

Micro Fiche Scan

Name of device(s) tested:

TU80

Test description:

TU80 FRONT-END PRTD

MAINDEC Number or Package Identifier (after SEP 1977):

CZTUZA0

Fiche Document Part Number:

AH-T337A-MC

Fiche preparation date unknown, using copyright year:

1983

Image resolution:

1-bit black&white, compressed for minimal file size

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.REMA

IDENTIFICATION

PRODUCT ID: AC-T336A-MC  
PRODUCT TITLE: CZTUZAO TUBO FRONT-END PRT D  
PRODUCT DATE: 23 - MARCH -1983  
MAINTAINER: TAPE DIAGNOSTIC ENGINEERING  
AUTHOR: DICE SYSTEMS, INC.

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ABSTRACT

1.0 ABSTRACT

THIS IS A PDP-11 RESIDENT DIAGNOSTIC WHICH CHECKS THE FUNCTIONALITY OF A TUBO MAGTAPE SUBSYSTEM WHILE CONNECTED TO A PDP-11 SYSTEM. THE PROGRAM PROVIDES ERROR MESSAGES WHICH IDENTIFY FAILING FUNCTIONS THAT AID IN THE REPAIR OF THE DEVICE. REFERENCE THE FOLLOWING DIGITAL EQUIPMENT DOCUMENTS:

1. ENGINEERING SPECIFICATION FOR TUBO MAGTAPE CONTROLLER; DOCUMENT NUMBER: YM-C194D-022; REVISION NUMBER 2; DATE: 28-JUL-81.
2. ENGINEERING SPECIFICATION FOR TUBO DIAGNOSTIC PACKAGE; DOCUMENT NUMBER: YM-C194F-00; REVISION NUMBER 0; DATE: 2-SEP-81.
3. ENGINEERING SPECIFICATION FOR TUBO MAGTAPE SUBSYSTEM; DOCUMENT NUMBER: YM-C194S-02; REVISION NUMBER 3; DATE: 10-JUN-81.
4. CIQPMAD XXDP+ PROGRAMMER'S MANUAL; DOCUMENT NUMBER AC-S296A-AC; DATE: 14 JULY 1980.

## HARDWARE, SOFTWARE REQUIREMENTS AND PREREQUISITES

### 2.0 HARDWARE, SOFTWARE REQUIREMENTS AND PREREQUISITES

#### 2.1 HARDWARE REQUIREMENTS

PDP-11 FAMILY PROCESSOR WITH 32K WORDS OF MEMORY  
TUBO MAGTAPE SUBSYSTEM (DRIVE AND CONTROLLER)  
CAUTION:DIAGNOSTIC REQUIRES 32K WORDS OF MEMORY  
(28K USEABLE I.E. 4K FOR I/O PAGE)

#### 2.2 OPTIONAL HARDWARE:

UP TO 4 TUBO CONTROLLERS PER PDP-11 UP TO 1 DRIVE PER CONTROLLER

#### 2.3 SOFTWARE REQUIREMENTS

PDP-11 DIAGNOSTIC SUPERVISOR (HSAADO)  
PDP-11 DIAGNOSTIC LOADER/MONITOR (XXDP+)

#### 2.4 PREREQUISITES

FUNCTIONAL PDP-11 FAMILY CENTRAL PROCESSOR AND MEMORY  
FUNCTIONAL CONSOLE TERMINAL  
FUNCTIONAL STANDALONE DIAGNOSTIC SUPERVISOR

## OPERATING INSTRUCTIONS

### 3.0 OPERATING INSTRUCTIONS

#### 3.1 OPERATOR COMMANDS

THE TUBO DIAGNOSTIC IS A PDP-11 DIAGNOSTIC SUPERVISOR COMPATIBLE PROGRAM. ALL LOADING AND RUNTIME INSTRUCTIONS CAN BE REFERENCED IN THE PDP-11 PROGRAMMER'S MANUAL 'CIQPMAO XXDP+ PROGRAMMERS MANUAL, NUMBER AC-S296A-AC. THE OPERATOR RESPONSE IS IN QUOTES.

#### BOOT THE DIAGNOSTIC XXDP MEDIA

```
CHMDLBO XXDP+ DL MONITOR 28K
BOOTED VIA UNIT 0
ENTER DATE (DD-MMM-YR): "29-JAN-82"
RESTART ADDRESS: 153726
50 HZ? N " <CR> "
LSI? N " Y<CR> "
THIS IS XXDP+. TYPE 'M' OR 'H/L' FOR DETAILS
R CZTUZAO
CZTUZABINDRS LOADED
DIAG. RUN-TIME SERVICES REV D. APR 79
CZTUZ-A-0
****TUBO LOGIC DIAGNOSTIC****
UNIT IS TUBO
DR> " STA/FLA:PNT:HOE "
```

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'.

#### 3.2 HARDWARE PARAMETERS

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 NOT RUN. IT WILL GIVE THE MESSAGE 'NO UNIT'. A 'Y' IS REQUIRED AND AT LEAST A '1' IS REQUIRED AT THE "# UNITS (D)?" QUESTION.

TSBA/TSDB = 172522, 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

## OPERATING INSTRUCTIONS

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 M7454 CONTROLLERS  
PRESENT TO BE TESTED>

UNIT 0

DEVICE ADDRESS (O) 172522 ? <ENTER THE ADDRESS OF THE  
TSSR 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 EIGHT UNITS CAN BE SELECTED FOR TESTING.

## 3.3 SOFTWARE PARAMETERS

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.>

CZTUZAO TU80 FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 8  
USER DOCUMENTATION

OPERATING INSTRUCTIONS - SAMPLE PRINTOUTS

4.0 OPERATING INSTRUCTIONS - SAMPLE PRINTOUTS

4.1 SUCCESSFUL RUN EXAMPLE (PDP-11)

TST: 001 WRITE TAPE MARK RETRY TEST  
TST: 002 SKIP TAPE MARKS TEST  
TST: 003 NO-OP AND INITIALIZE TEST  
TST: 004 ERASE AND OPERATION INCOMPLETE TEST  
TST: 005 TEST OF OPERATIONS AT EOT TEST  
TST: 006 FUNCTION TIMING TEST

0 ERRORS

NOTE: PROGRAM NOW STARTS OVER AGAIN AT TEST 1

OPERATING INSTRUCTIONS - SAMPLE ERROR MESSAGES

5.0 OPERATING INSTRUCTIONS - SAMPLE ERROR MESSAGES

ERROR MESSAGE EXAMPLE 1

TST: 001 FIFO EXERCISER TEST  
CZTUZ 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 SIGNALS 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

CZTUZ 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

CZTUZ 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

PROGRAM RUN TIMES

6.0 PROGRAM RUN TIMES

THE AVERAGE RUN TIMES OF THE PROGRAM ARE LISTED BELOW. THESE FIGURES ARE TO BE USED AS A GUIDE. THE TIMING WAS DONE ON A PDP-11/23 ) PROCESSOR WITH A LA-34 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	1	0
2	1	1	0
3	1	1	0
4	1	1	0
5	1	1	0
6	1	1	0

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

Q.V.	15 SECONDS
DEFAULT	16 SECONDS

7.0 TEST SUMMARIES  
7.1 TEST 1 - WRITE TAPE MARK RETRY

\*\*\*\*\*  
\* NOTE: THIS TEST MUST HAVE A GOOD MAGTAPE IN THE DRIVE \*  
\* ANY TAPE ERRORS WILL BE DISPLAYED AS A TAPE STATUS ALERT \*  
\*\*\*\*\*

THIS TEST VERIFIES PROPER OPERATION OF THE WRITE TAPE MARK RETRY  
COMMAND ( SPACE REVERSE, ERASE, WRITE TAPE MARK). SUBTESTS ARE  
AS FOLLOWS:

7.1.1 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 (NEF) ERROR BIT SET.

7.1.2 TEST 1, SUBTEST 2:-

VERIFIES THAT A WRITE TAPE MARK RETRY COMMAND ISSUED WHILE THE  
TAPE IS POSITIONED BEFORE THE FIRST RECORD, BUT NOT AT BOT,  
RESULTS IN TAPE STATUS ALERT TERMINATION, WITH THE REVERSE INTO  
BOT (RIB) STATUS BIT SET.

7.1.3 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).

7.1.4 TEST 1, SUBTEST 4:-

VERIFIES THAT THE SPACE-REVERSE PORTION OF THE WRITE TAPE MARK  
RETRY OPERATION IS PERFORMED BY REWINDING THE TAPE, ISSUING  
SEVERAL WRITE TAPE MARK RETRY COMMANDS IN SUCCESSION, THEN  
ISSUING TWO SPACE RECORDS REVERSE COMMANDS IN SUCCESSION. THE  
SECOND SPACE RECORDS REVERSE COMMAND SHOULD TERMINATE WITH  
REVERSE INTO BOT (RIB) STATUS SET.

7.2 TEST 2 - SKIP TAPE MARKS

\*\*\*\*\*  
\* NOTE: THIS TAPE MUST HAVE A GOOD MAGTAPE IN THE DRIVE \*  
\* ANY TAPE ERRORS WILL BE DISPLAYED AS TAPE STATUS ALERT \*  
\*\*\*\*\*

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.

7.2.1 TEST 2, SUBTEST 1:-

VERIFIES THAT A SKIP TAPE MARKS FORWARD COMMAND WITH A TAPE MARK COUNT OF 1 OPERATES PROPERLY. THE TAPE IS FIRST REWOUND AND THEN WRITTEN WITH SEVERAL 'FILES'; EACH FILE CONSISTS OF A NUMBER OF DATA RECORDS FOLLOWED BY A TAPE MARK. EACH DATA RECORD CONTAINS THE FILE NUMBER AND THE RECORD NUMBER WITHIN THE FILE SO THAT TAPE POSITION CAN BE SUBSEQUENTLY VERIFIED BY READING THE DATA. THE TAPE IS AGAIN REWOUND AND A SERIES OF TAPE SKIP MARK COMMAND ISSUED AND THE RESULTS (TAPE STATUS ALERT TERMINATION, TMK=1, STATUS, TAPE POSITION VIA READ COMMAND) CHECKED. PRIOR TO ISSUANCE OF EACH SKIP COMMAND, A WRITE CHARACTERISTICS COMMAND IS ISSUED TO SET UP THE ESS AND ENB CONTROL BITS. ALL COMBINATIONS OF ESS AND ENB ARE USED (00,01,10,11) ; OPERATION SHOULD BE THE SAME IN EACH CASE FOR THIS SUBTEST.

7.2.2 TEST 2, SUBTEST 2:-

VERIFIES THAT SKIP TAPE MARKS COMMAND WITH A TAPE MARK COUNT GREATER THAN 1 OPERATES PROPERLY. COUNTS OF 2, 3, 8, 32, 64, 256, AND 512 ARE TESTED. THE TESTING SEQUENCE IS SIMILAR TO THAT USED IN SUBTEST 1.

7.2.3 TEST 2, SUBTEST 3:-

VERIFIES THAT A SKIP TAPE MARKS REVERSE COMMAND ISSUED WHILE THE TAPE IS POSITIONED AT BOT CAUSES FUNCTION REJECT TERMINATION WITH THE NON-EXECUTABLE FUNCTION (NEF) ERROR BIT SET.

7.2.4 TEST 2, SUBTEST 4:-

VERIFIES THAT A SKIP TAPE MARKS REVERSE COMMAND ISSUED WHILE THE TAPE IS POSITIONED JUST BEFORE THE FIRST RECORD ON TAPE (BUT NOT AT BOT) CAUSES TAPE STATUS ALERT TERMINATION WITH THE REVERSE INTO BOT (RIB) STATUS BIT SET.

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

THIS TEST VERIFIES PROPER OPERATION OF THE NO-OP ('CLEAN TAPE') AND INITIALIZE COMMAND. SUBTESTS ARE:

## 7.3.1 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 THE 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 THAT TAPE POSITION AND VERIFYING DATA WERE NOT CHANGED), THEN THE NO-OP COMMAND IS ISSUED AGAIN AND STATUS AND POSITION ARE VERIFIED.

## 7.3.2 TEST 3, SUBTEST 2:-

VERIFIES THAT THE INITIALIZE COMMAND OPERATES AS A NO-OP, ASSUMING NO MICRODIAGNOSTIC ERRORS ARE PRESENT (THEY WOULD HAVE ALREADY BEEN DETECTED IN OTHER TESTS). THE TEST SEQUENCE IS SIMILAR TO THAT USED IN SUBTEST 1.

## 7.4 TEST 4 - ERASE AND OPERATION INCOMPLETE

\*\*\*\*\*  
 \* NOTE: THIS TEST MUST HAVE A GOOD MAGTAPE IN THE DRIVE                   \*  
 \* ANY TAPE ERRORS WILL BE DISPLAYED AS TAPE STATUS ALERT                   \*  
 \*\*\*\*\*

THIS TEST VERIFIES THAT THE ERASE COMMAND OPERATES PROPERLY AND THAT THE VARIOUS OTHER TAPE MOTION COMMANDS TERMINATE WITH UNRECOVERABLE ERROR (TAPE POSITION LOST) AND OPERATION INCOMPLETE (OPI) STATUS WHEN THEY DO NOT ENCOUNTER ANY DATA ON THE TAPE. THE TEST CONSISTS OF THE FOLLOWING SUBTESTS:

## 7.4.1 TEST 4, SUBTEST 1:-

VERIFIES THAT AN ERASE COMMAND ISSUED WHEN THE TAPE IS POSITIONED AT BOT OPERATES PROPERLY AND ACTUALLY ERASES THE TAPE. THE FOLLOWING TEST SEQUENCE IS PERFORMED:

1. THE TAPE IS FIRST REWOUND, THEN SEVERAL TEST RECORDS ARE WRITTEN AND THE TAPE IS REWOUND AGAIN.
2. AN ERASE COMMAND IS ISSUED, WHICH SHOULD ERASE A NUMBER OF TEST RECORDS.
3. NORMAL TERMINATION IS VERIFIED AND POSITION 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.

#### 7.4.2 TEST 4, SUBTEST 2:-

VERIFIES THAT AN ERASE COMMAND, EXECUTED WHEN THE TAPE IS NOT POSITIONED AT BOT OPERATES PROPERLY AND DOES NOT CORRUPT PREVIOUS TAPE RECORDS. THE TEST SEQUENCE IS:

1. THE TAPE IS FIRST REWOUND, SEVERAL TEST RECORDS ARE WRITTEN, AND THE TAPE IS REWOUND AGAIN.
2. A SPACE RECORDS FORWARD COMMAND IS ISSUED TO MOVE THE TAPE OFF OF BOT AND SKIP OVER THE FIRST SEVERAL RECORDS.
3. AN ERASE COMMAND IS ISSUED, WHICH SHOULD ERASE A NUMBER OF TEST RECORDS.
4. NORMAL TERMINATION IS VERIFIED AND STATUS IS CHECKED.
5. A READ REVERSE COMMAND IS ISSUED. IT IS VERIFIED THAT NORMAL TERMINATION IS ACCOMPLISHED AND THAT THE DATA TRANSFERRED CORRESPONDS TO THAT FOR THE EXPECTED RECORD. THIS DEMONSTRATES THAT NO DATA WAS ENCOUNTERED IN THE AREA ERASED BY THE ERASE COMMAND, AND THAT THE PREVIOUS RECORD WAS NOT CORRUPTED.

#### 7.4.3 TEST 4, SUBTEST 3:-

VERIFIES THAT AN ERASE COMMAND ENCOUNTERING THE EOT MARKER, OR EXECUTED BEYOND THE EOT MARKER, CAUSES TAPE STATUS ALERT TERMINATION WITH THE EOT STATUS BIT SET. ALSO VERIFIES THAT THE OTHER TAPE MOTION COMMANDS EXECUTED WHEN THE TAPE IS BLANK RESULTS IN UNRECOVERABLE ERROR TERMINATION AND OPERATION INCOMPLETE STATUS. THE FOLLOWING TEST SEQUENCE IS EXECUTED:

1. THE TAPE IS REWOUND.
2. ERASE COMMANDS ARE REPEATEDLY ISSUED UNTIL EOT STATUS IS SEEN. AN ERROR IS REPORTED IF ANY TERMINATION OTHER THAN NORMAL (WITH EOT=0), OR TAPE STATUS ALERT TERMINATION (WITH EOT=1) IS ENCOUNTERED. IF THE CONTROLLER OR TRANSPORT DOES NOT DETECT THE EOT, THE TRANSPORT WILL FAULT. THIS IS REPORTED AS A FATAL ERROR AND THE TEST IS ABORTED.
3. AN ADDITIONAL ERASE COMMAND IS ISSUED AND IT IS VERIFIED THAT TAPE STATUS ALERT TERMINATION RESULTS, WITH EOT=1.
4. IT IS VERIFIED THAT EACH OF THE FOLLOWING COMMANDS (ISSUED IN THE ORDER GIVEN) RESULTS IN UNRECOVERABLE ERROR TERMINATION WITH OPI=1; SPACE RECORDS REVERSE, SKIP TAPE MARKS REVERSE, READ REVERSE, REREAD PREVIOUS (OPP=0), REREAD PREVIOUS (OPP=1), REREAD NEXT (OPP=1), REREAD NEXT

(OPP=0), READ NEXT, SKIP TAPE MARKS REVERSE, SKIP TAPE MARKS FORWARD, REVERSE SKIP TAPE MARKS FORWARD, SPACE RECORDS FORWARD, WRITE DATA RETRY.

NEXT STEP: IF BUFFERING IS ENABLED, IT IS DISABLED VIA THE BUFFER CONTROL FIELD IN THE EXTENDED CHARACTERISTICS DATA WORD SUPPLIED BY A WRITE.

### 7.5 TEST 5 - OPERATIONS AT EOT

\*\*\*\*\*  
\* NOTE: THIS TAPE MUST HAVE A GOOD MAGTAPE IN THE DRIVE \*  
\* ANY TAPE ERRORS WILL BE DISPLAYED AS TAPE STATUS ALERT \*  
\*\*\*\*\*

THIS TEST VERIFIES THAT THE EOT STATUS IS HANDLED PROPERLY BY THE VARIOUS TAPE MOTION COMMANDS. THE FOLLOWING TEST SEQUENCE IS PERFORMED:

1. THE TAPE IS REWOUND.
2. WRITE DATA COMMANDS ARE REPEATEDLY ISSUED UNTIL TAPE STATUS ALERT TERMINATION IS SEEN WITH EOT=1. ERRORS OTHER THAN OCCASIONAL CORRECTABLE, OR UNCORRECTABLE DATA ERRORS CAUSE A FATAL ERROR REPORT. RECORDS WITH DATA ERRORS ARE RETRIED, SO THE TAPE ENDS UP WITH GOOD DATA.
3. ANOTHER WRITE DATA COMMAND IS ISSUED AND IT IS CHECKED THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=1.
4. A WRITE TAPE MARK COMMAND IS ISSUED, AND IT IS CHECKED THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=1.
5. A SKIP TAPE MARKS REVERSE COMMAND IS ISSUED, AND IT IS CHECKED THAT TAPE STATUS ALERT TERMINATION OCCURS WITH EOT=1, AND TMK=1.
6. A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF 1, IS ISSUED, AND IT IS CHECKED THAT TAPE STATUS ALERT TERMINATION OCCURS, WITH EOT=1, AND TMK=1.
7. A SPACE RECORDS REVERSE COMMAND, WITH A RECORD COUNT OF 1, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION OCCURS WITH EOT=1.
8. A SPACE RECORDS FORWARD COMMAND, WITH A RECORD COUNT OF 1, IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION OCCURS, WITH EOT=1.
9. A READ REVERSE COMMAND IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION OCCURS WITH EOT=1.
10. A READ FORWARD COMMAND IS ISSUED, AND IT IS CHECKED THAT NORMAL TERMINATION OCCURS, WITH EOT=1.

