070010R  002 T36WDR  075610R  002
T31WNH  043220R  002 T33SZ   054536R  002 T34WTM  061150R  002 T35WDR  067410R  002 T36WNG  075675R  002
T31WRF  046153R  002 T33S2   054542R  002 T35AM3  070646R  002 T35WNG  067424R  002 T36WRF  100432R  002
T31WSS  045241R  002 T33S3   054544R  002 T35BA   071206R  002 T35WRF  072125R  002 T36WSS  077566R  002
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K1

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SYMBOL TABLE

T37AM3  103607R    002 T37RRF  102451R    002 T6.1    055732R    002 WF.I4R= 000001             X$ALWA= 000000
T37BA   104147R    002 T37RT2  105356R    002 T7      063264RG   002 WRTCHR  010552RG       002 X$FALS= 000040
T37BFR  102152R    002 T37RT3  105420R    002 T7.1    063314R    002 WRTERR  005103R        002 X$OFFS= 000400
T37BF2  102270R    002 T37RWN  103465R    002 T7.2    064372R    002 WRTMSG  005046R        002 X$TRUE= 000020
T37BOT  103161R    002 T37SC   102546R    002 T7.3    065452R    002 WSMBK   021100RG       002 X1.COR= 020000
T37BS0  102270R    002 T37SCF  104727R    002 T7.4    066314R    002 XFERAS  015630R        002 X1.DLT= 100000
T37BS1  102271R    002 T37SSR  103036R    002 T8      073224RG   002 XNXM    016266R        002 X1.MBZ= 017375
T37CNT  102306R    002 T37SZ   102266R    002 T8.1    073260R    002 XORBF0  007564R        002 X1.RBP= 000400
T37CNU  102310R    002 T37S2   102272R    002 T8.2    074334R    002 XORFOR  007702R        002 X1.SPA= 040000
T37CON  102302R    002 T37S3   102274R    002 T9      101010RG   002 XST0   = 000006 G           X1.UNC= 000002
T37DAT  102140R    002 T37TIM  103254R    002 T9.1    101044R    002 XST1   = 000010 G           X2.BUF= 000100
T37DLY  102312R    002 T37TM   103410R    002 UAM    = 000200 G       XST2   = 000012 G           X2.EXT= 000200
T37DSW  102150R    002 T37TRL  104543R    002 UNITN   002174RG   002 XST3   = 000014 G           X2.OPM= 100000
T37DTA  105146R    002 T37TSA  105004R    002 UNREC  = 000006         XST4   = 000016 G           X2.RCE= 040000
T37EOT  103331R    002 T37VCK  104074R    002 USI     004113R    002 XSOBOT= 000002             X2.REV= 000077
T37LON  104311R    002 T37WB   102262R    002 WAITF   016140RG   002 XSOEOT= 000001             X2.SPA= 035400
T37LOO  101044R    002 T37WDC  104021R    002 WC.IFA= 000200          XSOIE = 000040             X2.UNI= 000007
T37LOP  104373R    002 T37WDD  103731R    002 WC.IFE= 000002          XSOILA= 000400             X2.WCF= 002000
T37LOQ  102755R    002 T37WDE  103072R    002 WC.IGO= 000001          XSOILC= 001000             X3.DCK= 000010
T37LOR  102630R    002 T37WDF  102700R    002 WC.IRE= 000010          XSOLET= 020000             X3.MBZ= 000006
T37NEF  104631R    002 T37WDR  102300R    002 WC.IRW= 000004          XSOMOT= 000200             X3.MDE= 177400
T37OFL  103656R    002 T37WNG  102314R    002 WC.IOT= 000100          XSONEF= 002000             X3.OPI= 000100
T37PAC  102130R    002 T37WRF  105066R    002 WC.I1T= 000040          XSOONL= 000100             X3.REV= 000040
T37PBP  104455R    002 T37WSS  104222R    002 WC.I5R= 000020          XSOPED= 000010             X3.RIB= 000001
T37PK2  102240R    002 T4      046600RG   002 WF.IED= 000010          XSORLL= 010000             X3.SPA= 000200
T37PK3  102260R    002 T4.1    046630R    002 WF.IER= 000004          XSORLS= 040000             X3.TRF= 000020
T37RB   102262R    002 T4.2    047470R    002 WF.IHI= 000200          XSOTMK= 100000             X4.HSP= 100000
T37RDF  102402R    002 T4.3    050300R    002 WF.IRE= 000040          XSOVCK= 000020             X4.MBZ= 017400
T37RES  105264R    002 T5      052666RG   002 WF.IWF= 000020          XSOWLE= 004000             X4.RCE= 040000
T37RN   102276R    002 T5.1    052716R    002 WF.IWR= 000100          XSOWLK= 000004             X4.TSM= 020000
T37RNC  103534R    002 T6      055702RG   002 WF.I3R= 000002          XXCOMM  003114RG       002 X4.WRC= 000377

. ABS.  000000     000
        000000     001
ABS     105706     002
ERRORS DETECTED:  0

VIRTUAL MEMORY USED:  30363 WORDS  ( 119 PAGES)
DYNAMIC MEMORY:  20614 WORDS  ( 79 PAGES)
ELAPSED TIME:  00:39:35
CZTSDA,CZTSDA.SEQ/-SP=SVC/ML,TSV1D,TSV22D,TSV3B,TSV4,TSV7B,TSV6
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