

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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IDENTIFICATION

PRODUCT ID: AC-T336A-MC
PRODUCT TITLE: CZTUZAO TU80 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 TU80 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 TU80 MAGTAPE CONTROLLER; DOCUMENT NUMBER: YM-C194D-022; REVISION NUMBER 2; DATE: 28-JUL-81.
2. ENGINEERING SPECIFICATION FOR TU80 DIAGNOSTIC PACKAGE; DOCUMENT NUMBER: YM-C194F-00; REVISION NUMBER 0; DATE: 2-SEP-81.
3. ENGINEERING SPECIFICATION FOR TU80 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
TU80 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 TU80 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 'C1QPMAO 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 'H' 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

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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.>

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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
NOT BIT (XSTO) NOT SET DURING REWIND (EXTENDED FEATURES MODE)
EXPD: 000312 RECV: 000112 XOR: 000200

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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

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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 *

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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.

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:

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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 UN-RECOVERABLE 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 OR 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.

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PROGRAM HEADER

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708          .SBTTL  PROGRAM HEADER
709
715          .MCALL  SVC
716 000000          SVC          ; INITIALIZE SUPERVISOR MACROS
717          .ENABLE LC
718          .NLIST  BEX,CND
724 000000          .ENABL  AMA,ABS
725          . = 2000
726 002000          BGNMOD  TUV2A
      002000
727
728          :++
729          : THE PPROGRAM HEADER IS THE INTERFACE BETWEEN
730          : THE DIAGNOSTIC PROGRAM AND THE SUPERVISOR.
731          :--
732
733          POINTER BGNSW,BGNSFT,BGNAU,BGNDU,BGNRPT,BGNSETUP
734 002000          HEADER  CZTUZ,A,0,655..0
735 002000          LSNAME::          ;DIAGNOSTIC NAME
      002000          .ASCII  /C/
      002001          .ASCII  /Z/
      002002          .ASCII  /T/
      002003          .ASCII  /U/
      002004          .ASCII  /Z/
      002005          .BYTE   0
      002006          .BYTE   0
      002007          .BYTE   0
      002010          LSREV::          ;REVISION LEVEL
      002010          .ASCII  /A/
      002011          LSDEPO::          ;0
      002011          .ASCII  /0/
      002012          LSUNIT::          ;NUMBER OF UNITS
      002012 000001          .WORD   T$PTHV
      002014          L$TIML::          ;LONGEST TEST TIME
      002014 001217          .WORD   655.
      002016          L$HPCP::          ;POINTER TO H.W. QUES.
      002016 071224          .WORD   L$HARD
      002020          L$SPCP::          ;POINTER TO S.W. QUES.
      002020 071364          .WORD   L$SOFT
      002022          L$HPTP::          ;PTR. TO DEF. H.W. PTABLE
      002022 002124          .WORD   L$HW
      002024          L$SPTP::          ;PTR. TO S.W. PTABLE
      002024 C02134          .WORD   L$SW
      002026          L$LADP::          ;DIAG. END ADDRESS
      002026 072332          .WORD   L$LAST
      002030          L$STA::          ;RESERVED FOR APT STATS
      002030 000000          .WORD   0
      002032          L$CO::          ;DIAGNOSTIC TYPE
      002032 000000          .WORD   0
      002034          L$DTYP::          ;APT EXPANSION
      002034 000000          .WORD   0
      002036          L$APT::          ;PTR. TO DISPATCH TABLE
      002036 000000          .WORD   0
      002040          L$DTP::          ;DIAGNOSTIC RUN PRIORITY
      002040 071552          .WORD   L$DISPATCH
      002042          L$PRIN::

```

CZTUZAO TUBO FRONT END PRT D
PROGRAM HEADER

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

002042	000000	LSENV1::	.WORD	0	;FLAGS DESCRIBE HOW IT WAS SETUP
002044					
002044	000000	LSEXP1::	.WORD	0	;EXPANSION WORD
002046					
002046	000000	LSMREV::	.WORD	0	;SVC REV AND EDIT #
002050					
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 ERRTABL
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		LSPT::			;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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737

.SBTTL DEFAULT HARDWARE P-TABLE

738

739

::++

740

: 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.

741

742

743

::--

744 002122

BGNHW

DFPTBL

:DEFAULT HARD-P-TABLE

002122 000003

.WORD

L10000-L\$HW/2

002124

L\$HW::

002124

DFPTBL::

745

746 002124

172522

.WORD

172522

: 2ND (OF 2) REGISTERS.

747 002126

000224

.WORD

224

: INTERRUPT VECTOR

748 002130

000240

.WORD

PRI05

: INTERRUPT PRIORITY.

749 002132

ENDHW

002132

L10000:

CZTUZAO TU80 FRONT END PRT D
SOFTWARE P-TABLE

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```

751                                .SBTTL  SOFTWARE P-TABLE
752
753                                ;++
754                                ; THE SOFTWARE P-TABLE CONTAINS THE VALUES OF THE PROGRAM
755                                ; PARAMETERS THAT CAN BE CHANGED BY THE OPERATOR.
756                                ;--
757 002132      BGNSW  SFPTBL
      002132      .WORD  L10001-LSSW/2
      002134      000004
      002134
      002134
758
759 002134      000000      TRANSTCT::      .WORD  0      ;ENABLE RAM DUMP IF =1
760 002136      000000      NOITS::      .WORD  0      ; INHIBIT ITERATION OPTION.
761                                ; ... 0 = ITERATE.
762                                ; ...NZ = INHIBIT ITERATE.
763 002140      000031      LERRMAX::      .WORD  25.      ; LOCAL (PER TEST) ERROR LIMIT
764 002142      000310      GERRMAX::      .WORD  200.      ; GLOBAL (PER UNIT) ERROR LIMIT
765 002144
      002144      ENDSW
766      L10001:

```

CZTUZAO TU80 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

MACRO M1200 29-MAR-83 13:43 PAGE 17-1

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	NOE== 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 TU80 FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 18
TU80 REGISTER AND PACKET DEFINITIONS

.SBTTL TU80 REGISTER AND PACKET DEFINITIONS

```

807
808
809
810
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      ;+
820      ;BIT DEFINITIONS FOR TSSR REGISTER
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!BIT5      ;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		;	
914	000006	TSREJ= 3+2	;COMMAND REJECTED
915	000006	UNREC= 6	;UNRECOVERABLE ERROR
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 MO E 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      RMPKTBE= 20      ;COMMAND PACKET BEGIN RAM ADDRESS
977      000027      RMPKTEND= 27     ;COMMAND PACKET END RAM ADDRESS
          000104      RMMSGBE= 104    ;MESSAGE BUFFER BEGIN RAM ADDRESS

```

CZTUZAO TU80 FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 18-3
TU80 REGISTER AND PACKET DEFINITIONS

```

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 MICROTEST 22
1026     000021      PW.D11 = 21      ;DO MICROTEST 11
1027     000022      PW.D13 = 22      ;DO MICROTEST 13
1028     000023      PW.NO1311 = 23      ;DISABLE MICROTEST 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 MACRO M1200 29-MAR-83 13:43 PAGE 18-4
TUBO REGISTER AND PACKET DEFINITIONS

1035	000100	WC.IOTAD	= BIT6	:ITAD0	- TRANSPORT ADDRESS BIT 0
1036	000040	WC.IITAD	= BIT5	:ITAD1	- TRANSPORT ADDRESS BIT 1
1037	000020	WC.ISRESV	= BIT4	:IRESV5	- RESERVED #5
1038	000010	WC.IREW	= BIT3	:IREW	- REWIND
1039	000004	WC.IRWU	= BIT2	:IRWU	- REWIND AND UNLOAD
1040	000002	WC.IFEN	= BIT1	:IFEN	- FORMATTER ENABLE
1041	000001	WC.IGO	= BIT0	:GO	
1042					
1043		:+			
1044		:BSEL1 CODES FOR WRITE FORMAT			
1045		:-			
1046	000200	WF.IHISP	= BIT7	:IHISP	- HIGH SPEED
1047	000100	WF.IWRT	= BIT6	:IWRT	- WRITE
1048	000040	WF.IREV	= BIT5	:IREV	- REVERSE
1049	000020	WF.IWFM	= BIT4	:IWFM	- WRITE FILE MARK
1050	000010	WF.IEDIT	= BIT3	:IEDIT	- EDIT
1051	000004	WF.IERASE	= BIT2	:IERASE	- ERASE
1052	000002	WF.I3RESV	= BIT1	:IRESV3	- RESERVED #3
1053	000001	WF.I4RESV	= BIT0	:IRESV4	- RESERVED #4
1054					
1055					
1056		:+			
1057		:BSEL1 CODES FOR WRITE MISCELLANEOUS SUBCOMMAND			
1058		:-			
1059	000200	MS.EXT	= BIT7	:INVERT SENSE OF EXTENDED FEATURES SWITCH	
1060	000020	MS.RSFIFO	= BIT4	:RESET FIFO AND INPUT PARITY ERROR	
1061	000010	MS.RSTAPE	= BIT3	:RESET TAPE STATUS IN 2 FLIP-FLOPS	
1062	000006	MS.ATTN	= BIT2:BIT1	:ATTENTION TRIGGER FIELD	
1063	000001	MS.RSD	= BIT0	:RESET TIMER A,B THEN DELAY TIMES IN SEL2	
1064		:+			
1065		:MS.ATTN SUBCODES			
1066		:-			
1067	000000	MSA.NOP	= 0*2	:NO-OP (NOTHING TRIGGERED)	
1068	000002	MSA.VOL	= 1*2	:SIMULATE ON-LINE/OFF-LINE TRANSITION	
1069	000004	MSA.NRAM	= 2*2	:FORCE NON-FATAL RAM ERROR (FORCES ERRCODE 54)	
1070	000006	MSA.FRAME	= 3*2	:FORCE FATAL RAM ERROR (CAUSES SCE TO SET)	
1071		:+			
1072		:WRITE SUBSYSTEM WRITE NPR BSEL1 BIT DEFINITIONS			
1073		:-			
1074	000200	NP.IR	= BIT7	:INTERRUPT REQUEST (0-1 TRANSITION)	
1075	000100	NP.OUT	= BIT6	:TAPE DATA DIRECTION OUT (0= IN)	
1076	000040	NP.LOOP	= BIT5	:ENABLE TRANSPORT LOOPBACK	
1077	000020	NP.WRP	= BIT4	:WRITE CORRECT PARITY (SET=0 TO WRITE WRONG)	
1078		:+			
1079		:READ STATUS MESSAGE BUFFER BIT DEFINITIONS			
1080		:-			
1081					
1082	000200	S2.DIM	= BIT7	:WORD #9 BYTE 2 DATA IN MISS	
1083	000100	S2.ILW	= BIT6	:ILW H	
1084	000040	S2.OUTRDY	= BIT5	:OUT PDY H	
1085	000020	S2.INRDY	= BIT4	:IN RDY H	
1086	000010	S2.ATIMR	= BIT3	:TIMER A FLAG H	
1087	000004	S2.BTIMR	= BIT2	:TIMER B FLAG H	
1088	000003	S2.UNDEF	= BIT1:BIT0	:(UNDEFINED)	
1089	100000	S1.PARIN	= BIT15	:WORD #8 BYTE 1 PARIN H	
1090	040000	S1.I2RESV	= BIT14	:IRESV2	
1091	020000	S1.I1RESV	= BIT13	:IRESV1	

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 18-5
TUBO REGISTER AND PACKET DEFINITIONS

1092	010000	S1.IEOT	= BIT12	:	IEOT L
1093	004000	S1.IIDENT	= BIT11	:	IIDENT H
1094	002000	S1.ICER	= BIT10	:	ICER H
1095	001000	S1.IFMK	= BIT9	:	IFMK H
1096	000400	S1.IHER	= BIT8	:	IHER H
1097	000200	SO.ISPEED	= BIT7	:	WORD #8 BYTE 0 ISPEED H
1098	000100	SO.IRDY	= BIT6	:	IRDY L
1099	000040	SO.IONL	= BIT5	:	IONL L
1100	000020	SO.ILDP	= BIT4	:	ILDP L
1101	000010	SO.IDBY	= BIT3	:	IDBY L
1102	000004	SO.IRWD	= BIT2	:	IRWD L
1103	000002	SO.IFBY	= BIT1	:	IFBY L
1104	000001	SO.IFPT	= BIT0	:	IFPT L
1105		:		:	
1106		:		:	
1107	177560	TKS	=177560	:	:KEYBOARD STATUS REGISTER
1108	177562	TKB	=177562	:	:KEYBOARD DATA REGISTER
1109	177564	TPS	=177564	:	:CONSOLE PRINTER STATUS REGISTER
1110	177566	TPB	=177566	:	:CONSOLE PRINTER DATA REGISTER
1111	007776	HIMEM	=007776	:	:HIGH MEMORY MASK VALUE
1112		:		:	
1113	174400	CSR	=174400	:	:STATUS AND CONTROL REGISTER
1114	174402	BAR	=174402	:	:DL ADDRESS REGISTER
1115	174404	DAR	=174404	:	:PLATTER ADDRESS
1116	174406	MPR	=174406	:	:MULTIPURPOSE REGISTER
1117		:		:	
1118		:		:	
1119		:		:	
1120	000004	DLGETS	=4	:	:GET STATUS COMMAND
1121	000006	SEEK	=6	:	:SEEK TRACK AND HEAD SELECT
1122	000010	DLRDHD	=10	:	:READ SECTOR HEADER
1123	000014	READ	=14	:	:READ COMMAND
1124	000016	DLRDNH	=16	:	:READ SECTOR NO HEADER CHECK
1125		:		:	
1126	000001	READY	=1	:	:DRIVE READY BIT IN STATUS REG.
1127	000013	DLSR	=13	:	:STATUS AND RESET
1128	177730	DLERR	=177730	:	:MASK FOR COVER OPEN
1129	000006	DLUN	=6	:	:HEADS UNLOADED
1130	000177	DLCYL	=000177	:	:MASK FOR CYLINDER ADDRESS
1131	100200	DLDNER	=100200	:	:DONE SET OR ERROR SET BITS
1132		:		:	
1133	071566	ROMBASE	= MOVER	:	:START OF THE BOOT ROM 00000
1134	177560	TTICSR	= 177560	:	:KEYBOARD INPUT STATUS
1135	177562	TTIBFR	= 177562	:	:KEYBOARD DATA REGISTER
1136	177564	TTOCSR	= 177564	:	:CONSOLE PRINTER STATUS REGISTER
1137	177566	TTOBFR	= 177566	:	:CONSOLE PRINTER DATA REGISTER

CZTUZAO TUBO FRONT END PRT D
SPECIAL MACROS AND OPDEFS.

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.SBTTL SPECIAL MACROS AND OPDEFS.

:+
:SAVE GENERAL REGS 1 TO 5
:-

.MACRO SAVREG
JSR R5,REGSAV
.ENDM

:+
:MACRO TO FORCE AN ERROR
:-

.MACRO FORCERROR TAG,NOTSSR

.NLIST

.IIF NDF LISTALL, .NLIST

.LIST

.IF B NOTSSR

MOV TSSR(R5),R1

;READ TSSR

.ENDC

MOV FORCER,FORCER

;IS FORCER SET? (LEAVE C BIT ALONE)

BNE TAG

;BR IF YES

.NLIST

.IIF NDF LISTALL, .LIST

.LIST

.ENDM

:+
:MACRO TO FORCE AN EXIT TO AVOID SECTION ITERATIONS
:WILL EXIT TO A LABEL IF FORCER IS NEGATIVE
:SO TO FORCE ERRORS AND EXIT ON 1 ERROR SET
:FORCER TO 177777
:TO FORCE ERRORS AND ITERATIONS SET FORCER TO 1.
:-

.MACRO FORCEEXIT TAG

.NLIST

.IIF NDF LISTALL, .NLIST

.LIST

MOV FORCER,FORCER

;IS FORCER NEGATIVE?

BMI TAG

;BR IF YES

.NLIST

.IIF NDF LISTALL, .LIST

.LIST

.ENDM

:+
:MACRO TO INCREMENT ERROR COUNTS
:-

.MACRO NEXT.ERRNO

.NLIST

...IIF NDF LISTALL, .NLIST

ERRNO=ERRNO+1

...IIF NDF LISTALL, .LIST

.LIST

.ENDM

:+

CZTUZAO TUBO FRONT END PRT D
SPECIAL MACROS AND OPDEFS.

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

```

1196      ;MACRO TO PERFORM XOR
1197      ;-
1198
1199      .MACRO XOR A,B
1200      MOV A,-(SP)
1201      BIC B,(SP)
1202      BIC A,B
1203      BIS (SP)+,B
1204      .ENDM
1205
1206      000000      EN=0 ; INITIALIZE ERROR NUMBER
1207      .SBTTL FORCER - FORCE ERROR FLAG
1208
1209      :
1210      : THE FOLLOWING LOCATIONS MAY BE PATCHED BY THE USER
1211      : TO OBTAIN THE RESULTS DESCRIBED FOR EACH.
1212      :
1213
1214      002144 000000 FORCER:: 0 ; FORCE TYPE ALL HARD ERRORS (THE ONES CALLED -
1215      ; - BY THE MACRO 'IFERROR'). AN ERROR NEED NOT -
1216      ; - EXIST, JUST ASSUME AND TYPE THE MESSAGE.
1217
1218
1219

```

CZTUZAO TU80 FRONT END PRT D
GLOBAL DATA SECTION

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.SBTTL GLOBAL DATA SECTION

```

1221
1222
1223
1224
1225
1226
1227
1228
1229
1230
1231
1232 002146 000000
1233 002150 000000
1234 002152 000000
1235 002154 000000
1236 002156 000224
1237 002160 000200
1238 002162 000000
1239 002164 000000
1240 002166 000000
1241 002170 000000
1242 002172 000000
1243 002174 000000
1244 002176 000000
1245 002200 000000
1246 002202 000000
1247 002204 000000
1248 002206
1249 002246 000000
1250 002250 000000
1251 002252 000000
1252 002254 000000
1253 002256 000000
1254 002260 000000
1255 002262 000000
1256 002264 000000
1257 002266
1258 002432
1259 002576
1260 002716 000000

```

```

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

      ;
      ;THE FOLLOWING DATA ARE SET FOR EACH UNIT AT INIT TIME.
      ;SINGLE UNIT DEFAULTS (LISTED) ARE IN THE DEFAULT P-TABLE.
      ;
      EPRTSW::      .WORD      0      ;PRINT SWITCH
      UNITN::      .WORD      0      ;UNIT # UNDER TEST.
      QVP::        .WORD      0      ;QUICK VERIFY FLAG.
      CSRADDR::    .WORD      0      ;ADDRESS OF CSR FOR CURRENT DEVICE
      IVEC::       .WORD      224    ;INTERRUPT VECTOR
      IPRI::       .WORD      PRI04  ;INTERRUPT PRIORITY.
      TSTCNT::     .WORD      0      ;NUMBER OF TESTS RUN IN THIS PASS
      LOOPCNT::    .WORD      0      ;REMAINING ITERATION COUNT FOR TEST
      DEVCNT::     .WORD      0      ;NUMBER OF DEVICE UNDER TEST
      FATFLG::     .WORD      0      ;SET IF FATAL ERROR IS DETECTED IN TEST
      INTRECV::    .WORD      0      ;SET IF TAPE INTERRUPT WAS RECEIVED
      BENBSW::     .WORD      0      ;BUFFER ENABLE SWITCH SW 0=OFF;1=ON
      EXPD::       .WORD      0      ;EXPECTED RAM DATA FOR PRAMPKT ROUTINE
      RECV::       .WORD      0      ;RECEIVED RAM DATA FOR PRAMPKT ROUTINE
      ERRHI::      .WORD      0      ;HIGH ADDRESS MEMORY ERROR
      ERRLO::      .WORD      0      ;LOW ADDRESS MEMORY ERROR
      RAMDATA::    .BLKW      16.    ;DATA READ FROM RAM PACKET OR MESSAGE BUF AREA
      RAMSIZ::     .WORD      0      ;RAM DATA SIZE FOR PRAMPKT ROUTINE
      RCVHIADD::   .WORD      0      ;RECEIVED BUFFER HIGH ADDRESS
      RCVLOADD::   .WORD      0      ;RECEIVED BUFFER LOW ADDRESS
      COUNT::      .WORD      0      ;TEST COUNT PATTERN
      DATA::      .WORD      0      ;TEST DATA
      TSTFLAG::    .WORD      0      ;TEST FLAG WORD
      TSTPTR::     .WORD      0      ;TSTBLK POINTER
      PRMNO::      .WORD      0      ;PRINT ROUTINE TEMP
      EXPMSG::     .BLKB      100.   ;EXPECTED MESSAGE BUFFER DATA
      RECMSG::     .BLKB      100.   ;RECEIVED MESSAGE BUFFER DATA
      TMPBFR::     .BLKB      80.    ;TEMPORARY STORAGE FOR PRINT
      MESBFA::     .WORD      0      ;STORES ADDRESS OF MESSAGE BUFFER FOR ERR PRT

```

CZTUZAO TUBO FRONT END PRT D
TSTBLK - TEST DATA TABLE

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.SBTTL TSTBLK - TEST DATA TABLE

```

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

```

TSTBLK::

```

.WORD 0 ;ALL ZEROS
.WORD 177777 ;ALL ONES
.WORD BIT0 ;DATA FOR WALKING ONES
.WORD BIT1
.WORD BIT2
.WORD BIT3
.WORD BIT4
.WORD BIT5
.WORD BIT6
.WORD BIT7
.WORD BIT8
.WORD BIT9
.WORD BIT10
.WORD BIT11
.WORD BIT12
.WORD BIT13
.WORD BIT14
.WORD BIT15
.WORD ^CBIT0 ;DATA FOR WALKING ZEROS
.WORD ^CBIT1
.WORD ^CBIT2
.WORD ^CBIT3
.WORD ^CBIT4
.WORD ^CBIT5
.WORD ^CBIT6
.WORD ^CBIT7
.WORD ^CBIT8
.WORD ^CBIT9
.WORD ^CBIT10
.WORD ^CBIT11
.WORD ^CBIT12
.WORD ^CBIT13
.WORD ^CBIT14
.WORD ^CBIT15
.WORD 125252 ;ALTERNATING ONES, ZEROS
.WORD 052525 ;ALTERNATING ONES, ZERO OPPOSITE FROM ABOVE

```

TBLEND==.

```

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

```

CZTUZAO TUBO FRONT END PRT D
GLOBAL ENVIRONMENT STORAGE

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```

1317          .SBTTL GLOBAL ENVIRONMENT STORAGE
1318
1319          ; STORAGE FOR DEVICE REGISTERS
1320
1321 003030 00000C 100000 000000 DUMMY: 0,100000,0,0          ; 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 LOSE 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::      .WORD 0          ; CONFIGURATION TABLES.
1346 003116 000000          CTABM::      .WORD 0          ; CONFIG WORK.
1347 003120          .WORD 0
1348 003122          .WORD 0
1349 003124          .WORD 0
1350 003126 177777          .WORD -1          ; END OF MEM TABLE.
1351 003130
1352          CTABE::
1353          ; ERROR STATISTICS TABLE (1 WORD PER UNIT), 64 UNITS MAX:
1354          :
1355          : 0 = UNIT NOT TESTED
1356          : 100000 = UNIT ONLINE, NO ERRORS
1357          : 10XXXX = UNIT ONLINE, ENCOUNTERED XXXX ERRORS
1358          : 160000 = UNIT DROPPED, NON-EXISTENT DEVICE REGISTER
1359          : 160001 = UNIT DROPPED, NOT IDLE AT START
1360          : 14XXXX = UNIT DROPPED, ENCOUNTERED XXXX ERRORS
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 MACRO M1200 29-MAR-83 13:43 PAGE 23
GLOBAL TEXT MESSAGES

.SBTTL GLOBAL TEXT MESSAGES

```

:++
: THE GLOBAL TEXT SECTION CONTAINS FORMAT STATEMENTS,
: MESSAGES, AND ASCII INFORMATION THAT ARE USED IN
: MORE THAN ONE TEST.
:--

```

```

:++
: NAMES OF DEVICES SUPPORTED
:--

```

```

DEVTYPE <TUBO>
LSDVTYP::
.ASCIZ /TUBO/
.EVEN

```

```

:++
: TEST DESCRIPTION
:--

```

```

DESCRIPT <CZTUZAO TUBO FRONT END PRT D>
LSDDESC::
.ASCIZ /CZTUZAO TUBO FRONT END PRT D/
.EVEN

```

```

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

```

1385									
1386									
1387									
1388									
1389									
1390									
1391									
1392	003400	003440	003443	003447	TSSRBIT::	.WORD	1\$,2\$,3\$,4\$,5\$,6\$,7\$,8\$		
1393	003420	003501	003505	003511		.WORD	9\$,10\$,11\$,12\$,13\$,14\$,15\$,16\$		
1394	003440	123	103	000	1\$:	.ASCIZ	'SC'		
1395	003443	102	111	105	2\$:	.ASCIZ	'BIE'		
1396	003447	123	103	105	3\$:	.ASCIZ	'SCE'		
1397	003453	122	115	122	4\$:	.ASCIZ	'RMR'		
1398	003457	116	130	115	5\$:	.ASCIZ	'NXM'		
1399	003463	116	102	101	6\$:	.ASCIZ	'MBA'		
1400	003467	102	111	124	7\$:	.ASCIZ	'BIT9'		
1401	003474	102	111	124	8\$:	.ASCIZ	'BIT8'		
1402	003501	123	123	122	9\$:	.ASCIZ	'SSR'		
1403	003505	117	106	114	10\$:	.ASCIZ	'OFL'		
1404	003511	102	111	124	11\$:	.ASCIZ	'BIT5'		
1405	003516	102	111	124	12\$:	.ASCIZ	'BIT4'		
1406	003523	102	111	124	13\$:	.ASCIZ	'BIT3'		
1407	003530	102	111	124	14\$:	.ASCIZ	'BIT2'		
1408	003535	102	111	124	15\$:	.ASCIZ	'BIT1'		
1409	003542	102	111	124	16\$:	.ASCIZ	'BIT0'		
1410						.EVEN			
1411	003550	124	123	123	SFIERR:	.ASCIZ	'TSSR ERROR AFTER SOFT INIT'		
1412	003603	124	123	123	SFHERR:	.ASCIZ	'TSSR ERROR AFTER BUS RESET'		
1413	003636	040	040	116	NXR:	.ASCIZ	/ NON-EXISTANT DEVICE REGISTER/		
1414	003675	045	101	040	NXR:	.ASCIZ	/XA ADDRESS: X06/		
1415	003716	045	101	040	TSSX:	.ASCII	/XA TSBA,TSSR EXP'D: X06XA,X06XN/		
1416	003756	045	101	040		.ASCIZ	/XA TSBA,TSSR REC'D: X06XA,X06/		

CZTUZAO TU80 FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 23-1
GLOBAL TEXT MESSAGES

1417	004015	045	116	045	FUS1:	.ASCII	/XNZA/
1418	004021	040	040	125	US1:	.ASCII2	/ UNEXPECTED INTERRUPT/
1419	004050	040	040	111	NS1:	.ASCII2	/ INTERRUPT EXPECTED, NOT RECEIVED/
1420	004113	045	116	045	FNOINTR:	.ASCII	/XNZA/
1421	004117	040	040	116	NOINTR:	.ASCII2	/ NO INTERRUPT WAS GENERATED/
1422	004154	040	040	111	IFault:	.ASCII2	/ INTERRUPT FAULT/
1423	004176	045	101	040	INTX:	.ASCII2	/X CPU PC: X06XA TSBA: X06/
1424	004233	040	040	042	NOINIT:	.ASCII2	/ 'BUS-INIT' DIDN'T INITIALIZE CONTROLLER/
1425	004305	040	040	042	NSINIT:	.ASCII2	/ 'SOFT-INIT' DIDN'T INITIALIZE THE DPU/
1426	004355	040	040	042	BRINIT:	.ASCII2	/ 'BUS-RESET' DIDN'T INITIALIZE THE DPU/
1427							
1428	004425	000			NUL:	.ASCII2	//
1429	004426	045	116	000	NULCR:	.ASCII2	/XN/
1430	004431	045	101	040	EXPGOT:	.ASCII2	/X EXP'D: X06XA, REC'D: X06/
1431	004465	045	116	045	EXPGT2:	.ASCII2	/XNZA EXP'D: X06XA, X06XNZA REC'D: X0XA, X06/
1432	004541	045	101	040	DUAD12:	.ASCII2	/X REG(W) WRITTEN TO: X06XA REG(R) READ; EXP'D: X06XA, REC'D: X06/
1433	004643	122	101	115	PKTRAM:	.ASCII2	'RAM Contents Do Not Match Packet Sent'
1434	004711	040	040	103	SCME:	.ASCII2	/ CONFIG DOESN'T MATCH MFG. MASTER/
1435	004754	127	122	111	WRTMSG:	.ASCII2	'WRITE CHARACTERISTICS Failed'
1436	005011	124	123	123	WRTERR:	.ASCII2	'TSSR Incorrect After WRITE Command, More Bits Set Than SSR'
1437	005104	124	123	123	RDERR:	.ASCII2	'TSSR Incorrect After READ Command, More Bits Set Than SSR'
1438						.EVEN	
1439							
1440							
1441							

CZTUZAO TU80 FRONT END PRT D
GLOBAL ERROR REPORT SECTION

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.SBTTL GLOBAL ERROR REPORT SECTION

1443

1444

1445

1446

1447

1448

1449

1450

1451 005176

005176

1452 005176

005176 013746 003062

005202 012746 003675

005206 012746 000002

005212 010600

005214 104415

005216 062706 000006

1453 005222 004737 005230

1454 005226

005226

005226 104423

1455

1456

1457

1458

1459

1460

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

:++

: 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.

:--

BGNMSG NXRRERR

;NON-EXISTANT DEVICE REGISTER.

NXRRERR::

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

:

: THIS ROUTINE APPENDS A UNIQUE EXTENSION (IF REQUIRED)

: TO ANY OF THE ABOVE ERROR SIGNATURES.

:

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
PRITSSR - PRINT TSSR CONTENTS

MACRO M1200 29-MAR-83 13:43 PAGE 26

.SBTTL PRITSSR - PRINT TSSR CONTENTS

1469
1470
1471
1472
1473
1474
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1476
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1486

;
+
ROUTINE TO DISPLAY THE CONTENTS, AND BIT DEFINITIONS, OF
THE TSSR REGISTER. THIS ROUTINE IS NORMALLY CALLED ONLY
BY A MESSAGE PRINTING ROUTINE

INPUTS:

R1 CONTENTS OF TSSR

SUBORDINATE ROUTINES:

CHKAMB CHECK FOR AMBIGUOUS CONTENTS

PRITSSR:

1487 005264
1488 005264
1489 005270 010104
1490 005272
005272 010446
005274 012746 006106
005300 012746 000002
005304 010600
005306 104414
005310 062706 000006
1491 005314 010400
1492 005316 004737 016704
1493 005322 103410
1494 005324
005324 012746 006326
005330 012746 000001
005334 010600
005336 104415
005340 062706 000004
1495 005344 010403
1496 005346 042703 001476
1497 005352 001434
1498 005354 012702 002576
1499 005360 012701 003400
1500 005364 005703
1501 005366 001413
1502 005370 000241
1503 005372 006103
1504 005374 103006
1505 005376 011100
1506 005400 112022
1507 005402 001376
1508 005404 112762 000054 177777
1509 005412 005721
1510 005414 000763
1511 005416 105042
1512 005420
005420 012746 002576
005424 012746 006277

SAVREG ;SAVE GENERAL REGISTERS
MOV R1,R4 ;SAVE THE TSSR CONTENTS
PRINTB #TSSRFOR,R4 ;PRINT THE CONTENTS OF TSSR
MOV R4,-(SP)
MOV #TSSRFOR,-(SP)
MOV #2,-(SP)
MOV SP,R0
TRAP C\$PNTB
ADD #6,SP
MOV R4,R0 ;GET TSSR BACK FOR CHKAMB
JSR PC,CHKAMB ;ARE CONTENTS AMBIGUOUS ?
BCS 5\$;BRANCH IF NOT
PRINTX #AMBTSSR ;SHOW CONTENTS ARE AMBIGUOUS
MOV #AMBTSSR,-(SP)
MOV #1,-(SP)
MOV SP,R0
TRAP C\$PNTX
ADD #4,SP
5\$: MOV R4,R3 ;CONTENTS OF TSSR
BIC #HIADDR!FATERR!TERCLS,R3 ;CLEAR ALL MULTIPLE BIT FIELDS
BEQ 20\$;NO BITS ARE SET
MOV #TMPBFR,R2 ;TEMPORARY ASCII BUFFER
MOV #TSSRBIT,R1 ;ASCII EQUIVALENT OF BITS
10\$: TST R3 ;REMAINING BITS TO CONVERT
BEQ 15\$;BRANCH WHEN ALL ARE DONE
CLC ;CLEAR CARRY FOR SHIFT
ROL R3 ;SHIFT NEXT BIT TO CARRY
BCC 13\$;BRANCH IF BIT NOT SET
MOV (R1),R0 ;POINTER TO BIT DEFINITION
11\$: MOVB (R0)+,(R2)+ ;MOVE ASCII TO BUFFER
BNE 11\$;MOVE ALL BITS
MOVB #' ,-(R2) ;INSERT A COMMA TO TERMINATE
13\$: TST (R1)+ ;POINT TO NEXT DESCRIPTION
BR 10\$;GET THE REMAINING BITS
15\$: CLRB -(R2) ;TERMINATE THE LINE
PRINTX #TSSDEF,#TMPBFR ;PRINT THE BIT DEFINITIONS
MOV #TMPBFR,-(SP)
MOV #TSSDEF,-(SP)

CZTUZAO TUBO FRONT END PRT D
PRITSSR - PRINT TSSR CONTENTS

MACRO M1200 29-MAR-83 13:43 PAGE 26-1

005430	012746	000002		MCV	#2,-(SP)	
005434	010600			MOV	SP,R0	
005436	104415			TRAP	CSPNTX	
005440	062706	000006		ADD	#4,SP	
1513						
1514	005444	010403	20\$:	MOV	R4,R3	;GET THE TSSR CONTENTS
1515	005446	042703	177761	BIC	#^CTERCLS,R3	;CLEAR ALL BUT TERMINATION
1516	005452	016303	006370	MOV	TCOCOD(R3),R3	;GET THE TERMINATION CODE MEANING
1517	005456			PRINTX	#TCOASC,R3	;PRINT THE TERMINATION CODE
	005456	010346		MOV	R3,-(SP)	
	005460	012746	006167	MOV	#TCOASC,-(SP)	
	005464	012746	000002	MOV	#2,-(SP)	
	005470	010600		MOV	SP,R0	
	005472	104415		TRAP	CSPNTX	
	005474	062706	000006	ADD	#6,SP	
1518	005500	010403		MOV	R4,R3	;TSSR CONTENTS AGAIN
1519	005502	042703	177717	BIC	#^CFATERR,R3	;CLEAR ALL BUT FATAL TERMINATION
1520	005506	001421		BEQ	25\$	;DON'T PRINT IF ZERO
1521	005510	006203		ASR	R3	
1522	005512	006203		ASR	R3	
1523	005514	006203		ASR	R3	
1524	005516	016303	006730	MOV	TSFCOD(R3),R3	;ALINE TERMINATION CODE FOR INDEX
1525	005522			PRINTX	#TFCASC,R3	;GET THE FATAL TERMINATION CODE
	005522	010346		MOV	R3,-(SP)	;PRINT THE FATAL TERMINATION CODE
	005524	012746	006230	MOV	#TFCASC,-(SP)	
	005530	012746	000002	MOV	#2,-(SP)	
	005534	010600		MOV	SP,R0	
	005536	104415		TRAP	CSPNTX	
	005540	062706	000006	ADD	#6,SP	
1526	005544	012737	000031 002170	MOV	#25,,FATFLG	;DROP THIS UNIT AFTER ERROR MESSAGE
1527	005552	010403		MOV	R4,R3	;GET TSSR CONTENTS
1528	005554	042703	176377	BIC	#^CHIADDR,R3	;CLEAR ALL BUT EXTENDED ADDRESS
1529	005560	001411		BEQ	30\$	;DON'T PRINT IF ZERO
1530	005562			PRINTX	#TEXASC,R3	;PRINT THE EXTENDED ADDRESS BITS
	005562	010346		MOV	R3,-(SP)	
	005564	012746	006126	MOV	#TEXASC,-(SP)	
	005570	012746	000002	MOV	#2,-(SP)	
	005574	010600		MOV	SP,R0	
	005576	104415		TRAP	CSPNTX	
	005600	062706	000006	ADD	#6,SP	
1531	005604	022704	100210	30\$:	CMP	#100210,R4
1532	005610	001003		BNE	31\$	;CHECK FOR MEDIA ERROR
1533	005612	012737	006015 002146	MOV	#EPRT3,EPRTSW	;BR, IF PROBABLY NOT TAPE ERROR
1534	005620	005737	002146	31\$:	TST	EPRTSW
1535	005624	001003		BNE	310\$	;PROBABLY MEDIA RELETED ERROR - BAD TAPE"
1536	005626	012737	005672 002146	MOV	#EPRT1,EPRTSW	;CHECK FOR THE SWITCH EMPTY
1537	005634	013737	002146 005644	310\$:	MOV	EPRTSW,32\$+2
1538	005642			32\$:	PRINTB	#EPRT1
	005642	012746	005672	MOV	#EPRT1,-(SP)	;BR, IF SWITCH IS NOT EMPTY
	005646	012746	000001	MOV	#1,-(SP)	;SET SWITCH TO DEFAULT
	005652	010600		MOV	SP,R0	;PUT REAL SWITCHABLE MESSAGE IN PLACE
	005654	104414		TRAP	CSPNTB	;PRINT THE ERROR MESSAGE
	005656	062706	000004	ADD	#4,SP	
1539	005662	012737	005672 002146	MOV	#EPRT1,EPRTSW	;RESET TO NORMAL ERROR POINTER
1540	005670	000207		RTS	PC	;RETURN TO CALLER
1541						
1542	005672	045	116	045	EPRT1: .ASCIZ	'XNXA *****CHECK TRANSPORT*****XS'

CZTU7A0 TU80 FRONT END PRT D
PRITSSR - PRINT TSSR CONTENTS

MACRO M1200 29-MAR-83 13:43 PAGE 26-2

1543	005733	045	116	045	EPRT2: .ASCIZ	'XNZA *****CHECK PARITY SWITCH IN TRANSPORT*****XS'
1544	006015	045	116	045	EPRT3: .ASCIZ	'XNZA *****POSSIBLE MEDIA RELATED ERROR - BAD IAPE*****XS'
1545	006106	045	116	045	TSSRFOR: .ASCIZ	'XNZA TSSR = X06'
1546	006126	045	116	045	TEXASC: .ASCIZ	'XNZA Extended Address Bits = X06'
1547	006167	045	116	045	TCOASC: .ASCIZ	'XNZA Termination Class Code = XT'
1548	006230	045	116	045	TFCASC: .ASCIZ	'XNZA Fatal Termination Class Code = XT'
1549	006277	045	116	045	TSSDEF: .ASCIZ	'XNZA TSSR Bits Set: XT'
1550	006326	045	116	045	AMBTSSR: .ASCIZ	'XNZA TSSR Contents Are Ambiguous'
1551					.EVEN	
1552	006370	006410	006433	006461	TCOCOD: .WORD	1\$,2\$,3\$,4\$,5\$,6\$,7\$,8\$
1553	006410	116	157	162	1\$: .ASCIZ	'Normal Termination'
1554	006433	124	145	162	2\$: .ASCIZ	'Termination Condition'
1555	006461	124	141	160	3\$: .ASCIZ	'Tape Status Alert'
1556	006503	106	165	156	4\$: .ASCIZ	'Function Reject'
1557	006523	122	145	143	5\$: .ASCIZ	'Recoverable Error - Tape Position One Record Down'
1558	006605	122	145	143	6\$: .ASCIZ	'Recoverable Error - Tape Was Not Moved'
1559	006654	125	156	162	7\$: .ASCIZ	'Unrecoverable Error'
1560	006700	106	141	164	8\$: .ASCIZ	'Fatal Controller Error'
1561					.EVEN	
1562						
1563	006730	006740	006774	007005	TSFCOD: .WORD	1\$,2\$,3\$,4\$
1564	006740	111	156	164	1\$: .ASCIZ	'Internal Diagnostic Failure'
1565	006774	122	145	163	2\$: .ASCIZ	'Reserved'
1566	007005	102	165	163	3\$: .ASCIZ	'Bus Interface or Sanity Check Error'
1567	007051	122	145	163	4\$: .ASCIZ	'Reserved'
1568					.EVEN	

CZTUZAO TU80 FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 27
 PRIPKT - PRINT THE ADDRESS/CONTENTS OF COMMAND PACKET

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1570 .SBTTL PRIPKT - PRINT THE ADDRESS/CONTENTS OF COMMAND PACKET
1571
1572 :+
1573 :THIS ROUTINE PRINTS THE ADDRESS AND CONTENTS OF A COMMAND PACKET.
1574 :THIS ROUTINE IS NORMALLY ONLY CALLED FROM A PRINT ROUTINE.
1575 :INPUT:
1576 :      R0      NUMBER OF WORDS IN PACKET
1577 :      R3      HIGH ORDER COMMAND PACKET ADDRESS
1578 :      R4      ADDRESS OF COMMAND PACKET
1579 :      NOTE:   R3 IS IGNORED IF THE KENABLE FLAG IS CLEAR.
1580
1580 PRIPKT::
1581   SAVREG      ;SAVE THE REGISTERS
1582   MOV R0,R5   ;SAVE NO. OF WORDS IN PACKET
1583   TST KENABLE ;ABOVE 28K UNDER TEST?
1584   BNE 10$    ;BR IF YES
1585   CLR R3     ;SET HIGH ORDER ADDRESS TO 0
1586   MOV R3,R1  ;COPY HIGH ORDER ADDRESS
1587   MOV R4,R0  ;GET LOWER ADDRESS
1588   ROL R0     ;SHIFT BIT 15 INTO C BIT
1589   ROL R1     ;AND INTO HIGH ORDER.
1590   PRINTB #PKTADD,R1,R4 ;PRINT PACKET ADDRESS
1591   MOV R4,-(SP)
1592   MOV R1,-(SP)
1593   MOV #PKTADD,-(SP)
1594   MOV #3,-(SP)
1595   MOV SP,R0
1596   TRAP C$PNTB
1597   ADD #10,SP
1598   MOV R3,R0  ;GET HIGH ORDER ADDRESS
1599   BEQ 20$    ;BR IF NOT ABOVE 28K.
1600   MOV R4,R1  ;GET LOW ORDER ADDRESS
1601   JSR PC,SETMAP ;SETUP PAR6 MAPPING FOR 18 BIT ADDRESS
1602   MOV R0,R4  ;GET RETURNED PAR6 ADDRESS BIAS
1603   CLR R1     ;SAVE WORD NUMBER
1604   MOV (R4)+,R2 ;GET PACKET CONTENTS
1605   PRINTB #PKTFRM,R1,R2 ;PRINT THE DATA
1606   MOV R2,-(SP)
1607   MOV R1,-(SP)
1608   MOV #PKTFRM,-(SP)
1609   MOV #3,-(SP)
1610   MOV SP,R0
1611   TRAP C$PNTB
1612   ADD #10,SP
1613   INC R1     ;NEXT WORD NUMBER
1614   CMP R1,R5  ;DONE ALL PACKET WORDS?
1615   BLT 25$    ;LOOP TILL ALL DONE
1616   PRINTB #PKTNEW ;JUST A COUPLE NEW LINES
1617   MOV #PKTNEW,-(SP)
1618   MOV #1,-(SP)
1619   MOV SP,R0
1620   TRAP C$PNTB
1621   ADD #4,SP
1622   RTS PC    ;RETURN
1623   'ZNZA Packet Word #XD1XA = X06'
1624   'ZNZA Packet Address = X01X05'
1625   'ZNZNZA '
1626   .EVEN