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

7.6 TEST 6 - FUNCTION TIMING

\*\*\*\*\*  
 \* NOTE: THIS TEST MUST HAVE A GOOD MAGTAPE IN THE DRIVE \*  
 \* ANY TAPE ERRORS WILL BE DISPLAYED AS TAPE STATUS ALERT \*  
 \*\*\*\*\*

THIS TEST VERIFIES THAT THE TAPE TRANSPORT SEEMS TO BE WRITING RECORDS, GAPS, AND EXTENDED GAPS OF THE PROPER LENGTH. BOTH LOW AND HIGH SPEED MODES ARE TESTED. IT IS ALSO VERIFIED THAT A SPACE RECORDS COMMAND WITH A RECORD COUNT OF 80 OR MORE, AND A SKIP TAPE MARKS COMMAND WITH A COUNT OF 2 OF MORE, OPERATE THE TAPE IN HIGH-SPEED MODE. THIS TEST CAN ONLY BE RUN IF A REAL-TIME CLOCK IS AVAILIABLE ON THE SYSTEM. THE TEST OPERATES BY TIMING VARIOUS TAPE-MOTION OPERATIONS, USING A NUMBER OF DIFFERENT TEST RECORD LENGTHS.

CZTUZAO TUBO FRONT END PRT D  
PROGRAM HEADER

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708  
709  
715  
716 000000  
717  
718  
724 000000  
725 002000 002000  
726 002000 002000  
727  
728  
729  
730  
731  
732  
733  
734 002000  
735 002000  
002000  
002000 103  
002001 132  
002002 124  
002003 125  
002004 132  
002005 000  
002006 000  
002007 000  
002010  
002010 101  
002011  
002011 060  
002012  
002012 000001  
002014  
002014 001217  
002016  
002016 071224  
002020  
002020 071364  
002022  
002022 002124  
002024  
002024 C02134  
002026  
002026 072332  
002030  
002030 000000  
002032  
002032 000000  
002034  
002034 000000  
002036  
002036 000000  
002040  
002040 071552  
002042

```
.SBTTL PROGRAM HEADER
.MCALL SVC ; INITIALIZE SUPERVISOR MACROS
SVC
.ENABLE LC
.NLIST BEX,CND
.ENABL AMA,ABS
.= 2000
BGNMOD TUV2A
TUV2A::

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

POINTER BGNSW,BGNSFT,BGNAU,BGNDU,BGNRPT,BGNSETUP
HEADER CZTUZ,A,0,655..0
LSNAME:: ;DIAGNOSTIC NAME
.ASCII /C/
.ASCII /Z/
.ASCII /T/
.ASCII /U/
.ASCII /Z/
.BYTE 0
.BYTE 0
.BYTE 0
LSREV:: ;REVISION LEVEL
.ASCII /A/
LSDEPO:: ;0
.ASCII /0/
LSUNIT:: ;NUMBER OF UNITS
.WORD T$PTHV
LSTIML:: ;LONGEST TEST TIME
.WORD 655.
LSHPCP:: ;POINTER TO H.W. QUES.
.WORD LSHARD
LSSPCP:: ;POINTER TO S.W. QUES.
.WORD L$SOFT
LSHPTP:: ;PTR. TO DEF. H.W. PTABLE
.WORD LSHW
LSSPTP:: ;PTR. TO S.W. PTABLE
.WORD L$SW
LSLADP:: ;DIAG. END ADDRESS
.WORD L$LAST
LSSTA:: ;RESERVED FOR APT STATS
.WORD 0
LSCO::
.WORD 0
LSDTYP:: ;DIAGNOSTIC TYPE
.WORD 0
LSAPT:: ;APT EXPANSION
.WORD 0
LSDTP:: ;PTR. TO DISPATCH TABLE
.WORD L$DISPATCH
LSPRI:: ;DIAGNOSTIC RUN PRIORITY
```

CZTUZAO TUBO FRONT END PRT D  
PROGRAM HEADER

MACRO M1200 29-MAR-83 13:43 PAGE 13-1

002042	000000	LSENVI::	.WORD	0		
002044						:FLAGS DESCRIBE HOW IT WAS SETUP
002044	000000	LSEXP1::	.WORD	0		
002046						:EXPANSION WORD
002046	000000	LSMREV::	.WORD	0		
002050						:SVC REV AND EDIT #
002050	003		.BYTE		CSREVISION	
002051	003		.BYTE		CSEDIT	
002052		LSEF::				:DIAG. EVENT FLAGS
002052	000000		.WORD	0		
002054	000000		.WORD	0		
002056		LSSPC::				
002056	000000		.WORD	0		
002060		LSDEVP::				: POINTER TO DEVICE TYPE LIST
002060	003334		.WORD	LSDVTYP		
002062		LSREPP::				:PTR. TO REPORT CODE
002062	023052		.WORD	LSRPT		
002064		LSEXP4::				
002064	000000		.WORD	0		
002066		LSEXP5::				
002066	000000		.WORD	0		
002070		LSAUT::				:PTR. TO ADD UNIT CODE
002070	022550		.WORD	LSAU		
002072		LSDUT::				:PTR. TO DROP UNIT CODE
002072	022646		.WORD	LSDU		
002074		LSLUN::				:LUN FOR EXERCISERS TO FILL
002074	000000		.WORD	0		
002076		LSDESP::				:POINTER TO DIAG. DESCRIPTION
002076	003342		.WORD	LSDESC		
002100		LSLOAD::				:GENERATE SPECIAL AUTOLOAD EMT
002100	104035		EMT	ESLOAD		
002102		LSETP::				:POINTER TO ERR_TBL
002102	000000		.WORD	0		
002104		LSICP::				:PTR. TO INIT CODE
002104	021752		.WORD	LSINIT		
002106		LSCCP::				:PTR. TO CLEAN-UP CODE
002106	023030		.WORD	LSCLEAN		
002110		LSACP::				:PTR. TO AUTO CODE
002110	022754		.WORD	LSAUTO		
002112		LSPRT::				:PTR. TO PROTECT TABLE
002112	021742		.WORD	LSPROT		
002114		LSTEST::				:TEST NUMBER
002114	000000		.WORD	0		
002116		LSDLY::				:DELAY COUNT
002116	000000		.WORD	0		
002120		LSHIME::				:PTR. TO HIGH MEM
002120	000000		.WORD	0		

CZTUZAO TUBO FRONT END PRT D  
DEFAULT HARDWARE P-TABLE

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.SBTTL DEFAULT HARDWARE P-TABLE

737  
738  
739  
740  
741  
742  
743  
744 002122  
002122 000003  
002124  
002124  
745  
746 002124 172522  
747 002126 000224  
748 002130 000240  
749 002132  
002132

:++  
: 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.  
:--

BGNHW DFPTBL ;DEFAULT HARD-P-TABLE  
.WORD L10000-LSHW/2  
LSHW::  
DFPTBL::  
.WORD 172522 ; 2ND (OF 2) REGISTERS.  
.WORD 224 ; INTERRUPT VECTOR  
.WORD PRIOS ; INTERRUPT PRIORITY.  
ENDHW  
L10000:

CZTUZAO TUBO FRONT END PRT D  
SOFTWARE P-TABLE

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.SBTTL SOFTWARE P-TABLE

751  
752  
753  
754  
755  
756  
757  
  
758  
759  
760  
761  
762  
763  
764  
765  
766

002132  
002132 000004  
002134  
002134  
  
002134 000000  
002136 000000  
  
002140 000031  
002142 000310  
002144  
002144

;++  
: THE SOFTWARE P-TABLE CONTAINS THE VALUES OF THE PROGRAM  
: PARAMETERS THAT CAN BE CHANGED BY THE OPERATOR.  
:--  
BGNSW SFPTBL  
.WORD L10001-LSSW/2  
LSSW::  
SFPTBL::  
  
TRANSTCT:: .WORD 0 ;ENABLE RAM DUMP IF =1  
NOITS:: .WORD 0 ; INHIBIT ITERATION OPTION.  
: ... 0 = ITERATE.  
: ...NZ = INHIBIT ITERATE.  
LERRMAX:: .WORD 25. ; LOCAL (PER TEST) ERROR LIMIT  
GERRMAX:: .WORD 200. ; GLOBAL (PER UNIT) ERROR LIMIT  
ENDSW  
L10001:

CZTUZAO TUBO FRONT END PRT D    MACRO M1200    29-MAR-83 13:43    PAGE 17  
SOFTWARE P-TABLE

769  
776  
781  
787  
788  
789  
790  
791  
792  
793  
794  
795  
796  
800 002144

.SBTTL GLOBAL EQUATES SECTION

.SBTTL GLOBAL EQUATES SECTION

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

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

CZTUZAO TUBO FRONT END PRT D  
GLOBAL EQUATES SECTION

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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	PR1== 2000
004000	IXE== 4000
010000	IBE== 10000
020000	IER== 20000
040000	LOE== 40000
100000	HOE== 100000

801  
802 002144

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

CZTUZAO TUBO FRONT END PRT D  
MEMORY MANAGEMENT DEFINITIONS

MACRO M1200 29-MAR-83 13:43 PAGE 17-2

```
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
```

CZTUZAO TUBO FRONT END PRT D  
MEMORY MANAGEMENT DEFINITIONS

MACRO M1200 29-MAR-83 13:43 PAGE 17-3

```

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

```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 18  
 TUBO REGISTER AND PACKET DEFINITIONS

```

      .SBTTL  TUBO REGISTER AND PACKET DEFINITIONS
807
808
809      :
810      : SOME GENERAL EQUATES.
811      :
812
813      000004      ERRVEC==      4      : POINTER TO ERROR VECTOR FOR BUS TIME OUT.
814      000060      TTIVEC==     60      : INTERRUPT VECTOR FOR CONSOLE INPUT
815      177560      TTICSR==    177560   : BUS ADDRESS OF CONSOLE INPUT
816      177562      TTIBFR==    177562   : CONSOLE INPUT DATA BUFFER
817
818      :+
819      :BIT DEFINITIONS FOR TSSR REGISTER
820      :-
821
822      100000      SC=      BIT15      :SPECIAL CONDITION
823      040000      BIE=     BIT14      :BUS INTERFACE ERROR
824      020000      SCE=     BIT13      :SANITY CHECK ERROR
825      010000      RMR=     BIT12      :MODIFICATION REFUSED
826      004000      NXM=     BIT11      :NONEXISTANT MEMORY ERROR
827      002000      NBA=     BIT10      :NEED BUFFER ADDRESS
828      001400      HIADDR= BIT9!BIT8   :EXTENDED ADDRESS BITS
829      000200      SSR=     BIT7       :SUB SYSTEM READY
830      000100      OFL=     BIT6       :OFF LINE BIT
831      000060      FATERR= BIT4!BITS   :FATAL TERMINATION ERROR CODES
832      000016      TERCLS= BIT3!BIT2!BIT1 :TERMINATION CODES
833
834
835      :+
836      :BIT DEFINITIONS FOR EXTENDED STATUS REGISTER 0
837      :(XST0)
838      :
839      :-
840
841
842      100000      XSOTMK= BIT15      :TAPE MARK DETECTED
843      040000      XSORLS= BIT14      :RECORD LENGTH SHORT
844      020000      XSOLET= BIT13      :LOGICAL END OF TAPE
845      010000      XSORLL= BIT12      :RECORD LENGTH LONG
846      004000      XSOWLE= BIT11      :WRITE LOCK ERROR
847      002000      XSONEF= BIT10      :NON EXECUTABLE FUNCTION
848      001000      XSOILC= BIT9       :ILLEGAL COMMAND
849      000400      XSOILA= BIT8       :ILLEGAL ADDRESS
850      000200      XSOMOT= BIT7       :TAPE IN MOTION
851      000100      XSOONL= BIT6       :TRANSPORT ON LINE
852      000040      XSOIE=  BIT5       :INTERRUPT ENABLE
853      000020      XSOVCK= BIT4       :VOLUME CHECK BIT
854      000010      XSOPED= BIT3       :PHASE ENCODED DRIVE
855      000004      XSOWLK= BIT2       :WRITE LOCKED
856      000002      XSOBOT= BIT1       :BEGINNING OF TAPE
857      000001      XSOEOT= BIT0       :END OF TAPE
858
859
860      :+
861      :BIT DEFINITIONS FOR EXTENDED STATUS REGISTER 1
862      :(XST1)
863      :-
  
```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 18-1  
TUBO REGISTER AND PACKET DEFINITIONS

```

864      100000      X1.DLT = BIT15      ;DATA LATE
865      040000      X1.SPARE= BIT14      ;NOT USED
866      020000      X1.COR  = BIT13      ;CORRECTABLE DATA ERROR
867      017375      X1.MBZ  = BIT12+BIT11+BIT10+BIT9+BIT7+BIT6+BIT5+BIT4+BIT3+BIT2+BIT0 ;ALWAYS 0
868      000400      X1.RBP  = BIT8       ;READ BUS PARITY ERROR
869      000002      X1.UNC  = BIT1       ;UNCORRECTABLE DATA OR HARD ERROR
870
871      ;+
872      ;BIT DEFINITIONS FOR EXTENDED STATUS REGISTER 2
873      ;(XST2)
874      ;-
875      100000      X2.OPM  = BIT15      ;OPERATION IN PROGRESS (TAPE MOVING)
876      040000      X2.RCE  = BIT14      ;RAM CHECKSUM ERROR
877      035400      X2.SPARE= BIT13+BIT12+BIT11+BIT9+BIT8 ;NOT USED BY TUBO (ALWAYS=0)
878      002000      X2.WCF  = BIT10      ;WRITE CLOCK FAILURE (FIFO NOT EMPTIED BY TRANSPORT)
879      000200      X2.EXTF = BIT7       ;IF WRITE CHAR CMD THEN = EXTENDED FEATURES ENABLED
880      000100      X2.BUFE = BIT6       ;IF WRITE CHAR CMD THEN = BUFFERING ENABLED
881      000077      X2.REV  = 000077    ;IF WRITE CHAR CMD THEN = MICROCODE REVISION LEVEL
882      000007      X2.UNIT = BIT2+BIT1+BIT0 ;IF GET STATUS THEN = CURRENTLY SELECTED UNIT NO.
883
884      ;+
885      ;BIT DEFINITIONS FOR EXTENDED STATUS REGISTER 3
886      ;(XST3)
887      ;-
888      177400      X3.MDE  = 177400    ;MICRO-DIAGNOSTIC ERROR CODE
889      000200      X3.SPARE= BIT7       ;NOT USED BY TUBO
890      000100      X3.OPI  = BIT6       ;OPERATION INCOMPLETE
891      000040      X3.REV  = BIT5       ;REVERSE
892      000020      X3.TRF  = BIT4       ;TRANSPORT RESPONSE FAILURE
893      000010      X3.DCK  = BIT3       ;DENSITY CHECK
894      000006      X3.MBZ  =BIT2+BIT1   ;NOT USED ALWAYS 0
895      000001      X3.RIB  = BIT0       ;REVERSE INTO BOT
896
897      ;+
898      ;BIT DEFINITIONS FOR EXTENDED STATUS REGISTER 4
899      ;(XST4)
900      ;-
901      100000      X4.HSP  = BIT15      ;HIGH SPEED
902      040000      X4.RCE  = BIT14      ;RETRY COUNT EXCEEDED
903      020000      X4.ISM  = BIT13      ;TRANSPORT SPECIAL MODE
904      017400      X4.MBZ  = BIT12+BIT11+BIT10+BIT9+BIT8 ;NOT USED ALWAYS 0
905      000377      X4.WRC  = 000377    ;WRITE RETRY COUNT FIELD
906
907
908      ;+
909      ;TSSR TERMINATION CODES (BIT 0-2)
910      ;-
911
912
913      000006      TSREJ= 3+2          ;COMMAND REJECTED
914      000006      UNREC= 6          ;UNRECOVERABLE ERROR
915
916
917      ;+
918      ;DEVICE REGISTER OFFSETS
919
920

```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 18-2  
TUBO REGISTER AND PACKET DEFINITIONS

```

921      :-
922
923      177776      TSBA== -2
924      177776      TSBAL== -2
925      177776      TSDB== -2      ;TSDB/TSBA REGISTER
926      177776      TSDBL== -2     ;TSDB/TSBA REGISTER
927      177777      TSBAH== -1
928      177777      TSDBH== -1     ;TSDB/TSBA REGISTER HIGH BYTE
929      000000      TSSR== 0       ;TSSR REGISTER
930      000001      TSSRH== 1      ;TSSR REGISTER HIGH BYTE
931
932      ;+
933      ; TSDB ADDRESS BIT DEFINITIONS
934      :-
935      000003      A1716 = BIT1+BIT0      ;ADDRESS BITS 17;16 ARE IN 1;0
936
937      ;+
938      ; COMMAND DEFINITIONS
939      :-
940      000017      P.GETSTAT      = 17      ;GET STATUS
941      000013      P.INIT        = 13      ;INITIALIZE
942      000012      P.CONTROL     = 12      ;CONTROL COMMANDS
943      000011      P.FORMAT      = 11      ;FORMAT
944      000010      P.POSITION    = 10      ;POSITION
945      000006      P.WRTSUB      = 6       ;SUBSYSTEM WRITE
946      000005      P.WRITE      = 5       ;WRITE
947      000004      P.WRTCHAR    = 4       ;WRITE CHARACTERISTICS
948      000001      P.READ       = 1       ;READ
949
950      ;+
951      ; COMMAND PACKET HEADER WORD BIT DEFINITIONS
952      :-
953      100000      P.ACK        = BIT15     ;BUFFER AVAIL FOR CONTROLLER
954      040000      P.CVC        = BIT14     ;CLEAR VOLUME CHECK
955      020000      P.OPP        = BIT13     ;REVERSE SEQUENCE OF DATA BITS
956      010000      P.SWB        = BIT12     ;SWAP BYTES IN MEMORY
957      007400      P.MODE      = BIT11!BIT10!BIT9!BIT8 ;EXTENDED COMMAND MODE FIELD
958      000200      P.IE         = BIT7      ;INTERRUPT ENABLE
959      000140      P.FMT= BIT6!BIT5 ;PACKET HEADER TYPE (ALWAYS=0)
960      000037      P.CMD        = 37      ;MAJOR COMMAND FIELD
961
962      ;+
963      ; CONTROL COMMAND MODE CODES
964      :-
965      000000      PC.RELEASE    = 0*256.   ;RELEASE BUFFER
966      000400      PC.REWIND    = 1*256.   ;REWIND
967      001000      PC.NOOP      = 2*256.   ;NO-OP
968      002000      PC.IEREW     = 4*256.   ;REWIND IMMEDIATE INTERRUPT
969      002400      PC.ERASE     = 5*256.   ;SECURITY ERASE
970
971      ;+
972      ; CONTROLLER RAM DEFINITIONS
973      :-
974      000167      RMCHBEG = 167      ;CHARACTERISTICS IO DATA BEGIN RAM ADDRESS
975      000200      RMCHEND = 200     ;CHARACTERISTICS IO DATA END RAM ADDRESS
976      000020      RMPKTBEGBEG= 20   ;COMMAND PACKET BEGIN RAM ADDRESS
977      000027      RMPKTEND= 27     ;COMMAND PACKET END RAM ADDRESS
978      000104      RMSGBEG= 104     ;MESSAGE BUFFER BEGIN RAM ADDRESS

```

```

978      000117      RMSGEND= 117      ;MESSAGE BUFFER END RAM ADDRESS
979      :+
980      :
981      :REGISTER DEFINITIONS IN THE MESSAGE BUFFER
982      :
983      :-
984
985      000006      XST0== 6      ;EXTENDED STATUS REGISTER 0 (WORD 4)
986      000010      XST1== 8.      ;EXTENDED STATUS REGISTER 1 (WORD 5)
987      000012      XST2== 10.     ;EXTENDED STATUS REGISTER 2 (WORD 6)
988      000014      XST3== 12.     ;EXTENDED STATUS REGISTER 3 (WORD 7)
989      000016      XST4== 14.     ;EXTENDED STATUS REGISTER 4 (WORD 8)
990
991
992      :+
993      :
994      :OFFSETS TO WORD LOCATIONS IN PACKET DEFINITIONS
995      :
996      :-
997
998      000002      PKLOW  = 2      ;LOW ORDER CHARACTERISTIC DATA POINTER
999      000004      PKHI   = 4      ;HIGH ORDER CHARACTERISTIC DATA POINTER
1000     000006      PKBCNT = 6      ;NUMBER OF BYTES IN DATA PACKET
1001
1002     000010      EXBCNT=10      ;NUMBER OF BYTES IN EXTENDED DATA PACKET
1003
1004      :+
1005      :DATA PACKET OFFSETS FOR WRITE SUBSYSTEM COMMAND
1006      :-
1007     000000      BSELO  = 0      ;BYTE 0
1008     000001      BSEL1  = 1      ;BYTE 1
1009     000002      SEL2   = 2      ;WORD 2
1010     000004      SELDATA = 4      ;WORD 3
1011
1012      :+
1013      :BSELO SELECT CODES FOR WRITE SUBSYSTEM COMMAND
1014      :-
1015     000000      PW.NOP   = 0      ;NO-OP
1016     000001      PW.RDRAM = 1      ;READ RAM
1017     000002      PW.WTRAM = 2      ;WRITE RAM
1018     000003      PW.RFIFO = 3      ;READ FIFO
1019     000004      PW.WFIFO = 4      ;WRITE FIFO
1020     000005      PW.RDSTAT = 5     ;READ STATUS
1021     000006      PW.WCTL  = 6      ;WRITE TAPE CONTROL
1022     000007      PW.WFMT  = 7      ;WRITE TAPE FORMAT
1023     000010      PW.WMISC = 10     ;WRITE MISCELLANEOUS
1024     000011      PW.WNPR  = 11     ;WRITE NPR CONTROL
1025     000020      PW.D22   = 20     ;DO MICROTTEST 22
1026     000021      PW.D11   = 21     ;DO MICROTTEST 11
1027     000022      PW.D13   = 22     ;DO MICROTTEST 13
1028     000023      PW.NO1311 = 23    ;DISABLE MICROTTEST 11 AND 13
1029     000024      PW.RDEXT = 24     ;READ EXT. TAPE STATUS (NOT SUPPORTED BY ALL TRANSP)
1030
1031      :+
1032      :BSEL1 CODES FOR WRITE TAPE CONTROL
1033      :-
1034     000200      WC.IFAD  = BIT7    ;IFAD - FORMATTER ADDRESS
    
```





CZTUZAO TUBO FRONT END PRT D  
SPECIAL MACROS AND OPDEFS.