```

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

```

1609                                .SBTTL PRIBXOR - PRINT EXPD, RECV AND XOR BYTE
1610
1611                                :+
1612                                :PRINT EXPECTED DATA, RECEIVED DATA, AND XOR OF THE DATA BYTE
1613                                :THIS ROUTINE IS NORMALLY CALLED ONLY FOR PRINT ROUTINES.
1614
1615                                :INPUTS:
1616                                :
1617                                :      R1      RECEIVED DATA
1618                                :      R2      EXPECTED DATA
1619
1620                                :OUTPUT:
1621                                :
1622                                :      P0      XOR OF EXPECTED/RECEIVED DATA
1623                                :
1624                                :-
1625
1626                                PRIBXOR::
1627                                SAVREG                                :SAVE THE REGISTERS
1628                                MOV      R2,R3                        :EXPECTED DATA
1629                                XOR      R1,R3                        :FORM THE EXCLUSIVE OR
1630                                MOV      #^C<377>,R0                :BYTE MASK
1631                                BIC      R0,R1                        :SAVE LOW BYTE RECV
1632                                BIC      R0,R2                        :SAVE LOW BYTE EXPD
1633                                BIC      R0,R3                        :SAVE LOW BYTE XOR
1634                                PRINTB  #XORBFOR,R2,R1,R3 ;PRINT THE MESSAGE
1635                                MOV      R3,-(SP)
1636                                MOV      R1,-(SP)
1637                                MOV      R2,-(SP)
1638                                MOV      #XORBFOR,-(SP)
1639                                MOV      #4,-(SP)
1640                                MOV      SP,R0
1641                                TRAP     CSPNTB
1642                                ADD      #12,SP
1643                                MOV      R3,R0                        :R0 HAS XOR ON RETURN
1644                                RTS      PC                          :RETURN TO CALLER
1645
1646                                .ASCIZ  '%X%A EXPD: %03XA RECV: %03XA XOR: %03'
1647                                .EVEN
1648
1649                                045      116      045  XORBFOR:
1650
1651

```

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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:+
 :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
 :-

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

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

XORFOR: .ASCIZ 'XN% EXPD: %06% RECV: %06% XOR: %06'
 .EVEN

CZTUZAO TU80 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

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```

: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:
:
:--

```

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
1807 010166 010337 010312
1808 010172 052737 000400 010310
1809 010200 012704 010310
1810 010204 010465 177776
1811 010210 004737 017110
1812 010214 103420
1813 010216
010216 012727 000250
010222 000000
010224 013727 002116
010230 000000
010232 005367 177772
010236 001375

```

SPACE::
:SAVREG
:MOV #500,SDELAY
:MOV #140010,R0
:TST R3
:BMI 5$
:MOV R3,R0
:BR 10$
5$: BIC #BIT15,R3
:MOV R3,R0
:BIS #BIT8,R0
10$: MOV #R0,R4
:MOV R4,TSD(R5)
15$: JSR PC,WAITF
:BCS 20$
:DELAY 250
:MOV #250,(PC)+
:WORD 0
:MOV LSDLY,(PC)+
:WORD 0
:DEC -6(PC)
:BNE -4
:SAVE THE GENERAL REGISTERS
:SET UP DELAY
:SET UP COMMAND, SPACE FORWARD
:CHECK FOR DIRECTION
:BR, IF REVERSE INDICATED
:LOAD UP NUMBER OF RECORDS TO SPACE
:GO DO COMMAND
:CLEAR DIRECTION BIT
:LOAD UP NUMBER OF RECORDS TO SPACE
:SET REVERSE BIT IN COMMAND PACKET
:SET UP R4 WITH PACKET ADDRESS
:SEND OUT COMMAND
:WAIT FOR SSR
:BR, IF SSR IS SET AND OK
:DELAY ABOUT .25 SECONDS

```

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 TROUBLE
1823	010276	000401			BR	708	:EXIT
1824	010300	000241		608:	CLC		: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-<.-TUV2AB7>
1837		:		
1838		:	COMMAND WORD	
1839	010310		80S: .WORD	
1840			:NUMBER OF RECORDS TO BE SPACED OVER WORD	
1841	010312		90S: .WORD	
1842	010314		.WORD	
1843	010316		.WORD	
1844	010320		SDELAY: .WORD	0 ;DELAY COUNTER
1845			.EVEN	

CZTUZAO TU80 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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1878 010322
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1880 010326 005037 002174
1881 010332 010465 177776
1882 010336 004737 017224
1883 010342 103401
1884 010344 000423
1885 010346 016501 000000
1886 010352 012702 000200
1887 010356 032701 000100
1888 010362 001402
1889 010364 052702 000100
1890 010370 020201
1891 010372 001401
1892 010374 000407
1893 010376 062704 000010
1894 010402 011403
1895 010404 010337 002716
1896 010410 000261
1897 010412 000401
1898 010414 000241
1899 010416 016500 000000
1900 010422 000207
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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
      CLR      BENBSW
10$:  MOV      R4,TSDB(R5)
      JSR      PC,CHKTSSR
      BCS      20$
      BR       60$
20$:  MOV      TSSR(R5),R1
      MOV      #SSR,R2
      BIT      #OFL,R1
      BEQ      25$
      BIS      #OFL,R2
25$:  CMP      R2,R1
      BEQ      40$
      BR       60$
40$:  ADD      #8,R4
      MOV      (R4),R3
      MOV      R3,MESBFA
      SEC
      BR       70$
60$:  CLC
70$:  MOV      TSSR(R5),R0
      RTS      PC
:SAVE THE GENERAL REGISTERS
:CLEAR BUFFER ENABLE SWITCH
:SEND OUT COMMAND
:WAIT FOR SSR
:BR, IF SSR IS SET AND OK
:BR IF TROUBLE CARRY = CLEAR
:READ TSSR
:SET UP EXPECTED
:WAS OFF LINE SET IN TSSR
:BR, IF NO OFL SET
:MAKE THEM LOOK ALIKE
:ARE THEY OK
:BR, IF EQUAL = OK
:TROUBLE EXIT
:POINT TO WRT CHARA DATA PACKET
:GET ADDRESS OF MESSAGE BUFFER
:STORE FOR PRINT ROUTINES
:SET CARRY NO TROUBLE
:EXIT
:CARPY CLEAR = ERROR
:RETURN TSSR CONTENTS
:RETURN

```

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

REWIND::

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

SAVREG
MOV #RWPACK,R4 ;SAVE R1-R5 UNTIL NEXT RETURN
MOV R4,TSDB(R5) ;GET PACKET ADDRESS
MOV #360.,R3 ;SEND PACKET ADDRESS TO EXECUTE
10\$: JSR PC,WAITF ;ENOUGH TIME FOR 2400' REEL TO REWIND
BCS 20\$;WAIT FOR SSR TO SET
DELAY 250. ;LEAVE WHEN SSR IS SET
MOV #250.,(PC)+ ;WAIT FOR .25 SECONDS
.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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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

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

```

CZTUZAO TU80 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
	MOVB R2,TSDBH(R5)	:SELECT NEXT RAM ADDRESS
	JSR PC,CHKTSSR	:WAIT FOR SSR TO SET
	MOVB 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
	MOVB (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 36-1
RAMER - READ AND DISPLAY SELECTED RAM

2051	011006	000207			50\$:	RTS	PC	:RETURN
2052								
2053	011010	000000			RAMHLD:	.WORD	0	;RAM ADDR HOLDER 1ST ADDRESS
2054	011012	000000			RAMR5H:	.WORD	0	;HOLDS R5 FOR LATER
2055	011014	045	116	045	RAMIOP:	.ASCIZ	'%NZA Ram Address (Octal) = %03XA - %03XN'	
2056	011065	045	101	040	RAMPD:	.ASCIZ	'XA %03XA '	
2057						.EVEN		
2058								

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 :ROUTINE TO READ THE FIRST 8 OR 10 BYTES FROM RAM
2063 :MEMORY AND COMPARE THIS DATA TO A CHARACTERISTICS DATA BLOCK.
2064 :
2065 :INPUT:
2066 :
2067 :      R4      ADDRESS OF THE CHARACTERISTICS DATA
2068 :      R5      FIRST DEVICE UNIBUS ADDRESS
2069 :
2070 :OUTPUT:
2071 :
2072 :      CARRY   SET - RAM MATCHES PACKET
2073 :             CLR - RAM DOES NOT MATCH PACKET
2074 :
2075 :IMPLICIT OUTPUT:
2076 :
2077 :      THE TABLE RAMDATA IS FILLED WITH THE
2078 :      DATA HELD IN RAM.
2079 :      RAMSIZ IS SET TO 8. OR 10. FOR PRAMPKT ROUTINE
2080 :
2081 :SIDE EFFECTS:
2082 :
2083 :
2084 :-
2085 :
2086 :
2087 CKRAM2::
2088     SAVREG                     ;SAVE THE GENERAL REGISTERS
2089     MOV      #RAMDATA,R1       ;ADDRESS TO SAVE THE RAM DATA
2090     MOV      #RMCHBEG,R2       ;BYTE ADDRESS OF FIRST RAM DATA
2091     CLR      R3                ;CLEAR THE ERROR FLAG
2092     JSR      PC,CHKTSSR        ;WAIT FOR SSR
2093     JSR      PC,CHKYSSR        ;WAIT FOR SSR TO SET
2094     MOV      R2,TSDBH(R5)      ;SELECT NEXT RAM ADDRESS
2095     JSR      PC,CHKTSSR        ;WAIT FOR SSR TO SET
2096     MOV      TSBAL(R5),(R1)    ;READ THE RAM DATA
2097     CMP      (R1)+,(R4)+      ;COMPARE TO EXPECTED
2098     BEQ      20$              ;BRANCH IF OK
2099     INC      R3               ;SET ERROR FLAG
2100     INC      R2               ;ADDRESS OF NEXT RAM LOCATION
2101     MOV      #8,RAMSIZ        ;ASSUME NORMAL NOT SET
2102     CMP      R2,#RMCHEND-2    ;REACHED END YET ?
2103     BLE      10$             ;BRANCH TILL ALL READ
2104     TST      R3              ;WAS AN ERROR FOUND ?
2105     BEQ      30$             ;BRANCH IF NOT
2106     CLC                     ;CLEAR CARRY TO SHOW ERROR
2107     BR       50$             ;AND EXIT
2108     SEC                     ;SHOW GOOD COMPARE
2109     RTS      PC              ;RETURN
2110

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2087	011100				
2088	011100				
2089	011104	012701	002206		
2090	011110	012702	000167		
2091	011114	005003			
2092	011116	004737	017224		
2093	011122	004737	017224	10\$:	
2094	011126	110265	177777		
2095	011132	004737	017224		
2096	011136	116511	177776		
2097	011142	122124			
2098	011144	001401			
2099	011146	005203			
2100	011150	005202		20\$:	
2101	011152	012737	000010		002246
2102	011160	020227	000176		
2103	011164	003756			
2104	011166	005703		27\$:	
2105	011170	001402			
2106	011172	000241			
2107	011174	000401			
2108	011176	000261		30\$:	
2109	011200	000207		50\$:	
2110					

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

.SBTTL CKMSG - COMPARE WRITE CHAR. MESSAGE BUFFERS

ROUTINE TO COMPARE A WRITE CHARACTERISTICS EXPD AND RECV
BUFFER. THE EXPECTED AND RECEIVED BUFFERS ARE STORED FOR
ERROR PRINT ROUTINES.

INPUT:

R0 RECV MESSAGE BUFFER HIGH ORDER ADDRESS
R1 RECV MESSAGE BUFFER LOW ORDER ADDRESS
R2 EXPD MESSAGE BUFFER ADDRESS

OUTPUT:

CARRY SET - MESSAGE BUFFERS MATCH
CLR -MESSAGE BUFFERS DON'T MATCH

IMPLICIT OUTPUT:

EXPMSG BUFFER IS SET TO EXPD DATA
RECMSG BUFFER IS SET TO RECV DATA
RCVHIADD SET TO HIGH ORDER ADDRESS OF RECV
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),RECMSG(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$:            SEC
60$:            RTS        PC ;SET SUCCESS
;RETURN

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2137 011202
2138 011202
2139 011206 010037 002250
2140 011212 010137 002252
2141 011216 005737 003102
2142 011222 001403
2143 011224 004737 020256
2144 011230 010001
2145 011232 005004
2146 011234 005003
2147 011236 010205
2148 011240 011264 002266
2149 011244 011164 002432
2150 011250 022221
2151 011252 001401
2152 011254 005203
2153 011256 062704 000002
2154 011262 020427 000014
2155 011266 003764
2156 011270 032765 000200 000012
2157 011276 001403
2158 011300 020427 000016
2159 011304 003755
2160 011306 005703
2161 011310 001402
2162 011312 000241
2163 011314 000401
2164 011316 000261
2165 011320 000207
2166

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

.SBTTL CKMSG2 - COMPARE EXPD RECV MESSAGE BUFFERS

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011322
011322
011326 020327 000144
011332 003412
011334 012703 000144
011340
011340 012746 011454
011344 012746 000001
011350 010600
011352 104417
011354 062706 000004
011360 010037 002250
011364 010137 002252
011370 005737 003102
011374 001403
011376 004737 020256
011402 010001
011404 005004
011406 005005
011410 111264 002266
011414 111164 002432
011420 122221
011422 001401
011424 005205
011426 062704 000001
011432 020403
011434 002001
011436 000764
011440 005705
011442 001402

```

ROUTINE TO COMPARE AN EXPECTED AND RECEIVED MESSAGE
BUFFER. THE EXPECTED AND RECEIVED BUFFERS ARE STORED FOR
ERROR PRINT ROUTINES.

INPUT:
R0      RECV MESSAGE BUFFER HIGH ORDER ADDRESS
R1      RECV MESSAGE BUFFER LOW ORDER ADDRESS
R2      EXPD MESSAGE BUFFER ADDRESS
R3      NUMBER OF BYTES TO COMPARE

OUTPUT:
CARRY   SET - MESSAGE BUFFERS MATCH
        CLR - MESSAGE BUFFERS DON'T MATCH

IMPLICIT OUTPUT:
EXPMSG  BUFFER IS SET TO EXPD DATA
RECVMSG BUFFER IS SET TO RECV DATA
RCVHIADD SET TO HIGH ORDER ADDRESS OF RECV
RCVLOADD SET TO LOW ORDER ADDRESS OF RECV

CKMSG2::
    SAVREG                ;SAVE R1-R5 UNTIL NEXT RETURN
    CMP R3,#RECVMSG-EXPMSG;ADD IS COUNT ABOVE MAX ALLOWED?
    BLE 5$                ;ADD BR IF NO
    MOV #RECVMSG-EXPMSG,R3;ADD
    PRINTF #DEBUGMSG      ;ADD
    MOV #DEBUGMSG,-(SP)
    MCV #1,-(SP)
    MOV SP,R0
    TRAP C$PNIF
    ADD #4,SP
5$:  MOV R0,RCVHIADD        ;SAVE RECV HIGH ADDRESS
    MOV R1,RCVLOAD         ;SAVE RECV LOW ADDRESS
    TST K$ENABLE           ;TESTING ABOVE 28K?
    BEQ 10$                ;BR IF NO
    JSR PC,SETMAP          ;RETURN ADDRESS BIASED TO PAR6 IN R0
    MOV R0,R1              ;GET RETURNED ADDRESS BIASED TO PAR6
10$: CLR R4                ;WORD IN BUFFER
    CLR R5                 ;CLEAR ERROR SEEN FLAG
15$: MOVB (R2),EXPMSG(R4)  ;SAVE EXPD FOR ERROR REPORT?
    MOVB (R1),RECVMSG(R4) ;SAVE RECV FOR ERROR REPORT
    CMPB (R2)+,(R1)+       ;EXPD EQUAL RECV?
    BEQ 25$                ;BR IF YES
    INC R5                 ;SET ERROR SEEN FLAG
25$: ADD #1,R4              ;POINT TO NEXT BYTE
    CMP R4,R3              ;DONE ALL BYTES?
    BGE 50$                ;BR IF YES
    BR 15$                 ;DO NEXT BYTE
50$: TST R5                ;ANY ERRORS SEEN?
    BEQ 55$                ;BR IF NO

```


CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 40
CKMSG2 - COMPARE EXPD RECV MESSAGE BUFFERS

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2250
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2253
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2255
2256
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011656
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011656 004737 005264
011662 004737 020142
011666
011666
011666 104423

011670
011670
011670 004737 005264
011674 012700 000004
011700 004737 007062
011704 013700 002716
011710 005001
011712 004737 014052
011716
011716
011716 104423

```

:
:PRINT ROUTINE TO FAIAL SOFT INIT ERRORS
:INPUT:
:      R1      CONTENTS CF TSSR AT ERROR
:SIDE EFFECTS:
:      EXECUTES DROP UNIT TO CEASE TESTING
:-

      BGNMSG  SFMSG
SFMSG::
      JSR      PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
      JSR      PC,CKDROP      ;DROP UNIT, IF ALLOWED
      ENDMSG
L10003:
      TRAP     CSMSG

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

      BGNMSG  PKTSSR
PKTSSR::
      JSR      PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
      MOV      #4,R0           ;NO. OF WORDS IN PACKET
      JSR      PC,PRIPKT      ;PRINT THE CONTENTS OF COMMAND PACKET
      MOV      MESBFA,R0      ;ADDRESS OF MESSAGE BUFFER
      CLR      R1              ;ASSUME NO HIGH MEMORY
      JSR      PC,PRMESS      ;PRINT THE MESSAGE BUFFER ALSO
      ENDMSG
L10004:
      TRAP     CSMSG

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

```

CZTUZAO TUBC FRONT END PRT D MACRC M1200 29-MAR-83 13:43 PAGE 40-1
 CKMSG2 - COMPARE EXPD RECV MESSAGE BUFFERS

```

2283
2284 011720          BGNMSG PKTGETS
          PKTGETS::
2285 011720 004737 005264      JSR      PC,PRITSSR      ;PRINT THE CONTENTS OF TSSR REGISTER
2286 011724 012700 000002      MOV      #2,R0          ;NO. OF WORDS IN GET STATUS PACKET
2287 011730 004737 007062      JSR      PC,PRIPKT      ;PRINT THE CONTENTS OF COMMAND PACKET
2288 011734          ENDMSG
          L10005:
          TRAP      CSMSG

2289
2290
2291          ;+
2292          ;PRINT TSSR ERRORS FOR INITIALIZATION TESTS
2293          ;INPUTS:
2294          ;
2295          ;
2296          ;
2297          ;
2298          ;
2299          ;
2300 011736          BGNMSG SFFMSG
          SFFMSG::
2301 011736 004737 005264      JSR      PC,PRITSSR      ;PRINT CONTENTS OF TSSR REGISTER
2302 011742          ENDMSG
          L10006:
          TRAP      CSMSG

2303
2304          .SBTTL PKTMES - PRINT TSSR AND MESSAGE BUFFER
2305          ;+
2306          ;PRINT ROUTINE TO PRINT THE CONTENTS OF TSSR AND MESSAGE
2307          ;BUFFER FOR ERROR REPORTS
2308          ;INPUTS:
2309          ;
2310          ;
2311          ;
2312          ;
2313          ;
2314          ;
2315          ;
2316          ;
2317          ;
2318 011744          BGNMSG PKTMES
          PKTMES::
2319 011744 004737 005264      JSR      PC,PRITSSR      ;PRINT CONTENTS OF TSSR
2320 011750 010200          MOV      R2,R0          ;LOW ORDER ADDRESS
2321 011752 010301          MOV      R3,R1          ;HIGH ORDER ADDRESS
2322 011754 004737 014052      JSR      PC,PRMESS      ;PRINT THE MESSAGE BUFFER
2323 011760          ENDMSG
          L10007:
          TRAP      CSMSG

2324

```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13 43 PAGE 41
 ADDSSR - PRINT TEST ADDRESS AND TSSR

2326
 2327
 2328
 2329
 2330
 2331
 2332
 2333
 2334
 2335
 2336
 2337
 2338 011762
 011762
 2339 011762 004737 010016
 2340 011766 016501 000000
 2341 011772 004737 005264
 2342 011776
 011776
 011776 104423
 2343
 2344
 2345
 2346
 2347
 2348
 2349
 2350
 2351
 2352
 2353
 2354
 2355
 2356
 2357 012000
 012000
 2358 012000 012700 000007
 2359 012004 004737 015412
 2360 012010
 012010
 012010 104423
 2361
 2362

.SBTTL ADDSSR - PRINT TEST ADDRESS AND TSSR
 ;
 ;PRINT ROUTINE TO PRINT THE CONTENTS OF
 ;TSSR AND A MEMORY TEST ADDRESS
 ;
 ;INPUTS:
 ;
 ; RS FIRST DEVICE UNIBUS ADDRESS
 ; ERRHI HIGH ORDER MEMORY TEST ADDRESS
 ; ERRLO LOW ORDER MEMORY TEST ADDRESS
 ;
 ;
 BGNMSG ADDSSR
 ADDSSR::
 JSR PC,PRITADD ;PRINT MEMORY TEST ADDRESS
 MOV TSSR(R5),R1 ;GET CURRENT TSSR
 JSR PC,PRITSSR ;PRINT THE CONTENTS OF TSSR REGISTER
 ENDMSG
 L10010:
 TRAP CSMSG
 ;
 .SBTTL MSGEXP - PRINT WRITE CHAR. EXPD-RCV MESSAGE BUFFERS
 ;
 ;PRINT ROUTINE TO PRINT WRITE CHARACTERISTIC MESSAGE BUFFER
 ;
 ;IMPLICIT INPUTS:
 ;
 ; EXPMSG - EXPECTED MESSAGE BUFFER
 ; RECMSG - RECEIVED MESSAGE BUFFER
 ; RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
 ; RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
 ;
 ;
 BGNMSG MSGEXP
 MSGEXP::
 MOV #7,R0 ;ASSUME NO EXT FEATURES
 JSR PC,PRMSGEXP ;PRINT EXPD/RCV MESSAGE BUFFERS
 ENDMSG
 L10011:
 TRAP CSMSG

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 43
MSGSTAT - PRINT STATUS HEADER AND MESSAGE BUFFERS

```

2387                                     .SBTTL MSGSTAT - PRINT STATUS HEADER AND MESSAGE BUFFERS
2388                                     :+
2389                                     :PRINT ROUTINE TO PRINT MESSAGE BUFFER EXPD/RCV
2390                                     :
2391                                     :IMPLICIT INPUTS:
2392                                     :
2393                                     :EXPMSG - EXPECTED MESSAGE BUFFER
2394                                     :RCMSG - RECEIVED MESSAGE BUFFER
2395                                     :RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
2396                                     :RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
2397                                     :
2398                                     :
2399                                     :
2400 BGNMSG MSGSTAT
MSGSTAT::
2401 012172 012172 012701 012234      10$: MOV #STATCOD,R1 ;ASCII ADDRESS TABLE
2402 012176 012100                   MOV (R1)+,R0 ;DONE ALL MSG LINES?
2403 012206 001410                   BEQ 20$ ;BR IF YES
2404 012202 010046                   PRINTX R0 ;PRINT STATUS BIT NAMES
2405 012204 012746 000001           MOV R0,-(SP)
2406 012210 010600                   MOV #1,-(SP)
2407 012212 104415                   MOV SP,R0
2408 012214 062706 000004           TRAP C$PNTX
2409 012220 000766                   ADD #4,SP
2410 012222 012700 000012           BR 10$ ;DO ANOTHER MSG LINE
2411 012226 004737 015412           20$: MOV #10,R0 ;NUMBER OF WORDS IN A READ STATUS BUFFER
2412 012232 012232                   JSR PC,PRMSGEXP ;PRINT EXPD/RCV MESSAGE BUFFERS
2413 012232 104423                   ENDMMSG
2414 012232 104423                   L10013: TRAP C$MSG
2415 012234 012252 012314 012405   STATCOD: .WORD 1$,2$,3$,4$,5$,6$,0
2416 012252 045 116 045 1$: .ASCIIZ 'XNZA Tape Bus Signals in Word #8:'
2417 012314 045 116 045 2$: .ASCIIZ 'XNZA PARERR<15> IEOT <12> IFMK <9> IRDY<6> IRWD<2>'
2418 012405 045 116 045 3$: .ASCIIZ 'XNZA IRESV2<14> IIDENT<11> IHER <8> IONL<5> IFBY<1>'
2419 012476 045 116 045 4$: .ASCIIZ 'XNZA IRESV1<13> ICER <10> ISPEED<7> ILDP<4> IFPT<0>'
2420 012567 045 116 045 5$: .ASCIIZ 'XNZA Tape Bus Signals in Word #9:'
2421 012631 045 116 045 6$: .ASCIIZ 'XNZA DATMIS<7> ILW<6> OUTRDY<5> INRDY<4>'
2422                                     .EVEN
2423                                     :
2424                                     :
2425                                     :
2426                                     :
2427                                     :
2428                                     :
2429                                     :
2430                                     :
2431                                     :
2432                                     :
2433 BGNMSG MSGLOOP
MSGLOOP::
2434 012706 012706 012701 012750      MOV #LOOPCOD,R1 ;ASCII ADDRESS TABLE

```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 43-1
MSGLOOP - PRINT LOOPBACK HEADER AND MESSAGE BUFFERS

```

2435 012712 012100          10$: MOV      (R1)+,R0          ;DONE ALL MSG LINES?
2436 012714 001410          BEQ      20$              ;BR IF YES
2437 012716          PRINTX   R0                    ;PRINT STATUS BIT NAMES
      012716 010046          MOV      R0,-(SP)
      012720 012746 000001    MOV      #1,-(SP)
      012724 010600          MOV      SP,R0
      012726 104415          TRAP     C$PNTX
      012730 062706 000004    ADD      #4,SP
2438 012734 000766          BR       10$              ;DO ANOTHER MSG LINE
2439 012736 012700 000012    20$: MOV      #10,,R0      ;NUMBER OF WORDS IN A READ STATUS BUFFER
2440 012742 004737 015412    JSR      PC,PRMSGEXP      ;PRINT EXPD/RECV MESSAGE BUFFERS
2441 012746          ENDMSG
      012746          L10014: TRAP     C$MSG
      012746 104423
2442
2443 012750 012770 013043 013142 LOOPCOD: .WORD 1$,2$,3$,4$,5$,6$,7$,0
2444 012770          045      116      045 1$: .ASCIIZ 'XNZX Tape Bus Loopback Signals in Word #8:'
2445 013043          045      116      045 2$: .ASCIIZ 'XNZX PARERR<15> IRESV2<14> IRESV1<13>'
2446 013142          045      116      045 3$: .ASCIIZ 'XNZX IHISP=>IEOT<12> IWRT=>IIDENT<11> IREV =>ICER <10>'
2447 013241          045      116      045 4$: .ASCIIZ 'XNZX IWFM =>IFMX<09> IEDIT=>IHER <08> IFAD =>ISPEED<07>'
2448 013340          045      116      045 5$: .ASCIIZ 'XNZX ITADO=>IRDY<06> ITAD1=>IONL <05> IERASE=>ILDOP <04>'
2449 013437          045      116      045 6$: .ASCIIZ 'XNZX IREW =>IDBY<03> IRWU =>IRWD <02> IFEN =>IFBY <01>'
2450 013536          045      116      045 7$: .ASCIIZ 'XNZX IGO =>IFPT<00>'
2451          .EVEN
2452

```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 44
 MSGSUB - PRINT WRITE SUBSYSTEM MESSAGE BUFFER

```

2454      .SBTTL MSGSUB - PRINT WRITE SUBSYSTEM MESSAGE BUFFER
2455
2456      :+
2457      :PRINT ROUTINE TO PRINT MESSAGE BUFFER EXPD/RCV
2458
2459      :IMPLICIT INPUTS:
2460
2461      :
2462      :EXPMSG - EXPECTED MESSAGE BUFFER
2463      :RCMSG - RECEIVED MESSAGE BUFFER
2464      :RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
2465      :RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
2466      :-
2467      BGNMSG MSGSUB
2468      MSGSUB::
2469      MOV      #10,,RO      ;SIZE OF WRITE SUBSYSTEM BUFFER
2470      JSR      PC,PRMSGEXP  ;PRINT EXPD/RCV MESSAGE BUFFERS
2471      ENDMSG
2472
2473      L10015:
2474      TRAP      CSMSG
2475
2476
2477
2478      .SBTTL MEMADD - PRINT MEMORY ADDRESS DATA ERROR
2479
2480      :+
2481      :PRINT ROUTINE TO PRINT MEMORY ADDRESS DATA COMPARE ERROR
2482
2483      :IMPLICIT INPUTS:
2484
2485      :
2486      :ERRHI - MEMORY ERROR HIGH ORDER ADDRESS
2487      :ERRLO - MEMORY ERROR LOW ORDER ADDRESS
2488      :EXP - EXPECTED DATA
2489      :RCV - RECEIVED DATA
2490      :-
2491      BGNMSG MEMADD
2492      MEMADD::
2493      JSR      PC,PRIADD      ;PRINT MEMORY ADDRESS IN ERROR
2494      MOV      EXPD,R1        ;GET EXPD DATA
2495      MOV      RCV,R2         ;GET RECEIVED DATA
2496      JSR      PC,PRI XOR     ;PRINT EXPD/RCV
2497      ENDMSG
2498
2499      L10016:
2500      TRAP      CSMSG
  
```

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PRAMPKT - PRINT RAM AND PACKET DATA

```

2496          .SBTTL  PRAMPKT - PRINT RAM AND PACKET DATA
2497          :+
2498          :PRINT ROUTINE TO DISPLAY RAM/PACKET DATA
2499          :WHEN THE RAM DATA DOES NOT MATCH.
2500          :
2501          :INPUTS:
2502          :
2503          :       R4      POINTER TO COMMAND PACKET
2504          :
2505          :IMPLICIT INPUTS:
2506          :
2507          :       RAMDATA  DATA AS READ FROM THE RAM
2508          :       RAMSIZ   NUMBER OF BYTES IN PACKET
2509          :                   IF RAMSIZ=0 THEN DEFAULT TO 8.
2510          :
2511          :IMPLICIT OUTPUTS:
2512          :
2513          :       RAMSIZ  SET TO 0
2514          :-
2515
2516          PRAMPKT:
2517          SAVREG                                ;SAVE R1-R5 UNTIL NEXT RETURN
2518          MOV      #RAMDATA,R1                  ;DATA FROM THE RAM
2519          CLR      R2                            ;INIT BYTE NUMBER
2520          5$:      CMPB   (R1)+,(R4)+            ;COMPARE EXPECTED, RECEIVED
2521          BNE      7$                            ;BR IF NO MATCH
2522          7$:      MOVB   -1(R1),R5              ;GET RECV RAM DATA
2523          MOVB     -1(R4),R3                    ;GET EXPD PACKET DATA
2524          XOR      R5,R3                        ;XOR EXPD/RECV
2525          BIC      #177400,R3                  ;LOW BYTE ONLY
2526          MOVB     -1(R1),RECV                 ;GET RECEIVED RAM DATA
2527          MOVB     -1(R4),EXPD                 ;GET EXPECTED RAM DATA
2528          PRINTB   #RAMASC,R2,RECV,EXPD,R3
2529          MOV      R3,-(SP)
2530          MOV      EXPD,-(SP)
2531          MOV      RECV,-(SP)
2532          MOV      R2,-(SP)
2533          MOV      #RAMASC,-(SP)
2534          MOV      #5,-(SP)
2535          MOV      SP,R0
2536          TRAP     C$PNTB
2537          ADD      #14,SP
2538          10$:     INC      R2                    ;UPDATE BYTE COUNT
2539          TST      RAMSIZ                        ;DEFAULT TO 8.?
2540          BEQ      15$                          ;BR IF YES
2541          CMP      R2,RAMSIZ                    ;DONE ALL BYTES?
2542          BLE      5$                            ;BR IF NO
2543          BR       25$
2544          15$:     CMP      R2,#8.                ;DONE DEFAULT NUMBER OF BYTES?
2545          20$:     BLT      5$                    ;BR IF NO
2546          25$:     CLR      RAMSIZ                ;SET DEFAULT RAMSIZ
2547          RTS      PC                            ;RETURN
2548          045 RAMASC: .ASCIZ 'XN%A BYTE: X02%A RAM: X03%A Packet: X03%A XOR:X03'
2549          .EVEN

```

CZTU2AU TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 46
 PRMESS - PRINT CONTENTS OF MESSAGE BUFFER

```

2543 .SBTTL PRMESS - PRINT CONTENTS OF MESSAGE BUFFER
2544 :+
2545 :
2546 :THIS ROUTINE PRINTS THE CONTENTS OF
2547 :THE 7 WORD MESSAGE BUFFER RETURNED BY THE
2548 :TUBO.
2549 :
2550 :INPUT:
2551 :
2552 :      R0      LOW ORDER ADDRESS OF MESSAGE BUFFER
2553 :      R1      HIGH ORDER ADDRESS OF MESSAGE BUFFER
2554 :      NOTE: R1 IS IGNORED IF KENABLE FLAG IS CLEAR
2555 :
2556 :THIS ROUTINE IS NORMALLY CALLED FROM A PRINT ROUTINE
2557 :-
2558 :
2559 :
2560 PRMESS:
2561 SAVREG          ;SAVE THE REGISTERS
2562 MOV R5,RAMR5H   ;SAVE DEVICE REGISTER POINTER
2563 MOV R0,R5       ;SAVE LOW ORDER ADDRESS
2564 TST KENABLE    ;ADDRESS ABOVE 28K?
2565 BNE 10$        ;BR IF YES
2566 CLR R1         ;SET HIGH ORDER ADDRESS TO 0
2567 10$: MOV R1,R3  ;SAVE HIGH ORDER ADDRESS
2568 ROL R0         ;SHIFT BIT15 TO C BIT
2569 ROL R1         ;SHIFT TO HIGH ORDER FOR PRINTOUT
2570 PRINTX #PROASC,R1,R5 ;PRINT MESSAGE BUFFER ADDRESS
      MOV R5,-(SP)
      MOV R1,-(SP)
      MOV #PROASC,-(SP)
      MOV #3,-(SP)
      MOV SP,R0
      TRAP C$PNTX
      ADD #10,SP
      CMP #177777,(R5) ;MESSAGE BUFFER FULL OF ONES
2571 BNE 15$       ;BR IF BUFFER IS PROBABLY OKAY
2572 PRINTX #MESBFN ;'MESSAGE BUFFER PROBABLY NOT VALID'
      MOV #MESBFN,-(SP)
      MOV #1,-(SP)
      MOV SP,R0
      TRAP C$PNTX
      ADD #4,SP
2574 15$: PRINTX #PRIASC ;PRINT HEADER FOR CONTENTS
      MOV #PRIASC,-(SP)
      MOV #1,-(SP)
      MOV SP,R0
      TRAP C$PNTX
      ADD #4,SP
      CLR R4        ;NUMBER OF THE NEXT WORD
2575 MOV R5,R1       ;COPY LOW ORDER ADDRESS
2576 MOV R3,R0       ;COPY HIGH ORDER ADDRESS
2577 BEQ 20$        ;BR IF NOT ABOVE 28K
2578 JSR PC,SETMAP   ;SETUP PAR ADDRESS IN R0
2579 MOV R0,R5       ;GET PAR FORMAT ADDRESS ABOVE 28K
2580 20$: PRINTX #MESHEA,(R5)+ ;PRINT 'MESSAGE BUFFER HEADER ='
2581
2582

```

2560	014052		
2561	014052		
2562	014056	010537	011012
2563	014062	010005	
2564	014064	005737	003102
2565	014070	001001	
2566	014072	005001	
2567	014074	010103	
2568	014076	006100	
2569	014100	006101	
2570	014102		
	014102	010546	
	014104	010146	
	014106	012746	014703
	014112	012746	000003
	014116	010600	
	014120	104415	
	014122	062706	000010
2571	014126	022715	177777
2572	014132	001010	
2573	014134		
	014134	012746	014623
	014140	012746	000001
	014144	010600	
	014146	104415	
	014150	062706	000004
2574	014154		
	014154	012746	014750
	014160	012746	000001
	014164	010600	
	014166	104415	
	014170	062706	000004
2575	014174	005004	
2576	014176	010501	
2577	014200	010300	
2578	014202	001403	
2579	014204	004737	020256
2580	014210	010005	
2581	014212		
2582	014212		

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 PRMESS - PRINT CONTENTS OF MESSAGE BUFFER

	014212	012546		MOV	(R5)+,-(SP)	
	014214	012746	015006	MOV	#MESHEA,-(SP)	
	014220	012746	000002	MOV	#2,-(SP)	
	014224	010600		MOV	SP,RO	
	014226	104415		TRAP	CSPNTX	
	014230	062706	000006	ADD	#6,SP	
2583	014234			PRINTX	#DATAFL,(R5)+	;PRINT 'DATA FIELD LENGTH ='
	014234	012546		MOV	(R5)+,-(SP)	
	014236	012746	015053	MOV	#DATAFL,-(SP)	
	014242	012746	000002	MOV	#2,-(SP)	
	014246	010600		MOV	SP,RO	
	014250	104415		TRAP	CSPNTX	
	014252	062706	000006	ADD	#6,SP	
2584	014256			PRINTX	#RBPORA,(R5)+	;PRINT 'RESIDUAL BYTE COUNTER ='
	014256	012546		MOV	(R5)+,-(SP)	
	014260	012746	015120	MOV	#RBPORA,-(SP)	
	014264	012746	000002	MOV	#2,-(SP)	
	014270	010600		MOV	SP,RO	
	014272	104415		TRAP	CSPNTX	
	014274	062706	000006	ADD	#6,SP	
2585	014300			PRINTX	#XS0CON,(R5)+	;PRINT 'XSTAT0 CONTENTS ='
	014300	012546		MOV	(R5)+,-(SP)	
	014302	012746	015165	MOV	#XS0CON,-(SP)	
	014306	012746	000002	MOV	#2,-(SP)	
	014312	010600		MOV	SP,RO	
	014314	104415		TRAP	CSPNTX	
	014316	062706	000006	ADD	#6,SP	
2586	014322			PRINTX	#XS1CON,(R5)+	;PRINT 'XSTAT1 CONTENTS ='
	014322	012546		MOV	(R5)+,-(SP)	
	014324	012746	015232	MOV	#XS1CON,-(SP)	
	014330	012746	000002	MOV	#2,-(SP)	
	014334	010600		MOV	SP,RO	
	014336	104415		TRAP	CSPNTX	
	014340	062706	000006	ADD	#6,SP	
2587	014344			PRINTX	#XS2CON,(R5)+	;PRINT 'XSTAT2 CONTENTS ='
	014344	012546		MOV	(R5)+,-(SP)	
	014346	012746	015277	MOV	#XS2CON,-(SP)	
	014352	012746	000002	MOV	#2,-(SP)	
	014356	010600		MOV	SP,RO	
	014360	104415		TRAP	CSPNTX	
	014362	062706	000006	ADD	#6,SP	
2588	014366			PRINTX	#XS3CON,(R5)+	;PRINT 'XSTAT3 CONTENTS ='
	014366	012546		MOV	(R5)+,-(SP)	
	014370	012746	015344	MOV	#XS3CON,-(SP)	
	014374	012746	000002	MOV	#2,-(SP)	
	014400	010600		MOV	SP,RO	
	014402	104415		TRAP	CSPNTX	
	014404	062706	000006	ADD	#6,SP	
2589	014410	022737	000001 002134	CMP	#1,TRANSTST	;CHECK FOR RAM DUMP REQUIRED
2590	014416	001402		BEG	40\$	;BR, IF REQUIRED
2591	014420	000137	014530	JMP	50\$	;JMP IF NO DUMP
2592	014424			PRINTX	#RAMFHR	
	014424	012746	014532	MOV	#RAMFHR,-(SP)	
	014430	012746	000001	MOV	#1,-(SP)	
	014434	010600		MOV	SP,RO	
	014436	104415		TRAP	CSPNTX	
	014440	062706	000004	ADD	#4,SP	

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 46-2
 PRMESS - PRINT CONTENTS OF MESSAGE BUFFER

2593	014444	012737	000010	002246	MOV	#8.,RAMSIZ	:RAM FIELD IS 8 BYTES LONG
2594	014452	012737	000020	011010	MOV	#20.,RAMHLD	:FIELD STARTS AT 20 OCTAL (10 HEX)
2595	014460	004737	010626		JSR	PC,RAMER	:READ AND PRINT THEM
2596	014464	012737	000040	011010	MOV	#40.,RAMHLD	:FIELD STARTS AT 40 OCTAL (20 HEX)
2597	014472	004737	010626		JSR	PC,RAMER	:READ AND PRINT THEM
2598	014476	012737	000060	011010	MOV	#60.,RAMHLD	:FIELD STARTS AT 60 OCTAL (30 HEX)
2599	014504	004737	010626		JSR	PC,RAMER	:READ AND PRINT THEM
2600	014510	012737	000020	002246	MOV	#16.,RAMSIZ	:RAM FIELD IS SIXTEEN BYTES LONG
2601	014516	012737	000100	011010	MOV	#100.,RAMHLD	:FIELD STARTS AT 100 OCTAL (40 HEX)
2602	014524	004737	010626		JSR	PC,RAMER	:READ AND PRINT THEM
2603	014530	000207			RTS	PC	:RETURN
2604	014532	045	116	045	RAMFHR:	.ASCIZ	'XNXA ***** SPECIAL M7454 RAM MEMORY DUMP *****'
2605	014623	045	116	045	MESBFN:	.ASCIZ	'XNXA MESSAGE BUFFER CONTENTS PROBABLY NOT VALID'
2606	014703	045	116	045	PROASC:	.ASCIZ	'XNXA Message Buffer Address = X01X05'
2607	014750	045	116	045	PR1ASC:	.ASCIZ	'XNXA Message Buffer Contents:'
2608							
2609	015006	045	116	045	MESHEA:	.ASCIZ	'XNXA Message Buffer Header = X06'
2610	015053	045	116	045	DATAFL:	.ASCIZ	'XNXA Data Field Length = X06'
2611	015120	045	116	045	RBPCRA:	.ASCIZ	'XNXA Residual Byte Counter = X06'
2612	015165	045	116	045	XSOCON:	.ASCIZ	'XNXA XSTAT0 Contents = X06'
2613	015232	045	116	045	XS1CON:	.ASCIZ	'XNXA XSTAT1 Contents = X06'
2614	015277	045	116	045	XS2CON:	.ASCIZ	'XNXA XSTAT2 Contents = X06'
2615	015344	045	116	045	XS3CON:	.ASCIZ	'XNXA XSTAT3 Contents = X06'
2616						.EVEN	

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 47
PRMSGEXP - PRINT EXPD/RCV MESSAGE BUFFERS