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```

1139          .SBTTL SPECIAL MACROS AND OPDEFS.
1140
1141
1142          :+
1143          :SAVE GENERAL REGS 1 TO 5
1144          :-
1145
1146          .MACRO SAVREG
1147          JSR    R5,REGSAV
1148          .ENDM
1149
1150          :+
1151          : MACRO TO FORCE AN ERROR
1152          :-
1153          .MACRO FORCERROR      TAG,NOTSSR
1154          .NLIST
1155          .IIF NDF LISTALL, .NLIST
1156          .LIST
1157          .IF B NOTSSR
1158          MOV    TSSR(R5),R1          ;READ TSSR
1159          .ENDC
1160          MOV    FORCER,FORCER      ;IS FORCER SET? (LEAVE C BIT ALONE)
1161          BNE    TAG                ;BR IF YES
1162          .NLIST
1163          .IIF NDF LISTALL, .LIST
1164          .LIST
1165          .ENDM
1166
1167          :+
1168          : MACRO TO FORCE AN EXIT TO AVOID SECTION ITERATIONS
1169          : WILL EXIT TO A LABEL IF FORCER IS NEGATIVE
1170          : SO TO FORCE ERRORS AND EXIT ON 1 ERROR SET
1171          : FORCER TO 177777
1172          : TO FORCE ERRORS AND ITERATIONS SET FORCER TO 1.
1173          :-
1174          .MACRO FORCEEXIT      TAG
1175          .NLIST
1176          .IIF NDF LISTALL, .NLIST
1177          .LIST
1178          MOV    FORCER,FORCER      ;IS FORCER NEGATIVE?
1179          BMI    TAG                ;BR IF YES
1180          .NLIST
1181          .IIF NDF LISTALL, .LIST
1182          .LIST
1183          .ENDM
1184          :+
1185          : MACRO TO INCREMENT ERROR COUNTS
1186          :-
1187          .MACRO NEXT.ERRNO
1188          .NLIST
1189          ::: .IIF NDF LISTALL, .NLIST
1190          ERRNO=ERRNO+1
1191          ::: .IIF NDF LISTALL, .LIST
1192          .LIST
1193          .ENDM
1194
1195          :+

```

CZTUZAO TUBO FRONT END PRT D  
SPECIAL MACROS AND OPDEFS.

MACRO M1200 29-MAR-83 13:43 PAGE 19-1

1196  
1197  
1198  
1199  
1200  
1201  
1202  
1203  
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1216  
1217  
1218  
1219

: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.  
:

002144 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.



CZTUZAO TUBO FRONT END PRT D  
TSTBLK - TEST DATA TABLE

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.SBTTL TSTBLK - TEST DATA TABLE

1262  
1263  
1264  
1265  
1266  
1267  
1268  
1269  
1270  
1271  
1272  
1273  
1274  
1275  
1276  
1277  
1278 002720  
1279 002720 000000  
1280 002722 177777  
1281 002724 000001  
1282 002726 000002  
1283 002730 000004  
1284 002732 000010  
1285 002734 000020  
1286 002736 000040  
1287 002740 000100  
1288 002742 000200  
1289 002744 000400  
1290 002746 001000  
1291 002750 002000  
1292 002752 004000  
1293 002754 010000  
1294 002756 020000  
1295 002760 040000  
1296 002762 100000  
1297 002764 177776  
1298 002766 177775  
1299 002770 177773  
1300 002772 177767  
1301 002774 177757  
1302 002776 177737  
1303 003000 177677  
1304 003002 177577  
1305 003004 177377  
1306 003006 176777  
1307 003010 175777  
1308 003012 173777  
1309 003014 167777  
1310 003016 157777  
1311 003020 137777  
1312 003022 077777  
1313 003024 125252  
1314 003026 052525  
1315 003030

```

:
:
:
: 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

```

TBLENDD==.

CZTUZAO TUBO FRONT END PRT D  
GLOBAL ENVIRONMENT STORAGE

MACRO M1200 29-MAR-83 13:43 PAGE 22

```

1317          .SBTTL GLOBAL ENVIRONMENT STORAGE
1318
1319          ; STORAGE FOR DEVICE REGISTERS
1320          ;
1321 003030 00000C 100000 000000 DUMMY: 0,100000,0,U          ; DUMMY DEVICE REGISTERS...
1322 003040 000000 000000 000000      0,0,0,0,0,0,0,0      ; ...FOR MULTI-UNIT CHECKOUT.
1323
1324
1325
1326 003060 000000          DUFLG::          .WORD 0          ; 'DROPPED UNIT' FLAG.
1327          ; INHIBITS LOBE IN 'CLEAN-UP'.
1328 003062 000000          NODEV::          .WORD 0          ; FLAG TO SAY NO DEVICE.
1329
1330 003064 000000          TEMP1::          .WORD 0          ; SOME TEMP LOCATIONS.
1331 003066 000000          TEMP2::          .WORD 0
1332 003070 000000          XXCOMM::          .WORD 0          ; XXDP+ COMM BLOCK POINTER.
1333 003072 000000          FREE::          .WORD 0          ; 1ST FREE MEMORY ADDRESS...
1334 003074 000000          FRESIZ::          .WORD 0          ; ...AND SIZE (IN WORDS).
1335 003076 000000          FREEHI::          .WORD 0          ; LAST WORD IN FREE SPACE
1336 003100 000000          KTFLG::          .WORD 0          ; KT11, MEM AVAIL FLAG -
1337          ; - .WORD 0 = <24K OR NO KT -
1338          ; - NZ = >24K AND KT.
1339 003102 000000          KTENABLE::          .WORD 0          ; SET BY TEST ROUTINES TO FLAG >28K UNDER TEST
1340 003104 002000          PST32W::          .WORD 2000          ; 32W BLOCK ADDRESS FOR 32K START
1341 003106 000000          SIFLAG::          .WORD 0
1342 003110 000000          BADDAT::          .WORD 0          ; ACTUAL DATA
1343 003112 000000          GDDAT::          .WORD 0          ; EXPECTED DATA
1344 003114 000000          LOOPFL::          .WORD 0
1345 003116          CTAB::          ; CONFIGURATION TABLES.
1346 003116 000000          CTABM::          .WORD 0          ; CONFIG WRK.
1347 003120          .WORD 0
1348 003122          .WORD 0
1349 003124          .WORD 0
1350 003126 177777          .WORD -1          ; END OF MEM TABLE.
1351 003130          CTABE::
1352          ; ERROR STATISTICS TABLE (1 WORD PER UNIT), 64 UNITS MAX:
1353          ;
1354          ; 0 = UNIT NOT TESTED
1355          ; 100000 = UNIT ONLINE, NO ERRORS
1356          ; 10XXXX = UNIT ONLINE, ENCOUNTERED XXXX ERRORS
1357          ; 160000 = UNIT DROPPED, NON-EXISTENT DEVICE REGISTER
1358          ; 160001 = UNIT DROPPED, NOT IDLE AT START
1359          ; 14XXXX = UNIT DROPPED, ENCOUNTERED XXXX ERRORS
1360
1361 003130          ERTABL:          .BLKW 64.
1362 003330 000000          ERTABE:          .WORD 0
1363
1364 003332 000000          SKIPT:          .WORD 0          ; 1=SKIP SUBTEST 0=NO SKIP OF SUBTEST

```





CZTUZAO TUBO FRONT END PRT D  
GLOBAL ERROR REPORT SECTION

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.SBTTL GLOBAL ERROR REPORT SECTION

1443  
1444  
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1449  
1450

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

1451 005176  
005176  
1452 005176 013746 003062  
005176 012746 003675  
005202 012746 000002  
005206 010600  
005212 104415  
005214 062706 000006  
1453 005222 004737 005230  
1454 005226  
005226  
005226 104423

BGNMSG NXRERR ;NON-EXISTANT DEVICE REGISTER.  
NXRERR::  
PRINTX #NXRX,NODEV ;NODEV = NEXM ADDRESS.  
MOV NODEV,-(SP)  
MOV #NXRX,-(SP)  
MOV #2,-(SP)  
MOV SP,R0  
TRAP C\$PNTX  
ADD #6,SP  
JSR PC,EXTEND ; PRINT EXTENSION IF REQUIRED.  
ENDMSG  
L10002:  
TRAP C\$MSG

1455  
1456  
1457  
1458  
1459  
1460

:  
: THIS ROUTINE APPENDS A UNIQUE EXTENSION (IF REQUIRED)  
: TO ANY OF THE ABOVE ERROR SIGNATURES.  
:

1461 005230 005727  
1462 005232 000000  
1463 005234 001402  
1464 005236 004777 177770  
1465 005242  
005242 012746 004426  
005246 012746 000001  
005252 010600  
005254 104415  
005256 062706 000004  
1466 005262 000207

EXTEND: TST (PC)+  
EXTA: 0 ; 0 = NO EXTENSION.  
BEQ 1\$  
JSR PC,@EXTA ; APPEND EXTENSION TEXT.  
1\$: PRINTX #NULCR ; PRINT A BLANK LINE  
MOV #NULCR,-(SP)  
MOV #1,-(SP)  
MOV SP,R0  
TRAP C\$PNTX  
ADD #4,SP  
RTS PC









CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 28  
PRIBXOR - PRINT EXPD, RECV AND XOR BYTE

.SBTTL PRIBXOR - PRINT EXPD, RECV AND XOR BYTE

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1638  
1639  
1640  
1641

007334  
007334 010203  
007342  
007352 012700 177400  
007356 040001  
007360 040002  
007362 040003  
007364 010346  
007366 010146  
007370 010246  
007372 012746 007416  
007376 012746 000004  
007402 010600  
007404 104414  
007406 062706 000012  
007412 010300  
007414 000207

:+  
: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  
:-

PRIBXOR::  
SAVREG ;SAVE THE REGISTERS  
MOV R2,R3 ;EXPECTED DATA  
XOR R1,R3 ;FORM THE EXCLUSIVE OR  
MOV #^C<377>,R0 ;BYTE MASK  
BIC R0,R1 ;SAVE LOW BYTE RECV  
BIC R0,R2 ;SAVE LOW BYTE EXPD  
BIC R0,R3 ;SAVE LOW BYTE XOR  
PRINTB #XORBFOR,R2,R1,R3 ;PRINT THE MESSAGE  
MOV R3,-(SP)  
MOV R1,-(SP)  
MOV R2,-(SP)  
MOV #XORBFOR,-(SP)  
MOV #4,-(SP)  
MOV SP,R0  
TRAP C\$PNTB  
ADD #12,SP  
MOV R3,R0 ;R0 HAS XOR ON RETURN  
RTS PC ;RETURN TO CALLER

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

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 29  
PRI XOR - PRINT EXPD, RECV AND XOR

.SBTTL PRI XOR - PRINT EXPD, RECV AND XOR

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1660

:+  
: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  
:-

1661 007464  
1662 007464  
1663 007470 010203  
1664 007472  
1665 007502  
007502 010346  
007504 010146  
007506 010246  
007510 012746 007534  
007514 012746 000004  
007520 010600  
007522 104414  
007524 062706 000012  
1666 007530 010300  
1667 007532 000207  
1668  
1669 007534 045 116 045  
1670

PRI XOR: :  
SAVREG :SAVE THE REGISTERS  
MOV R2,R3 :EXPECTED DATA  
XOR R1,R3 :FOR THE EXCLUSIVE OR  
PRINTB #XORFOR,R2,R1,R3 :PRINT THE MESSAGE  
MOV R3,-(SP)  
MOV R1,-(SP)  
MOV R2,-(SP)  
MOV #XORFOR,-(SP)  
MOV #4,-(SP)  
MOV SP,R0  
TRAP CSFNTB  
ADD #12,SP  
MOV R3,R0 :R0 HAS XOR ON RETURN  
RTS PC :RETURN TO CALLER  
XORFOR: .ASCIZ 'X%X EXPD: X06XA RECV: X06XA XOR: X06'  
.EVEN

CZTUZAO TUBO FRONT END PRT D MACRC M1200 29-MAR-83 13:43 PAGE 30  
PRIEQU - PRINT BIT NUMBERS AS ASCII EQUIVALENT

1672  
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1683  
1684  
1685  
1686 007602  
1687 007602  
1688 007606 000207  
1689  
1690  
1691  
1692  
1693  
1694  
1695  
1696  
1697  
1698  
1699  
1700  
1701  
1702  
1703  
1704 007610  
1705 007610  
1706 007614  
007614 010446  
007616 012746 007640  
007622 012746 000002  
007626 010600  
007630 104414  
007632 062706 000006  
1707 007636 000207  
1708  
1709 007640 045 116 045  
1710  
1711  
1712  
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1721  
1722

```
.SBTTL PRIEQU - PRINT BIT NUMBERS AS ASCII EQUIVALENT
:
:ROUTINE TO CONVERT BIT VALUES TO ASCII AND PRINT THE STRING
:THIS ROUTINE IS NORMALLY CALLED FROM A PRINT ROUTINE
:
:INPUTS:
:
:      RO      OCTAL VALUE TO CONVERT
:      R1      TABLE OF POINTERS TO ASCII EQUIVALENT
:
:
PRIEQU:
:      SAVREG      ;SAVE THE REGISTERS
:      RTS        PC      ;RETURN TO CALLER

.SBTTL PRIRAM - PRINT RAM ADDRESS
:
:PRINT CONTROLLER RAM ADDRESS.
:THIS ROUTINE IS NORMALLY CALLED ONLY FROM PRINT ROUTINES.
:
:INPUTS:
:
:      R4      RAM ADDRESS
:
PRIRAM:
:      SAVREG      ;SAVE R1-R5 UNTIL NEXT RETURN
:      PRINTB     #RAMFOR,R4 ;PRINT RAM ADDRESS IN ERROR
:      MOV        R4,-(SP)
:      MOV        #RAMFOR,-(SP)
:      MOV        #2,-(SP)
:      MOV        SP,R0
:      TRAP       C$PNTB
:      ADD        #6,SP
:      RTS        PC      ;RETURN

RAMFOR: .ASCIZ 'XNZA CONTROLLER RAM ADDRESS = X06'
        .EVEN

.SBTTL PRIADD - PRINT MEMORY ERROR ADDRESS
:
:PRINT MEMORY ADDRESS
:THIS ROUTINE IS NORMALLY CALLED ONLY FROM PRINT ROUTINES.
:
:IMPLICIT INPUTS
:
:      ERRHI     - HIGH ORDER ADDRESS
:      ERRLO     - LOW ORDER ADDRESS
```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 50-1  
 PRIADD - PRINT MEMORY ERROR ADDRESS

```

1723
1724
1725 007702
1726 007702
1727 007706 013700 002202
1728 007712 013701 002204
1729 007716 010102
1730 007720 006101
1731 007722 006100
1732 007724
      007724 010246
      007726 010046
      007730 012746 007752
      007734 012746 000003
      007740 010600
      007742 104414
      007744 062706 000010
1733 007750 000207
1734
1735 007752 045 116 045 PRIA0: .ASCIZ 'XNXA MEMORY ERROR ADDRESS = X01X05'
1736 .EVEN
1737
1738
1739 .SBTTL PRITADD - PRINT MEMORY TEST ADDRESS
1740
1741
1742 :PRINT MEMORY ADDRESS
1743 :THIS ROUTINE IS NORMALLY CALLED ONLY FROM PRINT ROUTINES.
1744
1745 : IMPLICIT INPUTS
1746
1747 ERRHI - HIGH ORDER ADDRESS
1748 ERRLO - LOW ORDER ADDRESS
1749
1750
1751 010016
1752 010016
1753 010022 013700 002202
1754 010026 013701 002204
1755 010032 010102
1756 010034 006101
1757 010036 006100
1758 010040
      010040 010246
      010042 010046
      010044 012746 010066
      010050 012746 000003
      010054 010600
      010056 104414
      010060 062706 000010
1759 010064 000207
1760 010066 045 116 045 PRITO: .ASCIZ 'XNXA MEMORY TEST ADDRESS = X01X05'
1761 .EVEN
  
```

```

:
:-
PRIADD:
  SAVREG
  MOV ERRHI,R0 ;SAVE R1-R5 UNTIL NEXT RETURN
  MOV ERRLO,R1 ;GET HIGH ADDRESS
  MOV R1,R2 ;GET LOW ADDRESS
  ROL R1 ;COPY LOW ADDRESS
  ROL R0 ;SHIFT BIT 15 TO C BIT
  PRINTB #PRIA0,R0,R2 ;SHIFT INTO HIGH ORDER
  MOV R2,-(SP) ;PRINT MEMORY ADDRESS IN ERROR
  MOV R0,-(SP)
  MOV #PRIA0,-(SP)
  MOV #3,-(SP)
  MOV SP,R0
  TRAP C$PNTB
  ADD #10,SP
  RTS PC ;RETURN

.PRIA0: .ASCIZ 'XNXA MEMORY ERROR ADDRESS = X01X05'
.EVEN

.SBTTL PRITADD - PRINT MEMORY TEST ADDRESS
:
:PRINT MEMORY ADDRESS
:THIS ROUTINE IS NORMALLY CALLED ONLY FROM PRINT ROUTINES.
: IMPLICIT INPUTS
:
: ERRHI - HIGH ORDER ADDRESS
: ERRLO - LOW ORDER ADDRESS
:
:PRITADD:
  SAVREG
  MOV ERRHI,R0 ;SAVE R1-R5 UNTIL NEXT RETURN
  MOV ERRLO,R1 ;GET HIGH ADDRESS
  MOV R1,R2 ;GET LOW ADDRESS
  ROL R1 ;COPY LOW ADDRESS
  ROL R0 ;SHIFT BIT 15 TO C BIT
  PRINTB #PRITO,R0,R2 ;SHIFT INTO HIGH ORDER
  MOV R2,-(SP) ;PRINT MEMORY ADDRESS IN ERROR
  MOV R0,-(SP)
  MOV #PRITO,-(SP)
  MOV #3,-(SP)
  MOV SP,R0
  TRAP C$PNTB
  ADD #10,SP
  RTS PC ;RETURN