```

2618 .SBTTL PRMSGEXP - PRINT EXPD/RCV MESSAGE BUFFERS
2619
2620 ;ROUTINE TO PRINT EXPECTED AND RECEIVED MESSAGE BUFFERS
2621 RO - NUMBER OF WORDS IN BUFFER
2622 ;IMPLICIT INPUTS:
2623 EXPMSG - EXPECTED MESSAGE BUFFER
2624 RECMMSG - RECEIVED MESSAGE BUFFER
2625 RCVHIADD- RECEIVED MESSAGE BUFFER HIGH ORDER ADDRESS
2626 RCVLOADD- RECEIVED MESSAGE BUFFER LOW ORDER ADDRESS
2627
2628 PRMSGEXP::
2629 SAVREG ;SAVE R1-R5 UNTIL NEXT RETURN
2630 MOV RO,R5 ;SAVE NUMBER OF WORDS
2631 MOV RCVLOADD,RO ;GET RCV LOW ADDRESS
2632 MOV RO,R4 ;COPY LOW ADDRESS
2633 MOV RCVHIADD,R1 ;GET RCV HIGH ADDRESS
2634 ROL RO ;SHIFT BIT15 TO C BIT
2635 ROL R1 ;SHIFT TO HIGH ORDER FOR PRINTOUT
2636 PRINTX #PRMSG0,R1,R4 ;PRINT MESSAGE BUFFER ADDRESS
      MOV R4,-(SP)
      MOV R1,-(SP)
      MOV #PRMSG0,-(SP)
      MOV #3,-(SP)
      MOV SP,RO
      TRAP C$PNTX
      ADD #10,SP
2637 PRINTX #PRMSG1 ;PRINT HEADER FOR CONTENTS
      MOV #PRMSG1,-(SP)
      MOV #1,-(SP)
      MOV SP,RO
      TRAP C$PNTX
      ADD #4,SP
2638 CLR R4 ;NUMBER OF THE CURRENT WORD
2639 MOV #EXPMSG,R1 ;GET EXPD BUFFER ADDRESS
2640 MOV #RECMMSG,R2 ;GET RCV BUFFER ADDRESS
20$: MOV (R1),RO ;GET EXPD
      MOV (R2),R3 ;GET RCV
      XOR RO,R3 ;XOR EXPD/RCV
      PRINTX #PRMSG2,R4,(R1)+,(R2)+,R3
      MOV R3,-(SP)
      MOV (R2)+,-(SP)
      MOV (R1)+,-(SP)
      MOV R4,-(SP)
      MOV #PRMSG2,-(SP)
      MOV #5,-(SP)
      MOV SP,RO
      TRAP C$PNTX
      ADD #14,SP
2645 INC R4 ;NUMBER OF THE NEXT
2646 CMP R4,R5 ;DONE ALL YET?
2647 BGE 50$ ;BR IF YES
2648 BR 20$ ;DO ANOTHER
2649 RTS ;RETURN
2650 50$: PRMSG0: .ASCIZ 'XNZA Message Buffer Address = X01X05'
2651 PRMSG1: .ASCIZ 'XNZA Message Buffer Contents:'
2652 PRMSG2: .ASCIZ 'XNZA WORD #XD2XA EXPD: X06XA RCV: X06XA XOR: X06'
2653 .EVEN

```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 48
 PRBYTEXP - PRINT ERROR BYTES IN EXP/REC MESSAGE BUFFER

```

2655          .SBTTL PRBYTEXP - PRINT ERROR BYTES IN EXP/REC MESSAGE BUFFER
2656
2657          *
2658          :ROUTINE TO PRINT ERROR BYTES IN MESSAGE BUFFERS
2659          :ONLY THE FIRST 8 ERRORS ENCOUNTERED ARE PRINTED DUE TO SCREEN SPACE
2660
2661          :RO      - NUMBER OF BYTES IN BUFFER
2662
2663          :IMPLICIT INPUTS:
2664
2665          :EXPMSG  - EXPECTED MESSAGE BUFFER
2666          :RECMMSG - RECEIVED MESSAGE BUFFER
2667
2668          PRBYTEXP::
2669          SAVREG          :SAVE R1-R5 UNTIL NEXT RETURN
2670          MOV            RO,R5          :SAVE NUMBER OF BYTES
2671          CLR            PRMNO          :INIT ERROR COUNT
2672          CLR            R4            :NUMBER OF THE CURRENT BYTE
2673          MOV            #EXPMSG,R1     :GET EXPD BUFFER ADDRESS
2674          MOV            #RECMMSG,R2    :GET RECV BUFFER ADDRESS
2675          20$:          MOVB          (R1),R0      :GET EXPD BYTE
2676          BIC            #^C<377>,R0    :CLEAR UPPER BYTE
2677          MOVB          R0,PRBEXP       :SAVE FOR ERROR REPORT
2678          MOVB          (R2),R3        :GET RECV BYTE
2679          BIC            #^C<377>,R3    :CLEAR UPPER BYTE
2680          MOVB          R3,PRBREC       :FOR ERROR REPORT
2681          XOR            R0,R3          :XOR EXPD/RECV
2682          CMPB          (R1)+,(R2)+    :EXPD = RECV?
2683          BEQ            30$           :BR IF YES
2684          INC            PRMNO          :UPDATE ERROR COUNT
2685          CMF            PRMNO,#8.      :PRINTED 8?
2686          BHI            30$           :BR IF YES
2687          27$:          PRINTX        #PRBMSG,R4,PRBEXP,PRBREC,R3
2688          MOV            R3,-(SP)
2689          MOV            PRBREC,-(SP)
2690          MOV            PRBEXP,-(SP)
2691          MOV            R4,-(SP)
2692          MOV            #PRBMSG,-(SP)
2693          MOV            #5,-(SP)
2694          MOV            SP,R0
2695          TRAP            C$PNTX
2696          ADD            #14,SP
2697          FORCEEXIT        50$          :22D
2698          BR            35$           :22D
2699          30$:          FORCERROR    27$,NOTSSR    :22D
2700          35$:          :22D
2701          INC            R4            :NUMBER OF THE NEXT
2702          CMP            R4,R5          :DONE ALL YET?
2703          BGE            50$           :BR IF YES
2704          BR            20$           :DO ANOTHER
2705          50$:          PRINTX        #PRBTOT,PRMNO :PRINT TOTAL ERROR COUNT
2706          MOV            PRMNO,-(SP)
2707          MOV            #PRBTOT,-(SP)
2708          MOV            #2,-(SP)
2709          MOV            SP,R0
2710          TRAP            C$PNTX

```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 48-1
 PRBYTEXP - PRINT ERROR BYTES IN EXP/REC MESSAGE BUFFER

2698	016170	062706	000006		ADD	#6,SP	
	016174	000207			RTS	PC	;RETURN
2699							
2700	016176	045	116	045	PRBMSG:	.ASCIZ	'%NZA BYTE #XD2ZA EXPD: %03ZA RECV: %03ZA XOR: %03'
2701	016263	045	116	045	PRBTOT:	.ASCIZ	'%NZA NUMBER OF BYTES IN ERROR = XD2'
2702						.EVEN	
2703	016330	000000			PRBEXP:	.WORD	0 ;EXPD
2704	016332	000000			PRBREC:	.WORD	0 ;RECV
2705							
2706					;	+	
2707					;		
2708					;	PRINT ROUTINE TO DISPLAY EXPD/RECV DATA	
2709					;		
2710					;	INPUTS:	
2711					;		
2712					;	R1	RECEIVED DATA
2713					;	R2	EXPECTED DATA
2714					;		
2715					;	-	
2716							
2717	016334				BGNMSG	EXPREC	
	016334				EXPREC::		
2718	016334	004737	007464		JSR	PC,PRIXOR	;PRINT THE DATA
2719	016340				ENDMSG		
	016340				L10017:		
	016340	104423			TRAP	C\$MSG	
2720							
2721							

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2773

```

.SBTTL  EXPBREC - PRINT EXPD/RECV BYTE DATA
:
:PRINT ROUTINE TO DISPLAY BYTE EXPD/RECV DATA
:
:INPUTS:
:
:      R1      RECEIVED DATA BYTE
:      R2      EXPECTED DATA BYTE
:
:
:
:      BGNMSG  EXPBREC
EXPBREC::
:      JSR      PC,PRIBXOR      ;PRINT THE DATA
:      ENDMSG
L10020:
:      TRAP     C$MSG

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

.SBTTL  RAMTAGD - PRINT TEST ADDRESS, RAM AND PACKET DATA
:
:PRINT ROUTINE TO DISPLAY RAM/PACKET DATA
:
:INPUTS:

```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 49-1
 RAMTADD - PRINT TEST ADDRESS, RAM AND PACKET DATA

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2790 016356
      016356
2791 016356 004737 010016
2792 016362 004737 013620
2793 016366
      016366
      016366 104423
2794
2795
2796
2797
2798
2799
2800
2801
2802
2803
2804
2805
2806
2807
2808 016370
      016370
2809 016370 042701 177400
2810 016374 042702 177400
2811 016400 004737 007610
2812 016404 004737 007464
2813 016410
      016410
      016410 104423
2814
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      R4      POINTER TO COMMAND PACKET

:IMPLICIT INPUTS:
      RAMDATA  DATA AS READ FROM THE RAM
      RAMSIZ   NUMBER OF BYTES IN PACKET
               IF RAMSIZ=0 THEN DEFAULT TO 8.
      ERRHI    HIGH ORDER TEST ADDRESS
      ERRLO    LOW ORDER TEST ADDRESS

:IMPLICIT OUTPUTS:
      RAMSIZ   SET TO 0

      BGNMSG   RAMTADD
RAMTADD::
      JSR      PC,PRITADD      ;PRINT TEST ADDRESS
      JSR      PC,PRAMPKT     ;PRINT RAM/PACKET DATA
      ENDMSG

L10022:
      TRAP     C$MSG

      .SBTTL   RAMEXP - PRINT RAM EXPD/RECV DATA

:PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
:INPUTS:
      R1      RECEIVED DATA
      R2      EXPECTED DATA
      R4      CONTROLLER RAM ADDRESS

      BGNMSG   RAMEXP
RAMEXP::
      BIC      #^C<377>,R1    ;SAVE EXPD RAM DATA BYTE
      BIC      #^C<377>,R2    ;SAVE EXPD RAM DATA BYTE
      JSR      PC,PRIRAM      ;PRINT THE RAM ADDRESS
      JSR      PC,PRIXOR      ;PRINT THE DATA
      ENDMSG

L10023:
      TRAP     C$MSG

      .SBTTL   TIMEXP - PRINT TIMER A,B AND EXP/REC

:PRINT ROUTINE TO DISPLAY EXPD/RECV DATA
:AND TIMER A,B HEADER MESSAGE
:INPUTS:
      R1      RECEIVED DATA
      R2      EXPECTED DATA

```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 49-2
 TIMEXP - PRINT TIMER A,B AND EXP/REC

```

2825      :-
2826
2827      016412      BGNMSG  TIMEXP
                TIMEXP::
2828      016412      PRINTX  #TIMSGO      ;PRINT HEADER
                MOV      #TIMSGO,-(SP)
                MOV      #1,-(SP)
                MOV      SP,R0
                TRAP     C$PNTX
                ADD      #4,SP
2829      016432      004737  000004      JSR      PC,PRIXOR      ;PRINT THE DATA
2830      016436      007464      ENDMSG
                L10024:
                TRAP     C$MSG
2831
2832
2833      016440      045      116      045  TIMSGO: .ASCIZ  'XNXA TIMER A STATUS IS IN BIT 3XNXA TIMER B STATUS IS IN BIT 2'
2834      .EVEN

```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 50
 BADSSR - PRINT TSSR ERRORS ON DATA TRANSFERS

```

2836                                     .SBTTL  BADSSR - PRINT TSSR ERRORS ON DATA TRANSFERS
2837
2838                                     :+
2839                                     :PRINT ROUTINE FOR TSSR ERRORS ON DATA TRANSFERS
2840                                     :
2841                                     :INPUTS:
2842                                     :
2843                                     :      R1      CONTENTS OF TSSR
2844                                     :      R2      DATA WRITTEN (8 BITS)
2845                                     :
2846                                     :
2847                                     :
2848                                     :
2849 016540      BGNMSG  BADSSR
016540      BADSSR::
2850 016540      010246      MOV      R2,-(SP)      ;SAVE DATA TRANSFERRED
2851 016542      042702      BIC      #177400,R2    ;GET JUST ONE BYTE
2852 016546      PRINTB     #XFERASC,R2
016546      010246      MOV      R2,-(SP)
016550      012746      016600      MOV      #XFERASC,-(SP)
016554      012746      000002      MOV      #2,-(SP)
016560      010600      MOV      SP,R0
016562      104414      TRAP      C$PNTB
016564      062706      0000C5      ADD      #6,SP
2853 016570      012602      MOV      (SP)+,R2      ;RESTORE R2
2854 016572      004737      005264      JSR      PC,PRITSSR    ;DECODE TSSR CONTENTS
2855 016576      ENDMSG
016576      L10025:
016576      104423      TRAP      C$MSG
2856 016600      045      116      045  XFERASC:  .ASCIZ  'XNZA Data Transferred = X03'
2857

```

CZTUZAO TU80 FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 51
 SOFINIT - SOFT INITIALIZE OF CONTROLLER

.SBTTL SOFINIT - SOFT INITIALIZE OF CONTROLLER

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;
;+
;ROUTINE TO DO A SOFT INITIALIZE OF THE CONTROLLER
;BY WRITING INTO THE TSSR REGISTER. AFTER THE INIT,
;THE TSSR REGISTER IS TESTED FOR ERRORS. ANY ERRORS
;DETECTED SHOULD BE TREATED AS DEVICE FATAL ERRORS.

;INPUTS:

R5 ADDRESS OF FIRST REGISTER

;OUTPUTS:

R0 CONTENTS OF TSSR, IF ERROR
CARRY SET IF INIT WAS OKAY
CLEAR IF FATAL ERROR

;CALLING SEQUENCE:

MOV #ADDRESS,R5
JSR PC,SOFINIT
BCS CONTINUE
ERRDF ;REPORT FATAL ERROR

;-
SOFINIT::

2887 016634
2888 016634
2889 016640 012765 000000 000000
2890 016646 004737 017110
2891 016652 016500 000000
2892 016656 010004
2893 016660 042704 176277
2894 016664 052704 002200
2895 016670 020400
2896 016672 001402
2897 016674 000241
2898 016676 000401
2899 016700 000261
2900 016702 000207

SAVREG ; SAVE THE REGISTERS
MOV #0,TSSR(R5) ; DO THE INIT.
JSR PC,WAITF ; WAIT FOR SSR
MOV TSSR(R5),R0 ;GET THE TSSR REGISTER
MOV R0,R4 ;TSSR CONTENTS
BIC #^C<HIADDR!OFL>,R4
BIS #SSR!NBA,R4 ;R4 HAS EXPECTED CONTENTS
CMP R4,R0 ;ONLY EXPECTED BITS SET ?
BEQ 5\$;BRANCH IF OKAY
CLC ;CLEAR THE CARRY FOR ERROR
BR 10\$;GO TO EXIT
5\$: SEC ;SET THE CARRY BIT
10\$: RTS PC ;RETURN TO CALLER

CZTUZAO TU80 FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 52
 CHKAMB - CHECK TSSR FOR AMBIGUITY

.SBTTL CHKAMB - CHECK TSSR FOR AMBIGUITY

↑
 : THIS ROUTINE TESTS THE CONTENTS OF THE TSSR REGISTER
 : FOR AMBIGUITY

: INPUT:

: R0 CONTENTS OF TSSR

: OUTPUT:

: R0 CONTENTS OF TSSR

: CARRY SET - NO AMBIGUITY
 : CLR - AMBIGUOUS CONTENTS

CHKAMB:

SAVREG

: SAVE THE GENERAL REGISTERS

MCV R0,R4

: CONTENTS OF TSSR

BIT #SC,R0

: IS BIT 15 SET ?

BNE 5\$

: BRANCH IF YES

BIT #^C<NBA!OFL!SSR!HIADDR>,R0

: ANY OTHER BITS SET ?

BNE 40\$

: MUST BE AN ERROR

BR 45\$

: RETURN WITH SUCCESS

5\$:

BIT #SSR,R0

: IS READY BIT SET ?

BNE 10\$

: BRANCH IF READY BIT IS SET.

BIT #BIT5,R0

: IS FATAL ERROR BIT SET ?

BEQ 40\$

: ERROR IF NOT

BIC #^CTERCLS,R4

: CLEAR ALL BUT TERMINATION CODE

CMP R4,#16

: ALL THREE BITS MUST BE SET

BNE 40\$

: ERROR IF NOT SET

BR 45\$

: OK IF ALL ARE SET

10\$:

BIT #BIT5,R0

: IS FATAL ERROR BIT SET ?

BEQ 45\$

: ERROR IF BIT IS SET WITH SSR

BIT #BIT2!BIT1,R0

: IS THIS A FUNCTION REJECT

BNE 45\$

: BR, IF TSSR IS OK

40\$:

CLC

: AMBIGUOUS CONTENTS

BR 50\$

45\$:

SEC

: SHOW SUCCESS - NO AMBIGUITY

50\$:

RTS

PC

: RETURN TO CALLER

2902

2903

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2905

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2919

2920

2921

2922 016704

2923 016704

2924 016710 010004

2925 016712 032700 100000

2926 016716 001004

2927 016720 032700 174077

2928 016724 001023

2929 016726 000424

2930 016730 032700 000200

2931 016734 001011

2932 016736 032700 000040

2933 016742 001414

2934 016744 042704 177761

2935 016750 020427 000016

2936 016754 001007

2937 016756 000410

2938 016760 032700 000040

2939 016764 001405

2940 016766 032700 000006

2941 016772 001002

2942 016774 000241

2943 016776 000401

2944 017000 000261

2945 017002 000207

2946

CZTUZAO TU80 FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 53
 ENAINT,DSBINT - ENABLE/DISABLE INTERRUPTS

```

2948          .SBTTL ENAINT,DSBINT - ENABLE/DISABLE INTERRUPTS
2949          :
2950          : DEFAULT DISPLAY INTERRUPT HANDLERS.
2951          : IF DISPLAY TIME-OUT, REPORT DEV FATAL, AND ABORT PASS.
2952          : OTHERWISE, SAVE DPU REGISTERS AND DISMISS.
2953          :
2954          :
2955          : BIT DEFINITIONS FOR "INTMASK" AND "INTFLAG" BYTES:
2956          :
2957          :       IOKCKIN=BIT7          ; DON'T CHECK FOR BAD INTERRUPTS -- TEST WILL.
2958          :       IOKSTP=BIT0          ; EXPECT "STOP" INTERRUPT.
2959          :
2960          : INTERRUPT MASK -- SAYS EXPECTING INTERRUPTS
2961 017004      000      INTMASK: .BYTE 0
2962          : INTERRUPT FLAG -- SAYS WE GOT ONE (IF POSITIVE)
2963 017005      000      INTFLAG: .BYTE 0
2964          :
2965          : SAVED INTERRUPT VECTOR:
2966 017006      000000      INTVEC: .WORD 0
2967          : SAVE CPU PC
2968 017010      000000      INTCPC: .WORD 0
2969          :
2970          : SUBROUTINE TO ENABLE INTERRUPTS:
2971 017012      010046      ENAINT: MOV R0,-(SP)          ;SAVE R0
2972 017014      013700      002156      MOV IVEC,R0          ;GET POINTER TO VECTORS
2973 017020      012720      017056      MOV #INTR,(R0)+      ;SET UP INTERRUPT VECTOR
2974 017024      012720      000340      MOV #PRI07,(R0)+
2975 017030      012600      MOV (SP)+,R0          ;RESTORE R0
2976 017032      011646      MOV (SP),-(SP)
2977 017034      012766      000000      000002      MOV #0,2(SP)          ;SET CPU TO LEVEL 0
2978 017042      000002      RTI
2979          :
2980          : SUBROUTINE TO DISABLE INTERRUPTS (RAISE PRIORITY TO LEVEL 7)
2981 017044      011646      DSBINT: MOV (SP),-(SP)
2982 017046      012766      000340      000002      MOV #PRI07,2(SP)
2983 017054      000002      RTI
2984

```

CZTUZAO TUBO FRONT END PRT D
INTR - INTERRUPT HANDLERS

MACRO M1200 29-MAR-83 13:43 PAGE 54

```

2986
2987
2988 017056
      017056
2989 017056 012737 000001 002172
2990 017064 105037 017005
2991 017070 132737 000001 017004
2992 017076 001003
2993 017100 152737 000001 017005
2994
2995
2996 017106
2997 017106
      017106
      017106 000002
2998
2999
      .SBTTL INTR - INTERRUPT HANDLERS
      BGNSRV INTR ;DEFINE INTERRUPT ENTRY
INTR::
      MOV #1,INTRECV ;SET FLAG TO SHOW INTERRUPT RECEIVED
      CLRB INTFLAG ;CLEAR FLAG TO SAY WE GOT INTERRUPT
      BITB #IOKSTP,INTMASK ;EXPECTING STOP INTERRUPT?
      BNE 1$ ;BR IF YES
      BISB #IOKSTP,INTFLAG ;NO. SET THE ERROR FLAG.
      ;SAVE REGISTERS, MSG BUFFER, ETC.
      1$:
      ENDSRV
L1C026:
      RTI

```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 55
 WAITF - WAIT FOR SUBSYSTEM READY

```

3001          .SBTTL WAITF - WAIT FOR SUBSYSTEM READY
3002          :
3003          : SUBROUTINE TO WAIT FOR THE SUBSYSTEM READY FLAG
3004          :
3005          : INPUTS:
3006          :
3007          : R5      ADDRESS OF FIRST DEVICE REGISTER
3008          :
3009          : OUTPUTS:
3010          :
3011          : R0      CONTENTS OF LAST TSSR READ
3012          : CARRY   SET - READY BIT SET
3013          :          CLR - TIMEOUT WAITING FOR READY
3014          :
3015          WAITF:: BREAK          ; DO A SUPVSR BREAK FIRST.
3016          017110 104422          TRAP      CSBRK
3017          017112 012746 010000    MOV      #10000,-(SP) ;BIG MSEC TIMER
3018          017116          DELAY      1          ;DELAY 100US
3019          017116 012727 000001    MOV      #1,(PC)+
3020          017122 000000          .WORD    0
3021          017124 013727 002116    MOV      L$DLY,(PC)+
3022          017130 000000          .WORD    0
3023          017132 005367 177772    DEC      -6(PC)
3024          017136 001375          BNE      .-4
3025          017140 005367 177756    DEC      -22(PC)
3026          017144 001367          BNE      .-20
3027          017146 016500 000000    2$: MOV      TSSR(R5),R0 ;READ THE TSSR REGISTER
3028          017152 105700          TSTB     R0          ;TEST FOR READY BIT SET
3029          017154 100420          BMI      3$          ; EXIT ON STOP FLAG.
3030          017156          DELAY      1          ; WAIT 100 USEC
3031          017156 012727 000001    MOV      #1,(PC)+
3032          017162 000000          .WORD    0
3033          017164 013727 002116    MOV      L$DLY,(PC)+
3034          017170 000000          .WORD    0
3035          017172 005367 177772    DEC      -6(PC)
3036          017176 001375          BNE      .-4
3037          017200 005367 177756    DEC      -22(PC)
3038          017204 001367          BNE      .-20
3039          017206 005316          DEC      (SP)          ;REDUCE DELAY COUNT
3040          017210 001356          BNE      2$          ;RETRY UNTIL TIMER EXPIRES
3041          017212 000241          CLC          ; C = 0, CONTROLLER STILL RUNNING...
3042          017214 000401          BR       4$          ;...OR HUNG-UP AFTER 300 MSEC.
3043          017216 000261          3$: SEC          ; C = 1, CONTROLLER IS STOPPED.
3044          017220 005326          4$: DEC      (SP)+      ;RESTORE STACK WITHOUT CHANGING CARRY BIT
3045          017222 000207          RTS      PC

```


CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 57
 XNXM - CHECK FOR NONEXISTENT MEMORY

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3075 017264 012737 017316 000004
3076 017272 012737 000200 000006
3077 017300 005003
3078 017302 005711
3079
3080 017304 020102
3081 017306 001407
3082 017310 062701 000002
3083 017314 000772
3084
3085 017316 005103
3086 017320 012716 017326
3087 017324 000002
3088 017326
      017326 012700 000004
      017332 104436
3089 017334 005703
3090 017336 001401
3091 017340 060261
3092 017342 000207
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3105 017344
3106 017344 005737 002136
3107 017350 001006
3108 017352 005737 002152
3109 017356 106403
3110 017360 005337 002164
3111 017364 001002
3112 017366 000241
3113 017370 000401
3114 017372 000261
3115 017374 000207

      .SBTTL XNXM - CHECK FOR NONEXISTENT MEMORY
      ;+
      ; ROUTINE TO TEST FOR A NEXM IN THE RANGE (R1) THRU (R2).
      ; ON RETURN, IF 'C' = 1, (R1) = NEXM ADDRESS.
      ; 'C' = 0, ALL ADDRESSES OK.
      ;
      ; CALL: MOV ADR1,R1
      ;         MOV ADR2,R2
      ;         JSR PC,NXM
      ;         RETURN
      ; TEST 'C' AND PROCEED.
      ;
      ; SET BUSERR VECTOR.
      ;
      ; FLAG.
      ; TEST THE ADDRESS(ES).
      ; IF ANY TRAP, CONTINUE AT 2$.
      ; OTHERWISE, CONTINUE HERE.
      ; OR IF FINISHED (NO NEXM'S).
      ; SET NEXT ADDRESS...
      ; ...AND CONTINUE.
      ;
      ; GOT ONE, SET FLAG...
      ;
      ; ...AND DISMISS INTERRUPT...
      ; ...AND GIVE BACK THE VECTOR.
      ;
      ; DID WE CATCH ONE ??
      ; NO, 'C' = 0, SKIP NEXT.
      ; YES, 'C' = 1, (R1) = NEXM ADDR.

      XNXM: MOV #2$,a#4
      MOV #PR104,a#6
      CLR R3
      1$: TST (R1)
      CMP R1,R2
      BEQ 3$
      ADD #2,R1
      BR 1$
      2$: COM R3
      MOV #3$, (SP)
      RTI
      3$: CLRVEC #4
      MOV #4,R0
      TRAP C$CVEC
      TST R3
      BEQ .+4
      SEC
      RTS PC

      .SBTTL TSTLOOP - CHECK ITERATION COUNT
      ;+
      ; SUBROUTINE TO EXECUTE TEST ITERATIONS.
      ; EXIT WITH 'C' SET IF LOOPS ALLOWED AND LOOP COUNT NON-ZERO.
      ; LOOP COUNTER IS SET BY 'BEGIN.TEST' MACRO.
      ;
      ; CALL: LOOPTO ARG
      ;
      TSTLOOP::
      TST NOITS
      BNE 1$
      TST QVP
      BMI 1$
      DEC LOOPCNT
      BNE 2$
      1$: CLC
      BR 3$
      2$: SEC
      3$: RTS PC
      ; ITERATIONS INHIBITED?
      ; YES.
      ; NO.
      ; LOOPS DISALLOWED IN QUICK PASS.
      ; BUMP LOOP COUNTER.
      ; LOOP DISALLOWED, OR DONE.
      ; LOOP ENABLED.

```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 58
TSTLOOP - CHECK ITERATION COUNT

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3141
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3143
3144

.SBTTL TSTSETUP - PRINT TEST NAME AND INIT ERROR COUNTS

```

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

```

3145 017376
3146 017376 010046
3147 017400 005037 003106
3148 017404 005037 017644
3149 017410 005037 005232
3150 017414 105037 017004
3151 017420 013700 002150
3152 017424 006300
3153 017426 005737 003062
3154 017432 001430
3155 017434 100010
3156 017436 052760 160000 003130
3157 017444
017444 104455
017446 000001
017450 003636
017452 005176
3158 017454 000407
3159 017456 052760 160001 003130 38:
3160 017464
017464 104455
017466 000002
017470 004233
017472 000000
3161 017474 012737 177777 003060 28:
3162 017502
017502 013700 002150
017506 104451
3163 017510

```

TSTSETUP::
MOV      R0, -(SP)      ;SAVE THE TEST ID MESSAGE
CLR      SIFLAG          ; CLEAR "SOFT INIT" FLAG
CLR      ERRK            ; CLEAR LOCAL ERROR COUNTER.
CLR      EXTA            ; CLEAR ERROR EXTENSION FLAG.
CLRB     INTMASK         ; CLEAR INTERRUPT MASK (CHECK ERROR)
MOV      UNITN, R0       ; GET THE UNIT NUMBER,
ASL      R0              ; ... AND MAKE IT A WORD OFFSET.
TST      NODEV           ; DID STARTUP FIND THE DEVICE?
BEQ      48              ; BR IF YES
BPL      38              ; BR IF NOT IDLE
BIS      #160000, ERTABL(R0) ; FLAG ERROR IN THE ERROR TABLE
ERRDF    1, NXR, NXRERR   ; NO DEVICE HERE -- PRINT IT
TRAP     C$ERRDF
        .WORD      1
        .WORD      NXR
        .WORD      NXRERR
BR        28
BIS      #160001, ERTABL(R0) ; FLAG ERROR IN THE ERROR TABLE
ERRDF    2, NOINIT        ; DEVICE NOT IDLE
TRAP     C$ERRDF
        .WORD      2
        .WORD      NOINIT
        .WORD      0
MOV      #-1, DUFLG      ; DROP THE UNIT
DODU     UNITN
MOV      UNITN, R0
TRAP     C$DODU
DOCLN                    ; ABORT THE PASS

```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 58-1
TSTSETUP - PRINT TEST NAME AND INIT ERROR COUNTS

	017510	104444		TRAP	CSDCLN	
3164	017512	000423		BR	5\$	
3165						
3166	017514		4\$:	RFLAGS	R0	; GET THE OPERATOR FLAGS.
	017514	104421		TRAP	CSR:LA	
3167	017516	032700	001000	BIT	#PNT,R0	; PRINT THE TEST NUMBERS?
3168	017522	001412		BEQ	1\$	; BR IF NO
3169	017524	011600		MOV	(SP),R0	;GET THE !D MESSAGE
3170	017526			PRINTF	#TNAM,R0	;DISPLAY THE TEST ID
	017526	010046		MOV	R0,-(SP)	
	017530	012746	017572	MOV	#TNAM,-(SP)	
	017534	012746	000002	MOV	#2,-(SP)	
	017540	010600		MOV	SP,R0	
	017542	104417		TRAP	CSPNTF	
	017544	062706	000006	ADD	#6,SP	
3171	017550	005237	002162	1\$:	INC	TSTCNT
3172	017554			SETPRI	IPRI	; BUMP TEST COUNTER.
	017554	013700	002160	MOV	IPRI,R0	;PRIORITY THAT OF DEVICE
	017560	104441		TRAP	CSPRI	
3173	017562	005726		5\$:	TST	(SP)+
3174	017564	013705	002154	MOV	CSRADDR,R5	;FIX UP THE STACK
3175	017570	000207		RTS	PC	; ADDRESS OF TSV REGISTERS ON JNIBUS
3176	017572	045	123	045	TNAM:	.ASCIZ 'XSXTXA Test'
3177						.EVEN

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 59
TSTEND - PRINT ERRORS RECEIVED

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3179                                     .SBTTL TSTEND - PRINT ERRORS RECEIVED
3180                                     :
3181                                     : AT END OF EACH TEST, PRINT THE NUMBER OF ERRORS RECEIVED
3182                                     : IF NORMAL ERROR REPORTING IS DISABLED (FLA:IER).
3183                                     :
3184 017606 TSTEND: RFLAGS RO
3185 017606 104421 TRAP CSRFLA
3186 017610 030027 020000 BIT RO,#IER
3187 017614 001412 BEQ 1$ ; BR IF "IER" NOT SET.
3188 017616 013746 017644 PRINTF #ESUM,ERRK ; PRINT ERROR COUNT.
3189 017616 012746 017646 MOV ERRK,-(SP)
3190 017622 012746 017646 MOV #ESUM,-(SP)
3191 017626 012746 000002 MOV #2,-(SP)
3192 017632 010600 MOV SP,RO
3193 017634 104417 TRAP CSPNTF
3194 017636 062706 000006 ADD #6,SP
3195 017642 000207 1$: RTS PC
3196
3197 ERRK: 0 ; LOCAL ERROR COUNT.
3198 ESUM: .ASCIZ /%A %D%A ERRORS/
3199 EMAXDU: .ASCIZ /ERROR LIMIT REACHED -- DROPPING UNIT/
3200 .EVEN
3201
3202                                     .SBTTL INCERK - INCREMENT LOCAL ERROR COUNT
3203                                     :
3204                                     :+
3205                                     : ROUTINES TO INCREMENT LOCAL ERROR COUNT AND CHECK FOR LIMIT:
3206                                     :
3207 INCERK: INC ERRK ; INCREMENT LOCAL ERROR COUNT
3208 MOV RO,-(SP) ; SAVE RO
3209 MOV UNITN,RO ; GET UNIT NUMBER
3210 ASL RO ; ... AND MAKE IT A WORD OFFSET.
3211 ADD #ERTABL,RO ; RO GETS ADDRESS OF ERROR TABLE ENTRY.
3212 INC (RO) ; INCREMENT THE DEVICE ERROR COUNT
3213 BIT #7777,(RO) ; DID WE OVERFLOW THE FIELD?
3214 BNE 1$ ; BR IF NO.
3215 DEC (RO) ; YES -- BACK IT UP TO 7777.
3216 MOV (SP)+,RO ; RESTORE RO
3217 RTS PC ; RETURN TO CALLER.
3218
3219 CKEMAX: MOV RO,-(SP) ; SAVE RO
3220 MOV UNITN,RO ; GET UNIT NUMBER
3221 ASL RO ; ... AND MAKE IT A WORD OFFSET
3222 MOV ERTABL(RO),RO ; GET ERROR TABLE ENTRY
3223 BIC #170000,RO ; EXTRACT ERROR COUNT FIELD
3224 CMP RO,GERRMAX ; IS GLOBAL LIMIT EXCEEDED FOR THIS UNIT?
3225 BHS 1$ ; BR IF YES
3226 CMP ERRK,LERRMAX ; IS LOCAL LIMIT EXCEEDED FOR THIS TEST?
3227 BLO 2$ ; BR IF NO
3228 RFLAGS RO ; GET OPERATOR FLAGS
3229 TRAP CSRFLA
3230 BIT #IDU,RO ; IS DROPPING INHIBITED?
3231 BNE 2$ ; BR IF YES.
3232 MOV #-1,DUFLG ; NO -- DROP THE UNIT
3233 ERDF 4,EMAXDU
3234 TRAP CSERDF
3235 .WORD 4
3236 .WORD EMAXDU

```

CZTUZAO TJB0 FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 59-1
 INCERK - INCREMENT LOCAL ERROR COUNT

3225	020052	000000				.WORD	0	
	020054					DODU	UNITN	
	020054	013700	002150			MOV	UNITN,R0	
	020060	104451				TRAP	C%DODU	
3226	020062					DOCLN		
	020062	104444				TRAP	C%DCLN	
3227	020064	012600			2\$:	MOV	(SP)+,R0	; RESTORE R0
3228	020066	000207				RTS	PC	; RETURN TO CALLER
3229						.SBTTL	FATCHK - INC FATAL ERRORS AND CHECK FOR LIMIT	
3230								
3231								
3232								
3233								
3234								
3235								
3236	020070					FATCHK:		
3237	020070					SAVREG		;BETTER SAVE THE REGISTERS
3238	020074	013701	002150			MOV	UNITN,R1	;PICK UP THE UNIT NUMBER
3239	020100	006301				ASL	R1	;MAKE IT INTO A BYTE OFFSET
3240	020102	062761	000001	003130		ADD	#1,ERTABL(R1)	;ADD 1 TO THE PROPER UNIT'S ERROR COUNTER
3241	020110	005237	002170			INC	FATFLG	;BUMP FATAL ERROR COUNTER
3242	020114	023727	002170	000031		CMP	FATFLG,#25.	;CHECK AGAINST 25
3243	020122	002406				BLT	9\$	;BR, IF LESS THAN 25 ERRORS
3244	020124					RFLAGS	R0	;READ THE FLAGS INTO R0
	020124	104421				TRAP	C\$RFLA	
3245	020126	032700	040000			BIT	#BIT14,R0	;BR, IF LOOP ON ERROR IS SET
3246	020132	001002				BNE	9\$	;OTHERWISE NEVER BE ABLE TO SCOPE ETC.
3247	020134	004737	020142			JSR	PC,CKDROP	;DROP UNIT IF ALLOWED
3248	020140	000207			9\$:	RTS	PC	;RETURN ETC.
3249								
3250								
3251								

CZTUZAO TUBC FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 60
CKDROP - CHECK IF UNIT SHOULD BE DROPPED

```

3253                                     .SBTTL CKDROP - CHECK IF UNIT SHOULD BE DROPPED
3254                                     :+
3255                                     : CHECK IF UNIT SHOULD BE DROPPED
3256                                     :-
3257 020142 010046 CKDROP: MOV      RO,-(SP)
3258 020144 FORCERROR      1$,NOTSSR
3259 020154 RFLAGS      RO
3260 020156 104421 TRAP      C$RFLA
3261 020162 032700 000040 BIT      #IDU,RO
3262 020164 001010 BNE      1$
3263 020166 011600 MOV      (SP),RO
3264 020174 012737 177777 003060 MOV      #-1,DUFLG
3265 020174 013700 002150 DODU      UNITN
3266 020200 104451 MOV      UNITN,RO
3267 020202 TRAP      C$DODU
3268 020202 DOCLN                                     ;ABORT THE PASS
3269 020202 104444 TRAP      C$DCLN
3270 020204 012600 1$: MOV      (SP)+,RO
3271 020206 000207 RTS      PC
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```

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                                     .SBTTL CONFIG - DETERMINE CONFIGURATION OF SYSTEM
                                     :
                                     : SUBROUTINE - DETERMINE CONFIGURATION OF TUBO SYSTEM.
                                     :
3276 020210 CONFIG: JSR      PC,SOFINIT
3277 020210 004737 016634 RTS      PC
3278 020214 000207
3279
3280
3281

```

CZTUZAO TU80 FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 61
 KTON,KTOFF - ENABLE/DISABLE MEMORY MANAGEMENT

```

3283          .SBTTL KTON,KTOFF          - ENABLE/DISABLE MEMORY MANAGEMENT
3284          ;
3285          ; SUBROUTINE - ENABLE MEM MGT.
3286          ;
3287 020216 005737 003100      KTON:  TST      KTFLG      ; GOT KT?
3288 020222 001403              BEQ      1$              ; NO.
3289 020224 012737 000001 177572  MOV      #1,SRO      ; YES. ENABLE KT11.
3290 020232 000207      1$:      RTS      PC
3291
3292
3293          ;
3294          ; SUBROUTINE - DISABLE MEM MGT.
3295          ;
3296          ;
3297 020234 005737 003100      KTOFF: TST      KTFLG      ; GOT KT11?
3298 020240 001405              BEQ      1$              ; NO.
3299 020242 000240              NOP
3300 020244 000240              NOP
3301 020246 012737 000000 177572  MOV      #0,SRO      ; DISABLE KT.
3302 020254 000207      1$:      RTS      PC
3303
3304

```

CZTUZAO TUBO FRONT END PRT D
SETMAP - SETUP PAR6 MAPPING

MACRO M1200 29-MAR-83 13:43 PAGE 62

.SBTTL SETMAP - SETUP PAR6 MAPPING

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020256
020256
020262 005737 003100
020266 001433
020270 010102
000006

020322 042701 000177
020326 020137 003100
020332 103011
020334 010137 172354
020340 042702 160000
020344 062702 140000
020350 010200
020352 000261
020354 000401
020356 000241
020360 000207

..+

..THIS ROUTINE SETS UP KERNEL PAR6 TP HANDLE
..AN 18 BIT ADDRESS. THE OFFSET INTO THE PAGE
..IS RETURNED BIASED TO PAR6.