.PRITO: .ASCIZ 'XNXA MEMORY TEST ADDRESS = X01X05'
.EVEN
  
```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 31  
SPACE - SPACE RECORDS (FORWARD AND REVERSE) COMMAND

.SBTTL SPACE - SPACE RECORDS (FORWARD AND REVERSE) COMMAND

1763  
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1794  
1795  
1796  
1797  
1798 010130  
1799 010130  
1800 010134 012737 000764 010320  
1801 010142 012737 140010 010310  
1802 010150 005703  
1803 010152 100403  
1804 010154 010337 010312  
1805 010160 000407  
1806 010162 042703 100000 5\$:  
1807 010166 010337 010312  
1808 010172 052737 000400 010310 10\$:  
1809 010200 012704 010310  
1810 010204 010465 177776  
1811 010210 004737 017110 15\$:  
1812 010214 103420  
1813 010216  
010216 012727 000250  
010222 000000  
010224 013727 002116  
010230 000000  
010232 005367 177772  
010236 001375

```

:ROUTINE TO ISSUE A SPACE RECORDS
:COMMAND (FORWARD OR REVERSE)
:INPUT:
      R3      NUMBER OF RECORDS TO BE SPACED OVER
              BIT15 CONTROLS DIRECTION
              BIT15 = 0 IS FORWARD
              BIT15 = 1 IS REVERSE
      R5      FIRST DEVICE UNIBUS ADDRESS
              REQUIRES A WRITE CHARACTERISTICS DONE PREVIOUSLY
:OUTPUT:
      CARRY   SET - SPACE RECORDS COMMAND OK
              CLR - SPACE RECORDS FAILED
      R0      THE CONTENTS OF R4 IS MOVED TO R0
:IMPLICIT OUTPUT:
      TAPE HAS BEEN MOVED
:SIDE EFFECTS:
:-
SPACE::
      SAVREG      :SAVE THE GENERAL REGISTERS
      MOV #500.,SDELAY :SET UP DELAY
      MOV #140010,80$ :SET UP COMMAND, SPACE FORWARD
      TST R3       :CHECK FOR DIRECTION
      BMI 5$      :BR, IF REVERSE INDICATED
      MOV R3,90$  :LOAD UP NUMBER OF RECORDS TO SPACE
      BR 10$      :GO DO COMMAND
      BIC #BIT15,R3 :CLEAR DIRECTION BIT
      MOV R3,90$  :LOAD UP NUMBER OF RECORDS TO SPACE
      BIS #BIT8,80$ :SET REVERSE BIT IN COMMAND PACKET
      MOV #80$,R4 :SET UP R4 WITH PACKET ADDRESS
      MOV R4,TSDB(R5) :SEND OUT COMMAND
      JSR PC,WAITF :WAIT FOR SSR
      BCS 20$     :BR, IF SSR IS SET AND OK
      DELAY 250  :DELAY ABOUT .25 SECONDS
      MOV #250,(PC)+
      .WORD 0
      MOV LSDLY,(PC)+
      .WORD 0
      DEC -6(PC)
      BNE .-4

```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 31-1  
 SPACE - SPACE RECORDS (FORWARD AND REVERSE) COMMAND

	010240	005367	177756		DEC	-22(PC)	
	010244	001367			BNE	.-20	
1814	010246	005337	010320		DEC	SDELAY	:BUMP DELAY COUNTER DOWN
1815	010252	001356			BNE	158	:BR, IF MORE DELAY
1816	010254	000411			BR	608	:BR IF TROUBLE CARRY = CLEAR
1817	010256	016501	000000	208:	MOV	TSSR(R5),R1	:READ TSSR
1818	010262	012702	000200		MOV	#SSR,R2	:SET UP EXPECTED
1819	010266	020201		258:	CMP	R2,R1	:ARE THEY OK
1820	010270	001401			BEQ	408	:BR, IF EQUAL = OK
1821	010272	000402			BR	608	:TROUBLE EXIT
1822	010274	000261		408:	SEC		:SET CARRY NO TRGUBLE
1823	010276	000401			BR	708	:EXIT
1824	010300	000241		608:	CLL		:CARRY CLEAR = ERROR
1825	010302			708:			
1826	010302	010400			MOV	R4,R0	:PASS PACKET ADDRESS
1827	010304	000207			RTS	PC	:RETURN

CZTUZAJ TUBO FRONT END PRT D MACRO M1200 24-MAR-83 13:43 PAGE 32  
SPACE - SPACE RECORDS (FORWARD AND REVERSE) COMMAND

```

1829
1830
1831
1832 :PACKET FOR SPACE COMMAND
1833
1835 010306 .BLKB 10-<.-TUV2A&7>
1837
1838 :COMMAND WORD
1839 010310 000000 80S: .WORD
1840 :NUMBER OF RECORDS TO BE SPACED OVER WORD
1841 010312 000000 90S: .WORD
1842 010314 000000 .WORD
1843 010316 000000 .WORD
1844 010320 000000 SDELAY: .WORD 0 ;DELAY COUNTER
1845 .EVEN

```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 33  
WRTCHR - WRITE CHARACTERISTICS COMMAND

.SBTTL WRTCHR - WRITE CHARACTERISTICS COMMAND

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

WRTCHR::  
SAVREG ;SAVE THE GENERAL REGISTERS  
CLR BENBSW ;CLEAR BUFFER ENABLE SWITCH  
10\$: MOV R4,TSDB(R5) ;SEND OUT COMMAND  
JSR PC,CHKTSSR ;WAIT FOR SSR  
BCS 20\$ ;BR, IF SSR IS SET AND OK  
BR 60\$ ;BR IF TROUBLE CARRY = CLEAR  
20\$: MOV TSSR(R5),R1 ;READ TSSR  
MOV #SSR,R2 ;SET UP EXPECTED  
BIT #OFL,R1 ;WAS OFF LINE SET IN TSSR  
BEQ 25\$ ;BR, IF NO OFL SET  
BIS #OFL,R2 ;MAKE THEM LOOK ALIKE  
25\$: CMP R2,R1 ;ARE THEY OK  
BEQ 40\$ ;BR, IF EQUAL = OK  
BR 60\$ ;TROUBLE EXIT  
40\$: ADD #8.,R4 ;POINT TO WRT CHARA DATA PACKET  
MOV (R4),R3 ;GET ADDRESS OF MESSAGE BUFFER  
MOV R3,MESBFA ;STORE FOR PRINT ROUTINES  
SEC ;SET CARRY NO TROUBLE  
BR 70\$ ;EXIT  
60\$: CLC ;CARPY CLEAR = ERROR  
70\$: MOV TSSR(R5),R0 ;RETURN TSSR CONTENTS  
RTS PC ;RETURN

010322  
010322 005037 002174  
010332 010465 177776  
010336 004737 017224  
010342 103401  
010344 000423  
010346 016501 000000  
010352 012702 000200  
010356 032701 000100  
010362 001402  
010364 052702 000100  
010370 020201  
010372 001401  
010374 000407  
010376 062704 000010  
010402 011403  
010404 010337 002716  
010410 000261  
010412 000401  
010414 000241  
010416 016500 000000  
010422 000207

CZTUZAO TU80 FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 34  
REWIND - POSITION TAPE (REWIND) COMMAND

.SBTTL REWIND - POSITION TAPE (REWIND) COMMAND

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.\*  
: 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

1932 010424  
1933 010424  
1934 010430 012704 010520  
1935 010434 010465 177776  
1936 010440 012703 000550  
1937 010444 004737 017110  
1938 010450 103417  
1939 010452  
010452 012727 000372  
010456 000000  
010460 013727 002116  
010464 000000  
010466 005367 177772  
010472 001375  
010474 005367 177756  
010500 001367  
1940 010502 005303  
1941 010504 001357  
1942 010506 000241  
1943 010510 010400  
1944 010512 000207  
1945  
1946  
1948 010514  
1950 010520  
1951 010520 102010  
1952 010522 000000

REWIND::

SAVREG ;SAVE R1-R5 UNTIL NEXT RETURN  
MOV #RWPACK,R4 ;GET PACKET ADDRESS  
MOV R4,TSDB(R5) ;SEND PACKET ADDRESS TO EXECUTE  
MOV #360.,R3 ;ENOUGH TIME FOR 2400' REEL TO REWIND  
10\$: JSR PC,WAIT ;WAIT FOR SSR TO SET  
BCS 20\$ ;LEAVE WHEN SSR IS SET  
DELAY 250. ;WAIT FOR .25 SECONDS  
MOV #250.,(PC)+  
.WORD 0  
MOV LSDLY,(PC)+  
.WORD 0  
DEC -6(PC)  
BNE .-4  
DEC -22(PC)  
BNE .-20  
DEC R3 ;BUMP COUNTER DOWN  
BNE 10\$ ;KEEP GOING  
CLC ;CLEAR CARRY TO SET ERROR  
20\$: MOV R4,R0 ;PASS THE PACKET ADDRESS  
RTS PC ;RETURN  
RWPACK: .BLKB 10-<.-TUV2A&7>  
.WORD 102010 ;POSITION COMMAND (REWIND)  
.WORD 0 ;NOT USED

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 35  
CKRAM - COMPARE RAM TO I/O PACKET

.SBTTL CKRAM - COMPARE RAM TO I/O PACKET

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:+  
: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:  
:-

1982 010524  
1983 010524  
1984 010530 012701 002206  
1985 010534 012702 000020  
1986 010540 005003  
1987 010542 004737 017224  
1988 010546 004737 017224  
1989 010552 110265 177777  
1990 010556 004737 017224  
1991 010562 116511 177776  
1992 010566 122124  
1993 010570 001401  
1994 010572 005203  
1995 010574 005202  
1996 010576 020227 000027  
1997 010602 003761  
1998 010604 005703  
1999 010606 001402  
2000 010610 000241  
2001 010612 000401  
2002 010614 000261  
2003 010616 012737 000010 002246  
2004 010624 000207  
2005

CKRAM::  
SAVREG ;SAVE THE GENERAL REGISTERS  
MOV #RAMDATA,R1 ;ADDRESS TO SAVE THE RAM DATA  
MOV #RMPKTBEG,R2 ;BYTE ADDRESS OF FIRST RAM DATA  
CLR R3 ;CLEAR THE ERROR FLAG  
JSR PC,CHKTSSR ;WAIT FOR SSR  
10\$: JSR PC,CHKTSSR ;WAIT FOR SSR TO SET  
MOVB R2,TSDBH(R5) ;SELECT NEXT RAM ADDRESS  
JSR PC,CHKTSSR ;WAIT FOR SSR TO SET  
MOVB TSBAL(R5),(R1) ;READ THE RAM DATA  
CMPB (R1)+,(R4)+ ;COMPARE TO EXPECTED  
BEQ 20\$ ;BRANCH IF OK  
INC R3 ;SET ERROR FLAG  
20\$: INC R2 ;ADDRESS OF NEXT RAM LOCATION  
CMP R2,#RMPKTEND ;REACHED END YET ?  
BLE 10\$ ;BRANCH TILL ALL READ  
TST R3 ;WAS AN ERROR FOUND ?  
BEQ 30\$ ;BRANCH IF NOT  
CLC ;CLEAR CARRY TO SHOW ERROR  
BR 50\$ ;AND EXIT  
30\$: SEC ;SHOW GOOD COMPARE  
50\$: MOV #8.,RAMSIZ ;SETUP RAMSIZ FOR PRAMPKT ROUTINE  
RTS PC ;RETURN

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 36  
RAMER - READ AND DISPLAY SELECTED RAM

```

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2027 010626
2028 010626
2029 010632 013705 011012
2030 010636 012701 002206
2031 010642 013702 011010
2032 010646 013703 002246
2033 010652 004737 017224
2034 010656 110265 177777
2035 010662 004737 017224
2036 010666 116521 177776
2037 010672 062702 000001
2038 010676 077313
2039 010700 013704 002246
2040 010704 013702 011010
2041 010710 060204
2042 010712 162704 000001
2043 010716
    010716 010446
    010720 010246
    010722 012746 011014
    010726 012746 000003
    010732 010600
    010734 104415
    010736 062706 000010
2044 010742 012701 002206
2045 010746 013703 002246
2046 010752 005004
2047 010754 112104
2048 010756 042704 177400
2049 010762
    010762 010446
    010764 012746 011065
    010770 012746 000002
    010774 010600
    010776 104415
    011000 062706 000006
2050 011004 077316

```

```

.SBTTL RAMER - READ AND DISPLAY SELECTED RAM
:
:
:ROUTINE TO READ THE SELECTED RAM LOCATIONS
:
:INPUT:
:
:      R5      FIRST DEVICE UNIBUS ADDRESS
:      CONSOLE WILL ALSO BE PRINTED TO
:
:IMPLICIT OUTPUT:
:
:      THE TABLE RAMDATA IS FILLED WITH THE
:      DATA HELD IN RAM.
:
:SIDE EFFECTS:
:
:-
RAMER::
    SAVREG                                :SAVE THE GENERAL REGISTERS
    MOV      RAMR5H,R5                     :RESET R5 TO FIRST DEVICE REGISTER
    MOV      #RAMDATA,R1                  :ADDRESS TO SAVE THE RAM DATA
    MOV      RAMHLD,R2                     :BYTE ADDRESS OF THE FIRST RAM DATA
    MOV      RAMSIZ,R3                     :SET THE SIZE OF THE READ UP
10$:    JSR      PC,CHKTSSR                 :WAIT FOR THE SSR TO SET
        MOVVB   R2,TSDBH(R5)               :SELECT NEXT RAM ADDRESS
        JSR      PC,CHKTSSR                 :WAIT FOR SSR TO SET
        MOVVB   TSBAL(R5),(R1)+           :READ THE RAM DATA
20$:    ADD      #1,R2                      :ADDRESS OF THE NEXT RAM LOCATION
        SOB     R3,10$                     :NUMBER OF LOCATIONS COUNTER
        MOV     RAMSIZ,R4                   :GET THE RAM SIZE
        MOV     RAMHLD,R2                  :GET THE STARTING RAM ADDRESS
        ADD     R2,R4                       :CALCULATE THE END ADDRESS
        SUB     #1,R4                       :CORRECT VALUE OF PRINTOUT
        PRINTX #RAMIOP,R2,R4              :RAM ADDRESS = 10 - 17, ETC.
        MOV     R4,-(SP)
        MOV     R2,-(SP)
        MOV     #RAMIOP,-(SP)
        MOV     #3,-(SP)
        MOV     SP,R0
        TRAP   C$PNTX
        ADD     #10,SP
        MOV     #RAMDATA,R1               :ADDRESS OF WHERE RAM DATA IS
        MOV     RAMSIZ,R3                  :THE SIZE OF THE RAM FIELD READ
30$:    CLR     R4                          :NO EXTRA DATA LEFT OVER
        MOVVB   (R1)+,R4                   :PICK UP BYTE OF RAM DATA
        BIC     #177400,R4                 :GET RID OF SIGN EXTEND
        PRINTX #RAMPD,R4                   :'010 211 111 222 377 000 123 134 ETC.'
        MOV     R4,-(SP)
        MOV     #RAMPD,-(SP)
        MOV     #2,-(SP)
        MOV     SP,R0
        TRAP   C$PNTX
        ADD     #6,SP
        SOB     R3,30$                     :LOOP UNTIL ALL PRINTED

```



CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 37  
 CKRAM2 - COMPARE RAM TO I/O CHARACTERISTICS DATA

```

2060 .SBTTL CKRAM2 - COMPARE RAM TO I/O CHARACTERISTICS DATA
2061
2062
2063 :ROUTINE TO READ THE FIRST 8 OR 10 BYTES FROM RAM
2064 :MEMORY AND COMPARE THIS DATA TO A CHARACTERISTICS DATA BLOCK.
2065
2066 :INPUT:
2067
2068 R4 ADDRESS OF THE CHARACTERISTICS DATA
2069 R5 FIRST DEVICE UNIBUS ADDRESS
2070
2071 :OUTPUT:
2072
2073 CARRY SET - RAM MATCHES PACKET
2074 CLR - RAM DOES NOT MATCH PACKET
2075
2076 :IMPLICIT OUTPUT:
2077
2078 THE TABLE RAMDATA IS FILLED WITH THE
2079 DATA HELD IN RAM.
2080 RAMSIZ IS SET TO 8. OR 10. FOR PRAMPKT ROUTINE
2081
2082 :SIDE EFFECTS:
2083
2084
2085
2086
2087 011100 CKRAM2::
2088 011100 SAVREG ;SAVE THE GENERAL REGISTERS
2089 011104 012701 002206 MOV #RAMDATA,R1 ;ADDRESS TO SAVE THE RAM DATA
2090 011110 012702 000167 MOV #RMCHBEG,R2 ;BYTE ADDRESS OF FIRST RAM DATA
2091 011114 005003 CLR R3 ;CLEAR THE ERROR FLAG
2092 011116 004737 017224 JSR PC,CHKTSSR ;WAIT FOR SSR
2093 011122 004737 017224 10$: JSR PC,CHKYSSR ;WAIT FOR SSR TO SET
2094 011126 110265 177777 MOV R2,TSDBH(R5) ;SELECT NEXT RAM ADDRESS
2095 011132 004737 017224 JSR PC,CHKTSSR ;WAIT FOR SSR TO SET
2096 011136 116511 177776 MOV R2,TSDBH(R5),(R1) ;READ THE RAM DATA
2097 011142 122124 CMPB (R1)+,(R4)+ ;COMPARE TO EXPECTED
2098 011144 001401 BEQ 20$ ;BRANCH IF OK
2099 011146 005203 INC R3 ;SET ERROR FLAG
2100 011150 005202 20$: INC R2 ;ADDRESS OF NEXT RAM LOCATION
2101 011152 012737 000010 002246 MOV #8,RAMSIZ ;ASSUME NORMAL NOT SET
2102 011160 020227 000176 CMP R2,#RMCHEND-2 ;REACHED END YET ?
2103 011164 003756 BLE 10$ ;BRANCH TILL ALL READ
2104 011166 005703 27$: TST R3 ;WAS AN ERROR FOUND ?
2105 011170 001402 BEQ 30$ ;BRANCH IF NOT
2106 011172 000241 CLC ;CLEAR CARRY TO SHOW ERROR
2107 011174 000401 BR 50$ ;AND EXIT
2108 011176 000261 30$: SEC ;SHOW GOOD COMPARE
2109 011200 000207 50$: RTS PC ;RETURN
2110
    
```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 38  
CKMSG - COMPARE WRITE CHAR. MESSAGE BUFFERS

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011202  
011206 010037 002250  
011212 010137 002252  
011216 005737 003102  
011222 001403  
011224 004737 020256  
011230 010001  
011232 005004  
011234 005003  
011236 010205  
011240 011264 002266  
011244 011164 002432  
011250 022221  
011252 001401  
011254 005203  
011256 062704 000002  
011262 020427 000014  
011266 003764  
011270 032765 000200 000012  
011276 001403  
011300 020427 000016  
011304 003755  
011306 005703  
011310 001402  
011312 000241  
011314 000401  
011316 000261  
011320 000207

.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  
: RECVMSG BUFFER IS SET TO RECV DATA  
: RCVHIADD SET TO HIGH ORDER ADDRESS OF RECV  
: RCVLOAD SET TO LOW ORDER ADDRESS OF RECV  
-  
CKMSG::

SAVREG :SAVE R1-R5 UNTIL NEXT RETURN  
MOV R0,RCVHIADD :SAVE RECV HIGH ADDRESS  
MOV R1,RCVLOAD :SAVE RECV LOW ADDRESS  
TST KTENABLE :TESTING ABOVE 28K?  
BEQ 10\$ :BR IF NO  
JSR PC,SETHAP :RETURN ADDRESS BIASED TO PAR6 IN R0  
MOV R0,R1 :GET RETURNED ADDRESS BIASED TO PAR6  
10\$: CLR R4 :WORD IN BUFFER  
CLR R3 :CLEAR ERROR SEEN FLAG  
MOV R2,R5 :GET EXPD BUFFER ADDRESS  
15\$: MOV (R2),EXPMSG(R4) :SAVE EXPD FOR ERROR REPORT  
MOV (R1),RECVMSG(R4) :SAVE RECV FOR ERROR REPORT  
CMP (R2)+,(R1)+ :EXPD EQUAL RECV?  
BEQ 25\$ :BR IF YES  
INC R3 :SET ERROR SEEN FLAG  
25\$: ADD #2,R4 :POINT TO NEXT WORD ADDRESS  
CMP R4,#14 :DONE FIRST 7 WORDS?  
BLE 15\$ :BR IF NO  
BIT #X2.EXTF,XST2(R5) :IS EXTENDED FEATURES SET IN EXPD?  
BEQ 50\$ :BR IF NO  
CMP R4,#16 :DONE EXTENDED FEATURES WORD?  
BLE 15\$ :BR IF NO  
50\$: TST R3 :ANY ERRORS SEEN?  
BEQ 55\$ :BR IF NO  
CLC :SET FAILURE  
BR 60\$  
55\$: SEC :SET SUCCESS  
60\$: RTS PC :RETURN



CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 39-1  
CKMSG2 - COMPARE EXPD RECV MESSAGE BUFFERS

2220 011444 000241  
2221 011446 000401  
2222 011450 000261  
2223 011452 000207  
2224  
2225 011454 120  
2226 011544 045  
2227 011555 040  
2228 011610 056  
2229 011643 124  
2230

122  
116  
040  
056  
105

558:  
608:

CLC  
BR 608  
SEC  
RTS P'

:SET FAILURE  
:  
:SET SUCCESS  
:RETURN

DEBUGMSG: .ASCIZ 'PROGRAM INTERNAL ERROR -CKMSG2 MESSAGE BUFFER EXCEEDED-';220  
FERCM: .ASCII /XNXA \*\*\*/  
ERCM: .ASCIZ / TSSR ERROR CODE REC'D = /  
SIMSG: .ASCIZ /..... AFTER DOING SOFT INIT/  
TINERR: .ASCIZ /TEST: .../  
.CVEN













































































CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 68  
 CHKMAN - CHECK MANUAL INTERVENTION LEGALITY

```

3577 .SBTTL CHKMAN - CHECK MANUAL INTERVENTION LEGALITY
3578
3579
3580 :ROUTINE TO TEST FOR MANUAL INTERVENTION LEGALITY.
3581
3582 :INPUT:
3583
3584 :       NONE.
3585
3586 :OUTPUT:
3587
3588 :       CARRY  0      MANUAL INTERVENTION NOT ALLOWED
3589 :             1      MANUAL INTERVENTION IS OK
3590
3591 :SIDE EFFECTS:
3592
3593 :       A MESSAGE IS DISPLAYED WARNING THAT TEST IS
3594 :       NOT EXECUTED IF MANUAL INTERVENTION IS NOT
3595 :       ALLOWED.
3596
3597 :-
3598
3599 021372 CHKMAN:: SAVREG          ;SAVE THE REGISTERS
3600 021372      MANUAL          ;SEE IF MANUAL INTERVENTION OK
3601 021376      104450      TRAP      CSMANI
3602 021400      021400      BCOMPLETE 1$      ;BRANCH IF ALLOWED
3603 021402      103411      BCS      1$
3604 021402      012746      021426      PRINTF #NOMAN      ;PRINT THE WARNING MESSAGE
3605 021406      012746      000001      MOV      #NOMAN,-(SP)
3606 021412      010600      MOV      #1,-(SP)
3607 021414      104417      MOV      SP,RC
3608 021416      062706      000004      TRAP      CSPNTF
3609 021422      000241      ADD      #4,SP
3610 021424      000207      CLC          ;CLEAR CARRY FOR ERROR
3611 021424      1$:      RTS      PC      ;RETURN
3612 021426      045      116      045 NOMAN: .ASCIZ 'XNZA *** Manual Intervention not Allowed - Test Aborted ***'
3613 021426      .even
    
```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 69  
 ENVIRN - SETUP FREE DIAGNOSTIC SPACE

```

3610                                     .SBTTL ENVIRN - SETUP FREE DIAGNOSTIC SPACE
3611                                     :
3612                                     : SUBROUTINE TO SET-UP VARIOUS ENVIRONMENTAL PARAMETERS.
3613                                     :
3614 021522 ENVIRN: MEMORY R0
      021522 104431 TRAP CSMEM
3615 021524 010037 003072 MOV R0,FREE ; GET 1ST FREE ADDRESS...
3616 021530 062737 000002 003072 ADD #2,FREE
3617 021536 011037 003074 MOV (R0),FRESIZ ;...AND WORD COUNT.
3618 021542 162737 000004 003074 SUB #4,FRESIZ
3619 021550 013702 002012 MOV L$UNIT,R2 ; GET NUMBER OF UNITS
3620 021554 162737 000007 003074 10$: SUB #7,FRESIZ ; TAKE AWAY 7 WORDS PER UNIT
3621 021562 005302 DEC R2
3622 021564 001373 BNE 10$
3623 021566 013700 003072 MOV FREE,R0 ;GET FIRST FREE ADDRESS
3624 021572 063700 003074 ADD FRESIZ,R0 ;POINT TO LAST FREE ADDRESS
3625 021576 162700 000002 SUB #2,R0 ;BACKUP 1 WORD
3626 021602 010037 003076 MOV R0,FREHI ;STORE LAST FREE ADDRESS
3627 021606 000207 RTS PC ;RETURN
3628

```

CZTUZAO TU80 FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 70  
 KTINIT - SETUP KT11 MEMORY MANAGEMENT REGISTERS

```

3630                                     .SBTTL KTINIT - SETUP KT11 MEMORY MANAGEMENT REGISTERS
3631
3632                                     ;*
3633                                     ;ROUTINE TO INIT KT-11
3634                                     ;-
3635                                     KTINIT:
3636 021610 005037 003100                 CLR     KTFLG                ; INIT >28K MEMORY FLAG
3637 021614 005037 003102                 CLR     KTENABLE            ; INIT TEST >28K FLAG
3638 021620 023727 002120 001577         CMP     LSHIME,#1577        ; GOT ENOUGH MEMORY (>28K)?
3639 021626 101444                        BLOS   9$                  ; NO.
3640 021630 013700 000004                 MOV     @ERRVEC,R0         ; SAVE OLD ERR VEC PTR.
3641 021634 012737 021726 000004         MOV     #28,@ERRVEC       ; SET ERR VEC PTR.
3642 021642 005737 177572                 TST    @SRO                ; GOT KT11?
3643 021646 000240                        NOP                         ; (TRAP IF NO).
3644 021650 013737 002120 003100         MOV     LSHIME,KTFLG       ; YES. SET KT FLAG.
3645 021656 042737 000177 003100         BIC    #177,KTFLG         ;
3646 021664 C10037 000004                 MOV     R0,@ERRVEC        ; RESTORE OLD ERR VEC PTR.
3647 021670 005000                        CLR     R0                 ; R0 = AR DATA.
3648 021672 012701 172340                 MOV     @KIPAR,R1         ; R1 = KI REGS PTR.
3649 021676 012761 077406 177740 1$:     MOV     #77406,-40(R1)    ; SET DESCRIPTOR REG.
3650 021704 010021                        MOV     R0,(R1)+         ; SET KIPAR REG.
3651 021706 062700 000200                 ADD     #200,R0           ; BUMP AR DATA BY "4K".
3652 021712 020027 002000                 CMP     R0,#2000         ; AT "I/O"?
3653 021716 001367                        BNE    1$                 ; NO.
3654 021720 012741 177600                 MOV     #177600,-(R1)    ; YES. SET KIPAR7 FOR I/O.
3655 021724 000405                        BR     9$                 ;
3656 021726 012716 021734 2$:           MOV     #6$, (SP)        ; SET UP RETURN
3657 021732 000002                        RTI                         ; RTI TO NEXT LOCATION
3658 021734 010037 000004 6$:           MOV     R0,@ERRVEC       ; RESTORE OLD ERR VEC PTR.
3659 021740 000207 9$:                 RTS     PC
3673 021742                                BGNPROT
3674 021742 177777 177777 177777 LSPROT:: .WORD -1, -1, -1, -1 ;NO DEVICE PROTECTION REQUIRED.
3675 021752                                ENDPROT
    
```





CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 72-2  
INITIALIZE SECTION

```

3768 022326 012001      MOV      (R0)+,R1      ;GET VECTOR ADDRESS.
3769 022330 011002      MOV      (R0),R2      ;GET INTERRUPT PRIORITY
3770 022332 010237 002160  MOV      R2,IPRI      ;SET INTERRUPT PRIORITY.
3771 022336 010137 002156  MOV      R1,IVEC      ;SET INTERRUPT VECTOR POINTER...
3772 022342 012721 017056  MOV      #INIR,(R1)+  ;...VECTOR...
3773 022346 010221      MOV      R2,(R1)+    ;...AND PRIORITY.
3774
3775 022350      1$:
3776      :      TST      QVP      ;1ST PASS ??
3777      :      BEQ      5$      ;NO, SKIP THE PASS 1 STUFF.
3778
3779      :
3780      :1ST PASS, CHECK THAT DEVICE ADDRESSES ARE VALID, AND
3781      :THAT THE DISPLAY STATUS IS PROPERLY INITIALIZED.
3782      :
3783 022350 013701 002150      MOV      UNITN,R1
3784 022354 006301      ASL      R1
3785 022356 052761 100000 003130  BIS      #BIT15,ERTABL(R1) ;SAY DEVICE RUNNING
3786 022364 005037 005232      CLR      EXTA      ;CLEAR ERROR EXTENSION FLAG.
3787 022370 023727 002012 000001  CMP      LSUNIT,#1   ;ARE WE TESTING MULTIPLE UNITS?
3788 022376 101416      BLOS     10$      ;BR IF NO.
3789 022400      RFLAGS     RO      ;YES -- GET OPERATOR FLAGS.
      022400 104421      TRAP     CSRFLA
3790 022402 032700 001000      BIT      #PNT,RO    ;SHOULD WE PRINT UNIT #?
3791 022406 001412      BEQ      10$      ;BR IF NOT.
3792 022410      PRINTF    #PUNIT,UNITN ;PRINT THE UNIT #
      022410 013746 002150      MOV      UNITN,-(SP)
      022414 012746 022502      MOV      #PUNIT,-(SP)
      022420 012746 000002      MOV      #2,-(SP)
      022424 010600      MOV      SP,RO
      022426 104417      TRAP     CSPNTF
      022430 062706 000006      ADD      #6,SP
3793 022434      10$:
3794 022434 005037 003062      CLR      NODEV
3795 022440 013701 002154      MOV      CSRADDR,R1 ;ADDRESS OF FIRST REGISTER
3796 022444 010102      MOV      R1,R2      ;START OF REGISTERS
3797 022446 062702 000000      ADD      #TSSR,R2   ;ADDRESS OF TSSR REGISTER
3798 022452 004737 017264      JSR      PC,XNXXM   ;TEST BOTH CONTROLLER REGISTERS...
3799 022456 103005      BCC      2$      ;...AND BR IF ALL OK.
3800 022460 010137 003062      MOV      R1,NODEV   ;FLAG DEVICE AS NON-EXISTENT
3801 022464 012737 177777 003060  MOV      #-1,DUFLG  ;DROP THIS UNIT.
3802 022472      2$:
3803      :
3804      :FINALLY, SET CPU PRIORITY AND WE'RE DONE.
3805      :
3806 022472      5$:      SETPRI    #PRIO0      ;ENABLE INTERRUPTS.
      022472 012700 000000      MOV      #PRIO0,RO
      022476 104441      TRAP     CSSPRI
3807 022500      ENDINIT
      022500      L10030:
      022500 104411      TRAP     CSINIT
3808
3809 022502 045 116 045 PUNIT: .ASCIZ /XNXNZA***** TESTING UNIT XD2XA *****/
3810      .EVEN

```

CZTUZAO TUBO FRONT END PRT D  
ADD AND DROP UNITS SECTIONS

MACRO M1200 29-MAR-83 13:43 PAGE 73

.SBTTL ADD AND DROP UNITS SECTIONS

```

3812
3813
3814
3815
3816
3817
3818
3819 022550
      022550
3820 022550 010001
3821 022552 006301
3822 022554 052761 100000 003130
3823 022562 042761 040000 003130
3824 022570
      022570 010046
      022572 012746 022616
      022576 012746 000002
      022602 010600
      022604 104417
      022606 062706 000006
3825 022612
      022612 000167
      022614 000026
3826 022616      045      116      045 18:
3827
3828
3829 022644
      022644
      022644 104452
3830
3831
3832
3833
3834
3835
3836
3837
3838
3839
3840
3841 022646
      022646
3842 022646 012737 177777 003060
3843 022654 010001
3844 022656 006301
3845 022660 052761 140000 003130
3846 022666 000240 000240 000240
3847 022674
      022674 010046
      022676 012746 022722
      022702 012746 000002
      022706 010600
      022710 104417
      022712 062706 000006
3848 022716
      022716 000167
      022720 000030

```

```

:++
: 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.
:--

```

```

      BGNAU
LSAU::
      MOV      RO,R1          ; GET UNIT TO BE ADDED (RO)
      ASL      R1            ; MAKE IT A WORD INDEX
      BIS      #10000,ERTABL(R1) ; SET THE 'ACTIVE' BIT
      BIC      #40000,ERTABL(R1) ; CLEAR THE 'DROPPED' BIT
      PRINTF   #1$,RO
      MOV      RO,-(SP)
      MOV      #1$,-(SP)
      MOV      #2,-(SP)
      MOV      SP,RO
      TRAP     CSPNTF
      ADD      #6,SP
      EXIT     AU
      .WORD    JSJMP
      .WORD    L10031-2-.
      .ASCIZ   /XNZA UNIT XDZA ADDED/
      .EVEN

```

```

      ENDAU          ; UNUSED.
L10031:
      TRAP     CSAU

```

```

:++
: 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-TABLEFc OF THOSE
: WHICH ARE STILL ACTIVE.
: UPON ENTRY, RO CONTAINS THE UNIT TO BE DROPPED.

```

```

      BGN DU
LSDU::
      MOV      #-1 DUFLG
      MOV      RO,R1
      ASL      R1
      BIS      #140000,ERTABL(R1) ; SAY DROPPED
      240,240,240 ; ??????????
      PRINTF   #1$,RO
      MOV      RO,-(SP)
      MOV      #1$,-(SP)
      MOV      #2,-(SP)
      MOV      SP,RO
      TRAP     CSPNTF
      ADD      #6,SP
      EXIT     DU
      .WORD    JSJMP
      .WORD    L10032-2-.

```

CZTUZAO TUBO FRONT END PRT D  
ADD AND DROP UNITS SECTIONS

MACRO M1200 29-MAR-83 13:43 PAGE 73-1

```

3849 022722 045 116 045 1$: .ASCIZ /XNXA UNIT XDXA DROPPED/
3850 .EVEN
3851 022752 ENDDU
022752 L10032: TRAP CS DU
022752 104453
3852 :++
3853 : AUTO-DROP CODE SECTION.
3854 :--
3855 022754 BGN AUTO
022754 L$AUTO::
3856 022754 012703 000550 MOV #360.,R3 ;ENOUGH TIME FOR 2400' REEL TO REWIND
3857 022760 004737 017110 JSR PC,WAITF ;WAIT FOR SSR TO SET
3858 022764 103420 BCS 20$ ;LEAVE WHEN SSR IS SET
3859 022766 DELAY 250. ;WAIT FOR .25 SECONDS
022766 012727 000372 MOV #250.,(PC)+
022772 000000 .WORD 0
022774 013727 002116 MOV LSDLY,(PC)+
023000 000000 .WORD 0
023002 005367 177772 DEC -6(PC)
023006 001375 BNE .-4
023010 005367 177756 DEC -22(PC)
023014 001367 BNE .-20
3860 023016 005303 DEC R3 ;BUMP COUNTER DOWN
3861 023020 001357 BNE 10$ ;KEEP GOING
3862 023022 004737 020142 JSR PC,CKDROP ;TRY AND DROP UNIT
3863 023026 20$: ENDAUTO ;UNUSED.
3864 023026 L10033: TRAP CS AUTO
023026 104461

```



```

023174 010600          MOV      SP,R0
023176 104416          TRAP     CSPNTS
023200 062706 000006   ADD      #6,SP
3904 023204 000431     BR       4$
3905 023206 020227 160001 3$:     CMP      R2,#160001      ; WAS UNIT NOT READY AT STARTUP?
3906 023212 001012     BNE     30$             ; BR IF NO.
3907 023214          PRINTS   #DEVNRD,R3
      023214 010346          MOV      R3,-(SP)
      023216 012746 023503   MOV      #DEVNRD,-(SP)
      023222 012746 000002   MOV      #2,-(SP)
      023226 010600          MOV      SP,R0
      023230 104416          TRAP     CSPNTS
      023232 062706 000006   ADD      #6,SP
3908 023236 000414     BR       4$
3909 023240 042702 170000 30$:   BIC     #^C7777,R2
3910 023244          PRINTS   #DEVDRD,R3,R2
      023244 010246          MOV      R2,-(SP)
      023246 010346          MOV      R3,-(SP)
      023250 012746 023564   MOV      #DEVDRD,-(SP)
      023254 012746 000003   MOV      #3,-(SP)
      023260 010600          MOV      SP,R0
      023262 104416          TRAP     CSPNTS
3911 023264 062706 000010 4$:   ADD     #10,SP
3912 023270 062704 000002   ADD     #2,R4
3913 023274 005203     INC     R3
3914 023276 020427 003330   CMP     R4,#ERTABE
3915 023302 103701     BLO    1$
3916 023304 012604     MOV     (SP)+,R4
3917 023306 012603     MOV     (SP)+,R3
3918 023310 012602     MOV     (SP)+,R2
3918 023312          ENDRPT                   ; UNUSED.
      023312          L10035:
3919 023312 104425     TRAP     CSRPT
3919 023314 045 116 045  DEVSUM: .ASCIZ /%X%DEVICE STATUS SUMMARY:%N/
3920 023351 045 101 040  DEVONL: .ASCIZ /%A UNIT %D3%A ONLINE, ERRORS = %D3N/
3921 023421 045 101 040  DEVNXR: .ASCIZ /%A UNIT %D3%A DROPPED, NON-EXISTENT REGISTER%N/
3922 023503 045 101 040  DEVNRD: .ASCIZ /%A UNIT %D3%A DROPPED, NOT READY AT STARTUP%N/
3923 023564 045 101 040  DEVDRD: .ASCIZ /%A UNIT %D3%A DROPPED, ERRORS = %D3N/
3924          .EVEN

```

CZTUZAO TUBO FRONT END PRT D  
TEST 1: WRITE TAPE MARK RETRY

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.SBTTL TEST 1: WRITE TAPE MARK RETRY

3946  
3947  
3948  
3949  
3950  
3951  
3952  
3953  
3954  
3955  
3956  
3957

↑  
: 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  
:  
:-

3958 023634  
023634  
3959 023634 005037 002170  
3960 023640 005037 003100  
3961 023644 012737 005672 002146  
3966 023652 012700 032101  
3967 023656 004737 017376  
3968 023662 012737 000002 002164  
3969 023670 005037 026534  
3970 023674

BGNTST  
CLR FATFLG ;CLEAR FATAL ERROR FLAG  
CLR KTFLG ;HOLD OFF KT11  
MOV #EPRT1,EPRTSW ;PRIMARY ERROR MESSAGE  
MOV #TST29ID,R0 ;ASCII MESSAGE TO IDENTIFY TEST  
JSR PC,TSTSETUP ;DO INITIAL TEST SETUP  
MOV #2,LOOPCNT ;PERFORM 2 ITERATIONS  
CLR T29CNT ;CLEAR TAPE RECORD COUNTER  
T29LOOP:

T1::





CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 77-2  
TEST 1: WRITE TAPE MARK RETRY

024266 000153  
024270 026670  
024272 016334  
4068 024274  
4069 024274 005103  
4070 024276 001273  
4071 024300  
024300  
024300 104403

170\$:

COM R3  
BNE 26\$  
ENDSUB

.WORD 107  
.WORD T29NEF  
.WORD EXPREC

:RESET THE SWITCH  
:BR, IF FIRST TIME THROUGH HERE

L10037:  
TRAP C\$ESUB





CZTUZAO TUBO FRONT END PRT D  
 TEST 1: WRITE TAPE MARK RETRY

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```

024710 104456 TRAP CSERHRD
024712 000162 .WORD 114
024714 027622 .WORD T29WDE
024716 011670 .WORD PKTSSR
4178 024720 180$: CKLOOP :LOOP IF SELECTED TRAP C8CLP1
024720 104406 :GET XST3 STATUS WORD
4179 024722 013701 026404 MOV T29BFR+14,R1 :SET UP EXPECTED
4180 024726 010102 MOV R1,R2 :SET THE RIB BIT
4181 024730 052702 000001 BIS #BIT0,R2 :ARE THEY EQUAL
4182 024734 020102 CMP R1,R2 :BR, IF EQUAL (GOOD)
4183 024736 001406 BEQ 190$ :INC AND CHECK FOR MORE THAN 25 ERRORS
4184 024740 004737 020070 JSR PC,FATCHK :NEF SHOULD BE SET
4188 024744 ERRHRD ERRNO,T29RIB,EXPREC
024744 104456 TRAP CSERHRD
024746 000163 .WORD 115
024750 031706 .WORD T29RIB
024752 016334 .WORD EXPREC
4189 024754 190$: ENDSUB ;>>>>>>>>> END SUBTEST >>>>>>>>>
4190 024754 L10040: TRAP CSesub
024754 104403
  