..INPUTS:

..R0 HIGH ORDER ADDRESS BITS
..R1 LOW ORDER ADDRESS BITS

..OUTPUTS:

..R0 OFFSET INTO BLOCK WITH PAR6 BIAS (I.E. THE ADDRESS)
..CARRY SET IF SUCCESS
..CLR IF ERROR

..-
SETMAP:

SAVREG ;SAVE R1-R4 UNTIL NEXT RETURN
TST KTFLG ;SYSTEM HAVE ABOVE 28K?
BEQ 10\$;BR IF NO
MOV R1,R2 ;SAVE LOW ORDER BITS
.REPT 6
ASR R0 ;CONVERT WORD ADDRESS TO 32W BLOCKS
ROR R1 ;MAKE IT DOUBLE PRECISION
.ENDR
BIC #177,R1 ;ALINE FOR LOWER 4K BOUNDARY
CMP R1,KTFLG ;HIGHER THAN EXISTING MEMORY?
BHS 10\$;BR IF YES
MOV R1,#KIPAR6 ;SETUP MAPPING REGISTER PAR6
BIC #160000,R2 ;SETUP DISPLACEMENT IN PAGE
ADD #140000,R2 ;ADD IN PAR6 BIAS
MOV R2,R0 ;RETURN IN R0
SEC ;SET SUCCESS
BR 15\$
10\$: CLC ;SET FAILURE
15\$: RTS PC ;RETURN

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 63
 FILLMEM - FILL MEMORY WITH BACKGROUND PATTERN

```

3347 .SBTTL FILLMEM - FILL MEMORY WITH BACKGROUND PATTERN
3348
3349 * FILL MEMORY WITH A BACKGROUND PATTERN
3350
3351 : INPUTS:
3352
3353 : RO = BACKGROUND PATTERN
3354 : FREE = FIRST LOCATION AVAILABLE TO DIAGNOSTIC
3355 : KTFLG = SET TO HIGHEST MEMORY LOCATION IF > 28K.
3356
3357 : OUTPUTS:
3358
3359 : NONE
3360
3361 : FILLMEM:
3362 020362 SAVREG ;SAVE R1-R5 UNTIL NEXT RETURN
3363 020362 JSR PC,KTOFF ;DISABLE KT.
3364 020366 004737 020234 MOV R0,R3 ;COPY TEST PATTERN
3365 020372 010003 MOV FREE,R1 ;GET FIRST FREE LOCATION
3366 020374 013701 003072 MOV FRESIZ,R2 ;SIZE OF FREE SPACE BELOW 28K.
3367 020400 013702 003074 10$: MOV R3,(R1)+ ;STORE A BACKGROUND WORD
3368 020404 010321 DEC R2 ;DONE ALL MEMORY IN FREE SPACE?
3369 020406 005302 BGT 10$ ;BR IF NO
3370 020410 003375 TST KTFLG ; GOT KT?
3371 020412 005737 003100 BEQ 55$ ; NO. GET OUT.
3372 020416 001452 JSR PC,KTON ; YES. ENABLE KT.
3373 020420 004737 020216 CLR R0 ;HIGH ORDER ADDRESS START
3374 020424 005000 MOV PST32W,R1 ;GET >28K START ADDRESS (IN 32W BLOCKS)
3375 020426 013701 003104 .REPT 6
3376 000006 CLC ;CLEAR C BIT
3377 ROL R1 ;CONVERT BLOCKS TO WORDS
3378 ROL R0 ;MAKE IT DOUBLE PRECISION
3379 .ENDR
3380
3381 020476 004737 020256 30$: JSR PC,SETMAP ;SETUP PAR6 MAPPING REGISTER
3382 020502 010320 MOV R3,(R0)+ ;STORE TEST PATTERN IN >28K ADDRESS
3383 020504 020027 160000 CMP R0,#160000 ;END OF PAR6 MAPPING AREA?
3384 020510 103774 BLO 30$ ;BR IF NO
3385 020512 162700 020000 SUB #20000,R0 ;BACKUP INTO PAR6 MAPPING BEGIN
3386 020516 062737 000200 172354 ADD #200,#KIPAR6 ;POINT TO NEXT 4K BLOCK >28K.
3387 020524 023737 172354 003100 CMP #KIPAR6,KTFLG ;END OF MEMORY?
3388 020532 001402 BEQ 50$ ;BR IF YES
3389 020534 000137 020502 JMP 30$ ;KEEP GOING ON ETC.
3390 020540 004737 020234 50$: JSR PC,KTOFF ;DISABLE KT.
3391 020544 000207 55$: RTS PC
3392
3393

```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 64
CMPMEM - COMPARE MEMORY TO BACKGROUND PATTERN

```

3395 .SBTTL CMPMEM - COMPARE MEMORY TO BACKGROUND PATTERN
3396
3397 *
3398 COMPARE MEMORY WITH A BACKGROUND PATTERN
3399
3400 INPUTS:
3401
3402     RO = BACKGROUND PATTERN
3403     FREE = FIRST LOCATION AVAILABLE TO DIAGNOSTIC
3404     KTFLG = SET TO HIGHEST MEMORY LOCATION IF > 28K.
3405
3406 OUTPUTS:
3407
3408     CARRY - SET IF NO ERROR
3409     CARRY - CLR IF ERROR
3410
3411 IMPLICIT OUTPUTS:
3412
3413     ERRHI - ERROR HIGH ADDRESS
3414     ERRLO - ERROR LOW ADDRESS
3415     EXPD  - EXPECTED DATA
3416     RECV  - RECEIVED DATA
3417
3418 -
3419 CMPMEM:
3420     SAVREG
3421     MOV     RO,R3
3422     JSR     PC,KTOFF
3423     MOV     FREE,R1
3424     MOV     FRESIZ,R2
3425 10$:     CMP     R3,(R1)
3426     BEQ     15$
3427     MOV     R1,ERRLO
3428     CLR     ERRHI
3429     MOV     R3,EXPD
3430     MOV     (R1),RECV
3431     BR      50$
3432 15$:     TST     (R1)+
3433     DEC     R2
3434     BGT     10$
3435     TST     KTFLG
3436     BEQ     55$
3437     JSR     PC,KTON
3438     CLR     RO
3439     MOV     PST32W,R1
3440     .REPT   6
3441     ROL     R1
3442     ROL     RO
3443     .ENDR
3444     BIC     #177,R1
3445     MOV     RO,-(SP)
3446     MOV     R1,-(SP)
3447     JSR     PC,SETMAP
3448     MOV     RO,R4
3449     MOV     (SP)+,R1
3450     MOV     (SP)+,RO
3451 30$:     CMP     R3,(R4)
3452     BEQ     32$
3453     MOV     RO,ERRHI

```

;SAVE R1-R5 UNTIL NEXT RETURN
 ;COPY TEST PATTERN
 ;DISABLE KT.
 ;GET FIRST FREE LOCATION
 ;SIZE OF FREE SPACE BELOW 28K.
 ;FREE SPACE LOCATION EQUAL TO EXPD?
 ;BR IF YES
 ;SAVE ADDRESS IN ERROR
 ;NO HIGH ADDRESS
 ;SAVE EXPD FOR ERROR REPORT
 ;SAVE RECV FOR ERROR REPORT
 ;
 ;POINT TO NEXT ADDRESS
 ;DONE ALL MEMORY IN FREE SPACE?
 ;BR IF NO
 ; GOT KT?
 ; NO. GET OUT.
 ; YES. ENABLE KT.
 ;HIGH ORDER ADDRESS START
 ;GET >28K START ADDRESS (IN 32W BLOCKS)
 ;
 ;CONVERT BLOCKS TO WORDS
 ;MAKE IT DOUBLE PRECISION
 ;
 ;ALINE 4K BOUNDARY
 ;SAVE HIGH ORDER
 ;SAVE LOW ORDER
 ;SETUP PAR6 MAPPING REGISTER
 ;COPY ADDRESS BIASED TO PAR6
 ;RESTORE LOW ORDER IN NON PAR6 FORMAT
 ;RESTORE HIGH ORDER IN NON PAR6 FORMAT
 ;ABOVE 28K LOCATION EQUAL EXPD?
 ;BR IF YES
 ;SAVE HIGH ORDER IN ERROR

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 64-1
 CMPMEM - COMPARE MEMORY TO BACKGROUND PATTERN

3452	020726	010137	002204		MOV	R1,ERRLO	;SAVE LOW ORDER IN ERROR
3453	020732	010337	002176		MOV	R3,EXPD	;SAVE EXPD FOR ERROR REPORT
3454	020736	011437	002200		MOV	(R4),RECV	;SAVE RECV FOR ERROR REPORT
3455	020742	000421			BR	50\$	;
3456	020744	062701	000002	32\$:	ADD	#2,R1	;UPDATE NON PAR6 ADDRESS
3457	020750	005500			ADC	R0	;MAKE IT DOUBLE PRECISION ADD
3458	020752	062704	000002		ADD	#2,R4	;UPDATE PAR FORMAT ADDRESS
3459	020756	020427	160000		CMP	R4,#160000	;END OF PAR6 MAPPING AREA?
3460	020762	103755			BLO	30\$	;BR IF NO
3461	020764	162704	020000		SUB	#20000,R4	;BACKUP INTO PAR6 MAPPING BEGIN
3462	020770	062737	000200	172354	ADD	#200,@#KIPAR6	;POINT TO NEXT 4K BLOCK >28K.
3463	020776	023737	172354	003100	CMP	@#KIPAR6,KTFLG	;END OF MEMORY?
3464	021004	101744			BLOS	30\$	;BR IF NO
3465	021006	004737	020234	50\$:	JSR	PC,KTOFF	;TURN OFF MEMORY MAPPING
3466	021012	000241			CLC		;SET FAILURE
3467	021014	000403			BR	60\$	;
3468	021016	004737	020234	55\$:	JSR	PC,KTOFF	;TURN OFF MEMORY MAPPING
3469	021022	000261			SEC		;SET SUCCESS
3470	021024	000207		60\$:	RTS	PC	
3471							

CZTUZAO TU80 FRONT END PRT D
REGSAV - SAVE R1-R5 ON STACK

MACRO M1200 29-MAR-83 13:43 PAGE 65

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3489
3490
3491
3492
3493 021026
3494 021026
021026 104422
3495 021030 010446
3496 021032 010346
3497 021034 010246
3498 021036 010146
3499 021040 010546
3500 021042 016605 000012
3501 021046 004736
3502 021050 012601
3503 021052 012602
3504 021054 012603
3505 021056 012604
3506 021060 012605
3507 021062
021062 104422
3508 021064 000207
3509

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

REGSAV:

BREAK
TRAP CSBRK ;LOOK FOR CNTL C
MOV R4,-(SP)
MOV R3,-(SP)
MOV R2,-(SP)
MOV R1,-(SP)
MOV R5,-(SP)
MOV 10.(SP),R5
JSR PC,B(SP)+
MOV (SP)+,R1
MOV (SP)+,R2
MOV (SP)+,R3
MOV (SP)+,R4
MOV (SP)+,R5
BREAK ;LOOK FOR CNTL C
TRAP CSBRK
RTS PC

CZTUZAO TU80 FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 66
GETPAT - GET 8 BIT PATTERN FROM OPERATOR

```

3511 .SBTTL GETPAT - GET 8 BIT PATTERN FROM OPERATOR
3512
3513
3514 :ROUTINE TO REQUEST AN 8 BIT DATA PATTERN FROM THE OPERATOR
3515
3516 :INPUTS:
3517
3518 :      NONE.
3519
3520 :OUTPUTS:
3521
3522 :      RO      OCTAL NUMBER FROM THE OPERATOR
3523
3524 :CALLING SEQUENCE:
3525
3526 :      JSR      PC,GETPAT
3527
3528 :-
3529
3530 GETPAT::
3531      SAVREG                                ;SAVE THE GENERAL REGISTERS
3532 1$:      GMANID  DATASC,PATDAT,0,377,0,377,NO
3533      TRAP      CSGMAN
3534      BR        10000$
3535      .WORD     PATDAT
3536      .WORD     TSCODE
3537      .WORD     DATASC
3538      .WORD     377
3539      .WORD     T$LOLIM
3540      .WORD     T$HILIM
3541
3542 10000$:      BNCOMPLETE      1$      ;RETRY IF ERROR
3543      BCC       1$
3544      MOV       PATDAT,RO      ;DATA PATTERN FROM OPERATOR
3545      RTS       PC            ;RETURN TO CALLER
3546
3547 :+
3548 :LOCAL DATA AREA
3549 :-
3550
3551 PATDAT: .WORD 0 ;TEMPORARY STORAGE FOR DATA
3552 DATASC: .ASCIZ 'ENTER DATA PATTERN'
3553      .EVEN

```

CZTUZAO TURBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 67
GETSEL - ISSUE MENU AND GET OPERATOR RESPONSE

```

3545 .SBTTL GETSEL - ISSUE MENU AND GET OPERATOR RESPONSE
3546
3547 ;+
3548 ;ROUTINE TO ISSUE A MENU AND GET
3549 ;THE OPERATOR'S RESPONSE.
3550 ;INPUTS:
3551 ;      RO      ADDRESS OF ASCIZ STRING OF MENU
3552 ;      R1      MAXIMUM ALLOWABLE OPERATOR RESPONSE
3553 ;OUTPUTS:
3554 ;      RO      NUMBER OF THE OPERATOR'S SELECTION
3555 ;-
3556 GETSEL::
3557     SAVREG                      ;SAVE GENERAL REGISTERS
3558     MOV      RO,R2              ;SAVE THE MENU ADDRESS
3559     1$:      MOV      R2,R3      ;START OF MENU STRING
3560     2$:      TST      (R3)        ;END OF ASCII ?
3561     BEQ      3$                ;BRANCH IF ALL LINES DISPLAYED
3562     PRINTF   #SELASC,(R3)+      ;DISPLAY THE MENU
3563     MOV      (R3)+,-(SP)
3564     MOV      #SELASC,-(SP)
3565     MOV      #2,-(SP)
3566     MOV      SP,RO
3567     TRAP     C$PNTF
3568     ADD      #6,SP
3569     BR       2$
3570     3$:      G$MANID  MENASC,MENRES,D,-1,0,-1,NO
3571     TRAP     C$G$MAN
3572     BR       10001$
3573     .WORD    MENRES
3574     .WORD    T$CODE
3575     .WORD    MENASC
3576     .WORD    -1
3577     .WORD    T$LOLIM
3578     .WORD    T$HILIM
3579     10001$:  BNCOMPLETE  1$      ;RETRY IF ERROR
3580     BCC      1$
3581     MOV      MENRES,RO          ;GET THE OPERATOR'S REPLY
3582     CMP      RO,R1              ;COMPARE TO MAXIMUM ALLOWED
3583     BLOS     5$                 ;BRANCH IF OK
3584     PRINTF   #MENERR           ;DISPLAY ERROR MESSAGE
3585     MOV      #MENERR,-(SP)
3586     MOV      #1,-(SP)
3587     MOV      SP,RO
3588     TRAP     C$PNTF
3589     ADD      #4,SP
3590     BR       1$                ;RETRY
3591     5$:      RTS               ;RETURN TO CALLER
3592     PC
3593     045     MENERR: .ASCIZ 'XNZA *** Menu Selection Too Large ***'
3594     045     SELASC: .ASCIZ 'XNXT'
3595     164     MENASC: .ASCIZ 'Enter Menu Selection: '
3596     .EVEN
3597     MENRES:  .WORD    0

```

CZTU7AO TU80 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 CHKMAN::
3600       SAVREG                ;SAVE THE REGISTERS
3601       MANUAL                ;SEE IF MANUAL INTERVENTION OK
3602       TRAP CSMANI
3603       BCOMPLETE 1$          ;BRANCH IF ALLOWED
3604       BCS 1$
3605       PRINTF #NOMAN         ;PRINT THE WARNING MESSAGE
3606       MOV #NOMAN,-(SP)
3607       MOV #1,-(SP)
3608       MOV SP,RC
3609       TRAP CSPNTF
3610       ADD #4,SP
3611       CLC                    ;CLEAR CARRY FOR ERROR
3612       RTS PC                 ;RETURN
3613
3614 1$:
3615
3616 045 NOMAN: .ASCIZ 'XNZA *** Manual Intervention not Allowed - Test Aborted ***'
3617 .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
                                TRAP C$MEM
3615 021522 104431 003072      MOV R0,FREE      ; GET 1ST FREE ADDRESS...
3616 021530 062737 000002 003072  ADD #2,FREE
3617 021536 011037 003074      MOV (R0),FRESIZ ; ...AND WORD COUNT.
3618 021542 162737 000004 003074  SUB #4,FRESIZ
3619 021550 013702 002012      MOV L$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 TUBO 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                                     ;ROUTINE TO INIT KT-11
3633                                     ;-
3634                                     KTINIT:
3635 021610 005037 003100 CLR KTFLG ; INIT >28K MEMORY FLAG
3636 021614 005037 003102 CLR KTENABLE ; INIT TEST >28K FLAG
3637 021620 023727 002120 001577 CMP LSHIME,#1577 ; GOT ENOUGH MEMORY (>28K)?
3638 021626 101444 BLOS 98 ; NO.
3639 021630 013700 000004 MOV @ERRVEC,R0 ; SAVE OLD ERR VEC PTR.
3640 021634 012737 021726 000004 MOV #28,@ERRVEC ; SET ERR VEC PTR.
3641 021642 005737 177572 TST @SRO ; GOT KT11?
3642 021646 000240 NOP ; (TRAP IF NO).
3643 021650 013737 002120 003100 MOV LSHIME,KTFLG ; YES. SET KT FLAG.
3644 021656 042737 000177 003100 BIC #177,KTFLG
3645 021664 010037 000004 MOV R0,@ERRVEC ; RESTORE OLD ERR VEC PTR.
3646 021670 005000 CLR R0 ; R0 = AR DATA.
3647 021672 012701 172340 MOV #KIPAR0,R1 ; R1 = KI REGS PTR.
3648 021676 012761 077406 177740 1$: MOV #77406,-40(R1) ; SET DESCRIPTOR REG.
3649 021704 010021 MOV R0,(R1)+ ; SET KIPAR REG.
3650 021706 062700 000200 ADD #200,R0 ; BUMP AR DATA BY "4K".
3651 021712 020027 002000 CMP R0,#2000 ; AT "I/O"?
3652 021716 001367 BNE 1$ ; NO.
3653 021720 012741 177600 MOV #177600,-(R1) ; YES. SET KIPAR7 FOR I/O.
3654 021724 000405 BR 98
3655 021726 012716 021734 2$: MOV #68,(SP) ; SET UP RETURN
3656 021732 000002 RTI ; RTI TO NEXT LOCATION
3657 021734 010037 000004 6$: MOV R0,@ERRVEC ; RESTORE OLD ERR VEC PTR.
3658 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
INITIALIZE SECTION

.SBTTL INITIALIZE SECTION

++
THE INITIALIZE SECTION CONTAINS THE CODING THAT IS PERFORMED
AT THE BEGINNING OF EACH PASS.

IF "START" OR "RESTART", SET QUICK-PASS FLAG AND BUS-INIT.
IF "CONTINUE", NOTHING IS REQUIRED.

--
+
INSERT TEMPORARY JUMP TO ODT
:-

BGNINIT

LSINIT::
40\$:

MOV #EPR1,EPR1SW ;SET UP PRIMARY MESSAGE FOR REPLACEMENT
CLR SIFLAG ;CLEAR "SOFT INIT" FLAG
CLR KTENABLE ;CLEAR TEST ABOVE 28K FLAG
CLR RAMSIZ ;CLEAR RAM SIZE FOR RAMERR ROUTINE

READF #EF.CONTINUE
MOV #EF.CONTINUE,R0
TRAP CSREFG

BNCOMPLETE 1\$

BCC 1\$

CMF UNITN,LSUNIT ;UNIT IN RANGE?

BHIS 4\$;BR IF NO.

TST DUFLG ;DROPPED UNIT?

BMI NXTU ;BR IF YES

MOV UNITN,R1

ASL R1

TST ERTABL(R1)

BEQ SETU

BIT #BIT14,ERTABL(R1) ;DROPPED?

BNE NXTU

EXIT INIT

;DO NOTHING IF "CONTINUE".

TRAP CSEXIT

.WORD L10030-

1\$:

READF #EF.NEW

MOV #EF.NEW,R0

TRAP CSREFG

BNCOMPLETE NXTU ;TAKE NEXT UNIT IF NOT NEW PASS.

BCC NXTU

READF #EF.START

MOV #EF.START,R0

TRAP CSREFG

BCOMPLETE 2\$

BCS 2\$

READF #EF.RESTART

MOV #EF.RESTART,R0

TRAP CSREFG

BNCOMPLETE 31\$

BCC 31\$

2\$:

BRESET

;1ST PASS, BUS-INIT...

;BUS RESET.

TRAP CSRESET

CLR TSTCNT

;NUMBER OF TESTS RUN IN PASS

3677
3678
3679
3680
3681
3682
3683
3684
3685
3686
3687
3688
3689
3690 021752
021752
3691 021752
3692 021752 012737 005672 002146
3693 021760 005037 003106
3694 021764 005037 003102
3695 021770 005037 002246
3696 021774
021774 012700 000036
022000 104447
3697 022002
022002 103023
3698 022004 023737 002150 002012
3699 022012 103073
3700 022014 005737 003060
3701 022020 100475
3702 022022 013701 002150
3703 022026 006301
3704 022030 005761 003130
3705 022034 001521
3706 022036 032761 040000 003130
3707 022044 001063
3708 022046
022046 104432
022050 000430
3709 022052
022052 012700 000035
022056 104447
3710 022060
022060 103055
3711 022062
022062 012700 000040
022066 104447
3712 022070
022070 103404
3713 022072
022072 012700 000037
022076 104447
3714 022100
022100 103034
3715 022102
3716 022102
022102 104433
3717 022104 005037 002162

PC	Instruction	Op	Op2	Op3	Op4	Op5	Op6	Op7	Op8	Op9	Op10	Op11	Op12	Op13	Op14	Op15	Op16	Op17	Op18	Op19	Op20	Op21	Op22	Op23	Op24	Op25	Op26	Op27	Op28	Op29	Op30	Op31	Op32	Op33	Op34	Op35	Op36	Op37	Op38	Op39	Op40	Op41	Op42	Op43	Op44	Op45	Op46	Op47	Op48	Op49	Op50	Op51	Op52	Op53	Op54	Op55	Op56	Op57	Op58	Op59	Op60	Op61	Op62	Op63	Op64	Op65	Op66	Op67	Op68	Op69	Op70	Op71	Op72	Op73	Op74	Op75	Op76	Op77	Op78	Op79	Op80	Op81	Op82	Op83	Op84	Op85	Op86	Op87	Op88	Op89	Op90	Op91	Op92	Op93	Op94	Op95	Op96	Op97	Op98	Op99	Op100	Op101	Op102	Op103	Op104	Op105	Op106	Op107	Op108	Op109	Op110	Op111	Op112	Op113	Op114	Op115	Op116	Op117	Op118	Op119	Op120	Op121	Op122	Op123	Op124	Op125	Op126	Op127	Op128	Op129	Op130	Op131	Op132	Op133	Op134	Op135	Op136	Op137	Op138	Op139	Op140	Op141	Op142	Op143	Op144	Op145	Op146	Op147	Op148	Op149	Op150	Op151	Op152	Op153	Op154	Op155	Op156	Op157	Op158	Op159	Op160	Op161	Op162	Op163	Op164	Op165	Op166	Op167	Op168	Op169	Op170	Op171	Op172	Op173	Op174	Op175	Op176	Op177	Op178	Op179	Op180	Op181	Op182	Op183	Op184	Op185	Op186	Op187	Op188	Op189	Op190	Op191	Op192	Op193	Op194	Op195	Op196	Op197	Op198	Op199	Op200	Op201	Op202	Op203	Op204	Op205	Op206	Op207	Op208	Op209	Op210	Op211	Op212	Op213	Op214	Op215	Op216	Op217	Op218	Op219	Op220	Op221	Op222	Op223	Op224	Op225	Op226	Op227	Op228	Op229	Op230	Op231	Op232	Op233	Op234	Op235	Op236	Op237	Op238	Op239	Op240	Op241	Op242	Op243	Op244	Op245	Op246	Op247	Op248	Op249	Op250	Op251	Op252	Op253	Op254	Op255	Op256	Op257	Op258	Op259	Op260	Op261	Op262	Op263	Op264	Op265	Op266	Op267	Op268	Op269	Op270	Op271	Op272	Op273	Op274	Op275	Op276	Op277	Op278	Op279	Op280	Op281	Op282	Op283	Op284	Op285	Op286	Op287	Op288	Op289	Op290	Op291	Op292	Op293	Op294	Op295	Op296	Op297	Op298	Op299	Op300	Op301	Op302	Op303	Op304	Op305	Op306	Op307	Op308	Op309	Op310	Op311	Op312	Op313	Op314	Op315	Op316	Op317	Op318	Op319	Op320	Op321	Op322	Op323	Op324	Op325	Op326	Op327	Op328	Op329	Op330	Op331	Op332	Op333	Op334	Op335	Op336	Op337	Op338	Op339	Op340	Op341	Op342	Op343	Op344	Op345	Op346	Op347	Op348	Op349	Op350	Op351	Op352	Op353	Op354	Op355	Op356	Op357	Op358	Op359	Op360	Op361	Op362	Op363	Op364	Op365	Op366	Op367	Op368	Op369	Op370	Op371	Op372	Op373	Op374	Op375	Op376	Op377	Op378	Op379	Op380	Op381	Op382	Op383	Op384	Op385	Op386	Op387	Op388	Op389	Op390	Op391	Op392	Op393	Op394	Op395	Op396	Op397	Op398	Op399	Op400	Op401	Op402	Op403	Op404	Op405	Op406	Op407	Op408	Op409	Op410	Op411	Op412	Op413	Op414	Op415	Op416	Op417	Op418
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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.
3790 022402 032700 001000      TRAP      CSRFLA
3791 022406 001412      BIT      #PNT,RO      ;SHOULD WE PRINT UNIT #?
3792 022410      BEQ      10$      ;BR IF NOT.
3793 022410 013746 002150      PRINTF  #PUNIT,UNITN ;PRINT THE UNIT #
3794 022414 012746 022502      MOV      UNITN,-(SP)
3795 022420 012746 000002      MOV      #PUNIT,-(SP)
3796 022424 010600      MOV      #2,-(SP)
3797 022426 104417      MOV      SP,RO
3798 022430 062706 000006      TRAP      CSPNTF
3799 022434      ADD      #6,SP
3800 022440 005037 003062      CLR      NODEV
3801 022444 013701 002154      MOV      CSRADDR,R1 ;ADDRESS OF FIRST REGISTER
3802 022446 010102      MOV      R1,R2      ;START OF REGISTERS
3803 022448 062702 000000      ADD      #TSSR,R2 ;ADDRESS OF TSSR REGISTER
3804 022452 004737 017264      JSR      PC,XNXXM ;TEST BOTH CONTROLLER REGISTERS...
3805 022456 103005      BCC      2$      ;...AND BR IF ALL OK.
3806 022460 010137 003062      MOV      R1,NODEV ;FLAG DEVICE AS NON-EXISTENT
3807 022464 012737 177777 003060  MOV      #-1,DUFLG ;DROP THIS UNIT.
3808 022472
3809 022472      2$:
3810 022476      ;
3811 022500      ;FINALLY, SET CPU PRIORITY AND WE'RE DONE.
3812 022500      5$:
3813 022500      SETPRI  #PRI00 ;ENABLE INTERRUPTS.
3814 022500 012700 000000      MOV      #PRI00,RO
3815 022500 104441      TRAP      CSSPRI
3816 022500      ENDINIT
3817 022500 104411      L10030:
3818 022500      TRAP      CSINIT
3819 022502 045 116 045 PUNIT: .ASCIZ /XNXXNXX***** TESTING UNIT XD2XA *****/
3820 022502      .EVEN

```

CZTUZAO TUBO FRONT END PRT D
ADD AND DROP UNITS SECTIONS

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.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      #100000,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-TABLES OF THOSE
      : WHICH ARE STILL ACTIVE.
      : UPON ENTRY, RO CONTAINS THE UNIT TO BE DROPPED.

      BGNDU
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-

```

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CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 74
 CLEAN-UP AND REPORT CODING SECTIONS

.SBTTL CLEAN-UP AND REPORT CODING SECTIONS

```

3866
3867
3868
3869
3870
3871
3872
3873 023030
      023030
3874 023030 005737 003060
3875 023034 100405
3876
3877
3878 023036 012765 000000 000000
3879 023044 004737 017110
3880 023050
3881 023050
      023050
      023050 104412
3882
3883
3884
3885
3886 023052
      023052
3887 023052
      023052 012746 023314
      023056 012746 000001
      023062 010600
      023064 104416
      023066 062706 000004
3888 023072 010246
3889 023074 010346
3890 023076 010446
3891 023100 012704 003130
3892 023104 005003
3893 023106 011402
3894 023110 001467
3895 023112 100066
3896 023114 032702 040000
3897 023120 001015
3898 023122 042702 170000
3899 023126
      023126 010246
      023130 010346
      023132 012746 023351
      023136 012746 000003
      023142 010600
      023144 104416
      023146 062706 000010
3900 023152 000446
3901 023154 020227 160000
3902 023160 001012
3903 023162
      023162 010346
      023164 012746 023421
      023170 012746 000002

      BGNCLN
L$CLEAN::
      TST      DUFLG      ;'DROPPED' FLAG IS SET ON...
      BMI      1$        ;...AND GROSS CONTROLLER FAULT...
                          ;...DON'T TRY TO XCT CLEANUP CODE.
      MOV      #0,TSSR(R5) ;DO SOFT INIT
      JSR      PC,WAITF
1$:
2$:
L10034:  ENDCLN
      TRAP     C$CLEAN

      BGNRPT
L$RPT::
      PRINTS   #DEVSUM
      MOV      #DEVSUM,-(SP)
      MOV      #1,-(SP)
      MOV      SP,R0
      TRAP     C$PNTS
      ADD      #4,SP
      MOV      R2,-(SP)
      MOV      R3,-(SP)
      MOV      R4,-(SP)
      MOV      #ERTABL,R4      ; GET START OF ERROR TABLE.
      CLR      R3              ; CLEAR UNIT NUMBER
1$:  MOV      (R4),R2          ; GET ERROR TABLE ENTRY & TEST IT.
      BEQ      4$              ; ZERO IF UNIT NOT RUN
      BPL      4$
      BIT      #BIT14,R2      ; WAS UNIT DROPPED?
      BNE      2$              ; BR IF YES
      BIC      #^C7777,R2     ; GET ERROR COUNT FIELD
      PRINTS   #DEVONL,R3,R2 ; PRINT
      MOV      R2,-(SP)
      MOV      R3,-(SP)
      MOV      #DEVONL,-(SP)
      MOV      #3,-(SP)
      MOV      SP,R0
      TRAP     C$PNTS
      ADD      #10,SP
      BR       4$
2$:  CMP      R2,#160000      ; WAS UNIT NON-EXISTENT?
      BNE      3$              ; BR IF NO
      PRINTS   #DEVNXR,R3
      MOV      R3,-(SP)
      MOV      #DEVNXR,-(SP)
      MOV      #2,-(SP)

```

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 CLEAN-UP AND REPORT CODING SECTIONS

	023174	010600			MOV	SP,R0	
	023176	104416			TRAP	CSPNTS	
	023200	062706	000006		ADD	#6,SP	
3904	023204	000431			BR	48	
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	48	
3909	023240	042702	170000	30\$:	BIC	#^C7777,R2	
3910	023244				PRINTS	#DEVDR0,R3,R2	
	023244	010246			MOV	R2,-(SP)	
	023246	010346			MOV	R3,-(SP)	
	023250	012746	023564		MOV	#DEVDR0,-(SP)	
	023254	012746	000003		MOV	#3,-(SP)	
	023260	010600			MOV	SP,R0	
	023262	104416			TRAP	CSPNTS	
	023264	062706	000010		ADD	#10,SP	
3911	023270	062704	000002	4\$:	ADD	#2,R4	
3912	023274	005203			INC	R3	
3913	023276	020427	003330		CMP	R4,#ERTABE	
3914	023302	103701			BLO	1\$	
3915	023304	012604			MOV	(SP)+,R4	
3916	023306	012603			MOV	(SP)+,R3	
3917	023310	012602			MOV	(SP)+,R2	
3918	023312				ENDRPT		: UNUSED.
	023312			L10035:			
	023312	104425			TRAP	CSPRT	
3919	023314	045	116	045	DEVSUM:	.ASCIZ /%N%ADEVICE STATUS SUMMARY:%N/	
3920	023351	045	101	040	DEVONL:	.ASCIZ /%A UNIT %D3%A ONLINE, ERRORS = %D3%A/	
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	DEVDR0:	.ASCIZ /%A UNIT %D3%A DROPPED, ERRORS = %D3%A/	
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

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

3946
3947
3948
3949
3950
3951
3952
3953
3954
3955
3956
3957
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
CLR KTFLG
MOV #EPRT1,EPRTSW
MOV #TST29ID,R0
JSR PC,TSTSETUP
MOV #2,LOOPCNT
CLR T29CNT

T29LOOP:

T1::
;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

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

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4019	024052			ERRDF	ERRNO,T29OFL,EXPREC	:DRIVE IS OFF LINE		
	024052	104455					TRAP	C\$ERDF
	024054	000147					.WORD	103
	024056	026542					.WORD	T29OFL
	024060	016334					.WORD	EXPREC
4020	024062	004737	020142		JSR	PC,CKDROP		
4021	024066	004737	010424	26\$:	JSR	PC,REWIND		:TRY AND DROP DRIVE
4022	024072	016501	000000		MOV	TSSR(R5),R1		:CALL TAPE REWIND COMMAND
4023	024076	012702	000200		MOV	#SSR,R2		:GET TSSR
4024	024102	103407			BCS	30\$		:SET UP EXPECTED TSSR
4025	024104	010004			MOV	R0,R4		:BR, IF NO PROBLEM
4026	024106	004737	020070		JSR	PC,FATCHK		:PACKET ADDRESS SET UP
4030	024112				ERRHRD	ERRNO,T29RWN,PKTSSR		:INC AND CHECK FOR MORE THAN 25 ERRORS
	024112	104456						:REWIND NOT ACCEPTED
	024114	000150					TRAP	C\$ERHRD
	024116	030260					.WORD	104
	024120	011670					.WORD	T29RWN
4031	024122			30\$:	CKLOOP		.WORD	PKTSSR
	024122	104406						:LOOP IF SELECTED
4032	024124	013701	026376		MOV	T29BFR+6,R1	TRAP	C\$CLP1
4033	024130	010102			MOV	R1,R2		:PICK UP XSTO
4034	024132	052702	000002		BIS	#BIT1,R2		:SET UP EXPECTED
4035	024136	020102			CMP	R1,R2		:SET BOT BIT IN EXPECTED
4036	024140	001406			BEQ	40\$		:DOES EXP = REC'D
4037	024142	004737	020070		JSR	PC,FATCHK		:BR, IF EQUAL (OK)
4041	024146				ERRHRD	ERRNO,T29BOT,EXPREC		:INC AND CHECK FOR MORE THAN 25 ERRORS
	024146	104456						:TAPE NOT AT BOT AFTER REWIND
	024150	000151					TRAP	C\$ERHRD
	024152	027751					.WORD	105
	024154	016334					.WORD	T29BOT
4042	024156			40\$:	CKLOOP		.WORD	EXPREC
	024156	104406						:LOOP IF SELECTED
4043	024160	013737	003072		MOV	FREE,T29RB	TRAP	C\$CLP1
4044	024166	012737	141011	026502	MOV	#141011,T29PK3		:ADDRESS OF READ BUFFER
4045	024174	012704	026500	026500	MOV	#T29PK3,R4		:WRITE TAPE MARK RETRY,CVC=1,ACK COMMAND
4046	024200	010465	177776		MOV	R4,TSDB(R5)		:SET UP R4 WITH PACKET ADDRESS
4047	024204	004737	017110		JSR	PC,WAITF		:ISSUE COMMAND
4048	024210	016501	000000		MOV	TSSR(R5),R1		:WAIT FOR SSR TO SET
4049	024214	012702	100206		MOV	#SSR!SC!BIT1!BIT2,R2		:GET TSSR CONTENTS
4050	024220	020102			CMP	R1,R2		:SET UP EXPECTED
4051	024222	001406			BEQ	75\$		:ARE THEY EQUAL
4052	024224	004737	020070		JSR	PC,FATCHK		:BR, IF OK
4056	024230				ERRHRD	ERRNO,T29WDE,PKTSSR		:INC AND CHECK FOR MORE THAN 25 ERRORS
	024230	104456						:TSSR INCORRECT AFTER READ DATA
	024232	000152					TRAP	C\$ERHRD
	024234	027622					.WORD	106
	024236	011670					.WORD	T29WDE
4057	024240			75\$:	CKLOOP		.WORD	PKTSSR
	024240	104406						:LOOP IF SELECTED
4058	024242	013701	026376		MOV	T29BFR+6,R1	TRAP	C\$CLP1
4059	024246	010102			MOV	R1,R2		:GET XSTO STATUS WORD
4060	024250	052702	002000		BIS	#BIT10,R2		:SET UP EXPECTED
4061	024254	020102			CMP	R1,R2		:SET THE NEF BIT
4062	024256	001406			BEQ	170\$		:ARE THEY EQUAL
4063	024260	004737	020070		JSR	PC,FATCHK		:BR, IF EQUAL (GOOD)
4067	024264				ERRHRD	ERRNO,T29NEF,EXPREC		:INC AND CHECK FOR MORE THAN 25 ERRORS
	024264	104456						:NEF SHOULD BE SET
							TRAP	C\$ERHRD

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TEST 1: WRITE TAPE MARK RETRY

	024266	000153				.WORD	107
	024270	026670				.WORD	T29NEF
	024272	016334				.WORD	EXPREC
4068	024274		170\$:				
4069	024274	005103		COM	R3		
4070	024276	001273		BNE	26\$		
4071	024300			ENDSUB			
	024300						
	024300	104403					

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

L10037: TRAP C\$ESUB

4073				:*
4074				:
4075				:TEST 1, SUBTEST 2
4076				:
4077				:VERIFIES THAT A WRITE TAPE MARK RETRY COMMAND ISSUED WHILE THE TAPE
4078				:IS POSITIONED BEFORE THE FIRST RECORD ON TAPE (BUT NOT AT BOT) RESULTS IN
4079				:TAPE STATUS ALERT TERMINATION, WITH THE REVERSE INTO BOT (RIB) STATUS BIT
4080				:SET.
4081				:
4082				:
4083				:
4084				:
4085	024302			-
	024302			BGNSUB
	024302	104402		;>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>
	024302			T1.2:
4086	024304	004737	032130	TRAP CSBSUB
4087	024310	004737	032222	;SET COMMAND PACKET
4088	024314	004737	032264	;SET UP OTHER COMMAND PACKET
4089	024320	004737	016634	;SET UP OTHER COMMAND PACKET
4090	024324	103407		;DO INITIALIZE ON CONTROLLER
4091	024326	004737	020070	;BR IF INIT WAS OK
4095	024332	010001		;INC AND CHECK FOR MORE THAN 25 ERRORS
4096	024334			;CONTENTS OF TSSR REGISTER
	024334	104455		;FATAL ERROR TSSR WAS NOT OK
	024336	000154		TRAP C\$ERDF
	024340	003550		.WORD 108
	024342	011656		.WORD \$FIERR
4097	024344			.WORD SFMSG
4098				
4099	024344	012704	026350	20\$:
4100	024350	004737	010322	MOV #T29PACKET,R4
4101	024354	103407		JSR PC,WRTCHR
4102	024356	004737	020070	BCS 25\$
4106	024362	010001		JSR PC,FATCHK
4107	024364			MOV R0,R1
	024364	104456		ERRHRD ERRNO,WRTMSG,SFMSG
	024366	000155		;SUBROUTINE NEEDS PACKET ADDRESS
	024370	004754		;ISSUE WRITE CHARACTERISTICS
	024372	011656		;BR, IF COMMAND ISSUED OK
4108	024374			;INC AND CHECK FOR MORE THAN 25 ERRORS
4109	024376	004737	010424	;SAVE CONTENTS OF TSSR
4110	024402	016501	000600	;WRITE CHARACTERISTICS FAILED
4111	024406	012702	000200	TRAP C\$ERHRD
4112	024412	103407		.WORD 109
4113	024414	010004		.WORD WRTMSG
4114	024416	004737	020070	.WORD SFMSG
4118	024422			
	024422	104456		25\$: CKLOOP ;LOOP IF SELECTED
	024424	000156		TRAP C\$CLP1
	024426	030260		
	024430	011670		26\$: JSR PC,REWIND ;CALL TAPE REWIND COMMAND
4119	024432			MOV TSSR(R5),R1 ;GET TSSR
4120	024434	013701	026376	MOV #SSR,R2 ;SET UP EXPECTED TSSR
4121	024440	010102		BCS 30\$;BR, IF NO PROBLEM
4122	024442	052702	000002	MOV R0,R4 ;PACKET ADDRESS SET UP
				JSR PC,FATCHK ;INC AND CHECK FOR MORE THAN 25 ERRORS
				ERRHRD ERRNO,T29RUN,PKTSSR ;REWIND NOT ACCEPTED
				TRAP C\$ERHRD
				.WORD 110
				.WORD T29RUN
				.WORD PKTSSR
				30\$: CKLOOP ;LOOP IF SELECTED
				TRAP C\$CLP1
				MOV T29BFR+6,R1 ;PICK UP XSTO
				MOV R1,R2 ;SET UP EXPECTED
				BIS #BIT1,R2 ;SET BOT BIT IN EXPECTED

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Line	Address	Offset	Label	Op	Op2	Op3	Op4	Op5	Op6	Op7	Op8	Op9	Op10	Op11	Op12	Op13	Op14	Op15	Op16	Op17	Op18	Op19	Op20	Op21	Op22	Op23	Op24	Op25	Op26	Op27	Op28	Op29	Op30	Op31	Op32	Op33	Op34	Op35	Op36	Op37	Op38	Op39	Op40	Op41	Op42	Op43	Op44	Op45	Op46	Op47	Op48	Op49	Op50	Op51	Op52	Op53	Op54	Op55	Op56	Op57	Op58	Op59	Op60	Op61	Op62	Op63	Op64	Op65	Op66	Op67	Op68	Op69	Op70	Op71	Op72	Op73	Op74	Op75	Op76	Op77	Op78	Op79	Op80	Op81	Op82	Op83	Op84	Op85	Op86	Op87	Op88	Op89	Op90	Op91	Op92	Op93	Op94	Op95	Op96	Op97	Op98	Op99	Op100	Op101	Op102	Op103	Op104	Op105	Op106	Op107	Op108	Op109	Op110	Op111	Op112	Op113	Op114	Op115	Op116	Op117	Op118	Op119	Op120	Op121	Op122	Op123	Op124	Op125	Op126	Op127	Op128	Op129	Op130	Op131	Op132	Op133	Op134	Op135	Op136	Op137	Op138	Op139	Op140	Op141	Op142	Op143	Op144	Op145	Op146	Op147	Op148	Op149	Op150	Op151	Op152	Op153	Op154	Op155	Op156	Op157	Op158	Op159	Op160	Op161	Op162	Op163	Op164	Op165	Op166	Op167	Op168	Op169	Op170	Op171	Op172	Op173	Op174	Op175	Op176	Op177	Op178	Op179	Op180	Op181	Op182	Op183	Op184	Op185	Op186	Op187	Op188	Op189	Op190	Op191	Op192	Op193	Op194	Op195	Op196	Op197	Op198	Op199	Op200	Op201	Op202	Op203	Op204	Op205	Op206	Op207	Op208	Op209	Op210	Op211	Op212	Op213	Op214	Op215	Op216	Op217	Op218	Op219	Op220	Op221	Op222	Op223	Op224	Op225	Op226	Op227	Op228	Op229	Op230	Op231	Op232	Op233	Op234	Op235	Op236	Op237	Op238	Op239	Op240	Op241	Op242	Op243	Op244	Op245	Op246	Op247	Op248	Op249	Op250	Op251	Op252	Op253	Op254	Op255	Op256	Op257	Op258	Op259	Op260	Op261	Op262	Op263	Op264	Op265	Op266	Op267	Op268	Op269	Op270	Op271	Op272	Op273	Op274	Op275	Op276	Op277	Op278	Op279	Op280	Op281	Op282	Op283	Op284	Op285	Op286	Op287	Op288	Op289	Op290	Op291	Op292	Op293	Op294	Op295	Op296	Op297	Op298	Op299	Op300	Op301	Op302	Op303	Op304	Op305	Op306	Op307	Op308	Op309	Op310	Op311	Op312	Op313	Op314	Op315	Op316	Op317	Op318	Op319	Op320	Op321	Op322	Op323	Op324	Op325	Op326	Op327	Op328	Op329	Op330	Op331	Op332	Op333	Op334	Op335	Op336	Op337	Op338	Op339	Op340	Op341	Op342	Op343	Op344	Op345	Op346	Op347	Op348	Op349	Op350	Op351	Op352	Op353	Op354	Op355	Op356	Op357	Op358	Op359	Op360	Op361	Op362	Op363	Op364	Op365	Op366	Op367	Op368	Op369	Op370	Op371	Op372	Op373	Op374	Op375	Op376	Op377	Op378	Op379	Op380	Op381	Op382	Op383	Op384	Op385	Op386	Op387	Op388	Op389	Op390	Op391	Op392	Op393	Op394	Op395	Op396	Op397	Op398	Op399	Op400	Op401	Op402	Op403	Op404	Op405	Op406	Op407	Op408	Op409	Op410	Op411	Op412	Op413	Op414	Op415	Op416	Op417	Op418	Op419	Op420	Op421	Op422	Op423	Op424	Op425	Op426	Op427	Op428	Op429	Op430	Op431	Op432	Op433	Op434	Op435	Op436	Op437	Op438	Op439	Op440	Op441	Op442	Op443	Op444	Op445	Op446	Op447	Op448	Op449	Op450	Op451	Op452	Op453	Op454	Op455	Op456	Op457	Op458	Op459	Op460	Op461	Op462	Op463	
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	024710	104456				TRAP	C\$ERHRD
	024712	000162				.WORD	114
	024714	027622				.WORD	T29WDE
	024716	011670				.WORD	PKTSSR
4178	024720		180\$:	CKLOOP	;LOOP IF SELECTED	TRAP	C\$CLP1
	024720	104406					
4179	024722	013701	026404	MOV	T29BFR+14,R1	:	GET XST3 STATUS WORD
4180	024726	010102		MOV	R1,R2	:	SET UP EXPECTED
4181	024730	052702	000001	BIS	#BIT0,R2	:	SET THE RIB BIT
4182	024734	020102		CMP	R1,R2	:	ARE THEY EQUAL
4183	024736	001406		BEQ	190\$	:	BR, IF EQUAL (GOOD)
4184	024740	004737	020070	JSR	PC,FATCHK	:	INC AND CHECK FOR MORE THAN 25 ERRORS
4188	024744			ERRHRD	ERRNO,T29RIB,EXPREC	:	NEF SHOULD BE SET
	024744	104456				TRAP	C\$ERHRD
	024746	000163				.WORD	115
	024750	031706				.WORD	T29RIB
	024752	016334				.WORD	EXPREC
4189	024754		190\$:				
4190	024754			ENDSUB	;>>>>>>>>>>> END SUBTEST >>>>>>>>>>		
	024754				L10040:		
	024754	104403				TRAP	C\$ESUB

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```

: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).

```

4201	024756		BGNSUB		:>>>>>>>>> BEGIN SUBTEST >>>>>>>>>
	024756				T1.3:
	024756	104402			TRAP CSBSUB
4202	024760	004737	032130	JSR PC,T29REST	:SET COMMAND PACKET
4203	024764	004737	032222	JSR PC,T29RT2	:SET UP OTHER COMMAND PACKET
4204	024770	004737	032264	JSR PC,T29RT3	:SET UP OTHER COMMAND PACKET
4205	024774	012737	023420	MOV #10000.,T29DLY	:SET UP DELAY ROUTINE
4206	025002	004737	016634	JSR PC,SOFINIT	:DO INITIALIZE ON CONTROLLER
4207	025006	103426		BCS 20\$	:BR IF INIT WAS OK
4208	025010			DELAY 250	:DELAY ABOUT .25 SECONDS
	025010	012727	000250		MOV #250,(PC)
	025014	000000			.WORD 0
	025016	013727	002116		MOV LSDLY,(P
	025022	000000			.WORD 0
	025024	005367	177772		DEC -6(PC)
	025030	001375			BNE -.4
	025032	005367	177756		DEC -22(PC)
	025036	001367			BNE -.20
4209	025040	005337	026540	DEC T29DLY	:BUMP DELAY ROUTINE DOWN
4210	025044	001356		BNE 10\$	:BR, IF MORE DELAY TIME LEFT
4211	025046	004737	020070	JSR PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS
4215	025052	010001		MOV R0,R1	:CONTENTS OF TSSR REGISTER
4216	025054			ERRDF ERRNO,SFIERR,SFIMSG	:FATAL ERROR TSSR WAS NOT OK
	025054	104455			TRAP C\$ERDF
	025056	000164			.WORD 116
	025060	003550			.WORD SFIERR
	025062	011656			.WORD SFIMSG
4217	025064		20\$:		
4218	025064	012704	026350	MOV #T29PACKET,R4	:SUBROUTINE NEEDS PACKET ADDRESS
4219	025070	004737	010322	JSR PC,WRTCHR	:ISSUE WRITE CHARACTERISTICS
4220	025074	103407		BCS 23\$	:BR, IF COMMAND ISSUED OK
4221	025076	004737	020070	JSR PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS
4225	025102	010001		MOV R0,R1	:SAVE CONTENTS OF TSSR
4226	025104			ERRHRD ERRNO,WRTMSG,SFIMSG	:WRITE CHARACTERISTISC FAILED
	025104	104456			TRAP C\$ERHRD
	025106	000165			.WORD 117
	025110	004754			.WORD WRTMSG
	025112	011656			.WORD SFIMSG
4227	025114		23\$: CKLOOP		:LOOP IF SELECTED
	025114	104406			RAP C\$CLP1
4228	025116	004737	010424	JSR PC,REWIND	:CALL TAPE REWIND COMMAND
4229	025122	103411		BCS 30\$	:BR, IF NO PROBLEM
4230	025124	016501	000000	MOV TSSR(R5),R1	:GET TSSR
4231	025130	010004		MOV R0,R4	:SAVE PACKET ADDRESS
4232	025132	004737	020070	JSR PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS
4236	025136			ERRHRD ERRNO,T29RWN,PKTSSR	:REWIND NOT ACCEPTED
	025136	104456			TRAP C\$ERHRD
	025140	000166			.WORD 118

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	025142	030260					.WORD	T29RWN
	025144	011670					.WORD	PKTSSR
4237	025146		30\$:	CKLOOP		:LOOP IF SELECTED		
	025146	104406					TRAP	C\$CLP1
4238	025150	013701	026376	MOV	T29WIR+6,R1	;PICK UP XSTO		
4239	025154	010102		MOV	R1,R2	;SET UP EXPECTED		
4240	025156	052702	000002	BIS	#BIT1,R2	;SET BOT BIT IN EXPECTED		
4241	025162	020102		CMP	R1,R2	;DOES EXP = REC'D		
4242	025164	001406		BEQ	40\$	;BR, IF EQUAL (OK)		
4243	025166	004737	020070	JSR	PC,FATCHK	;INC AND CHECK FOR MORE THAN 25 ERRORS		
4247	025172			ERRHRD	ERRNO,T29BOT,EXPREC	;TAPE NOT AT BOT AFTER REWIND		
	025172	104456					TRAP	C\$ERHRD
	025174	000167					.WORD	119
	025176	027751					.WORD	T29BOT
	025200	016334					.WORD	EXPREC
4248	025202		40\$:	CKLOOP		:LOOP IF SELECTED		
	025202	104406					TRAP	C\$CLP1
4249	025204	012737	140011	MOV	#140011,T29PK3	;WRITE TAPE MARK,ACK,CVC=1 COMMAND		
4250	025212	012704	026500	MOV	#T29PK3,R4	;SET UP R4 WITH PACKET ADDRESS		
4251	025216	010465	177776	MOV	R4,TSDB(R5)	;ISSUE COMMAND		
4252	025222	004737	017110	JSR	PC,WAITF	;WAIT FOR SSR TO SET		
4253	025226	016501	000000	MOV	TSSR(R5),R1	;GET TSSR CONTENTS		
4254	025232	012702	000200	MOV	#SSR,R2	;SET UP EXPECTED		
4255	025236	020102		CMP	R1,R2	;ARE THEY EQUAL		
4256	025240	001406		BEQ	70\$	;BR, IF OK		
4257	025242	004737	020070	JSR	PC,FATCHK	;INC AND CHECK FOR MORE THAN 25 ERRORS		
4261	025246			ERRHRD	ERRNO,T29WDC,PKTSSR	;TSSR INCORRECT AFTER WRITE TAPE MARK		
	025246	104456					TRAP	C\$ERHRD
	025250	000170					.WORD	120
	025252	030577					.WORD	T29WDC
	025254	011670					.WORD	PKTSSR
4262	025256		70\$:	CKLOOP		:LOOP IF SELECTED		
	025256	104406					TRAP	C\$CLP1
4263	025260	012703	000001	150\$:	MOV #1.,R3	;NUMBER OF RECORDS TO WRITE TM		
4264	025264	012737	141011	MOV	#141011,T29PK3	;WRITE TAPE MARK RETRY,ACK,CVC=1 COMMAND		
4265	025272	012704	026500	MOV	#T29PK3,R4	;SET UP R4 WITH PACKET ADDRESS		
4266	025276	010465	177776	155\$:	MOV R4,TSDB(R5)	;ISSUE COMMAND		
4267	025302	004737	017110	JSR	PC,WAITF	;WAIT FOR SSR TO SET		
4268	025306	016501	000000	MOV	TSSR(R5),R1	;PICK UP TSSR		
4269	025312	012702	000200	MOV	#SSR,R2	;SET UP EXPECTED (SSR ONLY)		
4270	025316	020102		CMP	R1,R2	;WAS STATUS GOOD		
4271	025320	001406		BEQ	165\$	;BR, IF TERMINATION WAS GOOD		
4272	025322	004737	020070	JSR	PC,FATCHK	;INC AND CHECK FOR MORE THAN 25 ERRORS		
4276	025326			ERRHRD	ERRNO,T29WDC,PKTSSR	;TSSR NOT CORRECT AFTER WRT YAPE M.		
	025326	104456					TRAP	C\$ERHRD
	025330	000171					.WORD	121
	025332	030577					.WORD	T29WDC
	025334	011670					.WORD	PKTSSR
4277	025336		165\$:	CKLOOP		:LOOP IF SELECTED		
	025336	104406					TRAP	C\$CLP1
4278	025340	012737	140401	MOV	#140401,T29PK3	;READ REVERSE,ACK, COMMAND		
4279	025346	013737	003072	MOV	FREE,T29RB	;NUMBER OF RECORDS TO SPACE BACK		
4280	025354	012704	026500	MOV	#T29PK3,R4	;SET UP R4 WITH PACKET ADDRESS		
4281	025360	010465	177776	MOV	R4,TSDB(R5)	;ISSUE COMMAND		
4282	025364	004737	017110</					

CZTUZAO TU80 FRONT END PRT D
TEST 1: WRITE TAPE MARK RETRY

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4285	025400	020102		CMP	R1,R2		;ARE THEY EQUAL
4286	025402	001406		BEQ	222\$		;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			222\$:	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	226\$		;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			226\$:	CKLOOP		;LOOP IF SELECTED
	025454	104406					TRAP C\$CLP1
4304	025456			ENDSUB			;<<<<<<<<<< END SUBTEST >>>>>>>>>>
	025456						L10041:
	025456	104403					TRAP C\$ESUB

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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.

```

4

BGNSUB

```
;>>>>>>>>> BEGIN SUBTEST >>>>>>>>>
      T1.4:
```

TRAP CSBSUB

```
JSR      PC,T29REST
JSR      PC,T29RT2
JSR      PC,T29RT3
MOV      #10000.,T29DLY
JSR      PC,SOFINIT
BCS      20$
DELAY    250
```

```

;SET COMMAND PACKET
;SET UP OTHER COMMAND PACKET
;SET UP OTHER COMMAND PACKET
;SET UP DELAY ROUTINE
;DO INITIALIZE ON CONTROLLER
;BR IF INIT WAS OK
;DELAY ABOUT .25 SECONDS

```

```

MOV      #250,(PC)+
.WORD    0
MOV      LSDLY,(PC)+
.WORD    0
DEC      -6(PC)
BNE      .-4
DEC      -22(PC)
BNE      .-20

```

```
DEC      T29DLY
BNE      10$
JSR      PC,FATCHK
MOV      R0,R1
ERRDF    ERNO,SFIERR,SFIMSG
```

```

;BUMP DELAY ROUTINE DOWN
;BR, IF MORE DELAY TIME LEFT
;INC AND CHECK FOR MORE THAN 25 ERRORS
;CONTENTS OF TSSR REGISTER
;FATAL ERROR TSSR WAS NOT OK

```

```

TRAP      CSERDF
.WORD     124
.WORD     SFIERR
.WORD     SFIMSG

```

205:

```
MOV      #T29PACKET,R4
JSR      PC,WRTCHR
BCS      23$
JSR      PC,FATCHK
MOV      R0,R1
ERRHRD   ERRNO,WRTMSG,SFMSG
```

```

:SUBROUTINE NEEDS PACKET ADDRESS
:ISSUE WRITE CHARACTERISTICS
:BR, IF COMMAND ISSUED OK
:INC AND CHECK FOR MORE THAN 25 ERRORS
:SAVE CONTENTS OF TSSR
:WRITE CHARACTERISTICS FAILED

```

```

TRAP      CSERHRD
.WORD     125
.WORD     WRTMSG
.WORD     SFIMSG

```

238:

CKLOOP

```

;LOOP IF SELECTED

```

TRAP CSCLP1

```
JSR      PC,REWIND
BCS      30$
MOV      TSSR(R5),R1
MOV      R0,R4
JSR      PC,FATCHK
ERRHRD   ERNO,T29RWN,PKTSSR
```

```

:CALL TAPE REWIND COMMAND
:BR, IF NO PROBLEM
:GET TSSR
:SAVE PACKET ADDRESS
:INC AND CHECK FOR MORE THAN 25 ERRORS
:REWIND NOT ACCEPTED

```

CZTUZAO TU80 FRONT END PRT D
TEST 1: WRITE TAPE MARK RETRY

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025640	104456						TRAP	C\$ERHRD
025642	000176						.WORD	126
025644	030260						.WORD	T29RWN
025646	011670						.WORD	PKTSSR
4353	025650			30\$:	CKLOOP		:LOOP IF SELECTED	
	025650	104406					TRAP	C\$CLP1
4354	025652	013701	026376		MOV	T29BFR+6,R1	:PICK UP XSTO	
4355	025656	010102			MOV	R1,R2	:SET UP EXPECTED	
4356	025660	052702	000002		BIS	#BIT1,R2	:SET BOT BIT IN EXPECTED	
4357	025664	020102			CMP	R1,R2	:DOES EXP = REC'D	
4358	025666	001406			BEQ	40\$	:BR, IF EQUAL (OK)	
4359	025670	004737	020070		JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS	
4363	025674				ERRHRD	ERRNO,T29BOT,EXPREC	:TAPE NOT AT BOT AFTER REWIND	
	025674	104456					TRAP	C\$ERHRD
	025676	000177					.WORD	127
	025700	027751					.WORD	T29BOT
	025702	016334					.WORD	EXPREC
4364	025704			40\$:	CKLOOP		:LOOP IF SELECTED	
	025704	104406					TRAP	C\$CLP1
4365	025706	012737	140011	026500	MOV	#140011,T29PK3	:WRITE TAPE MARK,ACK,CVC=1 COMMAND	
4366	025714	012704	026500		MOV	#T29PK3,R4	:SET UP R4 WITH PACKET ADDRESS	
4367	025720	010465	177776		MOV	R4,TSDB(R5)	:ISSUE COMMAND	
4368	025724	004737	017110		JSR	PC,WAITF	:WAIT FOR SSR TO SET	
4369	025730	016501	000000		MOV	TSSR(R5),R1	:GET TSSR CONTENTS	
4370	025734	012702	000200		MOV	#SSR,R2	:SET UP EXPECTED	
4371	025740	020102			CMP	R1,R2	:ARE THEY EQUAL	
4372	025742	001406			BEQ	70\$	:BR, IF OK	
4373	025744	004737	020070		JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS	
4377	025750				ERRHRD	ERRNO,T29WDC,PKTSSR	:TSSR INCORRECT AFTER WRITE TAPE MARK	
	025750	104456					TRAP	C\$ERHRD
	025752	000200					.WORD	128
	025754	030577					.WORD	T29WDC
	025756	011670					.WORD	PKTSSR
4378	025760			70\$:	CKLOOP		:LOOP IF SELECTED	
	025760	104406					TRAP	C\$CLP1
4379	025762	012703	000012		150\$:	MOV	#10.,R3	:NUMBER OF RECORDS TO WRITE TM
4380	025766	012737	000001	026502	MOV	#1,T29RB	:SET UP PACKET	
4381	025774	012737	141011	026500	MOV	#141011,T29PK3	:WRITE TAPE MARK RETRY,ACK,CVC=1 COMMAND	
4382	026002	012704	026500		MOV	#T29PK3,R4	:SET UP R4 WITH PACKET ADDRESS	
4383	026006	010465	177776		155\$:	MOV	R4,TSDB(R5)	:ISSUE COMMAND
4384	026012	004737	017110		JSR	PC,WAITF	:WAIT FOR SSR TO SET	
4385	026016	016501	000000		MOV	TSSR(R5),R1	:PICK UP TSSR	
4386	026022	012702	000200		MOV	#SSR,R2	:SET UP EXPECTED (SSR ONLY)	
4387	026026	020102			CMP	R1,R2	:WAS STATUS GOOD	
4388	026030	001406			BEQ	165\$	:BR, IF TERMINATION WAS GOOD	
4389	026032	004737	020070		JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS	
4393	026036				ERRHRD	ERRNO,T29WDC,PKTSSR	:TSSR NOT CORRECT AFTER WRT TAPE M.	
	026036	104456					TRAP	C\$ERHRD
	026040	000201					.WORD	129
	026042	030577					.WORD	T29WDC
	026044	011670					.WORD	PKTSSR
4394	026046			165\$:	CKLOOP		:LOOP IF SELECTED	
	026046	104406					TRAP	C\$CLP1
4395	026050	005303			DEC	R3	:BUMP COUNTER DOWN	
4396	026052	001355			BNE	155\$	:BR, IF LESS THAN 10 TAPE MARKS	
4397	026054	012737	140410	026500	MOV	#140410,T29PK3	:SPACE REVERSE,ACK,CVC=1, COMMAND	
4398	026062	012737	000001	026502	MOV	#1,T29RB	:NUMBER OF RECORDS TO SPACE BACK	

CZ1JZAO TUBO FRONT END PRT D
TES 1: WRITE TAPE MARK RE1RY

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4399	026070	012704	026500		MOV	#T29PK3,R4		:SET UP R4 WITH PACKET ADDRESS
4400	026074	010465	177776		MOV	R4,TSD8(R5)		:ISSUE COMMAND
4401	026100	004737	017110		JSR	PC,WAITF		:WAIT FOR SSR TO SET
4402	026104	016501	000000		MOV	TSSR(R5),R1		:GET TSSR CONTENTS
4403	026110	012702	100204		MOV	#SSR!SC!BIT2,R2		:SET UP EXPECTED
4404	026114	020102			CMP	R1,R2		:ARE THEY EQUAL
4405	026116	001406			BEQ	222\$		:BR, IF OK
4406	026120	004737	020070		JSR	PC,FATCHK		:INC AND CHECK FOR MORE THAN 25 ERRORS
4410	026124				ERRHRD	ERRNO,T29WDE,PKTSSR		:TSSR INCORRECT AFTER SPACE CMD.
	026124	104456					TRAP	C\$ERHRD
	026126	000202					.WORD	130
	026130	027622					.WORD	T29WDE
	026132	011670					.WORD	PKTSSR
4411	026134			222\$:	CKLOOP			:LOOP IF SELECTED
	026134	104406					TRAP	C\$CLP1
4412	026136	012737	100410	026500	MOV	#100410,T29PK3		:SPACE REVERSE,ACK, COMMAND
4413	026144	012737	000005	026502	MOV	#5,T29RB		:NUMBER OF RECORDS TO SPACE BACK
4414	026152	012704	026500		MOV	#T29PK3,R4		:SET UP R4 WITH PACKET ADDRESS
4415	026156	010465	177776		MOV	R4,TSD8(R5)		:ISSUE COMMAND
4416	026162	012737	000310	026540	MOV	#200,T29DLY		:NEED DELAY
4417	026170	004737	017110	230\$:	JSR	PC,WAITF		:WAIT FOR SSR TO SET
4418	026174	016501	000000		MOV	TSSR(R5),R1		:GET TSSR CONTENTS
4419	026200	012702	100204		MOV	#SSR!SC!BIT2,R2		:SET UP EXPECTED
4420	026204	020102			CMP	R1,R2		:ARE THEY EQUAL
4421	026206	001425			BEQ	260\$		:BR, IF OK
4422	026210				DELAY	250		:DELAY ABOUT .25 SECONDS
	026210	012727	000250				MOV	#250,(PC)+
	026214	000000					.WORD	0
	026216	013727	002116				MOV	LSDLY,(PC)+
	026222	000000					.WORD	0
	026224	005367	177772				DEC	-6(PC)
	026230	001375					BNE	-4
	026232	005367	177756				DEC	-22(PC)
	026236	001367					BNE	-20
4423	026240	005337	026540		DEC	T29DLY		:LOOP ROUTINE
4424	026244	001351			BNE	230\$		:LOOP BACK IF NOT ENOUGH DELAY
4425	026246	004737	020070		JSR	PC,FATCHK		:INC AND CHECK FOR MORE THAN 25 ERRORS
4429	026252				ERRHRD	ERRNO,T29SDG,PKTSSR		:TSSR INCORRECT AFTER SPACE REV
	026252	104456					TRAP	C\$ERHRD
	026254	000203					.WORD	131
	026256	031624					.WORD	T29SDG
	026260	011670					.WORD	PKTSSR
4430	026262			260\$:	CKLOOP			:LOOP IF SELECTED
	026262	104406					TRAP	C\$CLP1
4431	026264	013701	026404		MOV	T29BFR+14,R1		:PICK UP XST3
4432	026270	010102			MOV	R1,R2		:SET UP EXPECTED
4433	026272	052702	000001		BIS	#BIT0,R2		:RIB SHOULD BE SET
4434	026276	020102			CMP	R1,R2		:IS RIB SET
4435	026300	001406			BEQ	270\$		:BR, IF RIB WAS SET (GOOD)
4436	026302	004737	020070		JSR	PC,FATCHK		:INC AND CHECK FOR MORE THAN 25 ERRORS
4440	026306				ERRHRD	ERRNO,T29RIB,EXPREC		:TMK NOT SET AFTER READ REV
	026306	104456					TRAP	C\$ERHRD
	026310	000204					.WORD	132
	026312	031706					.WORD	T29RIB
	026314	016334					.WORD	EXPREC
4441	026316			270\$:	CKLOOP			:LOOP IF SELECTED
	026316	104406					TRAP	C\$CLP1

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```

3308:      CKLOOP
          ENDSUB

:
:
:
:
          JSR      PC,TSTLOOP
          BCC      1638
          JMP      T29LOOP
1638:      EXIT      TST

```

[illegible]

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 0

;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

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

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```

4512
4513
4514      ;+
4515      ;LOCAL TEXT MESSAGES FOR TEST
4516      ;--
4517
4518 026542      104      162      151  T29OFL: .ASCIZ 'Drive is OFFLINE'
4519 026563      124      141      160  T29WNG: .ASCIZ 'Tape Position Incorrect After WRITE TAPE MARK RETRY Previous (OPP=1)'
4520 026670      127      122      111  T29NEF: .ASCIZ 'WRITE TAPE MARK RETRY, At BOT, Failed To Set NEF (XST0)'
4521 026760      124      123      123  T29RDF: .ASCIZ 'TSSR Incorrect After READ DATA Command'
4522 027027      127      122      111  T29RRF: .ASCIZ 'WRITE TAPE MARK RETRY Previous (Space Reverse, Read Forward) Command Failed'
4523 027143      127      122      111  T29RRG: .ASCIZ 'WRITE TAPE MARK RETRY Previous (Read Forward, Space Reverse) Command Failed'
4524 027257      120      117      123  T29SC: .ASCIZ 'POSITION (Space Command) Failed, TSSR Not Correct'
4525 027341      122      111      102  T29LOR: .ASCIZ 'RIB NOT SET AFTER READ REVERSE INTO BOT'
4526 027411      124      123      123  T29WDF: .ASCIZ 'TSSR Not Correct After Illegal Mode Bits Set'
4527 027466      111      154      154  T29LOO: .ASCIZ 'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
4528 027547      127      122      111  T29SSR: .ASCIZ 'WRITE TAPE MARK RETRY COMMAND Not Accepted'
4529 027622      124      123      123  T29WDE: .ASCIZ 'TSSR Not Correct After SPACE REVERSE DATA Command'
4530
4531 027704      124      123      123  T29WRT: .ASCIZ 'TSSR Not Correct After WRITE Command'
4532 027751      124      141      160  T29BOT: .ASCIZ 'Tape Not At BOT After REWIND Command'
4533 030016      104      141      164  T29DTA: .ASCIZ 'Data Written To Tape Not Equal To Data Read From Tape'
4534 030104      127      122      111  T29EOT: .ASCIZ 'WRITE TAPE MARK RETRY DATA OVER EOT GAVE NO TAPE STATUS ALERT'
4535 030202      124      123      123  T29TM: .ASCIZ 'TSSR Not Correct After SPACE REVERSE Into BOT'
4536 030260      122      145      167  T29RWI: .ASCIZ 'Rewind (POSITION) Command Not Accepted'
4537 030327      122      101      115  T29RNC: .ASCIZ 'RAM Error, Correct Data Pattern Not In Ram'
4538 030402      124      123      123  T29AM3: .ASCIZ 'TSSR Init. Failed After WRITE TAPE MARK RETRY COMMAND'
4539 030470      124      123      123  T29WDD: .ASCIZ 'TSSR Not Correct After WRITE TAPE MARK RETRY DATA Command, SWB Bit Set'
4540 030577      124      123      123  T29WDC: .ASCIZ 'TSSR Not Correct After WRITE TAPE MARK RETRY DATA Command'
4541 030671      103      126      103  T29VCK: .ASCIZ 'CVC Set, Didn't Reset VCK In Message Buffer'
4542 030744      124      123      102  T29BA: .ASCIZ 'TSBA Not Correct After WRITE TAPE MARK RETRY DATA Command'
4543 031036      127      122      111  T29WSS: .ASCIZ 'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
4544 031125      122      145      141  T29LON: .ASCIZ 'Reading Long Record Failed To Set RLL Bit In XST0'
4545 031207      122      145      141  T29LOP: .ASCIZ 'Reading Long Record Failed To Set RLS Bit In XST0'
4546 031271      122      145      163  T29PBP: .ASCIZ 'Residual Byte Count Incorrect After Short Record Read'
4547 031357      122      145      141  T29TRL: .ASCIZ 'Reading Long Record Failed To Give Tape Status Alert'
4548 031445      104      141      164  T29NEQ: .ASCIZ 'Data WRITE TAPE MARK RETRY From Tape Not Correct, After SWB=1'
4549 031543      124      123      123  T29RDG: .ASCIZ 'TSSR Incorrect After READ REVERSE Into Tape Mark'
4550 031624      124      123      123  T29SDG: .ASCIZ 'TSSR Incorrect After SPACE REVERSE Into Tape Mark'
4551 031706      127      122      111  T29RIB: .ASCIZ 'WRITE TAPE MARK RETRY At First Record, Failed To Set RIB (XST3)'
4552 032006      124      115      113  T29RRN: .ASCIZ 'TMK (XST0) Failed To Set After READ REVERSE Into Tape Mark'
4553 032101      127      162      151  T29ID: .ASCIZ 'Write Tape Mark Retry'
4554      .EVEN
4555
4556      ;+
4557      ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
4558      ;WRITE SUBSYSTEM MEMORY COMMAND
4559      ;--
4560
4561      T29REST:
4562 032130      SAVREG
4563 032130      MOV      #T29PACKET,R1      ;SAVE THE REGISTERS
4564 032134      012701      026350      MOV      #140004,(R1)+      ;START OF THE PACKET
4565 032140      012721      140004      MOV      #T29DATA,(R1)+      ;WRITE SUBSYSTEM MEM. WITH ACK, CVC=1
4566 032144      012721      026360      CLR      (R1)+      ;ADDRESS OF CHARAISTICS DATA BLOCK
4567 032150      005021      CLR      (R1)+      ;EXTENDED ADDRESS
4568 032152      012721      000012      MOV      #10,(R1)+      ;SIZE OF DATA BLOCK IN BYTES

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

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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	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		ENDTST		
4602	032314					
	032314					
	032314	104401				

L10036:

TRAP CSETST

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SCIL TEST 2: SKIP TAPE MARKS

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

THE TEST CONSISTS OF THE FOLLOWING 11 SUBTESTS

4623	032316			
	032316			
4624	032316	005037	002170	
4625	032322	005037	003100	
4626	032326	012737	005672	002146
4631	032334	012700	041111	
4632	032340	004737	017376	
4633	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

4634
4635
4636
4637
4638
4639
4640
4641
4642
4643
4644
4645
4646
4647
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4651
4652
4653
4654
4655
4656
4657
4658
4659
4660

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

```

4661 032352
4662 032352
032352
032352 104402

T30 LOOP:

BGNSUB

:>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>

12.1:

IRAP

CSASUB

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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      #65000.,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 020070      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$:
4680
4681 032464 012704 036350      MOV      #T3OPACKET,R4 ;SUBROUTINE NEEDS PACKET ADDRESS
4682
4683      ;*****
4684      ;ISSUE WRITE CHARACTERISTICS COMMAND
4685      ;*****
4686
4687
4688
4689 032470 004737 010322      JSR      PC,WRTCHR      ;ISSUE WRITE CHARACTERISTICS
4690 032474 103407 020070      BCS      23$            ;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 CHARACTERISTICS FAILED
      032504 104456             TRAP     CSERHRD
      032506 000312             .WORD    202
      032510 004754             .WORD    WRTMSG
      032512 011656             .WORD    SFIMSG
4697 032514             23$: CKLOOP          ;LOOP IF SELECTED
      032514 104406             TRAP     CSCLP1
4698
4699      ;*****
4700      ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
4701      ;*****
4702
4703
4704
4705 032516 004737 010424      JSR      PC,REWIND     ;CALL TAPE REWIND COMMAND
4706 032522 103411 000000      BCS      30$            ;BR, IF NO PROBLEM
4707 032524 010004             MOV      R0,R4        ;GET PACKET ADDRESS
4708 032526 016501 000000      MOV      TSSR(R5),R1 ;GET STATUS REGISTER

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

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4709 032532 004737 020070      JSR      PC,FATCHK      ;INC AND CHECK FOR MORE THAN 25 ERRORS
4713 032536      ERRHRD      ERRNO,T3ORWN,PKTSSR      ;REWIND NOT ACCEPTED
      032536      104456      TRAP      C$ERRHD
      032540      000313      .WORD      203
      032542      040120      .WORD      T3ORWN
      032544      011670      .WORD      PKTSSR
4714 032546      30$:      CKLOOP      ;LOOP IF SELECTED      TRAP      C$CLP1
      032546      104406
4715
4716      ;*****
4717      ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
4718      ;*****
4719
4720
4721
4722 032550 013701 036376      MOV      T3OBFR+6,R1      ;PICK UP XSTO
4723 032554 010102      MOV      R1,R2      ;SET UP EXPECTED
4724 032556 052702 000002      BIS      #BIT1,R2      ;SET BOT BIT IN EXPECTED
4725 032562 020102      CMP      R1,R2      ;DOES EXP = REC'D
4726 032564 001406      BEQ      40$      ;BR, IF EQUAL (OK)
4727 032566 004737 020070      JSR      PC,FATCHK      ;INC AND CHECK FOR MORE THAN 25 ERRORS
4731 032572      ERRHRD      ERRNO,T3OBOT,EXPREC      ;TAPE NOT AT BOT AFTER REWIND
      032572      104456      TRAP      C$ERRHD
      032574      000314      .WORD      204
      032576      037721      .WORD      T3OBOT
      032600      016334      .WORD      EXPREC
4732 032602      40$:      CKLOOP      ;LOOP IF SELECTED      TRAP      C$CLP1
      032602      104406
4733 032604 012737 000001 036534      MOV      #1.,T3OFCN      ;SET 'FILE' COUNTER AT 1 DECIMAL
4734 032612 012703 000001      64$:      MOV      #1,R3      ;ONE RECORD PER 'FILE'
4735 032616 013737 003072 036502      65$:      MOV      FREE,T3OWB      ;SET UP PACKETS'S WRITE BUFFER
4736 032624 012737 003720 036506      MOV      #2000.,T3OSZ      ;SET RECORD SIZE AT 2000 BYTES
4737
4738      ;*****
4739      ;WRITE DATA,ACK,CVC=1 COMMAND
4740      ;*****
4741
4742
4743
4744 032632 012737 140005 036500      MOV      #140005,T3OPK3      ;WRITE DATA,ACK,CVC=1 COMMAND
4745 032640 012704 036500      MOV      #T3OPK3,R4      ;SET UP R4 WITH PACKET ADDRESS
4746 032644 013702 036534      MOV      T3OFCN,R2      ;GET FILE COUNTER
4747 032650 000302      SWAB      R2      ;MOVE TO UPPER BYTE
4748 032652 010301      MOV      R3,R1      ;GET RECORD COUNTER
4749 032654 060201      ADD      R2,R1      ;FILE COUNTER IN UPPER, RECORD # LOW
4750 032656 010177 150210      MOV      R1,BFREE      ;MOV TO OUT PUT BUFFER
4751 032662 010465 177776      MOV      R4,T$DB(R5)      ;ISSUE COMMAND
4752 032666 004737 017110      JSR      PC,WAITF      ;WAIT FOR SSR TO SET
4753 032672 016501 000000      MOV      TSSR(R5),R1      ;GET TSSR CONTENTS
4754 032676 012702 000200      MOV      #SSR,R2      ;SET UP EXPECTED
4755 032702 020102      CMP      R1,R2      ;ARE THEY EQUAL
4756 032704 001406      BEQ      70$      ;BR, IF OK
4757 032706 004737 020070      JSR      PC,FATCHK      ;INC AND CHECK FOR MORE THAN 25 ERRORS
4761      ;SOFT ERROR, DON'T CARE ABOUT WRITE
4762      ;COMMAND'S RESULTS - CHECKING SKIP
4763      ;TAPE MARK COMMAND
4764 032712      ERRSOFT ERRNO,T3OWDD,PKTSSR      ;TSSR INCORRECT AFTER WRITE DATA

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

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032712	104457					TRAP	C\$ERSOFT
032714	000315					.WORD	205
032716	037050					.WORD	T30WDD
032720	011670					.WORD	PKTSSR
4765	032722	104406		70\$:	CKLOOP	;LOOP IF SELECTED	
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,TSD8(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			BEG 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	C\$ERHRD
	033000	000316				.WORD	206
	033002	040242				.WORD	T30WDC
	033004	011670				.WORD	PKTSSR
4789	033006	104406		160\$:	CKLOOP	;LOOP IF SELECTED	
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,TSD8(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			BEG 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	C\$ERHRD
	033070	000317				.WORD	207
	033072	040242				.WORD	T30WDC
	033074	011670				.WORD	PKTSSR
4813	033076			165\$:	CKLOOP	;LOOP IF SELECTED	

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Address	Offset	PC	Instruction	Comment	Trap	CS
4814	033076	104406			TRAP	CSCLP1
4815			*****			
4816			ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET			
4817			*****			
4818						
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,T30RWN,PKTSSR	:REWIND NOT ACCEPTED	
	033120	104456			TRAP	CSERHRD
	033122	000320			.WORD	208
	033124	040120			.WORD	T30RWN
	033126	011670			.WORD	PKTSSR
4830	033130			170\$: CKLOOP	:LOOP IF SELECTED	
	033130	104406			TRAP	CSCLP1
4831						
4832				*****		
4833				:GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER		
4834				*****		
4835						
4836						
4837						
4838	033132	013701	036376	MOV T30BFR+6,R1	:PICK UP XST0	
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	CSERHRD
	033156	000321			.WORD	209
	033160	037721			.WORD	T30BOT
	033162	016334			.WORD	EXPREC
4848	033164			180\$: CKLOOP	:LOOP IF SELECTED	
	033164	104406			TRAP	CSCLP1
4849	033166	012703	036516	MOV #T30IMV,R3	:SET UP POINTER TO COMMAND TABLE	
4850						
4851	033172	011337	036366	182\$: MOV (R3),T30ETM	:GET NEXT COMMAND	
4852	033176	012704	036350	MOV #T30PACKET,R4	:SUBROUTINE NEEDS PACKET ADDRESS	
4853						
4854				*****		
4855				:ISSUE WRITE CHARACTERISTICS COMMAND		
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	CSERHRD

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TEST 2: SKIP TAPE MARKS

03322C	000322							.WORD	210
033222	004754							.WORD	WRTMSG
033224	011656							.WORD	SFIMSG
4868	033226	104406	188\$:	CKLOOP					
	033226	104406						TRAP	C\$CLP1
4869									
4870									
4871									
4872									
4873									
4874									
4875									
4876	033230	012737	141010	036500	MOV	#141010,T30PK3			
4877	033236	012737	000001	036502	MOV	#1,T30RB			
4878	033244	012704	036500		MOV	#T30PK3,R4			
4879	033250	010465	177776		MOV	R4,TSD8(R5)			
4880	033254	012737	176750	036536	MOV	#65000,T30DLY			
4881	033262	004737	017110		JSR	PC,WAITF			
4882	033266	016501	000000		MOV	TSSR(R5),R1			
4883	033272	032701	000200		BIT	#SSR,R1			
4884	033276	001017			BNE	191\$			
4885	033300				DELAY	250			
	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			
4887	033334	001352			BNE	190\$			
4888	033336	012702	000200	191\$:	MOV	#SSR,R2			
4889	033342	020102			CMP	R1,R2			
4890	033344	001406			BEQ	192\$			
4891	033346	004737	020070		JSR	PC,FATCHK			
4895	033352				ERRHRD	ERRNO,T30SKM,PKTSSR			
	033352	104456							
	033354	000323						TRAP	C\$ERHRD
	033356	036774						.WORD	211
	033360	011670						.WORD	T30SKM
	033362							.WORD	PKTSSR
4896	033362	104406	192\$:	CKLOOP					
	033362	104406						TRAP	C\$CLP1
4897									
4898									
4899									
4900									
4901									
4902									
4903									
4904	033364	013701	036376		MOV	T30BFR+6,R1			
4905	033370	010102			MOV	R1,R2			
4906	033372	052702	100000		BIS	#BIT15,R2			
4907	033376	020102			CMP	R1,R2			
4908	033400	001406			BEQ	195\$			
4909	033402	004737	020070		JSR	PC,FATCHK			
4913	033406				ERRHRD	ERRNO,T30TMK,EXPREC			

:SKIP TAPE MARK,ACK,CVC=1 COMMAND

:SKIP TAPE MARK,ACK,CVC=1 COMMAND
:SET UP NUMBER TO SKIP
:SET UP R4 WITH PACKET ADDRESS
:ISSUE COMMAND
:SET UP DELAY COUNTER
:WAIT FOR SSR TO SET
:PICK UP TSSR
:IS SSR SET YET
:BR, IF SSR IS SET
:CALL DELAY ROUTINE

:BUMP DELAY ROUTINE
:BR, IF MORE DELAY TO GO
:SET UP EXPECTED (SSR ONLY)
:WAS STATUS GOOD
:BR, IF TERMINATION WAS GOOD
:INC AND CHECK FOR MORE THAN 25 ERRORS
:TSSR NOT CORRECT AFTER SKIP TAPE M.
TRAP C\$ERHRD
.WORD 211
.WORD T30SKM
.WORD PKTSSR

:GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER

:PICK UP XST0
:SET UP EXPECTED
:SET TMK BIT IN EXPECTED
:DOES EXP = REC'D
:BR, IF EQUAL (OK)
:INC AND CHECK FOR MORE THAN 25 ERRORS
:TMK NOT SET AFTER WRT TAPE MARK

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TEST 2: SKIP TAPE MARKS

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033406	104456					TRAP	C\$ERHRD
033410	000324					.WORD	212
033412	040374					.WORD	T30TMK
033414	016334					.WORD	EXPREC
4914	033416	104406		195\$: CKLOOP		:LOOP IF SELECTED	
	033416	104406				TRAP	C\$CLP1
4915	033420	012700	177777	MOV	#177777,R0	:VALUE TO WRITEN TO MEMORY	
4916	033424	004737	020362	JSR	PC,FILLMEM	:FILL MEM WITH ALL ONES	
4917	033430	013737	003072	MOV	FREE,T30RB	:STARTING READ BUFFER ADDRESS	
4918							
4919							
4920							
4921							
4922							
4923							
4924							
4925	033436	012737	140001	MOV	#140001,T30PK3	:READ FORWARD,ACK,CVC=1 COMMAND	
4926	033444	012704	036500	MOV	#T30PK3,R4	:SET UP R4 WITH PACKET ADDRESS	
4927	033450	012737	003720	MOV	#2000.,T30SZ	:SET UP RECORD SIZE IN PACKET	
4928	033456	010465	177776	MOV	R4,TSD8(R5)	:ISSUE COMMAND	
4929	033462	004737	017110	JSR	PC,WAITF	:WAIT FOR SSR TO SET	
4930	033466	016501	000000	MOV	TSSR(R5),R1	:GET TSSR CONTENTS	
4931	033472	012702	000200	MOV	#SSR,R2	:SET UP EXPECTED	
4932	033476	020102		CMP	R1,R2	:ARE THEY EQUAL	
4933	033500	001406		BEQ	200\$	:BR, IF OK	
4934	033502	004737	020070	JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS	
4938	033506			ERRHRD	ERRNO,T30RDF,PKTSSR	:TSSR INCORRECT AFTER WRITE DATA	
	033506	104456				TRAP	C\$ERHRD
	033510	000325				.WORD	213
	033512	037273				.WORD	T30RDF
	033514	011670				.WORD	PKTSSR
4939	033516			200\$: CKLOOP		:LOOP IF SELECTED	
	033516	104406				TRAP	C\$CLP1
4940	033520	017701	147346	MOV	@FREE,R1	:FIRST LOC IN READ BUFFER	
4941	033524	012702	177777	MOV	#177777,R2	:EXPECTED IF NO DATA TRANS.	
4942	033530	020102		CMP	R1,R2	:DID ANY DATA GET TRANSFERRED	
4943	033532	001006		BNE	220\$	:BR, IF NO DATA TRANS (GOOD)	
4944	033534	004737	020070	JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS	
4948	033540			ERRHRD	ERRNO,T30DTR,EXPREC	:DATA TRANSFERRED ON READ TAPE MARK	
	033540	104456				TRAP	C\$ERHRD
	033542	000326				.WORD	214
	033544	040750				.WORD	T30DTR
	033546	016334				.WORD	EXPREC
4949	033550			220\$: CKLOOP		:LOOP IF SELECTED	
	033550	104406				TRAP	C\$CLP1
4950	033552	012702	001001	MOV	#1001,R2	:SET UP RECORD NUMBER EXPECTED (FILE 2)	
4951	033556	017701	147310	MOV	@FREE,R1	:GET INFO FROM BUFFER	
4952	033562	020201		CMP	R2,R1	:ARE THEY EQUAL	
4953	033564	001406		BEQ	228\$	:BR, IF EQUAL (OK)	
4954	033566	004737	020070	JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS	
4958	033572			ERRHRD	ERRNO,T30PTB,EXPREC	:RECORD POSITION WAS NOT CORRECT	
	033572	104456				TRAP	C\$ERHRD
	033574	000327				.WORD	215
	033576	07122				.WORD	T30PTB
	033600	016334				.WORD	EXPREC
4959	033602			228\$: CKLOOP		:LOOP IF SELECTED	
	033602	104406				TRAP	C\$CLP1