```





4285	025400	C20102		CMP	R1,R2		:ARE THEY EQUAL	
4286	025402	001406		BEQ	2228		:BR, IF OK	
4287	025404	004737	020070	JSR	PC,FATCHK		:INC AND CHECK FOR MORE THAN 25 ERRORS	
4291	025410			ERRHRD	ERRNO,T29RDG,PKTSSR		:TSSR INCORRECT AFTER SPACE CMD.	
	025410	104456					TRAP	C\$ERHRD
	025412	000172					.WORD	122
	025414	031543					.WORD	T29RDG
	025416	011670					.WORD	PKTSSR
4292	025420			2228:	CKLOOP		:LOOP IF SELECTED	
	025420	104406					TRAP	C\$CLP1
4293	025422	013701	026376	MOV	T29BFR+6,R1		:PICK UP XSTO	
4294	025426	010102		MOV	R1,R2		:SET UP EXPECTED	
4295	025430	052702	100000	BIS	#BIT15,R2		:TMK SHOULD BE SET	
4296	025434	020102		CMP	R1,R2		:IS TMK SET	
4297	025436	001406		BEQ	2268		:BR, IF TMK WAS SET (GOOD)	
4298	025440	004737	020070	JSR	PC,FATCHK		:INC AND CHECK FOR MORE THAN 25 ERRORS	
4302	025444			ERRHRD	ERRNO,T29RRN,EXPREC		:TMK NOT SET AFTER READ REV	
	025444	104456					TRAP	C\$ERHRD
	025446	000173					.WORD	123
	025450	032006					.WORD	T29RRN
	025452	016334					.WORD	EXPREC
4303	025454			2268:	CKLOOP		:LOOP IF SELECTED	
	025454	104406					TRAP	C\$CLP1
4304	025456			ENDSUB			:<<<<<<<<<<< END SUBTEST >>>>>>>>>	
	025456						L10041:	
	025456	104403					TRAP	C\$ESUB







CZTUZAO TUBO FRONT END PRT D     MACRO M1200 29-MAR-83 13:43 PAGE 80-3  
TEST 1: WRITE TAPE MARK RETRY

4442	026320		3308:	CKLOOP		;LOOP IF SELECTED		
	026320	104406						TRAP   CSCLP'
4443	026322			ENDSUB		;<<<<<<<<<< END SUBTEST >>>>>>>>>>		
	026322					L10042:		
	026322	104403						TRAP   CBESUB
4444								
4445				:				
4446				:				
4447				:				
4448	026324	004737		JSR	PC,TSTLOOP	;DO WE NEED TO ITERATE TEST		
4449	026330	103002		BCC	1638	;BR, IF NO LOOP REQUIRED		
4450	026332	00013?		JMP	T29LOOP	;EXECUTE AGAIN		
4451	026336		1638:	EXIT	TST	;ALL DONE THIS TEST		
	026336	104432						TRAP   CSEXIT
	026340	003754						.WORD  L10036-

CZTUZAO TUBO FRONT END PRT D  
TEST 1: WRITE TAPE MARK RETRY

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```

4453
4454
4455
4457 026342
4459 026350
4460 026350 014004
4461 026352 026360
4462 026354 000000
4463 026356 000012
4464 026360
4465 026360 026370
4466 026362 000000
4467 026364 000024
4468 026366 000000
4469 026370
4470
4471
4472
4474 026452
4476 026460
4477 026460 100006
4478 026462 026510
4479 026464 000000
4480 026466 000006
4482 026470
4484 026500
4485 026500 140005
4486 026502
4487 026502 003072
4488 026504 000000
4489 026506 000000
4490
4491
4492 026510
4493 026510 010
4494 026511 200
4495 026512 000000
4496 026514 000000
4497
4498
4499
4500 026516 140001
4501 026520 140401
4502 026522 141001
4503 026524 161001
4504 026526 141401
4505 026530 161401
4506 026532 177777
4507
4508 026534 000000
4509 026536 000000
4510 026540 000000

```

```

;+
;LOCAL STORAGE FOR THIS TEST
;-
      .BLKB  10-<.-TUV2A&7>
T29PACKET:
      .WORD  14004
      .WORD  T29DATA
      .WORD  0
      .WORD  10.
T29DATA:
      .WORD  T29BFR
      .WORD  0
      .WORD  20.
      .WORD  0
T29BFR: .BLKW 25.
;WRITE SUBSYSTEM MEMORY COMMAND PACKET
      .BLKB  10-<.-TUV2A&7>
T29PK2:
      .WORD  100006
      .WORD  T29BF2
      .WORD  0
      .WORD  6.
      .BLKB  10-<.-TUV2A&7>
T29PK3:
      .WORD  140005
T29RB:
T29WB: .WORD  FREE
      .WORD  0
T29SZ: .WORD  0
      .EVEN
;
T29BF2:
T29BS0: .BYTE  10
T29BS1: .BYTE  200
T29S2: .WORD  0
T29S3: .WORD  0
;
      .EVEN
;TAPE MOTION PACKET COMMAND VALUES
T29RN: .WORD  140001
T29WDR: .WORD  140401
T29CON: .WORD  141001
      .WORD  161001
      .WORD  141401
      .WORD  161401
      .WORD  177777
;
T29CNT: .WORD  0
T29RSZ: .WORD  0
T29DLY: .WORD

```

```

;COMMAND PACKET FOR TEST
;WRITE CHARACTERISTICS COMMAND, WITH CVC=1, ACK
;ADDRESS OF CHARACTERISTICS BLOCK

;STARTING VALUE OF BLOCK SIZE
;CHARACTERISTICS DATA BLOCK
;ADDRESS OF MESSAGE BUFFER

;LENGTH OF MESSAGE BUFFER

;MESSAGE BUFFER

;WRITE SUB SYS MEM COMMAND, AND ACK
;ADDRESS OF SELECT BLOCK DATA

;SIZE OF DATA PACKET

;WRITE TAPE MARK RETRY COMMAND, CVC=1 AND ACK

;ADDRESS OF WRITE BUFFER

;SIZE OF BUFFER (EXTENT)

;BSEL0 AREA
;BSEL1 AREA
;SEL 2 AREA
;DATA AREA

;READ DATA
;READ DATA REVERSE
;READ PREVIOUS OPP=0
;READ PREVIOUS OPP=1
;WRITE TAPE MARK RETRY NEXT OPP=0
;WRITE TAPE MARK RETRY NEXT OPP=1
;END OF DATA

;TAPE RECORD COUNTER STORAGE AREA
;RECORD STORAGE SIZE AREA
;DELAY COUNTER STORAGE AREA

```



CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 82-1  
 TEST 1: WRITE TAPE MARK RETRY

```

4569 032156 012721 026370      MOV      #T29BFR,(R1)+      ;ADDRESS OF MESSAGE BUFFER
4570 032162 005021              CLR      (R1)+              ;
4571 032164 012721 000024      MOV      #20,(R1)+         ;LENGTH OF MESSAGE BUFFER
4572 032170 005021              CLR      (R1)+              ;
4573 032172 012711 000000      MOV      #0,(R1)           ;SELECT DRIVE ZERO (0)
4574 032176 012702 000030      MOV      #24,R2           ;NUMBER OF LOCATIONS TO BE CLEARED
4575 032202 012762 177777 026370 64$: MOV      #177777,T29BFR(R2) ;ALL ONES TO MESSAGE BUFFER
4576 032210 005742              TST      -(R2)             ;NEXT LOCATION
4577 032212 020227 000000      CMP      R2,#0            ;CHECK FOR END OF LOOP
4578 032216 001371              BNE      64$              ;KEEP GOING UNTIL DONE
4579 032220 000207              RTS      PC                ;RETURN
4580
4581
4582 032222      T29RT2: SAVREG           ;SAVE THE REGISTERS
4583 032222      MOV      #T29PK2,R1       ;START OF THE PACKET
4584 032226 012701 026460      MOV      #140006,(R1)+    ;WRITE SUBSYSTEM MEM. WITH ACK,CVC=1,
4585 032232 012721 140006      MOV      #T29BF2,(R1)+    ;ADDRESS OF DATA BLOCK
4586 032236 012721 026510      CLR      (R1)+             ;EXTENDED ADDRESS
4587 032242 005021              MOV      #6,(R1)+         ;SIZE OF DATA BLOCK IN BYTES
4588 032244 012721 000006      CLR      (R1)+             ;
4589 032250 005021              MOV      #T29BF2,R1       ;POINT TO DATA SEL AREA
4590 032252 012701 026510      CLR      (R1)+             ;
4591 032256 005021              CLR      (R1)              ;
4592 032260 005011              CLR      (R1)              ;
4593 032262 000207              RTS      PC                ;RETURN
4594 032264      T29RT3: SAVREG           ;SAVE THE REGISTERS
4595 032264      MOV      #T29PK3,R1       ;START OF THE PACKET
4596 032270 012701 026500      MOV      #0,(R1)+         ;WRITE SUBSYSTEM MEM. WITH ACK,
4597 032274 012721 000000      MOV      #0,(R1)+         ;ADDRESS OF DATA BLOCK
4598 032300 012721 000000      CLR      (R1)+             ;EXTENDED ADDRESS
4599 032304 005021              MOV      #0,(R1)          ;SIZE OF DATA BLOCK IN BYTES
4600 032306 012711 000000      RTS      PC                ;RETURN
4601 032312 000207
4602 032314      ENDTST
      032314
      032314 104401
    
```

L10036: TRAP CSETST

CZTUZAO TUBO FRONT END PRT D
TEST 2: SKIP TAPE MARKS

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STILL TEST 2: SKIP TAPE MARKS

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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

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032316
032316 005037 002170
032322 005037 003100
032326 012737 005672 002146
032334 012700 041111
032340 004737 017376
032344 012737 000001 002164

BGN1ST
CLR FATFLG ;CLEAR FATAL ERROR FLAG
CLR KTFLG ;HOLD OFF KT11
MOV #EPRT1,EPRTSW ;PRIMARY ERROR MESSAGE
MOV #TST30ID,R0 ;ASCII MESSAGE TO IDENTIFY TEST
JSR PC,TSTSETUP ;DO INITIAL TEST SETUP
MOV #1,LOOPCNT ;PERFORM 1 ITERATIONS

TEST 2, SUBTEST 1

VERIFIES THAT A SKIP TAPE MARKS FORWARD COMMAND WITH
A TAPE MARK COUNT OF 1 OPERATES OPERATES PROPERLY. THE TAPE
IS FIRST REWOUND, THEN WRITTEN WITH SEVERAL 'FILES':
EACH FILE CONSISTS OF A NUMBER OF DATA RECORDS
FOLLOWED BY A TAPE MARK. THE FINAL FILE IS
TERMINATED BY A DOUBLE TAPE MARK. EACH DATA RECORD
CONTAINS A FILE NUMBER AND THE RECORD NUMBER WITHIN
THE FILE SO THAT TAPE POSITION CAN BE SUBSEQUENTLY
VERIFIED BY READING THE DATA. THE TAPE IS AGAIN
REWOUND AND A SERIES OF SKIP TAPE MARKS FORWARD
COMMANDS ARE ISSUED AND THE RESULTS (TAPE STATUS ALERT
TERMINATION, TPK=1 STATUS, TAPE POSITION VIA READ
COMMAND) IS CHECKED. PRIOR TO ISSUANCE OF EACH SKIP
COMMAND, A WRITE CHARACTERISTICS COMMAND IS ISSUED TO
SET UP THE ESS AND ENB CONTROL BITS. ALL
COMBINATIONS OF ESS AND ENB ARE USED (00,01,10,
11); OPERATION SHOULD BE THE SAME IN EACH CASE FOR
THIS SUBTEST.

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4662

032352
032352
032352
032352 104402

T30LOOP:
BGNSUB ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>
T2.1: TRAP CSBSUB

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 84-1  
TEST 2: SKIP TAPE MARKS

```

4663 032354 004737 041132      JSR      PC,T3OREST      ;SET COMMAND PACKET
4664 032360 005037 036534      CLR      T30FCN         ;CLEAR FILE COUNTER
4665 032364 004737 041224      JSR      PC,T3ORT2      ;SET UP OTHER COMMAND PACKET
4666 032370 004737 041266      JSR      PC,T3ORT3      ;SET UP OTHER COMMAND PACKET
4667 032374 012737 176750      MOV      #65U00.,T3ODLY ;SET UP DELAY COUNTER
4668 032402 004737 016634      JSR      PC,SOFINIT     ;DO INITIALIZE ON CONTROLLER
4669 032406 103426      BCS     20$            ;BR IF INIT WAS OK
4670 032410      DELAY    250          ;DELAY ROUTINE CALL
      032410 012727 000250      MOV      #250,(PC)+
      032414 000000      .WORD   0
      032416 013727 002116      MOV      LSDLY,(PC)+
      032422 000000      .WORD   0
      032424 005367 177772      DEC     -6(PC)
      032430 001375      BNE     .-4
      032432 005367 177756      DEC     -22(PC)
      032436 001367      BNE     .-20
4671 032440 005337 036536      DEC     T3ODLY         ;BUMP COUNTER
4672 032444 001356      BNE     10$            ;BR, IF MORE COUNTING TO DO
4673 032446 004737 020070      JSR      PC,FATCHK     ;INC AND CHECK FOR MORE THAN 25 ERRORS
4677 032452 010001      MOV      R0,R1         ;CONTENTS OF TSSR REGISTER
4678 032454      ERRDF   ERRNO,SFIERR,SFIMSG ;FATAL ERROR TSSR WAS NOT OK
      032454 104455      TRAP    CSERDF
      032456 000311      .WORD   201
      032460 003550      .WORD   SFIERR
      032462 011656      .WORD   SFIMSG
4679 032464      20$:
4680
4681 032464 012704 036350      MOV      #T3OPACKET,R4 ;SUBROUTINE NEEDS PACKET ADDRESS
4682
4683      ;*****
4684      ;ISSUE WRITE CHARACTERISTICS COMMAND
4685      ;*****
4686
4687
4688
4689 032470 004737 010322      JSR      PC,WRTCHR     ;ISSUE WRITE CHARACTERISTICS
4690 032474 103407      BCS     23$            ;BR, IF COMMAND ISSUED OK
4691 032476 004737 020070      JSR      PC,FATCHK     ;INC AND CHECK FOR MORE THAN 25 ERRORS
4695 032502 016001      MOV      R0,R1         ;SAVE CONTENTS OF TSSR
4696 032504      ERRHRD  ERRNO,WRTMSG,SFIMSG ;WRITE CHARACTERISTIC FAILED
      032504 104456      TRAP    CSERHRD
      032506 000312      .WORD   202
      032510 004754      .WORD   WRTMSG
      032512 011656      .WORD   SFIMSG
4697 032514      23$: CKLOOP          ;LOOP IF SELECTED
      032514 104406      TRAP    CSCLP1
4698
4699      ;*****
4700      ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
4701      ;*****
4702
4703
4704
4705 032516 004737 010424      JSR      PC,REWIND     ;CALL TAPE REWIND COMMAND
4706 032522 103411      BCS     30$            ;BR, IF NO PROBLEM
4707 032524 010004      MOV      R0,R4         ;GET PACKET ADDRESS
4708 032526 016501 000000      MOV      TSSR(R5),R1  ;GET STATUS REGISTER

```



CZTUZAO TUBO FRONT END PRT D  
TEST 2: SKIP TAPE MARKS

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```

032712 104457                                TRAP  CSERSOFT
032714 000315                                .WORD 205
032716 037050                                .WORD T30WDD
032720 011670                                .WORD PKTSSR
4765 032722                                70$:  CKLOOP                                :LOOP IF SELECTED
032722 104406                                TRAP  CSCLP1
4766 032724 005203                                .INC R3                                :COUNT THE RECORD COUNTER DOWN
4767 032726 020327 000021                    .CMP R3,#21                            :AT 20 YET
4768 032732 001331                    .BNE 65$                                :BR, IF NOT AT 20 RECORDS WRITTEN
4769
4770
4771
4772
4773
4774
4775
4776 032734 012737 141011 036500            MOV    #141011,T30PK3                    :WRITE TAPE MARK,ACK,CVC=1 COMMAND
4777 032742 012704 036500                    MOV    #T30PK3,R4                        :SET UP R4 WITH PACKET ADDRESS
4778 032746 010465 177776                    MOV    R4,TSDB(R5)                       :ISSUE COMMAND
4779 032752 004737 017110                    JSR    PC,WAITF                           :WAIT FOR SSR TO SET
4780 032756 016501 000000                    MOV    TSSR(R5),R1                        :PICK UP TSSR
4781 032762 012702 000200                    MOV    #SSR,R2                            :SET UP EXPECTED (SSR ONLY)
4782 032766 020102                    .CMP   R1,R2                              :WAS STATUS GOOD
4783 032770 001406                    .BEQ   160$                               :BR, IF TERMINATION WAS GOOD
4784 032772 004737 020070                    JSR    PC,FATCHK                          :INC AND CHECK FOR MORE THAN 25 ERRORS
4788 032776                                .ERRHRD ERRNO,T30WDC,PKTSSR              :TSSR NOT CORRECT AFTER WRT TAPE M.
032776 104456                                TRAP  CSERHRD
033000 000316                                .WORD 206
033002 040242                                .WORD T30WDC
033004 011670                                .WORD PKTSSR
4789 033006                                160$: CKLOOP                                :LOOP IF SELECTED
033006 104406                                TRAP  CSCLP1
4790 033010 005237 036534                    .INC   T30FCN                             :COUNT THE 'FILE' COUNTER DOWN
4791 033014 023727 036534 000006            .CMP   T30FCN,#6                          :WRITE 5 FILE TO TAPE
4792 033022 001273                    .BNE   64$                                :BR, IF NOT AT 5 FILES WRITTEN
4793
4794
4795
4796
4797
4798
4799
4800 033024 012737 141011 036500            MOV    #141011,T30PK3                    :WRITE TAPE MARK,ACK,CVC=1 COMMAND
4801 033032 012704 036500                    MOV    #T30PK3,R4                        :SET UP R4 WITH PACKET ADDRESS
4802 033036 010465 177776                    MOV    R4,TSDB(R5)                       :ISSUE COMMAND
4803 033042 004737 017110                    JSR    PC,WAITF                           :WAIT FOR SSR TO SET
4804 033046 016501 000000                    MOV    TSSR(R5),R1                        :PICK UP TSSR
4805 033052 012702 000200                    MOV    #SSR,R2                            :SET UP EXPECTED (SSR ONLY)
4806 033056 020102                    .CMP   R1,R2                              :WAS STATUS GOOD
4807 033060 001406                    .BEQ   165$                               :BR, IF TERMINATION WAS GOOD
4808 033062 004737 020070                    JSR    PC,FATCHK                          :INC AND CHECK FOR MORE THAN 25 ERRORS
4812 033066                                .ERRHRD ERRNO,T30WDC,PKTSSR              :TSSR NOT CORRECT AFTER WRT TAPE M.
033066 104456                                TRAP  CSERHRD
033070 000317                                .WORD 207
033072 040242                                .WORD T30WDC
033074 011670                                .WORD PKTSSR
4813 033076                                165$: CKLOOP                                :LOOP IF SELECTED