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4960				:*****			
4961				:			
4962				:ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET			
4963				:			
4964				:*****			
4965							
4966							
4967	033604	004737	010424	JSR	PC,REWIND	;CALL TAPE REWIND COMMAND	
4968	033610	103411		BCS	230\$	;BR, IF NO PROBLEM	
4969	033612	010004		MOV	R0,R4	;SAVE PACKET ADDRESS	
4970	033614	016501	000000	MOV	TSSR(R5),R1	;GET TSSR STATUS	
4971	033620	004737	020070	JSR	PC,FATCHK	;INC AND CHECK FOR MORE THAN 25 ERRORS	
4975	033624			ERRHRD	ERRNO,T3ORWN,PKTSSR	;REWIND NOT ACCEPTED	
	033624	104456					TRAP C\$ERHRD
	033626	000330					.WORD 216
	033630	040120					.WORD T3ORWN
	033632	011670					.WORD PKTSSR
4976	033634			230\$: CKLOOP		;LOOP IF SELECTED	
	033634	104406					TRAP C\$CLP1
4977							
4978				:*****			
4979				:			
4980				:GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER			
4981				:			
4982				:*****			
4983							
4984	033636	013701	036376	MOV	T3OBFR+6,R1	;PICK UP XSTO	
4985	033642	010102		MOV	R1,R2	;SET UP EXPECTED	
4986	033644	052702	000002	BIS	#BIT1,R2	;SET BOT BIT IN EXPECTED	
4987	033650	020102		CMP	R1,R2	;DOES EXP = REC'D	
4988	033652	001406		BEQ	240\$	;BR, IF EQUAL (OK)	
4989	033654	004737	020070	JSR	PC,FATCHK	;INC AND CHECK FOR MORE THAN 25 ERRORS	
4993	033660			ERRHRD	ERRNO,T3OBOT,EXPREC	;TAPE NOT AT BOT AFTER REWIND	
	033660	104456					TRAP C\$ERHRD
	033662	000331					.WORD 217
	033664	037721					.WORD T3OBOT
	033666	016334					.WORD EXPREC
4994	033670			240\$: CKLOOP		;LOOP IF SELECTED	
	033670	104406					TRAP C\$CLP1
4995	033672	005723		TST	(R3)+	;POINT TO NEXT POSITION	
4996	033674	011301		MOV	(R3),R1	;GET NEXT COMMAND ETC.	
4997	033676	020127	177777	CMP	R1,#177777	;END OF TABLE MARKER	
4998	033702	001402		BEQ	330\$	;BR, IF AT END OF TABLE	
4999	033704	000137	033172	JMP	182\$	;JUMP TO MORE COMMANDS TO DO	
5000	033710			330\$: CKLOOP		;LOOP IF SELECTED	
	033710	104406					TRAP C\$CLP1
5001	033712			ENDSUB		;<<<<<<<< END SUBTEST >>>>>>>>	
	033712					L10044:	
	033712	104403					TRAP C\$ESUB

5003			
5004			
5005			
5006			
5007			
5008			
5009			
5010			
5011			
5012			
5013			
5014			
5015			
5016	033714		
	033714		
	033714	104402	
5017	033716	004737	041132
5018	033722	005037	036534
5019	033726	004737	041224
5020	033732	004737	041266
5021	033736	012737	176750
5022	033744	004737	016634
5023	033750	103426	
5024	033752		
	033752	012727	090250
	033756	000000	
	033760	013727	002116
	033764	000000	
	033766	005367	177772
	033772	001375	
	033774	005367	177756
	034000	001367	
5025	034002	005337	036536
5026	034006	001356	
5027	034010	004737	020070
5031	034014	010001	
5032	034016		
	034016	104455	
	034020	000332	
	034022	003550	
	034024	011656	
5033	034026		
5034			
5035	034026	012704	036350
5036			
5037			
5038			
5039			
5040			
5041			
5042			
5043	034032	004737	010322
5044	034036	103407	
5045	034040	004737	020070
5049	034044	010001	
5050	034046		
	034046	104456	

TEST 2, SUBTEST 2

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

BGNSUB

```
;>>>>>>>>> BEGIN SUBTEST >>>>>>>>>
      12.2:
```

TRAP CSBSUB

```
JSR      PC,T30REST
CLR      T30FCN
JSR      PC,T30RT2
JSR      PC,T30RT3
MOV      #65000.,T30DLY
JSR      PC,SOFINIT
BCS      20$
DELAY    250
```

```

:SET COMMAND PACKET
:CLEAR FILE COUNTER
:SET UP OTHER COMMAND PACKET
:SET UP OTHER COMMAND PACKET
:SET UP DELAY COUNTER
:DO INITIALIZE ON CONTROLLER
:BR IF INIT WAS OK
:DELAY ROUTINE CALL

```

```
MOV      #250,(PC)+
.WORD    0
MOV      LSDLY,(PC)+
.WORD    0
DEC      -6(PC)
BNE      .-4
DEC      -22(PC)
BNE      .-20
```

```
DEC      T30DLY
BNE      10$
JSR      PC,FATCHK
MOV      R0,R1
ERRDF    ERNO,SF IERR,SF MSG
```

```

;BUMP COUNTER
;BR, IF MORE COUNTING TO DO
;INC AND CHECK FOR MORE THAN 25 ERRORS
;CONTENTS OF TSSR REGISTER
;FATAL ERROR TSSR WAS NOT OK

```

```

TRAP      C$ERDF
.WORD     218
.WORD     $FIERR
.WORD     $FIMSG

```

208:

MOV #T30PACKET,R4

```

:SUBROUTINE NEEDS PACKET ADDRESS

```

```

:*****
:ISSUE WRITE CHARACTERISTICS COMMAND
:*****

```

```
JSR      PC,WRTCHR
BCS      23$
JSR      PC,FATCHK
MOV      R0,R1
ERRHRD   ERRNO,WRTMSG,SFIMSG
```

```

:ISSUE WRITE CHARACTERISTICS
:BR, IF COMMAND ISSUED OK
:INC AND CHECK FOR MORE THAN 25 ERRORS
:SAVE CONTENTS OF TSSR
:WRITE CHARACTERISTICS FAILED
      TRAP      CSEHRD

```

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TEST 2: SKIP TAPE MARKS

034050	000333					.WORD	219
034052	004754					.WORD	WRTMSG
034054	011656					.WORD	SFIMSG
5051	034056	104406		23\$: CKLOOP	:LOOP IF SELECTED	TRAP	C\$CLP1
5052							
5053							
5054							
5055							
5056							
5057							
5058							
5059	034060	004737	010424	JSR	PC,REWIND		:CALL TAPE REWIND COMMAND
5060	034064	103411		BCS	30\$		:BR, IF NO PROBLEM
5061	034066	010004		MOV	R0,R4		:GET PACKET ADDRESS
5062	034070	016501	000000	MOV	TSSR(R5),R1		:GET STATUS REGISTER
5063	034074	004737	020070	JSR	PC,FATCHK		:INC AND CHECK FOR MORE THAN 25 ERRORS
5067	034100			ERRHRD	ERRNO,T3ORWN,PKTSSR		:REWIND NOT ACCEPTED
	034100	104456				TRAP	C\$ERHRD
	034102	000334				.WORD	220
	034104	040120				.WORD	T3ORWN
	034106	011670				.WORD	PKTSSR
5068	034110			30\$: CKLOOP	:LOOP IF SELECTED	TRAP	C\$CLP1
	034110	104406					
5069							
5070							
5071							
5072							
5073							
5074							
5075							
5076	034112	013701	036376	MOV	T30BFR+6,R1		:PICK UP XSTO
5077	034116	010102		MOV	R1,R2		:SET UP EXPECTED
5078	034120	052702	000002	BIS	#BIT1,R2		:SET BOT BIT IN EXPECTED
5079	034124	020102		CMP	R1,R2		:DOES EXP = REC'D
5080	034126	001406		BEQ	40\$		:BR, IF EQUAL (OK)
5081	034130	004737	020070	JSR	PC,FATCHK		:INC AND CHECK FOR MORE THAN 25 ERRORS
5085	034134			ERRHRD	ERRNO,T30BOT,EXPREC		:TAPE NOT AT BOT AFTER REWIND
	034134	104456				TRAP	C\$ERHRD
	034136	000335				.WORD	221
	034140	037721				.WORD	T30BOT
	034142	016334				.WORD	EXPREC
5086	034144			40\$: CKLOOP	:LOOP IF SELECTED	TRAP	C\$CLP1
	034144	104406					
5087	034146	012737	000001	MOV	#1.,T30FCN		:SET 'FILE' COUNTER AT 1 DECIMAL
5088	034154	012703	000001	64\$: MOV	#1,R3		:ONE RECORD PER 'FILE'
5089	034160	013737	003072	65\$: MOV	FREE,T30WB		:SET UP PACKETS'S WRITE BUFFER
5090	034166	012737	000024	MOV	#20.,T30SZ		:SET RECORD SIZE AT 2000 BYTES
5091							
5092							
5093							
5094							
5095							
5096							
5097							
5098	034174	012737	140005	MOV	#140005,T30PK3		:WRITE DATA,ACK,CVC=1 COMMAND
5099	034202	012704	036500	MOV	#T30PK3,R4		:SET UP R4 WITH PACKET ADDRESS

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 TES: 2: SKIP TAPE MARKS

5100	034206	013702	036534	MOV	T30FCN,R2	:GET FILE COUNTER
5101	034212	000302		SWAB	R2	:MOVE TO UPPER BYTE
5102	034214	010301		MOV	R3,R1	:GET RECORD COUNTER
5103	034216	060201		ADD	R2,R1	:FILE COUNTER IN UPPER, RECORD # LOW
5104	034220	010177	146646	MOV	R1,#FREE	:MOV TO OUT PUT BUFFER
5105	034224	010465	177776	MOV	R4,TSDB(R5)	:ISSUE COMMAND
5106	034230	004737	017110	JSR	PC,WAITF	:WAIT FOR SSR TO SET
5107	034234	016501	000000	MOV	TSSR(R5),R1	:GET TSSR CONTENTS
5108	034240	012702	000200	MOV	#SSR,R2	:SET UP EXPECTED
5109	034244	020102		CMP	R1,R2	:ARE THEY EQUAL
5110	034246	001406		BEQ	70\$	:BR, IF OK
5111	034250	004737	020070	JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS
5115						:SOFT ERROR, DON'T CARE ABOUT WRITE
5116						:COMMAND'S RESULTS - CHECKING SKIP
5117						:TAPE MARK COMMAND
5118	034254			ERRSOFT	ERRNO,T30WDD,PKTSSR	:TSSR INCORRECT AFTER WRITE DATA
	034254	104457				TRAP CSERSOFT
	034256	000336				.WORD 222
	034260	037050				.WORD T30WDD
	034262	011670				.WORD PKTSSR
5119	034264			70\$: CKLOOP		:LOOP IF SELECTED
	034264	104406				TRAP CSCLP1
5120	034266	005203		INC	R3	:COUNT THE RECORD COUNTER DOWN
5121	034270	020327	000021	CMP	R3,#21	:AT 20 YET
5122	034274	001331		BNE	65\$	:BR, IF NOT AT 20 RECORDS WRITTEN
5123						
5124						
5125						
5126						
5127						
5128						
5129						
5130	034276	012737	141011	MOV	#141011,T30PK3	:WRITE TAPE MARK,ACK,CVC=1 COMMAND
5131	034304	012704	036500	MOV	#T30PK3,R4	:SET UP R4 WITH PACKET ADDRESS
5132	034310	010465	177776	MOV	R4,TSDB(R5)	:ISSUE COMMAND
5133	034314	004737	017110	JSR	PC,WAITF	:WAIT FOR SSR TO SET
5134	034320	016501	000000	MOV	TSSR(R5),R1	:PICK UP TSSR
5135	034324	012702	000200	MOV	#SSR,R2	:SET UP EXPECTED (SSR ONLY)
5136	034330	020102		CMP	R1,R2	:WAS STATUS GOOD
5137	034332	001406		BEQ	160\$	:BR, IF TERMINATION WAS GOOD
5138	034334	004737	020070	JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS
5142	034340			ERRHRD	ERRNO,T30WDC,PKTSSR	:TSSR NOT CORRECT AFTER WRT TAPE M.
	034340	104456				TRAP CSERHRD
	034342	000337				.WORD 223
	034344	040242				.WORD T30WDC
	034346	011670				.WORD PKTSSR
5143	034350			160\$: CKLOOP		:LOOP IF SELECTED
	034350	104406				TRAP CSCLP1
5144	034352	005237	036534	INC	T30FCN	:COUNT THE 'FILE' COUNTER DOWN
5145	034356	023727	036534	CMP	T30FCN,#25.	:WRITE 25 FILES TO TAPE
5146	034364	001273		BNE	64\$	:BR, IF NOT AT 25 FILES WRITTEN
5147						
5148						
5149						
5150						
5151						
5152						

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TEST 2: SKIP TAPE MARKS

```

5153
5154 034366 012737 141011 036500      MOV      #141011,T30PK3      ;WRITE TAPE MARK,ACK,CVC=1 COMMAND
5155 034374 012704 036500      MOV      #T30PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
5156 034400 010465 177776      MOV      R4,TSD8(R5)      ;ISSUE COMMAND
5157 034404 004737 017110      JSR      PC,WAITF      ;WAIT FOR SSR TO SET
5158 034410 016501 000000      MOV      TSSR(R5),R1      ;PICK UP TSSR
5159 034414 012702 000200      MOV      #SSR,R2      ;SET UP EXPECTED (SSR ONLY)
5160 034420 020102      CMP      R1,R2      ;WAS STATUS GOOD
5161 034422 001406      BEQ      165$      ;BR, IF TERMINATION WAS GOOD
5162 034424 004737 020070      JSR      PC,FATCHK      ;INC AND CHECK FOR MORE THAN 25 ERRORS
5166 034430      ERRHRD      ERRNO,T30WDC,PKTSSR      ;TSSR NOT CORRECT AFTER WRT TAPE M.
                                TRAP      C$ERHRD
                                .WORD      224
                                .WORD      T30WDC
                                .WORD      PKTSSR
5167 034440      165$: CKLOOP      ;LOOP IF SELECTED
                                TRAP      C$CLP1
                                034440 104406
5168
5169      ;*****
5170      ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
5171      ;*****
5172
5173
5174
5175 034442 004737 010424      JSR      PC,REWIND      ;CALL TAPE REWIND COMMAND
5176 034446 103411      BCS      170$      ;BR, IF NO PROBLEM
5177 034450 010004      MOV      R0,R4      ;GET PACKET ADDRESS
5178 034452 016501 000000      MOV      TSSR(R5),R1      ;GET STATUS REGISTER
5179 034456 004737 020070      JSR      PC,FATCHK      ;INC AND CHECK FOR MORE THAN 25 ERRORS
5183 034462      ERRHRD      ERRNO,T30RWV,PKTSSR      ;REWIND NOT ACCEPTED
                                TRAP      C$ERHRD
                                .WORD      225
                                .WORD      T30RWV
                                .WORD      PKTSSR
                                034462 104456
                                034464 000341
                                034466 040120
                                034470 011670
5184 034472      170$: CKLOOP      ;LOOP IF SELECTED
                                TRAP      C$CLP1
                                034472 104406
5185
5186      ;*****
5187      ;GET EXTENDED STATUS REGISTER ZERO (XST0) FROM MESSAGE BUFFER
5188      ;*****
5189
5190
5191
5192 034474 013701 036376      MOV      T30BFR+6,R1      ;PICK UP XST0
5193 034500 010102      MOV      R1,R2      ;SET UP EXPECTED
5194 034502 052702 000002      BIS      #BIT1,R2      ;SET BOT BIT IN EXPECTED
5195 034506 020102      CMP      R1,R2      ;DOES EXP = REC'D
5196 034510 001406      BEQ      180$      ;BR, IF EQUAL (OK)
5197 034512 004737 020070      JSR      PC,FATCHK      ;INC AND CHECK FOR MORE THAN 25 ERRORS
5201 034516      ERRHRD      ERRNO,T30BOT,EXPREC      ;TAPE NOT AT BOT AFTER REWIND
                                TRAP      C$ERHRD
                                .WORD      226
                                .WORD      T30BOT
                                .WORD      EXPREC
                                034516 104456
                                034520 000342
                                034522 037721
                                034524 016334
5202 034526      180$: CKLOOP      ;LOOP IF SELECTED
                                TRAP      C$CLP1
                                034526 104406
5203 034530 012737 000002 036534      MOV      #2,T30FCN      ;SET TO NUMBER OF SKIP 'FILES'

```

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TEST 2: SKIP TAPE MARKS

```

5204 034536 012703 036516          MOV      #T30IMV,R3          ;SET UP POINTER TO COMMAND TABLE
5205
5206 034542 011337 036366      182$:  MOV      (R3),T30ETM      ;GET NEXT COMMAND
5207 034546 012704 036350          MOV      #T30PACKET,R4      ;SUBROUTINE NEEDS PACKET ADDRESS
5208
5209          :*****
5210          :ISSUE WRITE CHARACTERISTICS COMMAND
5211          :*****
5212
5213
5214
5215 034552 004737 010322          JSR      PC,WRTCHR          ;ISSUE WRITE CHARACTERISTICS
5216 034556 103407              BCS      188$          ;BR, IF COMMAND ISSUED OK
5217 034560 004737 020070          JSR      PC,FATCHK          ;INC AND CHECK FOR MORE THAN 25 ERRORS
5221 034564 010001              MOV      R0,R1          ;SAVE CONTENTS OF TSSR
5222 034566              ERRHRD  ERRNO,WRTMSG,SFMSG      ;WRITE CHARACTERISTICS FAILED
5223 034576 104456              TRAP      C$ERRHD      ;
5224 034570 000343              .WORD      227
5225 034572 004754              .WORD      WRTMSG
5226 034574 011656              .WORD      SFMSG
5227
5228
5229
5230
5231 034600 012737 141010 036500      188$:  CKLOOP          ;LOOP IF SELECTED
5232 034606 013737 036534 036502          TRAP      C$CLP1
5233 034614 012704 036500
5234 034620 010465 177776
5235 034624 012737 176750
5236 034632 004737 017110
5237 034636 016501 000000
5238 034642 032701 000200
5239 034646 001017
5240 034650
5241 034700 005337 036536
5242 034704 001352
5243 034706 012702 000200
5244 034712 020102
5245 034714 001406
5246 034716 004737 020070
5250 034722
5251 034722 104456
5252 034724 000344
5253 034726 036774

          :*****
          :SKIP TAPE MARK,ACK,CVC=1 COMMAND
          :*****
          MOV      #141010,T30PK3      ;SKIP TAPE MARK,ACK,CVC=1 COMMAND
          MOV      T30FCN,T30RB      ;SET UP NUMBER TO SKIP
          MOV      #T30PK3,R4      ;SET UP R4 WITH PACKET ADDRESS
          189$:  MOV      R4,T30DB(R5)      ;ISSUE COMMAND
          190$:  MOV      #65000.,T30DLY      ;SET UP DELAY COUNTER
          JSR      PC,WAITF      ;WAIT FOR SSR TO SET
          MOV      TSSR(R5),R1      ;PICK UP TSSR
          BIT      #SSR,R1      ;IS SSR SET YET
          BNE      191$      ;BR, IF SSR IS SET
          DELAY      250      ;CALL DELAY ROUTINE
          MOV      #250,(PC)+
          .WORD      0
          MOV      L$DLY,(PC)+
          .WORD      0
          DEC      -6(PC)
          BNE      -4
          DEC      -22(PC)
          BNE      -20
          DEC      T30DLY      ;BUMP DELAY ROUTINE
          190$:  BNE      190$      ;BR, IF MORE DELAY TO GO
          MOV      #SSR,R2      ;SET UP EXPECTED (SSR ONLY)
          CMP      R1,R2      ;WAS STATUS GOOD
          BEQ      192$      ;BR, IF TERMINATION WAS GOOD
          JSR      PC,FATCHK      ;INC AND CHECK FOR MORE THAN 25 ERRORS
          ERRHRD  ERRNO,T30SKM,PKTSSR      ;TSSR NOT CORRECT AFTER SKIP TAPE M.
          TRAP      C$ERRHD
          .WORD      228
          .WORD      T30SKM

```

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LINE	ADDRESS	DATA	INSTR	COMMENT	STATUS	TRAP	PKTSSR
5251	034730	011670	192\$:	CKLOOP	:LOOP IF SELECTED	.WORD	PKTSSR
	034732	104406				TRAP	C\$CLP1
5252							
5253							
5254							
5255							
5256							
5257							
5258							
5259	034734	013701	036376	MOV	T30BFR+6,R1	:PICK UP XSTO	
5260	034740	010102		MOV	R1,R2	:SET UP EXPECTED	
5261	034742	052702	100000	BIS	#BIT15,R2	:SET TMK BIT IN EXPECTED	
5262	034746	020102		CMP	R1,R2	:DOES EXP = REC'D	
5263	034750	001406		BEQ	195\$	:BR, IF EQUAL (OK)	
5264	034752	004737	020070	JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS	
5268	034756			ERRHRD	ERRNO,T30TMK,EXPREC	:TMK NOT SET AFTER WRT TAPE MARK	
	034756	104456				TRAP	C\$ERHRD
	034760	000345				.WORD	229
	034762	040374				.WORD	T30TMK
	034764	016334				.WORD	EXPREC
5269	034766			195\$:	CKLOOP	:LOOP IF SELECTED	
	034766	104406				TRAP	C\$CLP1
5270	034770	012700	177777	MOV	#177777,R0	:VALUE TO WRITTEN TO MEMORY	
5271	034774	004737	020362	JSR	PC,FILLMEM	:FILL MEM WITH ALL ONES	
5272	035000	013737	003072	MOV	FREE,T30RB	:STARTING READ BUFFER ADDRESS	
5273							
5274							
5275							
5276							
5277							
5278							
5279							
5280	035006	012737	140001	MOV	#140001,T30PK3	:READ FORWARD,ACK,CVC=1 COMMAND	
5281	035014	012704	036500	MOV	#T30PK3,R4	:SET L? R4 WITH PACKET ADDRESS	
5282	035020	012737	000024	MOV	#20.,T30SZ	:SET UP RECORD SIZE IN PACKET	
5283	035026	010465	177776	MOV	R4,T30DB(R5)	:ISSUE COMMAND	
5284	035032	004737	017110	JSR	PC,WAITF	:WAIT FOR SSR TO SET	
5285	035036	016501	000000	MOV	TSSR(R5),R1	:GET TSSR CONTENTS	
5286	035042	012702	000200	MOV	#SSR,R2	:SET UP EXPECTED	
5287	035046	020102		CMP	R1,R2	:ARE THEY EQUAL	
5288	035050	001406		BEQ	200\$	:BR, IF OK	
5289	035052	004737	020070	JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS	
5293	035056			ERRHRD	ERRNO,T30RDF,PKTSSR	:TSSR INCORRECT AFTER WRITE DATA	
	035056	104456				TRAP	C\$ERHRD
	035060	000346				.WORD	230
	035062	037273				.WORD	T30RDF
	035064	011670				.WORD	PKTSSR
5294	035066			200\$:	CKLOOP	:LOOP IF SELECTED	
	035066	104406				TRAP	C\$CLP1
5295	035070	017701	145776	MOV	@FREE,R1	:FIRST LOC IN READ BUFFER	
5296	035074	012702	177777	MOV	#177777,R2	:EXPECTED IF NO DATA TRANS.	
5297	035100	020102		CMP	R1,R2	:DID ANY DATA GET TRANSFERRED	
5298	035102	001006		BNE	220\$	:BR, IF NO DATA TRANS (GOOD)	
5299	035104	004737	020070	JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS	
5303	035110			ERRHRD	ERRNO,T30DTR,EXPREC	:DATA TRANSFERRED ON READ TAPE MARK	
	035110	104456				TRAP	C\$ERHRD

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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							
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							
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

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5413 035440 010001

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TEST 2: SKIP TAPE MARKS

```

5414 035442          ERRHRD  ERRNO,WRTMSG,SFMSG      ;WRITE CHARACTERISTICS FAILED
      035442 104456          TRAP  C$ERHRD
      035444 000354          .WORD 236
      035446 004754          .WORD WRTMSG
      035450 011656          .WORD SFMSG
5415 035452          23$:  CKLOOP                    ;LOOP IF SELECTED
      035452 104406          TRAP  C$CLP1
5416
5417          ;*****
5418          ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
5419          ;*****
5420
5421
5422
5423 035454 004737 010424      JSR    PC,REWIND        ;CALL TAPE REWIND COMMAND
5424 035460 103411          BCS    30$                ;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  C$ERHRD
      035476 000355          .WORD 237
      035500 040120          .WORD T3ORWN
      035502 011670          .WORD PKTSSR
5432 035504          30$:  CKLOOP                    ;LOOP IF SELECTED
      035504 104406          TRAP  C$CLP1
5433
5434          ;*****
5435          ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
5436          ;*****
5437
5438
5439
5440 035506 013701 036376      MOV    T3OBF+6,R1        ;PICK UP XSTO
5441 035512 010102          MOV    R1,R2                ;SET UP EXPECTED
5442 035514 052702 000002      BIS    #BIT1,R2          ;SET BOT BIT IN EXPECTED
5443 035520 020102          CMP    R1,R2                ;DOES EXP = REC'D
5444 035522 001406          BEQ    40$                ;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  C$ERHRD
      035532 000356          .WORD 238
      035534 037721          .WORD T3OBOT
      035536 016334          .WORD EXPREC
5450 035540          40$:  CKLOOP                    ;LOOP IF SELECTED
      035540 104406          TRAP  C$CLP1
5451 035542 012737 000001 036502  MOV    #1,T3OWB        ;SET # OF TM TO SKIP
5452
5453          ;*****
5454          ;SKIP TAPE MARK REVERSE,ACK,CVC=1 COMMAND
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,T3DB(R5)        ;ISSUE COMMAND

```

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Address	Offset	Hex	Label	Operation	Comments	Trap	Value
5462	035566	004737	017110	JSR	PC, WAITF		
5463	035572	016501	000000	MOV	TSSR(R5), R1		
5464	035576	012702	100206	MOV	#SSR!SC!BIT1!BIT2, R2		
5465	035602	020102		CMP	R1, R2		
5466	035604	001406		BEQ	70\$		
5467	035606	004737	020070	JSR	PC, FATCHK		
5471	035612			ERRHRD	ERRNO, T301BT, PKTSSR		
	035612	104456				TRAP	C\$ERHRD
	035614	000357				.WORD	239
	035616	036711				.WORD	T301BT
	035620	011670				.WORD	PKTSSR
5472	035622			70\$: CKLOOP		: LOOP IF SELECTED	
	035622	104406				TRAP	C\$CLP1
5473							
5474							
5475							
5476							
5477							
5478							
5479							
5480	035624	013701	036376	MOV	T30BFR+6, R1		
5481	035630	010102		MOV	R1, R2		
5482	035632	052702	002000	BIS	#BIT10, R2		
5483	035636	020102		CMP	R1, R2		
5484	035640	001406		BEQ	180\$		
5485	035642	004737	020070	JSR	PC, FATCHK		
5489	035646			ERRHRD	ERRNO, T30NEF, EXPREC		
	035646	104456				TRAP	C\$ERHRD
	035650	000360				.WORD	240
	035652	040456				.WORD	T30NEF
	035654	016334				.WORD	EXPREC
5490	035656			180\$: CKLOOP		: LOOP IF SELECTED	
	035656	104406				TRAP	C\$CLP1
5491	035660			ENDSUB			
	035660						
	035660	104403				TRAP	C\$ESUB

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

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```

5542 036012 010001          MOV    R0,R1          ;SAVE CONTENTS OF TSSR
5543 036014          ERRHRD  ERRNO,WRTMSG,SFMSG    ;WRITE CHARACTERISTICS
                                FAILED
                                TRAP    C$ERHRD
                                .WORD   242
                                .WORD   WRTMSG
                                .WORD   SFMSG
5544 036024          23$:    CKLOOP                ;LOOP IF SELECTED
                                TRAP    C$CLP1
                                036024 104406
5545
5546      ;*****
5547      ;
5548      ;ISSUE A REWIND TO TAPE DRIVE AND WAIT FOR SSR TO SET
5549      ;
5550      ;*****
5551
5552 036026 004737 010424    JSR     PC,REWIND      ;CALL TAPE REWIND COMMAND
5553 036032 103411          BCS     30$           ;BR, IF NO PROBLEM
5554 036034 010004          MOV     R0,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    C$ERHRD
                                .WORD   243
                                .WORD   T3ORWN
                                .WORD   PKTSSR
5561 036056          30$:    CKLOOP                ;LOOP IF SELECTED
                                TRAP    C$CLP1
                                036056 104406
5562
5563      ;*****
5564      ;
5565      ;GET EXTENDED STATUS REGISTER ZERO (XSTO) FROM MESSAGE BUFFER
5566      ;
5567      ;*****
5568
5569 036060 013701 036376    MOV     T3OBFR+6,R1    ;PICK UP XSTO
5570 036064 010102          MOV     R1,R2           ;SET UP EXPECTED
5571 036066 052702 000002    BIS     #BIT1,R2      ;SET BOT BIT IN EXPECTED
5572 036072 020102          CMP     R1,R2           ;DOES EXP = REC'D
5573 036074 001406          BEQ     40$           ;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    C$ERHRD
                                .WORD   244
                                .WORD   T3OBOT
                                .WORD   EXPREC
5579 036112          40$:    CKLOOP                ;LOOP IF SELECTED
                                TRAP    C$CLP1
                                036112 104406
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 TUBO FRONT END PRT D
TEST 2: SKIP TAPE MARKS

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5590	036136	012704	036500	MOV	#T30PK3,R4	:SET UP R4 WITH PACKET ADDRESS	
5591	036142	010465	177776	MOV	R4,TSDB(R5)	:ISSUE COMMAND	
5592	036146	004737	017110	JSR	PC,WAITF	:WAIT FOR SSR TO SET	
5593	036152	016501	000000	MOV	TSSR(R5),R1	:GET TSSR CONTENTS	
5594	036156	012702	000200	MOV	#SSR,R2	:SET UP EXPECTED	
5595	036162	020102		CMP	R1,R2	:ARE THEY EQUAL	
5596	036164	001406		BEQ	70\$	:BR, IF OK	
5597	036166	004737	020070	JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS	
5601						:SOFT ERROR, DON'T CARE ABOUT WRITE	
5602						:COMMAND'S RESULTS - CHECKING SKIP	
5603						:TAPE MARK COMMAND	
5604	036172				ERRSOFT ERRNO,T30WDD,PKTSSR	:TSSR INCORRECT AFTER WRITE DATA	
	036172	104457				TRAP	C\$ERSOFT
	036174	000365				.WORD	245
	036176	037050				.WORD	T30WDD
	036200	011670				.WORD	PKTSSR
5605	036202			70\$:	CKLOOP	:LOOP IF SELECTED	
	036202	104406				TRAP	C\$CLP1
5606							
5607							
5608							
5609							
5610							
5611							
5612							
5613	036204	012737	000001	MOV	#1,T30WB	:# OF TM TO SKIP	
5614	036212	012737	141410	MOV	#141410,T30PK3	:SKIP TAPE MARK REVERSE,ACK,CVC=1 CMD	
5615	036220	012704	036500	MOV	#T30PK3,R4	:SET UP R4 WITH PACKET ADDRESS	
5616	036224	010465	177776	MOV	R4,TSDB(R5)	:ISSUE COMMAND	
5617	036230	004737	017110	JSR	PC,WAITF	:WAIT FOR SSR TO SET	
5618	036234	016501	000000	MOV	TSSR(R5),R1	:PICK UP TSSR	
5619	036240	012702	100204	MOV	#SSR:BIT2!SC,R2	:SET UP EXPECTED (SSR AND SC ONLY)	
5620	036244	020102		CMP	R1,R2	:WAS STATUS GOOD	
5621	036246	001406		BEQ	160\$	:BR, IF TERMINATION WAS GOOD	
5622	036250	004737	020070	JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS	
5626	036254			ERRHRD	ERRNO,T30IBU,PKTSSR	:TSSR NOT CORRECT AFTER WRT TAPE M.	
	036254	104456				TRAP	C\$ERHRD
	036256	000366				.WORD	246
	036260	036540				.WORD	T30IBU
	036262	011670				.WORD	PKTSSR
5627	036264			160\$:	CKLOOP	:LOOP IF SELECTED	
	036264	104406				TRAP	C\$CLP1
5628							
5629							
5630							
5631							
5632							
5633							
5634							
5635	036266	013701	036404	MOV	T30BFR+14,R1	:PICK UP XST3	
5636	036272	010102		MOV	R1,R2	:SET UP EXPECTED	
5637	036274	052702	000001	BIS	#BIT0,R2	:SET RIB BIT IN EXPECTED	
5638	036300	020102		CMP	R1,R2	:DOES EXP = REC'D	
5639	036302	001406		BEQ	170\$	:BR, IF EQUAL (OK)	
5640	036304	004737	020070	JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS	
5644	036310			ERRHRD	ERRNO,T30RIB,EXPREC	:TAPE NOT AT RIB	
	036310	104456				TRAP	C\$ERHRD

	036312	000367
	036314	036625
	036316	016334
5645	036320	
	036320	104406
5646	036322	
	036322	
	036322	104403
5647		
5648		
5649		
5650	036324	004737
5651	036330	103002
5652	036332	000137
5653	036336	
	036336	104432
	036340	002750

ENDSUB

:SUBTEST END

```

      JSR      PC,TSTLOOP
      BCC     400$
      JMP     T30LOOP
400$:  EXIT     TST

```

```

                                .WORD    247
                                .WORD    T30R18
                                .WORD    EXPREC
;LOOP IF SELECTED
                                TRAP      C$CLP1
;<<<<<<<<<<<<<<<< END SUBTEST >>>>>>>>>>
                                L10047:
                                TRAP      C$ESUB

;DO WE NEED TO ITERATE TEST
;BR, IF NO LOOP REQUIRED
;EXECUTE AGAIN
;ALL DONE THIS TEST
                                TRAP      C$EXIT
                                .WORD    L10043-

```

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-<.-TUV2A&7>
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-<.-TUV2A&7>
T30PK2:
      .WORD 100006
      .WORD T30BF2
      .WORD 0
      .WORD 6.
      .BLKB 10-<.-TUV2A&7>
T30PK3:
      .WORD 100205
T30RB:
T30WB: .WORD FREE
      .WORD 0
T30SZ: .WORD 0
      .EVEN
      .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
      .EVEN
T30CNT: .WORD 0
T30CNU: .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

```

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TEST 2: SKIP TAPE MARKS

```

5715
5716
5717
5718
5719
5720 036540      124      123      123  T30IBU: .ASCIZ 'TSSR Incorrect After SKIP TAPE MARK REVERSE Into BOT'
5721 036625      122      111      102  T30RIB: .ASCIZ 'RIB Bit (XST3) Failed To Set After Reverse Into BOT'
5722 036711      124      123      123  T30IBT: .ASCIZ 'TSSR Incorrect After SKIP TAPE MARK REVERSE At BOT'
5723 036774      124      123      123  T30SKM: .ASCIZ 'TSSR Incorrect After SKIP TAPE MARK Command'
5724 037050      124      123      123  T30WDD: .ASCIZ 'TSSR Not Correct After WRITE DATA Command'
5725 037122      124      141      160  T30PTB: .ASCIZ 'Tape Not Positioned On Correct Record After READ REVERSE'
5726 037213      124      141      160  T30TPB: .ASCIZ 'Tape Not Positioned On Second File First Record'
5727 037273      124      123      123  T30RDF: .ASCIZ 'TSSR Incorrect After READ FORWARD Into 'File''
5728 037351      124      123      123  T30RDG: .ASCIZ 'TSSR Incorrect After SPACE Command Into TAPE MARK'
5729 037433      124      123      123  T30WDF: .ASCIZ 'TSSR Not Correct After Illegal Mode Bits Set'
5730 037510      111      154      154  T30LOQ: .ASCIZ 'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
5731 037571      127      122      111  T30SSR: .ASCIZ 'WRITE MISCELLANEOUS Command Not Accepted'
5732 037642      124      123      123  T30WDE: .ASCIZ 'TSSR Not Correct After SKIP TAPE MARKS, At BOT'
5733 037721      124      141      160  T30BOT: .ASCIZ 'Tape Not At BOT After REWIND Command'
5734 037766      124      123      123  T30TM: .ASCIZ 'TSSR Not Correct After SPACE FORWARD Command'
5735 040043      124      123      123  T30TM2: .ASCIZ 'TSSR Not Correct After SPACE REVERSE Command'
5736 040120      122      145      167  T30RW: .ASCIZ 'Rewind (POSITION) Command Not Accepted'
5737 040167      104      162      151  T30OFL: .ASCIZ 'Drive 7 Select Failed To Set 'OFL' In TSSR'
5738 040242      124      123      123  T30WDC: .ASCIZ 'TSSR Not Correct After WRITE TAPE MARK Command'
5739 040321      103      126      103  T30VCK: .ASCIZ 'CVC Set, Didn't Reset VCK In Message Buffer'
5740 040374      124      115      113  T30TMK: .ASCIZ 'TMK Not Set After WRITE TAPE MARK (RETRY) Command'
5741 040456      123      113      111  T30NEF: .ASCIZ 'SKIP TAPE MARKS, At BOT, failed To Set NEF Bit'
5742 040535      124      115      113  T30RRM: .ASCIZ 'TMK Not Set After READ REVERSE Into TAPE MARK'
5743 040613      124      115      113  T30RRN: .ASCIZ 'TMK Not Set After SPACE REVERSE Into TAPE MARK'
5744 040672      124      115      113  T30RRP: .ASCIZ 'TMK Not Set After READ FORWARD Into TAPE MARK'
5745 040750      116      117      040  T30DTR: .ASCIZ 'NO Data Transferred On READ FORWARD'
5746 041014      104      141      164  T30DTA: .ASCIZ 'Data Compare Error, Data Read From Tape Not Equal To Written'
5747 041111      123      153      151  TST30ID: .ASCIZ 'Skip Tape Marks'
5748
5749
5750
5751
5752
5753
5754
5755
5756 041132
5757 041132
5758 041136      012701      036350
5759 041142      012721      100004
5760 041146      012721      036360
5761 041152      005021
5762 041154      012721      000012
5763 041160      012721      036370
5764 041164      005021
5765 041166      012721      000024
5766 041172      005021
5767 041174      012711      000000
5768 041200      012702      000030
5769 041204      012762      177777      036370      64$:
5770 041212      005742
5771 041214      022702      000000

```

;+
 ;LOCAL TEXT MESSAGES FOR TEST
 ;-

;+
 ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
 ;WRITE SUBSYSTEM MEMORY COMMAND
 ;-

T30REST:
 SAVREG
 MOV #T30PACKET,R1 ;SAVE THE REGISTERS
 MOV #100004,(R1)+ ;START OF THE PACKET
 MOV #T30DATA,(R1)+ ;WRITE SUBSYSTEM MEM. WITH ACK,
 CLR (R1)+ ;ADDRESS OF CHARAISTICS DATA BLOCK
 MOV #10,(R1)+ ;EXTENDED ADDRESS
 MOV #T30BFR,(R1)+ ;SIZE OF DATA BLOCK IN BYTES
 CLR (R1)+ ;ADDRESS OF MESSAGE BUFFER
 MOV #20,(R1)+ ;LENGTH OF MESSAGE BUFFER
 CLR (R1)+
 MOV #0,(R1) ;SELECT DRIVE ZERO
 MOV #24,R2 ;NUMBER OF LOCATIONS TO BE CLEARED
 MOV #177777,T30BFR(R2) ;ALL ONES TO MESSAGE BUFFER
 TST -(R2) ;NEXT LOCATION
 CMP #0,R2 ;CHECK R2 FOR DONE

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 TEST 2: SKIP TAPE MARKS

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

L10043: TRAP CSETST

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

```

5798                                     .SBTTL TEST 3: NO-OP ('CLEAN TAPE') AND INITIALIZE
5799                                     :+
5800                                     :THIS TEST VERIFIES PROPER OPERATION OF THE NO-OP ('CLEAN TAPE') AND INITIALIZE
5801                                     :COMMAND (SPACE REVERSE, ERASE, WRITE DATA)
5802                                     :
5803                                     :
5804                                     :THE TEST CONSISTS OF THE FOLLOWING 2 SUBTESTS
5805                                     :
5806                                     :
5807                                     :
5808                                     :
5809                                     :-
5810 041312                             BGNTST
5811 041312                             CLR      FATFLG                      T3::
5812 041316 005037 002170                CLR      KTFLG                      ;CLEAR FATAL ERROR FLAG
5813 041322 012737 005672 002146         MOV      #EPT1,EPTSW                ;HOLD OFF KT11
5818 041330 012700 046403                MOV      #TST31ID,R0              ;PRIMARY ERROR MESSAGE
5819 041334 004737 017376                JSR      PC,TSTSETUP              ;ASCII MESSAGE TO IDENTIFY TEST
5820 041340 012737 000002 002164         MOV      #2,LOOPCNT              ;DO INITIAL TEST SETUP
5821 041346 005037 043176                CLR      T3ICNT                  ;PERFORM 2 ITERATIONS
5822                                     :                                     ;CLEAR TAPE RECORD COUNTER
5823                                     :
5824                                     :-
5825 041352                             T31LOOP:

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VERIFIES THAT THE NO-OP COMMAND (CORRESPONDS TO THE CLEAN TAPE COMMAND) TERMINATES PROPERLY (NORMAL TERMINATION), STORES PROPER STATUS IN THE MESSAGE BUFFER (LIKE THE GET STATUS COMMAND), AND INDEED DOES NOT MOVE TAPE. THE TAPE IS FIRST REWOUND AND WRITTEN WITH SEQUENCED TEST RECORDS. IT IS THEN REWOUND AGAIN AND THE NO-OP COMMAND IS ISSUED. IT IS VERIFIED THAT THE TAPE IS STILL AT BOT AND THAT PROPER STATUS IS STORED. THE FIRST RECORD ON TAPE IS READ AND VERIFIED (TO CHECK TAPE POSITION AND VERIFY THAT DATA WAS NOT CHANGED), THEN THE NO-OP COMMAND IS ISSUED AGAIN AND STATUS AND POSITION VERIFIED.

```
;>>>>>>>>> BEGIN SUBTEST >>>>>>>>>
      13.1:
```

TRAP CSBSUB

```
JSR    PC,T31REST
JSR    PC,T31RT2
JSR    PC,T31RT3
MOV     #65000.,T31DLY
JSR     PC,SOFINIT
BCS     208
DELAY   250
```

```

:SET COMMAND PACKET
:SET UP OTHER COMMAND PACKET
:SET UP OTHER COMMAND PACKET
:SET UP DELAY COUNTER
:DO INITIALIZE ON CONTROLLER
:BR IF INIT WAS OK
:DELAY ABOUT .25 SEC