```

CZTUZAO TUBO FRONT END PRT D  
TEST 2: SKIP TAPE MARKS

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```

033076 104406 TRAP C$CLP1
4814
4815
4816
4817
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4819
4820
4821 033100 004737 010424 JSR PC,REWIND ;CALL TAPE REWIND COMMAND
4822 033104 103411 BCS 170$ ;BR, IF NO PROBLEM
4823 033106 010004 MOV R0,R4 ;GET PACKET ADDRESS
4824 033110 016501 000000 MOV TSSR(R5),R1 ;GET STATUS REGISTER
4825 033114 004737 020070 JSR PC,FATCHK ;INC AND CHECK FOR MORE THAN 25 ERRORS
4829 033120 ERRHRD ERRNO,T3ORWN,PKTSSR ;REWIND NOT ACCEPTED
033120 104456 TRAP C$ERHRD
033122 000320 .WORD 208
033124 040120 .WORD T3ORWN
033126 011670 .WORD PKTSSR
4830 033130 170$: CKLOOP ;LOOP IF SELECTED TRAP C$CLP1
033130 104406
4831
4832
4833
4834
4835
4836
4837
4838 033132 013701 036376 MOV T30BFR+6,R1 ;PICK UP XSTO
4839 033136 010102 MOV R1,R2 ;SET UP EXPECTED
4840 033140 052702 000002 BIS #BIT1,R2 ;SET BOT BIT IN EXPECTED
4841 033144 020102 CMP R1,R2 ;DOES EXP = REC'D
4842 033146 001406 BEQ 180$ ;BR, IF EQUAL (OK)
4843 033150 004737 020070 JSR PC,FATCHK ;INC AND CHECK FOR MORE THAN 25 ERRORS
4847 033154 ERRHRD ERRNO,T30BOT,EXPREC ;TAPE NOT AT BOT AFTER REWIND
033154 104456 TRAP C$ERHRD
033156 000321 .WORD 209
033160 037721 .WORD T30BOT
033162 016334 .WORD EXPREC
4848 033164 180$: CKLOOP ;LOOP IF SELECTED TRAP C$CLP1
033164 104406
4849 033166 012703 036516 MOV #T30IMV,R3 ;SET UP POINTER TO COMMAND TABLE
4850
4851 033172 011337 036366 182$: MOV (R3),T30ETH ;GET NEXT COMMAND
4852 033176 012704 036350 MOV #T30PACKET,R4 ;SUBROUTINE NEEDS PACKET ADDRESS
4853
4854
4855
4856
4857
4858
4859
4860 033202 004737 010322 JSR PC,WRTCHR ;ISSUE WRITE CHARACTERISTICS
4861 033206 103407 BCS 188$ ;BR, IF COMMAND ISSUED OK
4862 033210 004737 020070 JSR PC,FATCHK ;INC AND CHECK FOR MORE THAN 25 ERRORS
4866 033214 010001 MOV R0,R1 ;SAVE CONTENTS OF TSSR
4867 033216 ERRHRD ERRNO,WRTMSG,SFMSG ;WRITE CHARACTERISTICS FAILED
033216 104456 TRAP C$ERHRD

```

CZTUZAO TU80 FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 84-5  
TEST 2: SKIP TAPE MARKS

```

03322C 000322 .WORD 210
033222 004754 .WORD WRTMSG
033224 011656 .WORD SFIMSG
4868 033226 188$: CKLOOP ;LOOP IF SELECTED TRAP C$CLP1
033226 104406

4869
4870 ;*****
4871 ;
4872 ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
4873 ;
4874 ;*****
4875
4876 033230 012737 141010 036500 MOV #141010,T30PK3 ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
4877 033236 012737 000001 036502 MOV #1,T30RB ;SET UP NUMBER TO SKIP
4878 033244 012704 036500 MOV #T30PK3,R4 ;SET UP R4 WITH PACKET ADDRESS
4879 033250 010465 177776 189$: MOV R4,T30B(R5) ;ISSUE COMMAND
4880 033254 012737 176750 036536 MOV #65000,T30DLY ;SET UP DELAY COUNTER
4881 033262 004737 017110 190$: JSR PC,WAITF ;WAIT FOR SSR TO SET
4882 033266 016501 000000 MOV TSSR(R5),R1 ;PICK UP TSSR
4883 033272 032701 000200 BIT #SSR,R1 ;IS SSR SET YET
4884 033276 001017 BNE 191$ ;BR, IF SSR IS SET
4885 033300 DELAY 250 ;CALL DELAY ROUTINE
033300 012727 000250 MOV #250,(PC)+
033304 000000 .WORD 0
033306 013727 002116 MOV LSDLY,(PC)+
033312 000000 .WORD 0
033314 005367 177772 DEC -6(PC)
033320 001375 BNE -.4
033322 005367 177756 DEC -22(PC)
033326 001367 BNE .-20
4886 033330 005337 036536 DEC T30DLY ;BUMP DELAY ROUTINE
4887 033334 001352 BNE 190$ ;BR, IF MORE DELAY TO GO
4888 033336 012702 000200 191$: MOV #SSR,R2 ;SET UP EXPECTED (SSR ONLY)
4889 033342 020102 CMP R1,R2 ;WAS STATUS GOOD
4890 033344 001406 BEQ 192$ ;BR, IF TERMINATION WAS GOOD
4891 033346 004737 020070 JSR PC,FATCHK ;INC AND CHECK FOR MORE THAN 25 ERRORS
4895 033352 ERRHRD ERRNO,T30SKM,PKTSSR ;TSSR NOT CORRECT AFTER SKIP TAPE M.
033352 104456 TRAP C$SERHRD
033354 000323 .WORD 211
033356 036774 .WORD T30SKM
033360 011670 .WORD PKTSSR
4896 033362 192$: CKLOOP ;LOOP IF SFLECTED TRAP C$CLP1
033362 104406

4897
4898 ;*****
4899 ;
4900 ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
4901 ;
4902 ;*****
4903
4904 033364 013701 036376 MOV T30BFR+6,R1 ;PICK UP XSTO
4905 033370 010102 MOV R1,R2 ;SET UP EXPECTED
4906 033372 052702 100000 BIS #BIT15,R2 ;SET TMK BIT IN EXPECTED
4907 033376 020102 CMP R1,R2 ;DOES EXP = REC'D
4908 033400 001406 BEQ 195$ ;BR, IF EQUAL (OK)
4909 033402 004737 020070 JSR PC,FATCHK ;INC AND CHECK FOR MORE THAN 25 ERRORS
4913 033406 ERRHRD ERRNO,T30TMK,EXPREC ;TMK NOT SET AFTER WRT TAPE MARK

```

















CZTUZAO TUBO FRONT END PRT D  
TEST 2: SKIP TAPE MARKS

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```

035112 000347 .WORD 231
035114 040750 .WORD T30DTR
035116 016334 .WORD EXPREC
5304 035120 2208: CKLOOP ;LOOP IF SELECTED TRAP C$CLP1
035120 104406
5305 035122 013702 036534 MOV T30FCN,R2 ;GET NUMBER OF SKIPS
5306 035126 005202 INC R2 ;SET TO CORRECT FILE VALUE
5307 035130 000302 SWAB R2 ;SWAP BYTE HALVES
5308 035132 052702 000001 BIS #BIT0,R2 ;SET FOR RECORD #1
5309 035136 017701 145730 MOV @FREE,R1 ;GET INFO FROM BUFFER
5310 035142 020201 CMP R2,R1 ;ARE THEY EQUAL
5311 035144 001406 BEQ 2288 ;BR, IF EQUAL (OK)
5312 035146 004737 020070 JSR PC,FATCHK ;INC AND CHECK FOR MORE THAN 25 ERRORS
5316 035152 ERRHRD ERRNO,T30PTB,EXPREC ;RECORD POSITION WAS NOT CORRECT
035152 104456 TRAP C$ERHRD
035154 000350 .WORD 232
035156 037122 .WORD T30PTB
035160 016334 .WORD EXPREC
5317 035162 2288: CKLOOP ;LOOP IF SELECTED TRAP C$CLP1
035162 104406
5318
5319 :*****
5320 :ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
5321 :*****
5322
5323
5324
5325 035164 004737 010424 JSR PC,REWIND ;CALL TAPE REWIND COMMAND
5326 035170 103411 BCS 2308 ;BR, IF NO PROBLEM
5327 035172 010004 MOV R0,R4 ;SAVE PACKET ADDRESS
5328 035174 016501 000000 MOV TSSR(R5),R1 ;GET TSSR STATUS
5329 035200 004737 020070 JSR PC,FATCHK ;INC AND CHECK FOR MORE THAN 25 ERRORS
5333 035204 ERRHRD ERRNO,T30RWN,PKTSSR ;REWIND NOT ACCEPTED
035204 104456 TRAP C$ERHRD
035206 000351 .WORD 233
035210 040120 .WORD T30RWN
035212 011670 .WORD PKTSSR
5334 035214 2308: CKLOOP ;LOOP IF SELECTED TRAP C$CLP1
035214 104406
5335
5336 :*****
5337 :GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
5338 :*****
5339
5340
5341
5342 035216 013701 036376 MOV T30BFR+6,R1 ;PICK UP XSTO
5343 035222 010102 MOV R1,R2 ;SET UP EXPECTED
5344 035224 052702 000002 BIS #BIT1,R2 ;SET BOT BIT IN EXPECTED
5345 035230 020102 CMP R1,R2 ;DOES EXP = REC'D
5346 035232 001406 BEQ 2408 ;BR, IF EQUAL (OK)
5347 035234 004737 020070 JSR PC,FATCHK ;INC AND CHECK FOR MORE THAN 25 ERRORS
5351 035240 ERRHRD ERRNO,T30BOT,EXPREC ;TAPE NOT AT BOT AFTER REWIND
035240 104456 TRAP C$ERHRD
035242 000352 .WORD 234
035244 037721 .WORD T30BOT
035246 016334 .WORD EXPREC

```

CZTUZAO TUBO FRONT END PRT D  
TEST 2: SKIP TAPE MARKS

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5352 035250  
035250 104406  
5353 035252 005723  
5354 035254 011301  
5355 035256 020127 177777  
5356 035262 001410  
5357 035264 013701 036534  
5358 035270 000241  
5359 035272 006101  
5360 035274 010137 036534  
5361 035300 000137 034542  
5362 035304  
035304 104406  
5363 035306  
035306  
035306 104403

2408: CKLOOP  
  
TST (R3)+  
MOV (R3),R1  
CMP R1,#177777  
BEG 3308  
MOV T30FCN,R1  
CLC  
ROL R1  
MOV R1,T30FCN  
JMP 1828  
3308: CKLOOP  
  
ENDSUB

:LOOP IF SELECTED  
  
TRAP C\$CLP1  
:POINT TO NEXT POSITION  
:GET NEXT COMMAND ETC.  
:END OF TABLE MARKER  
:BR, IF AT END OF TABLE  
:GET NUMBER OF SKIPS  
:CLEAR THE CARRY BIT  
:PUSH OVER ONE POSITION  
:PUT BACK IN COUNTER  
:JUMP TO MORE COMMANDS TO DO  
:LOOP IF SELECTED  
  
TRAP C\$CLP1  
:<<<<<<<<<<<< END SUBTEST >>>>>>>>>>>>
  
L10045:  
TRAP C\$ESUB

CZTUZAO TUBO FRGNT END PRT D TEST 2: SKIP TAPE MARKS MACRO M1200 29-MAR-83 13:43 PAGE 86

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5366  
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5376  
5377  
5378  
5379

:+  
:TEST 2, SUBTEST 3  
:  
:VERIFIES THAT A SKIP TAPE MARKS REVERSE COMMAND  
:ISSUED WHILE THE TAPE IS POSITIONED AT BOT CAUSES  
:FUNCTION REJECT TERMINATION, WITH THE NON-EXECUTABLE  
:FUNCTION (NEF) ERROR BIT SET.  
:-

5380 035310  
035310  
035310  
5381 035312  
5382 035316  
5383 035322  
5384 035326  
5385 035332  
5386 035340  
5387 035344  
5388 035346  
035346  
035352  
035354  
035360  
035362  
035366  
035370  
035374  
5389 035376  
5390 035402  
5391 035404  
5395 035410  
5396 035412  
035412  
035414  
035416  
035420  
5397 035422  
5398  
5399 035422  
5400  
5401  
5402  
5403  
5404  
5405  
5406  
5407 035426  
5408 035432  
5409 035434  
5413 035440

104402  
004737 041132  
005037 036534  
004737 041224  
004737 041266  
012737 176750  
004737 016634  
103426  
012727 000250  
000000  
013727 002116  
000000  
005367 177772  
001375  
005367 177756  
001367  
005337 036536  
001356  
004737 020070  
010001  
104455  
000353  
003550  
011656

036536

```
BGNSUB               ;>>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>>>>>
                                T2.3:
                                TRAP      CSBSUS
5381 JSR      PC,T3OREST        ;SET COMMAND PACKET
5382 CLR      T30FCN           ;CLEAR FILE COUNTER
5383 JSR      PC,T3ORT2        ;SET UP OTHER COMMAND PACKET
5384 JSR      PC,T3ORT3        ;SET UP OTHER COMMAND PACKET
5385 MOV      #65000.,T3ODLY    ;SET UP DELAY COUNTER
5386 JSR      PC,SOFINIT       ;DO INITIALIZE ON CONTROLLER
5387 BCS      20$              ;BR IF INIT WAS OK
5388 DELAY    250              ;DELAY ROUTINE CALL

                                MOV      #250,(PC)+
                                .WORD    0
                                MOV      LSDLY,(PC)+
                                .WORD    0
                                DEC      -6(PC)
                                BNE     -.4
                                DEC      -22(PC)
                                BNE     .-20
5389 DEC      T3ODLY           ;BUMP COUNTER
5390 BNE     10$              ;BR, IF MORE COUNTING TO DO
5391 JSR      PC,FATCHK        ;INC AND CHECK FOR MORE THAN 25 ERRORS
5395 MOV      R0,R1            ;CONTENTS OF TSSR REGISTER
5396 ERDF    ERRNO,SFIERR,SFIMSG ;FATAL ERROR TSSR WAS NOT OK
                                TRAP      CSERJF
                                .WORD    235
                                .WORD    SFIERR
                                .WORD    SFIMSG
20$:
5399 MOV      #T3OPACKET,R4    ;SUBROUTINE NEEDS PACKET ADDRESS

:*****
:ISSUE WRITE CHARACTERISTICS COMMAND
:*****
5407 JSR      PC,WRTCHR        ;ISSUE WRITE CHARACTERISTICS
5408 BCS      23$              ;BR, IF COMMAND ISSUED OK
5409 JSR      PC,FATCHK        ;INC AND CHECK FOR MORE THAN 25 ERRORS
5413 MOV      R0,R1            ;SAVE CONTENTS OF ISSR
```

CZTUZAO TUBO FRONT END PRT D  
TEST 2: SKIP TAPE MARKS

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```

5414 035442          ERRHRD  ERRNO,WRTMSG,SFIMSG      ;WRITE CHARACTERISTISC FAILED
      035442 104456          TRAP          CSERHRD
      035444 000354          .WORD        236
      035446 004754          .WORD        WRTMSG
      035450 011656          .WORD        SFIMSG
5415 035452          23$:  CKLOOP                    ;LOOP IF SELECTED          TRAP  CSCLP1
      035452 104406
5416
5417
5418
5419
5420
5421
5422
5423 035454 004737 010424      JSR      PC,REWIND          ;CALL TAPE REWIND COMMAND
5424 035460 103411          BCS      30$              ;BR, IF NO PROBLEM
5425 035462 010004          MOV      R0,R4            ;GET PACKET ADDRESS
5426 035464 016501 000000      MOV      TSSR(R5),R1      ;GET STATUS REGISTER
5427 035470 004737 020070      JSR      PC,FATCHK        ;INC AND CHECK FOR MORE THAN 25 ERRORS
5431 035474          ERRHRD  ERRNO,T3ORWN,PKTSSR      ;REWIND NOT ACCEPTED
      035474 104456          TRAP          CSERHRD
      035476 000355          .WORD        237
      035500 040120          .WORD        T3ORWN
      035502 011670          .WORD        PKTSSR
5432 035504          30$:  CKLOOP                    ;LOOP IF SELECTED          TRAP  CSCLP1
      035504 104406
5433
5434
5435
5436
5437
5438
5439
5440 035506 013701 036376      MOV      T3OBF+6,R1       ;PICK UP XSTO
5441 035512 010102          MOV      R1,R2           ;SET UP EXPECTED
5442 035514 052702 000002      BIS      #BIT1,R2        ;SET BOT BIT IN EXPECTED
5443 035520 020102          CMP      R1,R2           ;DOES EXP = REC'D
5444 035522 001406          BEQ      40$             ;BR, IF EQUAL (OK)
5445 035524 004737 020070      JSR      PC,FATCHK        ;INC AND CHECK FOR MORE THAN 25 ERRORS
5449 035530          ERRHRD  ERRNO,T3OBOT,EXPREC      ;TAPE NOT AT BOT AFTER REWIND
      035530 104456          TRAP          CSERHRD
      035532 000356          .WORD        238
      035534 037721          .WORD        T3OBOT
      035536 016334          .WORD        EXPREC
5450 035540          40$:  CKLOOP                    ;LOOP IF SELECTED          TRAP  CSCLP1
      035540 104406          MOV      #1,T3OWB        ;SET # OF TM TO SKIP
5451 035542 012737 000001 036502  MOV      #1,T3OWB
5452
5453
5454
5455
5456
5457
5458
5459 035550 012737 141410 036500  MOV      #141410,T3OPK3    ;SKIP TAPE MARK REVERSE,ACK,CVC=1 CMD
5460 035556 012704 036500          MOV      #T3OPK3,R4      ;SET UP R4 WITH PACKET ADDRESS
5461 035562 010465 177776          MOV      R4,TSDB(R5)     ;ISSUE COMMAND

```





CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 87-1  
TEST 2: SKIP TAPE MARKS

```

5542 036012 010001          MOV    RO,R1          ;SAVE CONTENTS OF TSSR
5543 036014          ERRHRD  ERRNO,WRTMSG,SFIMSG ;WRITE CHARACTERISTIC
                                FAILED
                                TRAP   CSERHRD
                                .WORD  242
                                .WORD  WRTMSG
                                .WORD  SFIMSG
5544 036024          23$:   CKLOOP          ;LOOP IF SELECTED
                                TRAP   CSCLP1
5545
5546          ;*****
5547          ;
5548          ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
5549          ;
5550          ;*****
5551
5552 036026 004737 010424    JSR    PC,REWIND      ;CALL TAPE REWIND COMMAND
5553 036032 103411          BCS    30$           ;BR, IF NO PROBLEM
5554 036034 010004          MOV    RO,R4         ;GET PACKET ADDRESS
5555 036036 016501 000000    MOV    TSSR(R5),R1   ;GET STATUS REGISTER
5556 036042 004737 020070    JSR    PC,FATCHK     ;INC AND CHECK FOR MORE THAN 25 ERRORS
5560 036046          ERRHRD  ERRNO,T3ORWN,PKTSSR ;REWIND NOT ACCEPTED
                                TRAP   CSERHRD
                                .WORD  243
                                .WORD  T3ORWN
                                .WORD  PKTSSR
5561 036056          30$:   CKLOOP          ;LOOP IF SELECTED
                                TRAP   CSCLP1
5562
5563          ;*****
5564          ;
5565          ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
5566          ;
5567          ;*****
5568
5569 036060 013701 036376    MOV    T3OBF+6,R1    ;PICK UP XSTO
5570 036064 010102          MOV    R1,R2         ;SET UP EXPECTED
5571 036066 052702 000002    BIS    #BIT1,R2      ;SET BOT BIT IN EXPECTED
5572 036072 020102          CMP    R1,R2         ;DOES EXP = REC'D
5573 036074 001406          BEQ    40$           ;BR, IF EQUAL (OK)
5574 036076 004737 020070    JSR    PC,FATCHK     ;INC AND CHECK FOR MORE THAN 25 ERRORS
5578 036102          ERRHRD  ERRNO,T3OBOT,EXPREC ;TAPE NOT AT BOT AFTER REWIND
                                TRAP   CSERHRD
                                .WORD  244
                                .WORD  T3OBOT
                                .WORD  EXPREC
5579 036112          40$:   CKLOOP          ;LOOP IF SELECTED
                                TRAP   CSCLP1
5580 036114 013737 003072 036502  MOV    FREE,T3OWB    ;SET UP GOOD WRITE BUFFER
5581 036122 012737 000400 036506  MOV    #256.,T3OSZ   ;SET UP SIZE
5582
5583          ;*****
5584          ;
5585          ;WRITE DATA,ACK,CVC=1 COMMAND
5586          ;
5587          ;*****
5588
5589 036130 012737 140005 036500  MOV    #140005,T3OPK3 ;WRITE DATA,ACK,CVC=1 COMMAND

```





CZTUZAO TC80 FRONT END PRT D  
TEST 2: SKIP TAPE MARKS

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```

5655
5656
5657
5659 036342
5661 036350
5662 036350 100004
5663 036352 036360
5664 036354 000000
5665 036356 000012
5666 036360
5667 036360 036370
5668 036362 000000
5669 036364 000024
5670 036366 000000
5671 036370
5672
5673
5674
5676 036452
5678 036460
5679 036460 100006
5680 036462 036510
5681 036464 000000
5682 036466 000006
5684 036470
5686 036500
5687 036500 100205
5688 036502
5689 036502 003072
5690 036504 000000
5691 036506 000000
5692
5693
5694 036510
5695 036510 010
5696 036511 200
5697 036512 000000
5698 036514 000000
5699
5700
5701
5702 036516
5703 036516
5704 036516 000000
5705 036520 000100
5706 036522 000200
5707 036524 000300
5708 036526 177777
5709
5710 036530 000000
5711 036532 000000
5712 036534 000000
5713 036536 000000