```

```
MOV      #250,(PC)+
.WORD    0
MOV      LSDLY,(PC)+
.WORD    0
DEC      -6(PC)
BNE      .-4
DEC      -22(PC)
BNE      .-20
```

```
DEC      T31DLY
BNE      108
JSR      PC,FATCHK
MOV      R0,R1
ERRDF    ERNO,SFIERR,SFMSG
```

```

: BUMP COUNTER
: BR, IF COUNTER NOT DONE
: INC AND CHECK FOR MORE THAN 25 ERRORS
: CONTENTS OF TSSR REGISTER
: FATAL ERROR TSSR WAS NOT OK

```

```

TRAP      CSE RDF
.WORD     301
.WORD     SF IERR
.WORD     SF IMSG

```

```
MOV      #T31PACKET,R4
JSR      PC,WRCHR
BCS      23$
JSR      PC,FATCHK
MOV      R0,R1
ERRHRD   ERNO,WRMSG,SFMSG
```

```

:SUBROUTINE NEEDS PACKET ADDRESS
:ISSUE WRITE CHARACTERISTICS
:BR, IF COMMAND ISSUED OK
:INC AND CHECK FOR MORE THAN 25 ERRORS
:SAVE CONTENTS OF TSSR
:WRITE CHARACTERISTICS FAILED

```

TRAP CSERHRD
WORD 302

Address	Instruction	Comments	Labels	Code	Register	Operation	Trap	Word	Message
5874	041504	004754							WRMSG
	041506	011656							SFMSG
5875	041510	104406	010424	238:	CKLOOP	:LOOP IF SELECTED	TRAP		C\$CLP1
5876	041512	004737			JSR	PC,REWIND			
5877	041516	103407			BCS	308			
5878	041520	010004			MOV	R0,R4			
5882	041522	004737	020070		JSR	PC,FATCHK			
	041526	104456			ERRHRD	ERRNO,T31RWN,PKTSSR			
	041530	000457					TRAP		C\$ERHRD
	041532	044534					.WORD		303
	041534	011670					.WORD		T31RWN
5883	041536	104406		308:	CKLOOP	:LOOP IF SELECTED	TRAP		C\$CLP1
5884	041540	013701	043046		MOV	T31BFR+6,R1			
5885	041544	010102			MOV	R1,R2			
5886	041546	052702	000002		BIS	#BIT1,R2			
5887	041552	020102			CMP	R1,R2			
5888	041554	001406			BEQ	408			
5889	041556	004737	020070		JSR	PC,FATCHK			
5893	041562	104456			ERRHRD	ERRNO,T31BOT,EXPREC			
	041564	000460					TRAP		C\$ERHRD
	041566	044205					.WORD		304
	041570	016334					.WORD		T31BOT
5894	041572	104406		408:	CKLOOP	:LOOP IF SELECTED	TRAP		C\$CLP1
5895	041574	013737	003072	043152	MOV	FREE,T31WB			
5896	041602	012737	140005	043150	658:	MOV	#140005,T31PK3		
5897	041610	012704	043150		MOV	#T31PK3,R4			
5898	041614	012700	000144		MOV	#100.,R0			
5899	041620	004737	020362		JSR	PC,FILLMEM			
5900	041624	012737	000144	043156	MOV	#100.,T31SZ			
5901	041632	010465	177776		MOV	R4,TSDB(R5)			
5902	041636	004737	017110		JSR	PC,WAITF			
5903	041642	016501	000000		MOV	TSSR(R5),R1			
5904	041646	012702	000200		MOV	#SSR,R2			
5905	041652	020102			CMP	R1,R2			
5906	041654	001406			BEQ	808			
5907	041656	004737	020070		JSR	PC,FATCHK			
5911									
5912									
5913									
5914	041662	104457			ERRSOFT	ERRNO,T31WDC,PKTSSR			
	041664	000461					TRAP		C\$ERSOFT
	041666	045070					.WORD		305
	041670	011670					.WORD		T31WDC
5915	041672	104406		808:	CKLOOP	:LOOP IF SELECTED	TRAP		C\$CLP1
5916	041674	004737	010424		JSR	PC,REWIND			
5917	041700	103407			BCS	2308			
5918	041702	010001			MOV	R0,R1			

Address	Offset	Hex	Dec	Label	Instruction	Comment	Register	Value	Word	306
5924	041712	000462		230\$:	CKLOOP	:LOOP IF SELECTED			.WORD	T31RWN
	041714	044534							.WORD	EXPREC
	041716	016334							.WORD	C\$CLP1
5925	041720	104406	043046		MOV	T31BFR+6,R1			TRAP	C\$CLP1
5926	041722	013701			MOV	R1,R2				
5927	041726	010102			BIS	#BIT1,R2				
5928	041730	052702	000002		CMP	R1,R2				
5929	041734	020102			BEQ	240\$				
5930	041736	001406			JSR	PC,FATCHK				
5931	041740	004737	020070		ERRHRD	ERRNO,T31BOT,EXPREC				
	041744	104456							TRAP	C\$ERHRD
	041746	000463							.WORD	307
	041750	044205							.WORD	T31BOT
	041752	016334							.WORD	EXPREC
5935	041754	104406		240\$:	CKLOOP	:LOOP IF SELECTED			TRAP	C\$CLP1
5936	041756	012737	041012	043150	265\$:	MOV	#041012,T31PK3			
5937	041764	012704	043150		MOV	#T31PK3,R4				
5938	041770	010337	043156		MOV	R3,T31SZ				
5939	041774	010465	177776		MOV	R4,TSDB(R5)				
5940	042000	004737	017110		JSR	PC,WAITF				
5941	042004	016501	000000		MOV	TSSR(R5),R1				
5942	042010	012702	000200		MOV	#SSR,R2				
5943	042014	020102			CMP	R1,R2				
5944	042016	001406			BEQ	280\$				
5945	042020	004737	020070		JSR	PC,FATCHK				
5946	042024	104456			ERRHRD	ERRNO,T31RDF,PKTSSR				
	042026	000464							TRAP	C\$ERHRD
	042030	043403							.WORD	308
	042032	011670							.WORD	T31RDF
	042034	104406							.WORD	PKTSSR
5950	042036	013701	043046		280\$:	CKLOOP	:LOOP IF SELECTED		TRAP	C\$CLP1
5951	042042	010102			MOV	T31BFR+6,R1				
5952	042044	052702	000002		MOV	R1,R2				
5953	042050	020102			BIS	#BIT1,R2				
5954	042052	001406			CMP	R1,R2				
5955	042054	004737	020070		BEQ	285\$				
5956	042060	104456			JSR	PC,FATCHK				
5957	042062	000465			ERRHRD	ERRNO,T31BOT,EXPREC				
	042064	044205							TRAP	C\$ERHRD
	042066	016334							.WORD	309
	042070	104406							.WORD	T31BOT
	042072	012737	140001	043150	285\$:	CKLOOP	:LOOP IF SELECTED		TRAP	C\$CLP1
5962	042100	012704	043150		MOV	#140001,T31PK3				
5963	042104	012737								

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

5971	042136	004737	020070	JSR	PC,FATCHK	;INC AND CHECK FOR MORE THAN 25 ERRORS
5975	042142			ERRHRD	ERRNO,T31RDE,PKTSSR	;TSSR INCORRECT AFTER READ DATA
	042142	104456				TRAP CSERHRD
	042144	000466				.WORD 310
	042146	043204				.WORD T31RDE
	042150	011670				.WORD PKTSSR
5976	042152			290\$:	CKLOOP	;LOOP IF SELECTED
	042152	104406				TRAP CSCLP1
5977	042154	017701	140712	MOV	@FREE,R1	;GET DATA READ
5978	042160	012702	000144	MOV	#100.,R2	;READ EXPECTED
5979	042164	020102		CMP	R1,R2	;DID TAPE STAY POSITIONED
5980	042166	001406		BEG	330\$	;BR, IF EXPD = RECD
5981	042170	004737	020070	JSR	PC,FATCHK	;INC AND CHECK FOR MORE THAN 25 ERRORS
5985	042174			ERRHRD	ERRNO,T31WNG,EXPREC	;TAPE DATA NOT CORRECT
	042174	104456				TRAP CSERHRD
	042176	000467				.WORD 311
	042200	043331				.WORD T31WNG
	042202	016334				.WORD EXPREC
5986	042204			330\$:		
5987	042204			ENDSUB		;>>>>>>>>> END SUBTEST >>>>>>>>>
	042204					L10051:
	042204	104403				TRAP CSesub

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5990						
5991				TEST 3, SUBTEST 2		
5992						
5993						
5994				VERIFIES THAT THE INITIALIZE COMMAND OPERATES AS A NO-OP,		
5995				ASSUMING NO MICRODIAGNOSTIC ERRORS ARE PRESENT (THEY WOULD		
5996				ALREADY HAVE BEEN DETECTED IN PREVIOUS TESTS). THE TEST		
5997				SEQUENCE IS SIMILAR TO THAT USED IN SUBTEST 1.		
5998						
5999						
6000						
6001						
6002	042206			BGNSUB	;>>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>	
	042206				T3.2:	
	042206	104402			TRAP CSBSUB	
6003	042210	004737	046450	JSR PC,T31REST	;SET COMMAND PACKET	
6004	042214	004737	046542	JSR PC,T31RT2	;SET UP OTHER COMMAND PACKET	
6005	042220	004737	046604	JSR PC,T31RT3	;SET UP OTHER COMMAND PACKET	
6006	042224	004737	016634	JSR PC,SOFINIT	;DO INITIALIZE ON CONTROLLER	
6007	042230	103407		BCS 20\$	;BR IF INIT WAS OK	
6008	042232	004737	020070	JSR PC,FATCHK	;INC AND CHECK FOR MORE THAN 25 ERRORS	
6012	042236	010001		MOV RO,R1	;CONTENTS OF TSSR REGISTER	
6013	042240			ERRDF ERNO,SFIERR,SFIMSG	;FATAL ERROR TSSR WAS NOT OK	
	042240	104455			TRAP CSEPDF	
	042242	000470			.WORD 312	
	042244	003550			.WORD SFIERR	
	042246	011656			.WORD SFIMSG	
6014	042250			20\$: MOV #T31PACKET,R4	;SUBROUTINE NEEDS PACKET ADDRESS	
6015	042250	012704	043020	JSR PC,WRTCHR	;ISSUE WRITE CHARACTERISTICS	
6016	042254	004737	010322	BCS 23\$	;BR, IF COMMAND ISSUED OK	
6017	042260	103407		JSR PC,FATCHK	;INC AND CHECK FOR MORE THAN 25 ERRORS	
6018	042262	004737	020070	MOV RO,R1	;SAVE CONTENTS OF TSSR	
6022	042266	010001		ERRHRD ERNO,WRTMSG,SFIMSG	;WRITE CHARACTERISTISC FAILED	
6023	042270				TRAP CSEHRD	
	042270	104456			.WORD 313	
	042272	000471			.WORD WRTMSG	
	042274	004754			.WORD SFIMSG	
	042276	011656				
6024	042300			23\$: CKLOOP	;LOOP IF SELECTED	
	042300	104406			TRAP CSCLP1	
6025	042302	004737	010424	JSR PC,REWIND	;CALL TAPE REWIND COMMAND	
6026	042306	103407		BCS 30\$	;BR, IF NO PROBLEM	
6027	042310	010004		MOV RO,R4	;SET UP REWIND PACKET ADDRESS	
6028	042312	004737	020070	JSR PC,FATCHK	;INC AND CHECK FOR MORE THAN 25 ERRORS	
6032	042316			ERRHRD ERNO,T31RW,N,PKTSSR	;REWIND NOT ACCEPTED	
	042316	104456			TRAP CSEHRD	
	042320	000472			.WORD 314	
	042322	044534			.WORD T31RW,N	
	042324	011670			.WORD PKTSSR	
6033	042326			30\$: CKLOOP	;LOOP IF SELECTED	
	042326	104406			TRAP CSCLP1	
6034	042330	013701	043C46	MOV T31BFR+6,R1	;PICK UP XSTO	
6035	042334	010102		MOV R1,R2	;SET UP EXPECTED	
6036	042336	052702	000002	BIS #BIT1,R2	;SET BOT BIT IN EXPECTED	
6037	042342	020102		CMP R1,R2	;DOES EXP = REC'D	
6038	042344	001406		BEQ 40\$	;BR, IF EQUAL (OK)	

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 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
	042352	104456					TRAP	C\$ERHRD
	042354	000473					.WORD	315
	042356	044205					.WORD	T31BOT
	042360	016334					.WORD	EXPREC
6044	042362			40\$:	CKLOOP			;LOOP IF SELECTED
	042362	104406					TRAP	C\$CLP1
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
	042452	104457					TRAP	C\$ERSOFT
	042454	000474					.WORD	316
	042456	045070					.WORD	T31WDC
	042460	011670					.WORD	PKTSSR
6065	042462			80\$:	CKLOOP			;LOOP IF SELECTED
	042462	104406					TRAP	C\$CLP1
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
	042500	104456					TRAP	C\$ERHRD
	042502	000475					.WORD	317
	042504	044534					.WORD	T31RWN
	042506	016334					.WORD	EXPREC
6074	042510			230\$:	CKLOOP			;LOOP IF SELECTED
	042510	104406					TRAP	C\$CLP1
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
	042534	104456					TRAP	C\$ERHRD
	042536	000476					.WORD	318
	042540	044205					.WORD	T31BOT
	042542	016334					.WORD	EXPREC
6085	042544			240\$:	CKLOOP			;LOOP IF SELECTED
	042544	104406					TRAP	C\$CLP1
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

Line	Address	Offset	Label	Instruction	Register/Value	Comment	Trap	Offset
6088	042560	010337	043156	MOV	R3,T31SZ	;SET UP RECORD SIZE IN PACKET		
6089	042564	010465	177776	MOV	R4,TSDB(R5)	;ISSUE COMMAND		
6090	042570	004737	017110	JSR	PC,WAITF	;WAIT FOR SSR TO SET		
6091	042574	016501	000000	MOV	TSSR(R5),R1	;GET TSSR CONTENTS		
6092	042600	012702	000200	MOV	#SSR,R2	;SET UP EXPECTED		
6093	042604	020102		CMP	R1,R2	;ARE THEY EQUAL		
6094	042606	001406		BEQ	280\$	;BR, IF OK		
6095	042610	004737	020070	JSR	PC,FATCHK	;INC AND CHECK FOR MORE THAN 25 ERRORS		
6099	042614			ERRHRD	ERRNO,T31RDF,PKTSSR	;TSSR INCORRECT AFTER READ DATA		
	042614	104456					TRAP	C\$ERHRD
	042616	000477					.WORD	319
	042620	043403					.WORD	T31RDF
	042622	011670					.WORD	PKTSSR
6100	042624		280\$:	CKLOOP		;LOOP IF SELECTED		
	042624	104406					TRAP	C\$CLP1
6101	042626	013701	043046	MOV	T31BFR+6,R1	;PICK UP XSTO		
6102	042632	010102		MOV	R1,R2	;SET UP EXPECTED		
6103	042634	052702	000002	BIS	#BIT1,R2	;SET BOT BIT IN EXPECTED		
6104	042640	020102		CMP	R1,R2	;DOES EXP = REC'D		
6105	042642	001406		BEQ	285\$	;BR, IF EQUAL (OK)		
6106	042644	004737	020070	JSR	PC,FATCHK	;INC AND CHECK FOR MORE THAN 25 ERRORS		
6110	042650			ERRHRD	ERRNO,T31BOT,EXPREC	;TAPE NOT AT BOT AFTER REWIND		
	042650	104456					TRAP	C\$ERHRD
	042652	000500					.WORD	320
	042654	044205					.WORD	T31BOT
	042656	016334					.WORD	EXPREC
6111	042660		285\$:	CKLOOP		;LOOP IF SELECTED		
	042660	104406					TRAP	C\$CLP1
6112	042662	012737	140001	MOV	#140001,T31PK3	;READ,ACK,CVC=1 COMMAND		
6113	042670	012704	043150	MOV	#T31PK3,R4	;SET UP R4 WITH PACKET ADDRESS		
6114	042674	012737	000144	MOV	#100.,T31SZ	;SET UP RECORD SIZE IN PACKET		
6115	042702	010465	177776	MOV	R4,TSDB(R5)	;ISSUE COMMAND		
6116	042706	004737	017110	JSR	PC,WAITF	;WAIT FOR SSR TO SET		
6117	042712	016501	000000	MOV	TSSR(R5),R1	;GET TSSR CONTENTS		
6118	042716	012702	000200	MOV	#SSR,R2	;SET UP EXPECTED		
6119	042722	020102		CMP	R1,R2	;ARE THEY EQUAL		
6120	042724	001406		BEQ	290\$	;BR, IF OK		
6121	042726	004737	020070	JSR	PC,FATCHK	;INC AND CHECK FOR MORE THAN 25 ERRORS		
6125	042732			ERRHRD	ERRNO,T31RDE,PKTSSR	;TSSR INCORRECT AFTER READ DATA		
	042732	104456					TRAP	C\$ERHRD
	042734	000501					.WORD	321
	042736	043204					.WORD	T31RDE
	042740	011670					.WORD	PKTSSR
6126	042742		290\$:	CKLOOP		;LOOP IF SELECTED		
	042742	104406					TRAP	C\$CLP1
6127	042744	017701	140122	MOV	@FREE,R1	;GET DATA READ		
6128	042750	012702	000144	MOV	#100.,R2	;READ EXPECTED		
6129	042754	020102		CMP	R1,R2	;DID TAPE STAY POS.TIONED		
6130	042756	001406		BEQ	330\$	;BR, IF EXPD = RECD		
6131	042760	004737	020070	JSR	PC,FATCHK	;INC AND CHECK FOR MORE THAN 25 ERRORS		
6135	042764			ERRHRD	ERRNO,T31WNH,EXPREC	;TAPE POSITION NOT CORRECT AFTER INIT		
	042764	104456					TRAP	C\$ERHRD
	042766	000502					.WORD	322
	042770	043250					.WORD	T31WNH
	042772	016334					.WORD	EXPREC
6136								

CZTUZAO TU80 FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 92-3
TEST 3: NO-OP ("CLEAN TAPE") AND INITIALIZE

```

042774
042774 104403
6138
6139
6140
6141 042776 004737 017344 JSR PC,TSTLOOP ;DO WE NEED TO ITERATE TEST
6142 043002 103002 BCC 163$ ;BR, IF NO LOOP REQUIRED
6143 043004 000137 041352 JMP T31LOOP ;EXECUTE AGAIN
6144 043010 163$: EXIT TST ;ALL DONE THIS TEST
043010 104432 TRAP C$EXIT
043012 003614 .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		;	LOCAL STORAGE FOR THIS TEST		
6148		;			
6150	043014		.BLKB	10-<.-TUV2A&7>	
6152	043020		T31PACKET:		;COMMAND PACKET FOR TEST
6153	043020	100004	.WORD	100004	;WRITE CHARACTERISTICS COMMAND, WITH , ACK
6154	043022	043030	.WORD	T31DATA	;ADDRESS OF CHARACTERISTICS BLOCK
6155	043024	000000	.WORD	0	
6156	043026	000012	.WORD	10.	;STARTING VALUE OF BLOCK SIZE
6157	043030		T31DATA:		;CHARACTERISTICS DATA BLOCK
6158	043030	043040	.WORD	T31BFR	;ADDRESS OF MESSAGE BUFFER
6159	043032	000000	.WORD	0	
6160	043034	000024	.WORD	20.	;LENGTH OF MESSAGE BUFFER
6161	043036	000000	.WORD	0	
6162	043040		T31BFR: .BLKW	25.	;MESSAGE BUFFER
6163			;		
6164			;	WRITE SUBSYSTEM MEMORY COMMAND PACKET	
6165			;		
6167	043122		.BLKB	10-<.-TUV2A&7>	
6169	043130		T31PK2:		
6170	043130	100006	.WORD	100006	;WRITE SUB SYS MEM COMMAND, AND ACK
6171	043132	043160	.WORD	T31BF2	;ADDRESS OF SELECT BLOCK DATA
6172	043134	000000	.WORD	0	
6173	043136	000006	.WORD	6.	;SIZE OF DATA PACKET
6174					
6176	043140		.BLKB	10-<.-TUV2A&7>	
6178	043150		T31PK3:		
6179	043150	100005	.WORD	100005	;REREAD COMMAND, AND ACK
6180	043152		T31RB:		
6181	043152	003072	T31WB: .WORD	FREE	;ADDRESS OF WRITE BUFFER
6182	043154	000000	.WORD	0	
6183	043156	000000	T31SZ: .WORD	0	;SIZE OF BUFFER (EXTENT)
6184			.EVEN		
6185			;		
6186			;		
6187			;		
6188	043160		T31BF2:		
6189	043160	010	T31BS0: .BYTE	10	;BSEL0 AREA
6190	043161	200	T31BS1: .BYTE	200	;BSEL1 AREA
6191	043162	000000	T31S2: .WORD	0	;SEL 2 AREA
6192	043164	000000	T31S3: .WORD	0	;DATA AREA
6193			;		
6194			;		
6195			.EVEN		
6196			;	TAPE MOTION PACKET COMMAND VALUES	
6197					
6198	043166	100205	T31RN: .WORD	100205	;REREAD DATA (NEXT)
6199	043170	100605	T31WDR: .WORD	100605	;REREAD DATA RETRY
6200	043172	102205	T31CON: .WORD	102205	;WRITE CONTINUOUS
6201	043174	177777	.WORD	177777	;END OF DATA
6202					
6203			;		
6204	043176	000000	T31CNT: .WORD	0	;TAPE TIMER COUNTER STORAGE AREA
6205	043200	000000	T31CNU: .WORD	0	;TAPE TIMER COUNTER STORAGE AREA
6206	043202	000000	T31DLY: .WORD	0	;DELAY COUNTER
6207					

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

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6209
6210
6211
6212
6213
6214
6215
6216 043204 124 123 123 T31RDE: .ASCIZ 'TSSR Not Correct After READ Command'
6217 043250 124 141 160 T31WNH: .ASCIZ 'Tape Position Incorrect After INITIALIZE Command'
6218 043331 124 141 160 T31WNG: .ASCIZ 'Tape Position Incorrect After NOP Command'
6219 043403 124 123 123 T31RDF: .ASCIZ 'TSSR Incorrect After READ DATA Command'
6220 043452 122 105 122 T31RRF: .ASCIZ 'REREAD Previous (Space Reverse, Read Forward) Command Failed'
6221 043547 120 117 123 T31SC: .ASCIZ 'POSITION (Space Command) Failed, TSSR Not Correct'
6222 043631 122 111 102 T31LOR: .ASCIZ 'RIB NOT SET AFTER READ REVERSE INTO BOT'
6223 043701 124 123 123 T31WDF: .ASCIZ 'TSSR Not Correct After Illegal Mode Bits Set'
6224 043756 111 154 154 T31LOQ: .ASCIZ 'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
6225 044037 122 105 122 T31SSR: .ASCIZ 'REREAD COMMAND Not Accepted'
6226 044073 124 123 123 T31WDE: .ASCIZ 'TSSR Not Correct After NO-OP ('CLEAN TAPE') AND INITIALIZE Command, At BOT'
6227 044205 124 141 160 T31BOT: .ASCIZ 'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
6228 044300 116 117 055 T31TIM: .ASCIZ 'NO-OP ('CLEAN TAPE') AND INITIALIZE'S Erase Tape Not Long Enough'
6229 044400 122 105 122 T31EOT: .ASCIZ 'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
6230 044457 124 123 123 T31TM: .ASCIZ 'TSSR Not Correct After REREAD COMMAND Reject'
6231 044534 122 145 167 T31RWV: .ASCIZ 'Rewind (POSITION) Command Not Accepted'
6232 044603 122 101 115 T31RNC: .ASCIZ 'RAM Error, Correct Data Pattern Not In Ram'
6233 044656 124 123 123 T31AM3: .ASCIZ 'TSSR Init. Failed After REREAD COMMAND'
6234 044725 104 162 151 T31OFL: .ASCIZ 'Drive 7 Select Failed To Set 'OFL' In TSSR'
6235 045000 124 123 123 T31WDD: .ASCIZ 'TSSR Not Correct After REHEAD DATA Command, SWB Bit Set'
6236 045070 124 123 123 T31WDC: .ASCIZ 'TSSR Not Correct After REREAD DATA Command'
6237 045143 103 126 103 T31VCK: .ASCIZ 'CVC Set, Didn't Reset VCK In Message Buffer'
6238 045216 124 123 102 T31BA: .ASCIZ 'TSBA Not Correct After REREAD DATA Command'
6239 045271 127 122 111 T31WSS: .ASCIZ 'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
6240 045360 122 145 141 T31LON: .ASCIZ 'Reading Long Record Failed To Set RLL Bit In XST0'
6241 045442 122 145 141 T31LOP: .ASCIZ 'Reading Long Record Failed To Set RLS Bit In XST0'
6242 045524 122 145 163 T31PBP: .ASCIZ 'Residual Byte Count Incorrect After Short Record Read'
6243 045612 122 145 141 T31TRL: .ASCIZ 'Reading Long Record Failed To Give Tape Status Alert'
6244 045700 116 117 055 T31NEF: .ASCIZ 'NO-OP AND INITIALIZE, At First Record, Failed To Set RIB Bit in XSTAT3'
6245 046021 124 123 123 T31SCF: .ASCIZ 'TSSR Not Correct After SPACE RECORDS Command'
6246 046076 124 123 123 T31TSA: .ASCIZ 'TSSR Not Correct After NO-OP ('CLEAN TAPE') AND INITIALIZE, Into BOT'
6247 046203 124 123 123 T31WRF: .ASCIZ 'TSSR Not Correct After NO-OP ('CLEAN TAPE') AND INITIALIZE Command'
6248 046306 104 141 164 T31DTA: .ASCIZ 'Data Compare Error, Data Read From Tape Not Equal To Written'
6249 046403 116 117 055 T31ID: .ASCIZ 'NO-OP ('Clean Tape') And INITIALIZE'

```

```

: +
: LOCAL TEXT MESSAGES FOR TEST
: -

```

```

: +
: ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
: WRITE SUBSYSTEM MEMORY COMMAND
: -

```

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6250
6251
6252
6253
6254
6255
6256
6257
6258 046450
6259 046450
6260 046454 012701 043020
6261 046460 012721 100004
6262 046464 012721 043030
6263 046470 005021
6264 046472 012721 000012
6265 046476 012721 043040

T31REST:
  SAVREG
  MOV #T31PACKET,R1
  MOV #100004,(R1)+
  MOV #T31DATA,(R1)+
  CLR (R1)+
  MOV #10,(R1)+
  MOV #T31BFR,(R1)+

: SAVE THE REGISTERS
: START OF THE PACKET
: WRITE SUBSYSTEM MEM. WITH ACK.
: ADDRESS OF CHARAISTICS DATA BLOCK
: EXTENDED ADDRESS
: SIZE OF DATA BLOCK IN BYTES
: ADDRESS OF MESSAGE BUFFER

```

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

6266	046502	005021		CLR	(R1)+	
6267	046504	012721	000024	MOV	#20.,(R1)+	;LENGTH OF MESSAGE BUFFER
6268	046510	005021		CLR	(R1)+	
6269	046512	012711	000000	MOV	#0.(R1)	;SELECT DRIVE ZERO
6270	046516	012702	000030	MOV	#24.,R2	;NUMBER OF LOCATIONS TO BE CLEARED
6271	046522	012762	177777 043040 648:	MOV	#177777,T31BFR(R2)	;ALL ONES TO MESSAGE BUFFER
6272	046530	005742		TST	-(R2)	;NEXT LOCATION
6273	046532	022702	000000	CMP	#0,R2	;AT END OF LOOP YET
6274	046536	001371		BNE	648	;KEEP GOING UNTIL DONE
6275	046540	000207		RTS	PC	;RETURN
6276						
6277						
6278	046542			T31RT2:		
6279	046542			SAVREG		;SAVE THE REGISTERS
6280	046546	012701	043130	MOV	#T31PK2,R1	;START OF THE PACKET
6281	046552	012721	100006	MOV	#100006,(R1)+	;WRITE SUBSYSTEM MEM. WITH ACK.
6282	046556	012721	043160	MOV	#T31BF2,(R1)+	;ADDRESS OF DATA BLOCK
6283	046562	005021		CLR	(R1)+	;EXTENDED ADDRESS
6284	046564	012721	000006	MOV	#6.,(R1)+	;SIZE OF DATA BLOCK IN BYTES
6285	046570	005021		CLR	(R1)+	
6286	046572	012701	043160	MOV	#T31BF2,R1	;POINT TO DATA SEL AREA
6287	046576	005021		CLR	(R1)+	
6288	046600	005011		CLR	(R1)	
6289	046602	000207		RTS	PC	;RETURN
6290	046604			T31RT3:		
6291	046604			SAVREG		;SAVE REGISTERS
6292	046610	012701	043150	MOV	#T31PK3,R1	;SET UP POINTER ADDRESS
6293	046614	005021		CLR	(R1)+	;COMMAND SPACE
6294	046616	005021		CLR	(R1)+	;ADDRESS OF DATA BLOCK
6295	046620	005021		CLR	(R1)+	;EXTENDED ADDRESS
6296	046622	005011		CLR	(R1)	;SIZE OF DATA TRANSFER BLOCK
6297	046624	000207		RTS	PC	;RETURN
6298	046626			ENDTST		
	046626					
	046626	104401				

L10050: TRAP CSETST

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 TEST 4: ERASE AND OPERATION INCOMPLETE

.SBTTL TEST 4: Erase And Operation Incomplete

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

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

THE TEST CONSISTS OF THE FOLLOWING 3 SUBTESTS

BGNTST

T4::

CLR	FATFLG		:CLEAR FATAL ERROR FLAG
CLR	KTFLG		:HOLD OFF KT11
MOV	#EPRT1,EPRTSW		:PRIMARY ERROR MESSAGE
MOV	#TST32ID,R0		:ASCII MESSAGE TO IDENTIFY TEST
JSR	PC,TSTSETUP		:DO INITIAL TEST SETUP
MOV	#1,LOOPCNT		:PERFORM 1 ITERATIONS
CLR	T32CNT		:CLEAR TAPE RECORD COUNTER

TEST 4, SUBTEST 1

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

T32LOOP:

6301
 6302
 6303
 6304
 6305
 6306
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 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

Address	Offset	Label	Instruction	Comment
6350				
6351	046670		BGNSUB	
	046670			
	046670	104402		
6352	046672	004737	052500	
6353	046676	004737	052572	
6354	046702	004737	052622	
6355	046706	012737	176750	051314
6356	046714	004737	016634	10\$:
6357	046720	103426		
6358	046722			
	046722	012727	000250	
	046726	000000		
	046730	013727	002116	
	046734	000000		
	046736	005367	177772	
	046742	001375		
	046744	005367	177756	
	046750	001367		
6359	046752	005337	051314	
6360	046756	001356		
6361	046760	004737	020070	
6365	046764	010001		
6366	046766			
	046766	104455		
	046770	000621		
	046772	003550		
	046774	011656		
6367	046776			20\$:
6368	046776	012704	051120	
6369	047002	004737	010322	
6370	047006	103407		
6371	047010	004737	020070	
6375	047014	010001		
6376	047016			
	047016	104456		
	047020	000622		
	047022	004754		
	047024	011656		
6377	047026			25\$:
	047026	104406		
6378	047030	004737	010424	
6379	047034	103411		
6380	047036	010004		
6381	047040	016501	000000	
6382	047044	004737	020070	
6386	047050			
	047050	104456		
	047052	000623		
	047054	051500		
	047056	011670		
6387	047060			26\$:
	047060	104406		
6388	047062	012703	000400	
6389	047066	013737	003072	051252
6390	047074	012737	140005	051250
6391	047102	012704	051250	

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 TEST 4: ERASE AND OPERATION INCOMPLETE

6392	047106	010337	051256	27\$:	MOV	R3,T32SZ	:SET UP RECORD SIZE IN PACKET
6393	047112	010465	177776		MOV	R4,TSDB(R5)	:ISSUE COMMAND
6394	047116	004737	017110		JSR	PC,WAITF	:WAIT FOR SSR TO SET
6395	047122	016501	000000		MOV	TSSR(R5),R1	:GET TSSR CONTENTS
6396	047126	012702	000200		MOV	#SSR,R2	:SET UP EXPECTED
6397	047132	020102			CMP	R1,R2	:ARE THEY EQUAL
6398	047134	001406			BEQ	28\$	:BR, IF OK
6399	047136	004737	020070		JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS
6403							:SOFT ERROR, DON'T CARE ABOUT WRITE
6404							:COMMAND'S RESULTS - CHECKING THE
6405							:ERASE COMMAND
6406	047142					ERRSOFT ERRNO,T32WDC,PKTSSR	:TSSR INCORRECT AFTER WRITE DATA
	047142	104457					TRAP CSERSOFT
	047144	000624					.WORD 404
	047146	052336					.WORD T32WDC
	047150	011670					.WORD PKTSSR
6407	047152			28\$:	CKLOOP		:LOOP IF SELECTED
	047152	104406					TRAP CSCLP1
6408	047154	005723			TST	(R3)+	:BUMP RECORD COUNTER
6409	047156	020327	001002		CMP	R3,#514.	:AT MAX SIZE YET
6410	047162	001351			BNE	27\$	:BR, IF NOT AT END OF LOOP
6411	047164	004737	010424		JSR	PC,REWIND	:CALL TAPE REWIND COMMAND
6412	047170	103411			BCS	30\$	:BR, IF NO PROBLEM
6413	047172	016501	000000		MOV	TSSR(R5),R1	:GET TSSR CONTENTS
6414	047176	010004			MOV	R0,R4	:SET UP REWIND PACKET ADDRESS
6415	047200	004737	020070		JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS
6419	047204				ERRHRD	ERRNO,T32RWN,PKTSSR	:REWIND NOT ACCEPTED
	047204	104456					TRAP CSERHRD
	047206	000625					.WORD 405
	047210	051500					.WORD T32RWN
	047212	011670					.WORD PKTSSR
6420	047214			30\$:	CKLOOP		:LOOP IF SELECTED
	047214	104406					TRAP CSCLP1
6421	047216	013701	051146		MOV	T32BFR+6,R1	:PICK UP XSTO
6422	047222	010102			MOV	R1,R2	:SET UP EXPECTED
6423	047224	052702	000002		BIS	#BIT1,R2	:SET BOT BIT IN EXPECTED
6424	047230	020102			CMP	R1,R2	:DOES EXP = REC'D
6425	047232	001406			BEQ	40\$	:BR, IF EQUAL (OK)
6426	047234	004737	020070		JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS
6430	047240				ERRHRD	ERRNO,T32BOE,EXPREC	:TAPE AT BOT AFTER ERASE
	047240	104456					TRAP CSERHRD
	047242	000626					.WORD 406
	047244	052166					.WORD T32BOE
	047246	016334					.WORD EXPREC
6431	047250			40\$:	CKLOOP		:LOOP IF SELECTED
	047250	104406					TRAP CSCLP1
6432	047252	012737	140411	051250	MOV	#140411,T32PK3	:ERASE TAPE,CVC=1,ACK COMMAND
6433	047260	012704	051250		MOV	#T32PK3,R4	:SET UP R4 WITH PACKET ADDRESS
6434	047264	010465	177776		MOV	R4,TSDB(R5)	:ISSUE COMMAND
6435	047270	004737	017110		JSR	PC,WAITF	:WAIT FOR SSR TO SET
6436	047274	016501	000000		MOV	TSSR(R5),R1	:GET TSSR CONTENTS
6437	047300	012702	000200		MOV	#SSR,R2	:SET UP EXPECTED
6438	047304	020102			CMP	R1,R2	:ARE THEY EQUAL
6439	047306	001406			BEQ	50\$	:BR, IF OK
6440	047310	004737	020070		JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS
6444	047314				ERRHRD	ERRNO,T32ERA,PKTSSR	:TSSR INCORRECT AFTER ERASE DATA
	047314	104456					TRAP CSERHRD

	047316	000627					.WORD	407
	047320	051616					.WORD	T32ERA
	047322	011670					.WORD	PKTSSR
6445	047324		50\$:	CKLOOP		:LOOP IF SELECTED		
	047324	104406					TRAP	C\$CLP1
6446	047326	013701	051146	MOV	T32BFR+6,R1	:PICK UP XSTO		
6447	047332	010102		MOV	R1,R2	:SET UP EXPECTED		
6448	047334	042702	000002	BIC	#BIT1,R2	:SET BOT BIT IN EXPECTED		
6449	047340	020102		CMP	R1,R2	:DOES EXP = REC'D		
6450	047342	001406		BEQ	55\$	:BR, IF EQUAL (OK)		
6451	047344	004737	020070	JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS		
6455	047350			ERRHRD	ERRNO,T32BOE,EXPREC	:TAPE NOT AT BOT AFTER REWIND		
	047350	104456					TRAP	C\$ERHRD
	047352	000630					.WORD	408
	047354	052166					.WORD	T32BOE
	047356	016334					.WORD	EXPREC
6456	047360		55\$:	CKLOOP		:LOOP IF SELECTED		
	047360	104406					TRAP	C\$CLP1
6457	047362	013737	003072	MOV	FREE,T32RB	:ADDRESS OF BUFFER		
6458	047370	012737	140401	MOV	#140401,T32PK3	:READ REVERSE,ACK,CVC=1 COMMAND		
6459	047376	012737	000400	MOV	#256.,T32SZ	:SET UP THE SIZE OF RECORD		
6460	047404	012704	051250	MOV	#T32PK3,R4	:SET UP R4 WITH PACKET ADDRESS		
6461	047410	010465	177776	MOV	R4,TSDB(R5)	:ISSUE COMMAND		
6462	047414	004737	017110	JSR	PC,WAITF	:WAIT FOR SSR TO SET		
6463	047420	016501	000000	MOV	TSSR(R5),R1	:GET TSSR CONTENTS		
6464	047424	012702	100204	MOV	#SSR!SC!BIT2,R2	:SET UP EXPECTED TAPE STATUS ALERT		
6465	047430	020102		CMP	R1,R2	:ARE THEY EQUAL		
6466	047432	001406		BEQ	180\$	:BR, IF OK		
6467	047434	004737	020070	JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS		
6471	047440			ERRHRD	ERRNO,T32TSA,PKTSSR	:TSSR INCORRECT AFTER READ DATA		
	047440	104456					TRAP	C\$ERHRD
	047442	000631					.WORD	409
	047444	052111					.WORD	T32TSA
	047446	011670					.WORD	PKTSSR
6472	047450		180\$:	CKLOOP		:LOOP IF SELECTED		
	047450	104406					TRAP	C\$CLP1
6473	047452	013701	051154	MOV	T32BFR+14,R1	:GET XST3 STATUS WORD		
6474	047456	010102		MOV	R1,R2	:SET UP EXPECTED		
6475	047460	052702	000001	BIS	#BIT0,R2	:SET THE RIB BIT		
6476	047464	020102		CMP	R1,R2	:ARE THEY EQUAL		
6477	047466	001406		BEQ	190\$	:BR, IF EQUAL (GOOD)		
6478	047470	004737	020070	JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS		
6482	047474			ERRHRD	ERRNO,T32RIB,EXPREC	:RIB SHOULD BE SET		
	047474	104456					TRAP	C\$ERHRD
	047476	000632					.WORD	410
	047500	051736					.WORD	T32RIB
	047502	016334					.WORD	EXPREC
6483	047504		190\$:					
6484	047504			ENDSUB		:>>>>>>>>> END SUBTEST >>>>>>>>>		
	047504					L10054:		
	047504	104403					TRAP	C\$ESUB

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6520	:	-

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

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

205:

```

JSR      PC,T32REST
JSR      PC,T32RT2
JSR      PC,T32RT3
JSR      PC,SOFINIT
BCS      208
JSR      PC,FATCHK
MOV      R0,R1
ERRDF    ERNO,SFIERR,SFMSG