```

```

: LOCAL STORAGE FOR THIS TEST
:-
: .BLKB 10-<.-TUV2AB7>
T30PACKET:
: .WORD 100004
: .WORD T30DATA
: .WORD 0
: .WORD 10.
T30DATA:
: .WORD T30BFR
: .WORD 0
: .WORD 20.
T30ETM: .WORD 0
T30BFR: .BLKB 25.
: WRITE SUBSYSTEM MEMORY COMMAND PACKET
:
: .BLKB 10-<.-TUV2AB7>
T30PK2:
: .WORD 100006
: .WORD T30BF2
: .WORD 0
: .WORD 6.
: .BLKB 10-<.-TUV2AB7>
T30PK3:
: .WORD 100205
T30RB:
T30WB: .WORD FREE
: .WORD 0
T30SZ: .WORD 0
: .EVEN
:
T30BF2:
T30BS0: .BYTE 10
T30BS1: .BYTE 200
T30S2: .WORD 0
T30S3: .WORD 0
:
: .EVEN
: TAPE MOTION PACKET COMMAND VALUES
T30IMV:
T30RN:
: .WORD 000000
: .WORD 000100
: .WORD 000200
: .WORD 000300
: .WORD 177777
:
T30CNT: .WORD 0
T30CMU: .WORD 0
T30FCN: .WORD 0
T30DLY: .WORD 0

```

```

: COMMAND PACKET FOR TEST
: WRITE CHARACTERISTICS COMMAND, WITH , ACK
: ADDRESS OF CHARACTERISTICS BLOCK
: STARTING VALUE OF BLOCK SIZE
: CHARACTERISTICS DATA BLOCK
: ADDRESS OF MESSAGE BUFFER
: LENGTH OF MESSAGE BUFFER
: SKIP TAPE MARK CONTROL
: MESSAGE BUFFER
: WRITE SUB SYS MEM COMMAND, AND ACK
: ADDRESS OF SELECT BLOCK DATA
: SIZE OF DATA PACKET
: REREAD COMMAND, IE AND ACK
: ADDRESS OF WRITE BUFFER
: SIZE OF BUFFER (EXTENT)
: BSEL0 AREA
: BSEL1 AREA
: SEL 2 AREA
: DATA AREA
: NEITHER EWB NOR ESS
: EWB SET
: ESS SET
: BOTH EWB AND ESS SET
: END OF DATA
: TAPE TIMER COUNTER STORAGE AREA
: TAPE TIMER COUNTER STORAGE AREA
: FILE NUMBER COUNTER
: DELAY COUNTER STORAGE

```



CZTUZAO TUBO FRONT END PRT D  
TEST 2: SKIP TAPE MARKS

MACRO M1200 29-MAR-83 13:43 PAGE 89-1

```

5772 041220 001371          BNE      648      :KEEP GOING UNTIL DONE
5773 041222 000207          RTS       PC       :RETURN
5774
5775
5776 041224          T30RT2:
5777 041224          SAVREG
5778 041230 012701 036460  MOV      #T30PK2,R1  :SAVE THE REGISTERS
5779 041234 012721 100006  MOV      #100006,(R1)+ :START OF THE PACKET
5780 041240 012721 036510  MOV      #T30BF2,(R1)+ :WRITE SUBSYSTEM MEM. WITH ACK.
5781 041244 005021          CLR      (R1)+       :ADDRESS OF DATA BLOCK
5782 041246 012721 000006  MOV      #6,(R1)+    :EXTENDED ADDRESS
5783 041252 005021          CLR      (R1)+       :SIZE OF DATA BLOCK IN BYTES
5784 041254 012701 036510  MOV      #T30BF2,R1  :POINT TO DATA SEL AREA
5785 041260 005021          CLR      (R1)+
5786 041262 005011          CLR      (R1)
5787 041264 000207          RTS       PC       :RETURN
5788 041266          T30RT3:
5789 041266          SAVREG
5790 041272 012701 036500  MOV      #T30PK3,R1  :SAVE REGISTERS
5791 041276 005021          CLR      (R1)+     :SET UP POINTER ADDRESS
5792 041300 005021          CLR      (R1)+     :COMMAND SPACE
5793 041302 005021          CLR      (R1)+     :ADDRESS OF DATA BLOCK
5794 041304 005011          CLR      (R1)+     :EXTENDED ADDRESS
5795 041306 000207          RTS       PC       :SIZE OF DATA TRANSFER BLOCK
5796 041310          ENDTST :RETURN
      041310
      041310 104401          L10043: TRAP CSETST
    
```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 90  
TEST 3: NO-OP ('CLEAN TAPE') AND INITIALIZE

5798  
5799  
5800  
5801  
5802  
5803  
5804  
5805  
5806  
5807  
5808  
5809

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

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

:THE TEST CONSISTS OF THE FOLLOWING 2 SUBTESTS

5810 041312  
041312  
5811 041312 005037 002170  
5812 041316 005037 003100  
5813 041322 012737 005672 002146  
5818 041330 012700 046403  
5819 041334 004737 017376  
5820 041340 012737 000002 002164  
5821 041346 005037 043176  
5822  
5823  
5824  
5825 041352

BGNTST

CLR FATFLG  
CLR KTFLG  
MOV #EPRT1,EPRTSW  
MOV #TST31ID,RO  
JSR PC,TSTSETUP  
MOV #2,LOOPCNT  
CLR T3ICNT

T3::  
:CLEAR FATAL ERROR FLAG  
:HOLD OFF KT11  
:PRIMARY ERROR MESSAGE  
:ASCII MESSAGE TO IDENTIFY TEST  
:DO INITIAL TEST SETUP  
:PERFORM 2 ITERATIONS  
:CLEAR TAPE RECORD COUNTER

:  
:-

T31LOOP:











CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 92-1  
TEST 3: NO-OP ('CLEAN TAPE') AND INITIALIZE

```

6039 042346 004737 020070      JSR    PC,FATCHK      ;INC AND CHECK FOR MORE THAN 25 ERRORS
6043 042352                      ERRHRD  ERRNO,T31BOT,EXPREC ;TAPE NOT AT BOT AFTER REWIND
                                TRAP    CSERHRD
                                .WORD   315
                                .WORD   T31BOT
                                .WORD   EXPREC
                                042352 104456
                                042354 000473
                                042356 044205
                                042360 016334
6044 042362                      40$:   CKLOOP      ;LOOP IF SELECTED
                                TRAP    CSCLP1
6045 042364 013737 003072 043152  MOV    FREE,T31WB      ;STARTING WRITE BUFFER ADDRESS
6046 042372 012737 140005 043150 65$:   MOV    #140005,T31PK3 ;WRITE DATA,CVC=1,ACK COMMAND
6047 042400 012704 043150      MOV    #T31PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
6048 042404 012700 000144      MOV    #100.,R0        ;SET PATTERN IN CORRECT REGISTER
6049 042410 004737 020362      JSR    PC,FILLMEM      ;FILL MEMORY WITH RECORD SIZE
6050 042414 012737 000144 043156  MOV    #100.,T31SZ      ;SET UP RECORD SIZE IN PACKET
6051 042422 010465 177776      MOV    R4,TSDB(R5)     ;ISSUE COMMAND
6052 042426 004737 017110      JSR    PC,WAITF        ;WAIT FOR SSR TO SET
6053 042432 016501 000000      MOV    TSSR(R5),R1     ;GET TSSR CONTENTS
6054 042436 012702 000200      MOV    #SSR,R2        ;SET UP EXPECTED
6055 042442 020102      CMP    R1,R2          ;ARE THEY EQUAL
6056 042444 001406      BEQ    80$           ;BR, IF OK
6057 042446 004737 020070      JSR    PC,FATCHK      ;INC AND CHECK FOR MORE THAN 25 ERRORS
6061                               ;SOFT ERROR, DON'T CARE ABOUT WRITE
6062                               ;COMMAND'S RESULTS - CHECKING
6063                               ;THE INITIALIZE COMMAND
6064 042452                      ERRSOFT ERRNO,T31WDC,PKTSSR ;TSSR INCORRECT AFTER WRITE DATA
                                TRAP    CSERSOFT
                                .WORD   316
                                .WORD   T31WDC
                                .WORD   PKTSSR
                                042452 104457
                                042454 000474
                                042456 045070
                                042460 011670
6065 042462                      80$:   CKLOOP      ;LOOP IF SELECTED
                                TRAP    CSCLP1
6066 042464 004737 010424      JSR    PC,REWIND      ;CALL TAPE REWIND COMMAND
6067 042470 103407      BCS    230$          ;BR, IF NO PROBLEM
6068 042472 010001      MOV    R0,R1          ;SAVE TSSR
6069 042474 004737 020070      JSR    PC,FATCHK      ;INC AND CHECK FOR MORE THAN 25 ERRORS
6073 042500                      ERRHRD  ERRNO,T31RWN,EXPREC ;REWIND NOT ACCEPTED
                                TRAP    CSERHRD
                                .WORD   317
                                .WORD   T31RWN
                                .WORD   EXPREC
                                042500 104456
                                042502 000475
                                042504 044534
                                042506 016334
6074 042510                      230$:  CKLOOP      ;LOOP IF SELECTED
                                TRAP    CSCLP1
6075 042512 013701 043046      MOV    T31BFR+6,R1    ;PICK UP XST0
6076 042516 010102      MOV    R1,R2          ;SET UP EXPECTED
6077 042520 052702 000002      BIS    #BIT1,R2       ;SET BOT BIT IN EXPECTED
6078 042524 020102      CMP    R1,R2          ;DOES EXP = REC'D
6079 042526 001406      BEQ    240$          ;BR, IF EQUAL (OK)
6080 042530 004737 020070      JSR    PC,FATCHK      ;INC AND CHECK FOR MORE THAN 25 ERRORS
6084 042534                      ERRHRD  ERRNO,T31BOT,EXPREC ;TAPE NOT AT BOT AFTER REWIND
                                TRAP    CSERHRD
                                .WORD   318
                                .WORD   T31BOT
                                .WORD   EXPREC
                                042534 104456
                                042536 000476
                                042540 044205
                                042542 016334
6085 042544                      240$:  CKLOOP      ;LOOP IF SELECTED
                                TRAP    CSCLP1
6086 042546 012737 041012 043150 265$:  MOV    #041012,T31PK3 ;INITIALIZE,CVC=1 COMMAND
6087 042554 012704 043150      MOV    #T31PK3,R4     ;SET UP R4 WITH PACKET ADDRESS

```



CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 92-3  
TEST 3: NO-OP ("CLEAN TAPE") AND INITIALIZE

	042774						L10052:		
	042774	104403					TRAP	C\$ESUB	
6138			:						
6139			:						
6140			:						
6141	042776	004737	017344		JSR	PC,TSTLOOP			
6142	043002	103002			BCC	1638			:DO WE NEED TO ITERATE TEST
6143	043004	000137	041352		JMP	T31LOOP			:BR, IF NO LOOP REQUIRED
6144	043010			1638:	EXIT	TST			:EXECUTE AGAIN
	043010	104432							:ALL DONE THIS TEST
	043012	003614					TRAP	C\$EXIT	
							.WORD	L10050-	

CZTUZAO TU80 FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 93  
 TEST 3: NO-OP ('CLEAN TAPE') AND INITIALIZE

```

6146
6147      ;+
6148      ;LOCAL STORAGE FOR THIS TEST
6149      ;-
6150      .BLKB    10-<.-TUV2A&7>
6151      T31PACKET:
6152      .WORD    100004
6153      .WORD    T31DATA
6154      .WORD    0
6155      .WORD    10.
6156      T31DATA:
6157      .WORD    T31BFR
6158      .WORD    0
6159      .WORD    20.
6160      .WORD    0
6161      T31BFR: .BLKW 25.
6162
6163      ;WRITE SUBSYSTEM MEMORY COMMAND PACKET
6164      ;
6165      .BLKB    10-<.-TUV2A&7>
6166      T31PK2:
6167      .WORD    100006
6168      .WORD    T31BF2
6169      .WORD    0
6170      .WORD    6.
6171
6172      .BLKB    10-<.-TUV2A&7>
6173      T31PK3:
6174      .WORD    100005
6175      T31RB:
6176      T31WB: .WORD  FREE
6177      .WORD    0
6178      T31SZ: .WORD  0
6179      .EVEN
6180      ;
6181      ;
6182      T31BF2:
6183      T31BS0: .BYTE  10
6184      T31BS1: .BYTE  200
6185      T31S2: .WORD  0
6186      T31S3: .WORD  0
6187      ;
6188      ;
6189      .EVEN
6190      ;TAPE MOTION PACKET COMMAND VALUES
6191      T31RN: .WORD  100205
6192      T31WDR: .WORD  100605
6193      T31CON: .WORD  102205
6194      .WORD  177777
6195
6196      ;
6197      T31CNT: .WORD  0
6198      T31CNU: .WORD  0
6199      T31DLY: .WORD  0
6200
6201
6202
6203
6204
6205
6206
6207
    
```

;COMMAND PACKET FOR TEST  
 ;WRITE CHARACTERISTICS COMMAND, WITH , ACK  
 ;ADDRESS OF CHARACTERISTICS BLOCK

;STARTING VALUE OF BLOCK SIZE  
 ;CHARACTERISTICS DATA BLOCK  
 ;ADDRESS OF MESSAGE BUFFER

;LENGTH OF MESSAGE BUFFER  
 ;MESSAGE BUFFER

;WRITE SUB SYS MEM COMMAND, AND ACK  
 ;ADDRESS OF SELECT BLOCK DATA

;SIZE OF DATA PACKET

;REREAD COMMAND, AND ACK

;ADDRESS OF WRITE BUFFER

;SIZE OF BUFFER (EXTENT)

;BSEL0 AREA

;BSEL1 AREA

;SEL 2 AREA

;DATA AREA

;REREAD DATA (NEXT)

;REREAD DATA RETRY

;WRITE CONTINOUS

;END OF DATA

;TAPE TIMER COUNTER STORAGE AREA

;TAPE TIMER COUNTER STORAGE AREA

;DELAY COUNTER





CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 96  
TEST 4: ERASE AND OPERATION INCOMPLETE

6301  
6302  
6303  
6304  
6305  
6306  
6307  
6308  
6309  
6310  
6311  
6312  
6313  
6314  
6315  
6316  
6317  
6318  
6319  
6320  
6321  
6322  
6323  
6324  
6325  
6326 046630  
046630  
6327 046630 005037 002170  
6328 046634 005037 003100  
6329 046640 012737 005672 002146  
6334 046646 012700 052440  
6335 046652 004737 017376  
6336 046656 012737 000001 002164  
6337 046664 005037 051310  
6338  
6339  
6340  
6341  
6342  
6343  
6344  
6345  
6346  
6347  
6348 046670

.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

CLR	FATFLG		T4::
CLR	KTF LG		:CLEAR FATAL ERROR FLAG
MOV	#EPRT1,EPRTSW	:HOLD OFF	KT11
MOV	#TST32ID,RO		:PRIMARY ERROR MESSAGE
JSR	PC,TSTSETUP		:ASCII MESSAGE TO IDENTIFY TEST
MOV	#1,LOOPCNT		:DO INITIAL TEST SETUP
CLR	T32CNT		:PERFORM 1 ITERATIONS
			:CLEAR TAPE RECORD COUNTER

TEST 4, SUBTEST 1

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

T32LOOP:



































































































SYMBOL TABLE

T37ISA	063764	UNREC = 000006	WRMSG	004754	XSORLL= 010000	X2.EXT= 000200
T37VCK	063054	USI 004021	XFERAS	016600	XSORLS= 040000	X2.OPM= 100000
T37WB	061242	WAITF 017110 G	XNXM	017264	XSOTMK= 100000	X2.RCE= 040000
T37WDC	063001	WC.IFA= 000200	XORBFO	007416	XSOVCK= 000020	X2.REV= 000077
T37WDD	062711	WC.IFE= 000002	XORFOR	007534	XSOWLE= 004000	X2.SPA= 035400
T37WDE	062052	WC.IGO= 000001	XST0 =	000006 G	XSOWLK= 000004	X2.UNI= 000007
T37WDF	061660	WC.IRE= 000010	XST1 =	000010 G	XS1CON 015232	X2.WCF= 002000
T37WDR	061260	WC.IRW= 000004	XST2 =	000012 G	XS2CON 015277	X3.DCK= 000010
T37WNG	061274	WC.IOT= 000100	XST3 =	000014 G	XS3CON 015344	X3.MBZ= 000006
T37WRF	064046	WC.IIT= 000040	XST4 =	000016 G	XXCOMM 003070 G	X3.MDE= 177400
T37WSS	063202	WC.ISR= 000020	XSOBOT=	000002	XSALWA= 000000	X3.OPI= 000100
T4	046630 G	WF.IED= 000010	XSOCON	015165	X\$FALS= 000040	X3.REV= 000040
T4.1	046670	WF.IER= 000004	XSOEOT=	000001	X\$OFFS= 000400	X3.RIB= 000001
T4.2	047506	WF.IHJ= 000200	XSOIE =	000040	X\$TRUE= 000020	X3.SPA= 000200
T4.3	050274	WF.IRE= 000040	XSOILA=	000400	X1.COR= 020000	X3.TRF= 000020
T5	052646 G	WF.IWF= 000020	XSOILC=	001000	X1.DLT= 100000	X4.HSP= 100000
T5.1	052706	WF.IWR= 000100	XSOLET=	020000	X1.MBZ= 017375	X4.MBZ= 017400
T6	057776 G	WF.I3R= 000002	XSOMOT=	000200	X1.RBP= 000400	X4.RCE= 040000
T6.1	060042	WF.I4R= 000001	XSONEF=	002000	X1.SPA= 040000	X4.TSM= 020000
UAM =	000200 G	WRTCHR 010322 G	XSOONL=	000100	X1.UNC= 000002	X4.WRC= 000377
UNITN	002150 G	WRTERR 005011	XSOPED=	000010		

. ABS. 072344 000  
 000000 001  
 ERRORS DETECTED: 0

VIRTUAL MEMORY USED: 36224 WORDS ( 142 PAGES)  
 DYNAMIC MEMORY: 20060 WORDS ( 77 PAGES)  
 ELAPSED TIME: 00:12:21  
 CZTUZA.BIC,CZTUZA/-SP=SVC.MLB/ML,CZTUZA