MOV      #T32PACKET,R4
JSR      PC,WRTCHR
BCS      238
JSR      PC,FATCHK
MOV      R0,R1
ERRHRD   ERNO,WRTMSG,SFMSG

```

```
;>>>>>>>>>> BEGIN SUBTEST >>>>>>>>>>
T4.2:
TRAP CSBSUB
;SET COMMAND PACKET
;SET UP OTHER COMMAND PACKET
;SET UP OTHER COMMAND PACKET
;DO INITIALIZE ON CONTROLLER
;BR IF INIT WAS OK
;INC AND CHECK FOR MORE THAN 25 ERRORS
;CONTENTS OF TSSR REGISTER
;FATAL ERROR TSSR WAS NOT OK
TRAP CSERDF
.WORD 411
.WORD SFIERR
.WORD SFIMSG
;SUBROUTINE NEEDS PACKET ADDRESS
;ISSUE WRITE CHARACTERISTICS
;BR, IF COMMAND ISSUED OK
;INC AND CHECK FOR MORE THAN 25 ERRORS
;SAVE CONTENTS OF TSSR
;WRITE CHARACTERISTICSC FAILED
TRAP CSERHRD
```

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 TEST 4: ERASE AND OPERATION INCOMPLETE

	047572	000634					.WORD	412
	047574	004754					.WORD	WRTMSG
	047576	011656					.WORD	SFMSG
6542	047600		238:	CKLOOP				:LOOP IF SELECTED
	047600	104406					TRAP	C\$CLP1
6543	047602	004737	010424	JSR	PC,REWIND			:CALL TAPE REWIND COMMAND
6544	047606	103407		BCS	30\$			:BR, IF NO PROBLEM
6545	047610	010004		MOV	R0,R4			:SET UP REWIND PACKET ADDRESS
6546	047612	004737	020070	JSR	PC,FATCHK			:INC AND CHECK FOR MORE THAN 25 ERRORS
6550	047616			ERRHRD	ERRNO,T32RWN,PKTSSR			:REWIND NOT ACCEPTED
	047616	104456					TRAP	C\$ERHRD
	047620	000635					.WORD	413
	047622	051500					.WORD	T32RWN
	047624	011670					.WORD	PKTSSR
6551	047626		308:	CKLOOP				:LOOP IF SELECTED
	047626	104406					TRAP	C\$CLP1
6552	047630	013701	051146	MOV	T32BFR+6,R1			:PICK UP XSTO
6553	047634	010102		MOV	R1,R2			:SET UP EXPECTED
6554	047636	052702	000002	BIS	#BIT1,R2			:SET BOT BIT IN EXPECTED
6555	047642	020102		CMP	R1,R2			:DOES EXP = REC'D
6556	047644	001406		BEQ	40\$			:BR, IF EQUAL (OK)
6557	047646	004737	020070	JSR	PC,FATCHK			:INC AND CHECK FOR MORE THAN 25 ERRORS
6561	047652			ERRHRD	ERRNO,T32BOT,EXPREC			:TAPE NOT AT BOT AFTER REWIND
	047652	104456					TRAP	C\$ERHRD
	047654	000636					.WORD	414
	047656	051316					.WORD	T32BOT
	047660	016334					.WORD	EXPREC
6562	047662		408:	CKLOOP				:LOOP IF SELECTED
	047662	104406					TRAP	C\$CLP1
6563	047664	012703	000144	MOV	#100.,R3			:STARTING RECORD SIZE
6564	047670	010300		MOV	R3,R0			:SET UP MEMORY FILL
6565	047672	004737	020362	JSR	PC,FILLMEM			:CALL MEMORY FILLER
6566	047676	013737	003072	MOV	FREE,T32WB			:STARTING WRITE BUFFER ADDRESS
6567	047704	012737	140005	MOV	#140005,T32PK3			:WRITE DATA,CVC=1,ACK COMMAND
6568	047712	012704	051250	MOV	#T32PK3,R4			:SET UP R4 WITH PACKET ADDRESS
6569	047716	010300		MOV	R3,R0			:SET PATTERN IN CORRECT REGISTER
6570	047720	004737	020362	JSR	PC,FILLMEM			:FILL MEMORY WITH RECORD SIZE
6571	047724	010337	051256	MOV	R3,T32SZ			:SET UP RECORD SIZE IN PACKET
6572	047730	010465	177776	MOV	R4,T5DB(R5)			:ISSUE COMMAND
6573	047734	004737	017110	JSR	PC,WAITF			:WAIT FOR SSR TO SET
6574	047740	016501	000000	MOV	TSSR(R5),R1			:GET TSSR CONTENTS
6575	047744	012702	000200	MOV	#SSR,R2			:SET UP EXPECTED
6576	047750	020102		CMP	R1,R2			:ARE THEY EQUAL
6577	047752	001406		BEQ	80\$			:BR, IF OK
6578	047754	004737	020070	JSR	PC,FATCHK			:INC AND CHECK FOR MORE THAN 25 ERRORS
6582								:SOFT ERROR, DON'T CARE ABOUT WRITE
6583								:COMMAND'S RESULTS - CHECKING THE
6584								:ERASE COMMAND
6585	047760			ERRSOFT	ERRNO,T32WDC,PKTSSR			:TSSR INCORRECT AFTER WRITE DATA
	047760	104457					TRAP	C\$ERSOFT
	047762	000637					.WORD	415
	047764	052336					.WORD	T32WDC
	047766	011670					.WORD	PKTSSR
6586	047770		808:	CKLOOP				:LOOP IF SELECTED
	047770	104406					TRAP	C\$CLP1
6587	047772	005723		TST	(R3)+			:BUMP RECORD SIZE COUNTER
6588	047774	020327	000156	CMP	R3,#110.			:AT 160 SIZE YET

Line	Address	Offset	Hex	Label	Operation	Comments	Trap	CS
6589	050000	001341			BNE	65\$		
6590	050002	004737	01C424		JSR	PC,REWIND		
6591	050006	103407			BCS	230\$		
6592	050010	010001			MOV	R0,R1		
6593	050012	004737	020070		JSR	PC,FATCHK		
6597	050016				ERRHRD	ERRNO,T32RWN,EXPREC		
	050016	104456					TRAP	C\$ERHRD
	050020	000640					.WORD	416
	050022	051500					.WORD	T32RWN
	050024	016334					.WORD	EXPREC
6598	050026			230\$:	CKLOOP		:LOOP IF SELECTED	
	050026	104406					TRAP	C\$CLP1
6599	050030	013701	051146		MOV	T32BFR+6,R1		
6600	050034	010102			MOV	R1,R2		
6601	050036	052702	000002		BIS	#BIT1,R2		
6602	050042	020102			CMP	R1,R2		
6603	050044	001406			BEQ	240\$		
6604	050046	004737	020070		JSR	PC,FATCHK		
6608	050052				ERRHRD	ERRNO,T32BOT,EXPREC		
	050052	104456					TRAP	C\$ERHRD
	050054	000641					.WORD	417
	050056	051316					.WORD	T32BOT
	050060	016334					.WORD	EXPREC
6609	050062			240\$:	CKLOOP		:LOOP IF SELECTED	
	050062	104406					TRAP	C\$CLP1
6610	050064	012703	000001		MOV	#1,R3		
6611	050070	004737	010130		JSR	PC,SPACE		
6612	050074	012737	140411	051250	MOV	#140411,T32PK3		
6613	050102	012704	051250		MOV	#T32PK3,R4		
6614	050106	010465	177776		MOV	R4,TSDB(R5)		
6615	050112	004737	017110		JSR	PC,WAITF		
6616	050116	016501	000000		MOV	TSSR(R5),R1		
6617	050122	012702	000200		MOV	#SSR,R2		
6618	050126	020102			CMP	R1,R2		
6619	050130	001406			BEQ	280\$		
6620	050132	004737	020070		JSR	PC,FATCHK		
6624	050136				ERRHRD	ERRNO,T32ERA,PKTSSR		
	050136	104456					TRAP	C\$ERHRD
	050140	000642					.WORD	418
	050142	051616					.WORD	T32ERA
	050144	011670					.WORD	PKTSSR
6625	050146			280\$:	CKLOOP		:LOOP IF SELECTED	
	050146	104406					TRAP	C\$CLP1
6626	050150	013737	003072	051252	MOV	FREE,T32RB		
6627	050156	012737	140401	051250	MOV	#140401,T32PK3		
6628	050164	012737	000144	051256	MOV	#100.,T32SZ		
6629	050172	012704	051250		MOV	#T32PK3,R4		
6630	050176	010465	177776		MOV	R4,TSDB(R5)		
6631	050202	004737	017110		JSR	PC,WAITF		
6632	050206	016501	000000		MOV	TSSR(R5),R1		
6633	050212	012702	000200		MOV	#SSR,R2		
6634	050216	020102			CMP	R1,R2		
6635	050220	001406			BEQ	290\$		
6636	050222	004737	020070		JSR	PC,FATCHK		
6640	050226				ERRHRD	ERRNO,T32TSA,PKTSSR		
	050226	104456					TRAP	C\$ERHRD
	050230	000643					.WORD	419

	050232	052111				.WORD	T32TSA
	050234	011670				.WORD	PKTSSR
6641	050236		290\$:	CKLOOP	;LOOP IF SELECTED	TRAP	C\$CLP1
	050236	104406					
6642	050240	017701	132626	MOV	@FREE,R1	;GET DATA READ	
6643	050244	012702	000144	MOV	#100.,R2	;SHOULD BE 100	
6644	050250	020102		CMP	R1,R2	;CHECK'EM OUT	
6645	050252	001406		BEQ	300\$	;BR, IF OK	
6646	050254	004737	020070	JSR	PC,FATCHK	;INC AND CHECK FOR MORE THAN 25 ERRORS	
6650	050260			ERRHRD	ERRNO,T32ECF,EXPREC	;ERASE COMMAND DIDN'T WORK	
	050260	104456				TRAP	C\$ERHRD
	050262	000644				.WORD	420
	050264	052255				.WORD	T32ECF
	050266	016334				.WORD	EXPREC
6651	050270		300\$:	CKLOOP	;LOOP IF SELECTED	TRAP	C\$CLP1
	050270	104406					
6652	050272		330\$:				
6653	050272			ENDSUB	>>>>>>>>>> END SUBTEST >>>>>>>>>>		
	050272				L10055:		
	050272	104403				TRAP	C\$ESUB

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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 RESULT 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 (WITH EOT=1) IS ENCOUNTERED. IF THE CONTROLLER OR TRANSPORT DOES NOT DETECT THE EOT, THE TRANSPORT WILL FAULT. THIS IS REPORTED AS A FATAL ERROR AND THE TEST IS ABORTED.
3. AN ADDITIONAL ERASE COMMAND IS ISSUED AND IT IS VERIFIED THAT TAPE STATUS ALERT TERMINATION RESULTS, WITH EOT=1.
4. IT IS VERIFIED THAT EACH OF THE FOLLOWING COMMANDS (ISSUED IN THE ORDER GIVEN) RESULTS IN UNRECOVERABLE ERROR TERMINATION WITH OPI=1: SPACE RECORDS REVERSE SKIP TAPE MARKS REVERSE READ REVERSE REREAD PREVIOUS (OPP=0) REREAD PREVIOUS (OPP=1) REREAD NEXT (OPP=1) REREAD NEXT (OPP=0) READ NEXT SKIP TAPE MARKS REVERSE SKIP TAPE MARKS FORWARD SPACE RECORDS FORWARD WRITE DATA RETRY

Address	Hex	Hex	Hex	Label	Comment	Comment	Comment
6692	050274						
6693	050274						
	050274	104402					
6694	050276	004737	052572	9\$:	JSR	PC,T32RT2	
6695	050302	004737	052500		JSR	PC,T32REST	
6696	050306	004737	052622		JSR	PC,T32RT3	
6697	050312	012737	176750	051314	MOV	#65000.,T32DLY	
6698	050320	004737	016634	10\$:	JSR	PC,SOFINIT	
6699	050324	103426			BCS	20\$	
6700	050326				DELAY	250	
	050326	012727	000250				MOV #250,(PC)+
	050332	000000					.WORD 0
	050334	013727	002116				MOV LSDLY,(PC)+
	050340	000000					.WORD 0
	050342	005367	177772				DEC -6(PC)
	050346	001375					BNE -.4
	050350	005367	177756				DEC -22(PC)
	050354	001367					BNE -.20
6701	050356	005337	051314		DEC	T32DLY	:BUMP COUNTER

6702	050362	001356		BNE	10\$		:BR, IF COUNTER NOT DONE
6703	050364	004737	020070	JSR	PC,FATCHK		:INC AND CHECK FOR MORE THAN 25 ERRORS
6707	050370	010001		MOV	R0,R1		:CONTENTS OF TSSR REGISTER
6708	050372			ERRDF	ERRNO,SFIERR,SFIMSG		:FATAL ERROR TSSR WAS NOT OK
	050372	104455				TRAP	C\$ERDF
	050374	000645				.WORD	421
	050376	003550				.WORD	SFIERR
	050400	011656				.WORD	SFIMSG
6709	050402		20\$:				
6710							
6711	050402	012704	051120	MOV	#T32PACKET,R4		:SUBROUTINE NEEDS PACKET ADDRESS
6712	050406	004737	010322	JSR	PC,WRTCHR		:ISSUE WRITE CHARACTERISTICS
6713	050412	103407		BCS	23\$		:BR, IF COMMAND ISSUED OK
6714	050414	004737	020070	JSR	PC,FATCHK		:INC AND CHECK FOR MORE THAN 25 ERRORS
6718	050420	010001		MOV	R0,R1		:SAVE CONTENTS OF TSSR
6719	050422			ERRHRD	ERRNO,WRTMSG,SFIMSG		:WRITE CHARACTERISTICS FAILED
	050422	104456				TRAP	C\$ERHRD
	050424	000646				.WORD	422
	050426	004754				.WORD	WRTMSG
	050430	011656				.WORD	SFIMSG
6720	050432		23\$:	CKLOOP			:LOOP IF SELECTED
	050432	104406				TRAP	C\$CLP1
6721	050434	004737	010424	JSR	PC,REWIND		:CALL TAPE REWIND COMMAND
6722	050440	103411		BCS	30\$		:BR, IF NO PROBLEM
6723	050442	016501	000000	MOV	TSSR(R5),R1		:GET TSSR CONTENTS
6724	050446	010004		MOV	R0,R4		:GET PACKET ADDRESS
6725	050450	004737	020070	JSR	PC,FATCHK		:INC AND CHECK FOR MORE THAN 25 ERRORS
6729	050454			ERRHRD	ERRNO,T32RWN,PKTSSR		:REWIND NOT ACCEPTED
	050454	104456				TRAP	C\$ERHRD
	050456	000647				.WORD	423
	050460	051500				.WORD	T32RWN
	050462	011670				.WORD	PKTSSR
6730	050464		30\$:	CKLOOP			:LOOP IF SELECTED
	050464	104406				TRAP	C\$CLP1
6731	050466	013701	051146	MOV	T32BFR+6,R1		:PICK UP XSTO
6732	050472	010102		MOV	R1,R2		:SET UP EXPECTED
6733	050474	052702	000002	BIS	#BIT1,R2		:SET BOT BIT IN EXPECTED
6734	050500	020102		CMP	R1,R2		:DOES EXP = REC'D
6735	050502	001406		BEQ	40\$		:BR, IF EQUAL (OK)
6736	050504	004737	020070	JSR	PC,FATCHK		:INC AND CHECK FOR MORE THAN 25 ERRORS
6740	050510			ERRHRD	ERRNO,T32BOT,EXPREC		:TAPE NOT AT BOT AFTER REWIND
	050510	104456				TRAP	C\$ERHRD
	050512	000650				.WORD	424
	050514	051316				.WORD	T32BOT
	050516	016334				.WORD	EXPREC
6741	050520		40\$:	CKLOOP			:LOOP IF SELECTED
	050520	104406				TRAP	C\$CLP1
6742	050522	012737	140411	MOV	#140411,T32PK3		:ERASE DATA,CVC=1,ACK COMMAND
6743	050530	012704	051250	MOV	#T32PK3,R4		:SET UP R4 WITH PACKET ADDRESS
6744	050534	010337	051256	MOV	R3,T32SZ		:SET UP RECORD SIZE IN PACKET
6745	050540	010465	177776	MOV	R4,T32DB(R5)		:ISSUE COMMAND
6746	050544	004737	017110	JSR	PC,WAITF		:WAIT FOR SSR TO SET
6747	050550	016501	000000	MOV	TSSR(R5),R1		:GET TSSR CONTENTS
6748	050554	012702	000200	MOV	#SSR,R2		:SET UP EXPECTED
6749	050560	020102		CMP	R1,R2		:ARE THEY EQUAL
6750	050562	001757		BEQ	65\$		:BR, IF OK
6751	050564	010102		MOV	R1,R2		:SAVE ORIG TSSR

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 TEST 4: ERASE AND OPERATION INCOMPLETE

6752	050566	042701	177760		BIC	#177760,R1		:ONLY SAVE 4 BITS	
6753	050572	122701	000004		CMPB	#BIT2,R1		:CHECK FOR REAL TAPE STATUS ALERT	
6754	050576	001410			BEQ	80\$		:BR, IF REAL TAPE STATUS ALERT	
6755	050600	010201			MOV	R2,R1		:RESTORE R1 FOR ERROR PRINTOUT	
6756	050602	004737	020070		JSR	PC,FATCHK		:INC AND CHECK FOR MORE THAN 25 ERRORS	
6760	050606				ERRHRD	ERRNO,T32WDC,PKTSSR		:TSSR INCORRECT AFTER WRITE DATA	
	050606	104456						TRAP	C\$ERHRD
	050610	000651						.WORD	425
	050612	052336						.WORD	T32WDC
	050614	011670						.WORD	PKTSSR
6761	050616	000741			BR	65\$		:KEEP GOING	
6762	050620			80\$:	CKLOOP			:LOOP IF SELECTED	
	050620	104406						TRAP	C\$CLP1
6763	050622	013701	051146		MOV	T32BFR+6,R1		:PICK UP XSTO	
6764	050626	010102			MOV	R1,R2		:SET UP EXPECTED	
6765	050630	052702	000001		BIS	#BIT0,R2		:SET EOT BIT IN EXPECTED	
6766	050634	020102			CMP	R1,R2		:DOES EXP = REC'D	
6767	050636	001406			BEQ	240\$		:BR, IF EQUAL (OK)	
6768	050640	004737	020070		JSR	PC,FATCHK		:INC AND CHECK FOR MORE THAN 25 ERRORS	
6772	050644				ERRHRD	ERRNO,T32EOT,EXPREC		:TAPE NOT AT EOT AFTER ERASE COMMANDS	
	050644	104456						TRAP	C\$ERHRD
	050646	000652						.WORD	426
	050650	051411						.WORD	T32EOT
	050652	016334						.WORD	EXPREC
6773	050654			240\$:	CKLOOP			:LOOP IF SELECTED	
	050654	104406						TRAP	C\$CLP1
6774	050656	012703	051260		MOV	#T32CMD,R3		:STARTING RECORD SIZE	
6775	050662	013737	003072	051252	MOV	FREE,T32RB		:STARTING READ BUFFER ADDRESS	
6776	050670	011337	051250		MOV	(R3),T32PK3		:READ DATA,ACK COMMAND	
6777	050674	012704	051250		MOV	#T32PK3,R4		:SET UP R4 WITH PACKET ADDRESS	
6778	050700	012700	177777		MOV	#177777,R0		:SET PATTERN IN CORRECT REGISTER	
6779	050704	004737	020362		JSR	PC,FILLMEM		:FILL MEMORY WITH ALL ONES	
6780	050710	012737	000144	051256	MOV	#100.,T32SZ		:SET UP RECORD SIZE IN PACKET	
6781	050716	010465	177776		MOV	R4,TSDB(R5)		:ISSUE COMMAND	
6782	050722	012737	000012	051314	MOV	#10.,T32DLY		:SET UP DELAY COUNTER	
6783	050730	004737	017110		JSR	PC,WAITF		:WAIT FOR SSR TO SET	
6784	050734	016501	000000		MOV	TSSR(R5),R1		:GET TSSR CONTENTS	
6785	050740	012702	100214		MOV	#SSR!SC!BIT2!BIT3,R2		:SET UP EXPECTED	
6786	050744	020102			CMP	R1,R2		:ARE THEY EQUAL	
6787	050746	001425			BEQ	280\$		:BR, IF OK	
6788	050750				DELAY	250		:DELAY FOR SSR TO BE SET	
	050750	012727	000250					MOV	#250,(PC)+
	050754	000000						.WORD	0
	050756	013727	002116					MOV	LSDLY,(PC)+
	050762	000000						.WORD	0
	050764	005367	177772					DEC	-6(PC)
	050770	001375						BNE	.-4
	050772	005367	177756					DEC	-22(PC)
	050776	001367						BNE	.-20
6789	051000	005337	051314		DEC	T32DLY		:COUNT DELAY ROUTINE DOWN	
6790	051004	001351			BNE	270\$		:BR, IF DELAY HAS NOT ENDED	
6791	051006	004737	020070		JSR	PC,FATCHK		:INC AND CHECK FOR MORE THAN 25 ERRORS	
6795	051012				ERRHRD	ERRNO,T32ECF,PKTSSR		:TSSR INCORRECT AFTER READ DATA	
	051012	104456						TRAP	C\$ERHRD
	051014	000653						.WORD	427
	051016	052255						.WORD	T32ECF
	051020	011670						.WORD	PKISSR

6796	051022		
	051022	104406	
6797	051024	013701	051154
6798	051030	010102	
6799	051032	052702	000100
6800	051036	020102	
6801	051040	001406	
6802	051042	004737	020070
6806	051046		
	051046	104456	
	051050	000654	
	051052	052403	
	051054	016334	
6807	051056		
	051056	104406	
6808	051060	005723	
6809	051062	021327	177777
6810	051066	001300	
6811	051070		
	051070		
	051070	104403	
6812			
6813			
6814			
6815	051072	004737	017344
6816	051076	103002	
6817	051100	000137	046670
6818	051104		
	051104	104432	
	051106	001536	

```

280$:      CKLOOP

           MOV      T32BFR+14,R1
           MOV      R1,R2
           BIS      #B116,R2
           CMP      R1,R2
           BEQ      290$
           JSR      PC,FATCHK
           ERHRD    ERNO,T32OP1,EXPREC

290$:      CKLOOP

           TST      (R3)+
           CMP      (R3),#177777
           BNE      265$

291$:      ENDSUB

:
:
:

           JSR      PC,TSTLOOP
           BCC      163$
           JMP      T32LOOP
163$:      EXIT      TST

```

[illegible]

6820		
6821		
6822		
6824	051110	
6826	051120	
6827	051120	100004
6828	051122	051130
6829	051124	000000
6830	051126	000012
6831	051130	
6832	051130	051140
6833	051132	000000
6834	051134	000024
6835	051136	000000
6836	051140	
6837		
6838		
6839		
6841	051222	
6843	051230	
6844	051230	100006
6845	051232	000000
6846	051234	000000
6847	051236	000006
6849	051240	
6851	051250	
6852	051250	100005
6853	051252	
6854	051252	003072
6855	051254	000000
6856	051256	000000
6857		
6858		
6859	051260	
6860	051260	140410
6861	051262	141410
6862	051264	140401
6863	051266	141001
6864	051270	161401
6865	051272	161001
6866	051274	141401
6867	051276	140001
6868	051300	141410
6869	051302	141010
6870	051304	141005
6871	051306	177777
6872		
6873	051310	000000
6874	051312	000000
6875	051314	000000

```

T32CNT: .WORD 0
T32CNU: .WORD 0
T32DLY: .WORD 0

```

```

:TAPE TIMER COUNTER STORAGE AREA
:TAPE TIMER COUNTER STORAGE AREA
:DELAY COUNTER

```

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 TEST 4: ERASE AND OPERATION INCOMPLETE

```

6877
6878
6879
6880
6881
6882
6883 051316 124 141 160 T32BOT: .ASCIZ 'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
6884 051411 124 141 160 T32EOT: .ASCIZ 'Tape Status Alert During Erase To EOT, But EOT Not Set'
6885 051500 122 145 167 T32RWN: .ASCIZ 'Rewind (POSITION) Command Not Accepted'
6886 051547 124 123 123 T32AM3: .ASCIZ 'TSSR Init. Failed After REREAD COMMAND'
6887 051616 124 123 123 T32ERA: .ASCIZ 'TSSR Not Correct After ERASE Command'
6888 051663 124 123 102 T32BA: .ASCIZ 'TSBA Not Correct After REREAD DATA Command'
6889 051736 122 105 101 T32RIB: .ASCIZ 'READ REVERSE, After ERASE From BOT, Failed To Set RIB In XST3'
6890 052034 124 123 123 T32SCF: .ASCIZ 'TSSR Not Correct After SPACE RECORDS Command'
6891 052111 124 123 123 T32TSA: .ASCIZ 'TSSR Not Correct After READ REVERSE into BOT'
6892 052166 102 117 124 T32BOE: .ASCIZ 'BOT (XST0) Still Set After Erase From Tape's BOT Marker'
6893 052255 105 122 101 T32ECF: .ASCIZ 'ERASE Failed To Clear Tape (Erase) Tape Properly'
6894
6895 052336 124 123 123 T32WDC: .ASCIZ 'TSSR Not Correct After ERASE Command'
6896 052403 117 120 111 T32OPI: .ASCIZ 'OPI Bit (XST3) Failed To Set'
6897 052440 105 162 141 T32ID: .ASCIZ 'Erase And Operation Incomplete'
6898
6899
6900
6901
6902
6903
6904
6905
6906 052500 T32REST:
6907 052500 SAVREG
6908 052504 012701 051120 MOV #T32PACKET,R1
6909 052510 012721 100004 MOV #100004,(R1)+
6910 052514 012721 051130 MOV #T32DATA,(R1)+
6911 052520 005021 CLR (R1)+
6912 052522 012721 000012 MOV #10,(R1)+
6913 052526 012721 051140 MOV #T32BFR,(R1)+
6914 052532 005021 CLR (R1)+
6915 052534 012721 000024 MOV #20,(R1)+
6916 052540 005021 CLR (R1)+
6917 052542 012711 000000 MOV #0,(R1)
6918 052546 012702 000030 MOV #24,R2
6919 052552 012762 177777 051140 64$: MOV #177777,T32BFR(R2)
6920 052560 005742 TST -(R2)
6921 052562 022702 000000 CMP #0,R2
6922 052566 001371 BNE 64$
6923 052570 000207 RTS PC
6924
6925
6926 052572 T32RT2:
6927 052572 SAVREG
6928 052576 012701 051230 MOV #T32PK2,R1
6929 052602 012721 100006 MOV #100006,(R1)+
6930 052606 005021 CLR (R1)+
6931 052610 005021 CLR (R1)+
6932 052612 012721 000006 MOV #6,(R1)+
6933 052616 005021 CLR (R1)+

```

;+
 ;LOCAL TEXT MESSAGES FOR TEST
 ;-
 ;+
 ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
 ;WRITE SUBSYSTEM MEMORY COMMAND
 ;-
 ;SAVE THE REGISTERS
 ;START OF THE PACKET
 ;WRITE SUBSYSTEM MEM. WITH ACK.
 ;ADDRESS OF CHARAISTICS DATA BLOCK
 ;EXTENDED ADDRESS
 ;SIZE OF DATA BLOCK IN BYTES
 ;ADDRESS OF MESSAGE BUFFER
 ;LENGTH OF MESSAGE BUFFER
 ;SELECT DRIVE ZERO
 ;NUMBER OF LOCATIONS TO BE CLEARED
 ;ALL ONES TO MESSAGE BUFFER
 ;NEXT LOCATION
 ;AT END OF LOOP YET
 ;KEEP GOING UNTIL DONE
 ;RETURN

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 TEST 4: ERASE AND OPERATION INCOMPLETE

6934 052620 000207
 6935 052622
 6936 052622
 6937 052626 012701 051250
 6938 052632 005021
 6939 052634 005021
 6940 052636 005021
 6941 052640 005011
 6942 052642 000207
 6943 052644
 052644
 052644 104401

T32RT3: RTS PC
 SAVREG
 MOV #T32PK3,R1
 CLR (R1)+
 CLR (R1)+
 CLR (R1)+
 CLR (R1)
 RTS PC
 ENDTST

;RETURN
 ;SAVE REGISTERS
 ;SET UP POINTER ADDRESS
 ;COMMAND SPACE
 ;ADDRESS OF DATA BLOCK
 ;EXTENDED ADDRESS
 ;SIZE OF DATA TRANSFER BLOCK
 ;RETURN

L10053: TRAP CSETST

CZTUZAO TUBO FRONT END PRT D
TEST 5: OPERATIONS AT EOT

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.SBTTL TEST 5: OPERATIONS AT EOT

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

THE TEST CONSISTS OF THE FOLLOWING 1 SUBTEST

BGNTST

T5::

CLR	FATFLG		;CLEAR FATAL ERROR FLAG
CLR	KTFLG		;HOLD OFF KT11
MOV	#EPR1,EPRSW		;PRIMARY ERROR MESSAGE
MOV	#TST34ID,R0		;ASCII MESSAGE TO IDENTIFY TEST
JSR	PC,TSTSETUP		;DO INITIAL TEST SETUP
MOV	#1,LOOPCNT		;PERFORM 1 ITERATIONS
CLR	T34CNT		;CLEAR TAPE RECORD COUNTER

TEST 5, SUBTEST 1

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

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

6947
6948
6949
6950
6951
6952
6953
6954
6955
6956
6957
6958
6959 052646

052646
6960 052646 005037 002170
6961 052652 005037 003100
6962 052656 012737 005672 002146
6967 052664 012700 057112
6968 052670 004737 017376
6969 052674 012737 000001 002164
6970 052702 005037 055542

6971
6972
6973
6974
6975
6976
6977
6978
6979
6980
6981
6982
6983
6984
6985
6986
6987
6988
6989
6990
6991
6992
6993
6994
6995
6996
6997
6998
6999
7000
7001
7002
7003
7004
7005
7006

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TEST 5: OPERATIONS AT EOT

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7007
7008
7009
7010
7011
7012
7013
7014
7015
7016
7017
7018
7019
7020
7021
7022
7023
7024
7025
7026
7027
7028
7029
7030
7031
7032
7033
7034 052706

.....
:-

T34LOOP:

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

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052706		
052706		
052706	104402	
052710	004737	057614
052714	004737	057750
052720	004737	057706
052724	012737	176750
052732	004737	016634
052736	103433	
052740		
052740	012727	000250
052744	000000	
052746	013727	002116
052752	000000	
052754	005367	177772
052760	001375	
052762	005367	177756
052766	001367	
052770	016501	000000
052774	032701	000200
053000	001012	
053002	005337	055544
053006	001351	
053010	004737	020070
053014	010001	
053016		

BGNSUB

```
;>>>>>>>>> BEGIN SUBTEST >>>>>>>>>
      T5.1:
```

TRAP CSBSUB

SET UP THE PACKET BUFFERS AND WAIT LONG TIME FOR SSR
THEN ISSUE A SOFT INITIALIZE

```
JSR      PC,T34REST
JSR      PC,T34RT3
JSR      PC,T34RT2
MOV      #65000.,T34DLY
JSR      PC,SOFINIT
BCS      20$
DELAY    250
```

```

;SET COMMAND PACKET
;RESTORE PACKET
;SET UP OTHER COMMAND PACKET
;SET UP COUNTER
;DO INITIALIZE ON CONTROLLER
;BR IF INIT WAS OK
;DELAY A WHILE

```

```
MOV      #250,(PC)+
.WORD    0
MOV      LSDLY,(PC)+
.WORD    0
DEC      -6(PC)
BNE      .-4
DEC      -22(PC)
BNE      .-20
```

```
MOV      TSSR(R5),R1
BIT      #SSR,R1
BNE      208
DEC      T34DLY
BNE      108
JSR      PC,FATCHK
MOV      R0,R1
ERRDF    ERKNO,SFIERR,SFIMSG
```

```

:GET TSSR STATUS
:CHECK FOR SSR SET
:BR, WHEN SSR IS SET
:BUMP COUNTER DOWN
:BR, IF MORE DELAY REQUIRED
:INC AND CHECK FOR MORE THAN 25 ERRORS
:CONTENTS OF TSSR REGISTER
:FATAL ERROR TSSR WAS NOT OK

```

CZTUZAO TUBO FRONT END PRT D
TEST 5: OPERATIONS AT EOT

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053016	104455				TRAP	CSEDF
053020	000765				.WORD	501
053022	003550				.WORD	SFERR
053024	011656				.WORD	SFMSG
7086	053026	104406	208:	CKLOOP	:LOOP IF SELECTED	TRAP C\$CLP1
7087	053026	104406				
7088						
7089						
7090						
7091						
7092						
7093						
7094						
7095						
7096	053030	012704	055400			
7097	053034	004737	010322			
7098	053040	103407				
7099	053042	004737	020070			
7103	053046	010001				
7104	053050					
	053050	104456				
	053052	000766				
	053054	004754				
	053056	011656				
7105	053060					
	053060	104406				
7106						
7107						
7108						
7109						
7110						
7111						
7112						
7113	053062	004737	010424			
7114	053066	103411				
7115	053070	016501	000000			
7116	053074	010004				
7117	053076	004737	020070			
7121	053102					
	053102	104456				
	053104	000767				
	053106	057134				
	053110	011670				
7122	053112					
	053112	104406				
7123						
7124						
7125						
7126						
7127						
7128						
7129						
7130						
7131	053114	012737	140005	055530		
7132	053122	013737	003072	055532		
7133	053130	012737	006654	055536		


```

208:  CKLOOP                                :LOOP IF SELECTED
:
:*****
:      ISSUE A WRITE CHARACTERISTICS COMMAND TO CONTROLLER
:*****
:
:      MOV      #T34PACKET,R4                :SUBROUTINE NEEDS PACKET ADDRESS
:      JSR      PC,WRTCHR                    :ISSUE WRITE CHARACTERISTICS
:      BCS      308                          :BR, IF COMMAND ISSUED OK
:      JSR      PC,FATCHK                    :INC AND CHECK FOR MORE THAN 25 ERRORS
:      MOV      R0,R1                        :SAVE CONTENTS OF TSSR
:      ERHRD    ERRNO,WRTMSG,SFMSG          :WRITE CHARACTERISTICS FAILED
:
:      TRAP     C$ERHRD                      :TRAP
:      .WORD    502                          :.WORD
:      .WORD    WRTMSG                       :.WORD
:      .WORD    SFMSG                       :.WORD
:
308:  CKLOOP                                :LOOP IF SELECTED
:
:*****
:      ISSUE A REWIND COMMAND
:*****
:
:      JSR      PC,REWIND                    :REWIND CALL
:      BCS      358                          :BR, IF TSSR IS OK (GOOD)
:      MOV      TSSR(R5),R1                  :GET TSSR
:      MOV      R0,R4                        :SET UP PACKET
:      JSR      PC,FATCHK                    :INC AND CHECK FOR MORE THAN 25 ERRORS
:      ERHRD    ERRNO,T34RWN,PKTSSR         :TSSR IS INCORRECT AFTER REWIND
:
:      TRAP     C$ERHRD                      :TRAP
:      .WORD    503                          :.WORD
:      .WORD    T34RWN                       :.WORD
:      .WORD    PKTSSR                      :.WORD
:
358:  CKLOOP                                :LOOP IF SELECTED
:
:*****
:      ISSUE A WRITE COMMAND, CHECK FOR ERRORS, THIS IS SO THAT THE
:      DRIVE WILL NOT JUST HANG IF AN ERROR OCCURS.
:*****
:
:      MOV      #140005,T34PK3              :WRITE DATA, ACK, CVC=1
:      MOV      FREE,T34WB                  :SET UP WRITE BUFFER ADDRESS
:      MOV      #3500,,T34SZ                :SET UP BUFFER SIZE (3.5 BYTES)

```

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 TEST 5: OPERATIONS AT EOT

```

7134 053136 012704 055530
7135 053142 010465 177776
7136 053146 004737 017110
7137 053152 016501 000000
7138 053156 012702 000200
7139 053162 020102
7140 053164 001407
7141 053166 004737 020070
7145 053172
      053172 104457
      053174 000770
      053176 005011
      053200 011670
7146 053202 000757
7147 053204
      053204 104406
7148
7149
7150
7151
7152
7153
7154
7155
7156
7157 053206 012737 140005 055530
7158 053214 012703 176750
7159 053220 013737 003072 055532
7160 053226 012737 006654 055536
7161 053234 012704 055530
7162 053240 010465 177776
7163 053244 004737 017110
7164 053250 016501 000000
7165 053254 012702 000200
7166 053260 020102
7167 053262 001010
7168 053264 005303
7169 053266 001364
7170 053270 004737 020070
7174 053274
      053274 104455
      053276 000771
      053300 056745
      053302 011670
7175
7176
7177
7178
7179
7180
7181
7182 053304 032701 000004
7183 053310 001001
7184 053312 000752
7185 053314 013701 055426
7186 053320 010102
7187 053322 052702 000001

368:  MOV      #T34PK3,R4          ;R4 = POINTER TO PACKET
      MOV      R4,TSDB(R5)        ;ISSUE COMMAND
      JSR      PC,WAITF           ;WAIT FOR SSR TO SET
      MOV      TSSR(R5),R1        ;GET TSSR CONTENTS
      MOV      #SSR,R2           ;SET UP EXPECTED
      CMP      R1,R2             ;ARE THEY EQUAL
      BEQ      398               ;BR, IF ALL IS WELL NO PROBLEMS
      JSR      PC,FATCHK          ;INC AND CHECK FOR MORE THAN 25 ERRORS
      ERRSOF  ERRNO,WRTErr,PKTSSR ;TSSR INCORRECT AFTER WRITE TAPE
                                      TRAP      CSERSOF 504
                                      .WORD     WRTErr
                                      .WORD     PKTSSR

398:  BR        368               ;BR, TO DO MORE CONTROLLED WRITES
      CKLOOP                                ;LOOP ON ERROR IF SELECTED
                                      TRAP      CSCLP1

:
:*****
:      ISSUE A WRITE COMMAND, KEEP GOING UNTIL TAPE STATUS ALERT
:*****
:
408:  MOV      #140005,T34PK3      ;WRITE DATA, ACK, CVC=1
      MOV      #65000,R3          ;SET MAX NUMBER OF WRITES
      MOV      FREE,T34WB         ;SET UP WRITE BUFFER ADDRESS
      MOV      #3500,T34SZ        ;SET UP BUFFER SIZE (3.5K BYTES)
      MOV      #T34PK3,R4        ;R4 = POINTER TO PACKET
      MOV      R4,TSDB(R5)        ;ISSUE COMMAND
      JSR      PC,WAITF           ;WAIT FOR SSR TO SET
      MOV      TSSR(R5),R1        ;GET TSSR CONTENTS
      MOV      #SSR,R2           ;SET UP EXPECTED
      CMP      R1,R2             ;ARE THEY EQUAL
      BNE      508               ;BR, IT MIGHT BE END OF TAPE
      DEC      R3                 ;DEC RECORD COUNTER
      BNE      408               ;BR, IF MORE TO GO
      JSR      PC,FATCHK          ;INC AND CHECK FOR MORE THAN 25 ERRORS
      ERRDF   ERRNO,T34ET,PKTSSR ;EOT NOT FOUND (USE SHORTER TAPE?)
                                      TRAP      CSERDF 505
                                      .WORD     T34ET
                                      .WORD     PKTSSR

:
:*****
:      HAVE TAPE STATUS ALERT, NOW CHECK FOR EOT. IF NEITHER KEEP GOING
:*****
:
508:  BIT      #BIT2,R1           ;CHECK FOR TAPE STATUS ALERT
      BNE      608               ;BR, IF SET
      BR        408              ;KEEP GOING
608:  MOV      T34BFR+6,R1        ;PICK UP XSTO
      MOV      R1,R2             ;SET UP EXPECTED
      BIS      #BIT0,R2          ;SET THE EOT BIT ON IN EXPECTED

```

CZTUZAO TU80 FRONT END PRT D
TEST 5: OPERATIONS AT EOT

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```

7188 053326 020102      CMP      R1,R2      ;WAS THE BIT ON
7189 053330 001402      BEQ      80$      ;BR, IF EOT WAS FOUND
7190 053332 000137 053240 JMP      40$      ;KEEP LOOKING
7191 053336      104406 80$: CKLOOP      ;LOOP IF SELECTED
                                TRAP      CSCLP1
7192
7193      :*****
7194      :
7195      :      ISSUE ONE MORE WRITE AFTER EOT DETECTED
7196      :
7197      :*****
7198
7199 053340 012737 140005 055530      MOV      #140005,T34PK3      ;WRITE DATA, ACK, CVC=1
7200 053346 013737 003072 055532      MOV      FREE,T34WB      ;SET UP WRITE BUFFER ADDRESS
7201 053354 012737 006654 055536      MOV      #3500,T34SZ      ;SET UP BUFFER SIZE (4K BYTES)
7202 053362 012704 055530      MOV      #T34PK3,R4      ;R4 = POINTER TO PACKET
7203 053366 010465 177776      MOV      R4,TSD8(R5)      ;ISSUE COMMAND
7204 053372 004737 017110      JSR      PC,WAITF      ;WAIT FOR SSR TO SET
7205 053376 016501 000000      MOV      TSSR(R5),R1      ;GET TSSR CONTENTS
7206 053402 012702 100204      MOV      #SC!SSR!BIT2,R2      ;SET UP EXPECTED
7207 053406 020102      CMP      R1,R2      ;ARE THEY EQUAL
7208 053410 001406      BEQ      90$      ;BR, IF THEY ARE OK
7209 053412 004737 020070      JSR      PC,FATCHK      ;INC AND CHECK FOR MORE THAN 25 ERRORS
7213 053416      104456      ERRHRD      ERRNO,T34ET2,PKTSSR      ;WRITE TAPE AT EOT FAILED TO SET TSA
                                TRAP      CSERHRD
                                .WORD      506
                                .WORD      T34ET2
                                .WORD      PKTSSR
7214 053426      104406 90$: CKLOOP      ;LOOP IF SELECTED
                                TRAP      CSCLP1
7215
7216      :*****
7217      :
7218      :      CHECK TO BE SURE EOT IS STILL SET, IT SHOULD BE
7219      :
7220      :*****
7221
7222 053430 013701 055426      MOV      T34BFR+6,R1      ;PICK UP XSTO
7223 053434 010102      MOV      R1,R2      ;SET UP EXPECTED
7224 053436 052702 000001      BIS      #BIT0,R2      ;SET THE EOT BIT ON IN EXPECTED
7225 053442 020102      CMP      R1,R2      ;WAS THE BIT ON
7226 053444 001406      BEQ      100$      ;BR, IF EOT WAS FOUND
7227 053446 004737 020070      JSR      PC,FATCHK      ;INC AND CHECK FOR MORE THAN 25 ERRORS
7231 053452      104456      ERRHRD      ERRNO,T34ETN,EXPREC      ;EOT BIT (XSTO) NOT SET
                                TRAP      CSERHRD
                                .WORD      507
                                .WORD      T34ETN
                                .WORD      EXPREC
7232 053462      104406 100$: CKLOOP      ;LOOP IF SELECTED
                                TRAP      CSCLP1
7233
7234      :*****
7235      :
7236      :      NOW ISSUE A WRITE TAPE MARK, STILL BEYOND EOT
7237      :
7238      :*****
7239

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TEST 5: OPERATIONS AT EOT

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7240 053464 012737 140011 055530      MOV      #140011,T34PK3      ;WRITE TAPE MARK, ACK, CVC-1 COMMAND
7241 053472 012704 055530      MOV      #T34PK3,R4      ;R4 = POINTER TO PACKET
7242 053476 010465 177776      MOV      R4,TSDB(R5)      ;ISSUE COMMAND
7243 053502 004737 017110      JSR      PC,WAITF        ;WAIT FOR SSR TO SET
7244 053506 016501 000000      MOV      TSSR(R5),R1     ;GET TSSR CONTENTS
7245 053512 012702 100204      MOV      #SC!SSR!BIT2,R2 ;SET UP EXPECTED
7246 053516 020102              CMP      R1,R2              ;ARE THEY EQUAL
7247 053520 001406              BEQ      110$              ;BR, IF STATUS IS GOOD (OK)
7248 053522 004737 020070      JSR      PC,FATCHK      ;INC AND CHECK FOR MORE THAN 25 ERRORS
7252 053526              ERRHRD   ERRNO,T34WTM,PKTSSR ;WRITE TAPE MARK FAILED
                                TRAP      C$ERHRD
                                .WORD     508
                                .WORD     T34WTM
                                .WORD     PKTSSR
7253 053536              110$: CKLOOP              ;LOOP IF SELECTED
                                TRAP      C$CLP1
                                .WORD     104406
7254
7255
7256
7257
7258
7259
7260
7261 053540 013701 055426      MOV      T34BFR+6,R1     ;PICK UP XSTO
7262 053544 010102              MOV      R1,R2              ;SET UP EXPECTED
7263 053546 052702 000001      BIS      #BIT0,R2       ;SET THE EOT BIT ON IN EXPECTED
7264 053552 020102              CMP      R1,R2              ;WAS THE BIT ON
7265 053554 001406              BEQ      120$              ;BR, IF EOT WAS FOUND
7266 053556 004737 020070      JSR      PC,FATCHK      ;INC AND CHECK FOR MORE THAN 25 ERRORS
7270 053562              ERRHRD   ERRNO,T34ETO,EXPREC ;EOT BIT (XSTO) NOT SET
                                TRAP      C$ERHRD
                                .WORD     509
                                .WORD     T34ETO
                                .WORD     EXPREC
7271 053572              120$: CKLOOP              ;LOOP IF SELECTED
                                TRAP      C$CLP1
                                .WORD     104406
7272
7273
7274
7275
7276
7277
7278
7279 053574 012737 141410 055530      MOV      #141410,T34PK3 ;SKIP TAPE MARK REVERSE ACK,CVC=1 COMMAND
7280 053602 012737 000001 055532      MOV      #1,T34WB       ;SET NUMBER (1) OF TMS TO SKIP
7281 053610 012704 055530      MOV      #T34PK3,R4     ;R4 = POINTER TO PACKET
7282 053614 010465 177776      MOV      R4,TSDB(R5)     ;ISSUE COMMAND
7283 053620 004737 017110      JSR      PC,WAITF        ;WAIT FOR SSR TO SET
7284 053624 016501 000000      MOV      TSSR(R5),R1     ;GET TSSR CONTENTS
7285 053630 012702 000200      MOV      #SSR,R2        ;SET UP EXPECTED
7286 053634 020102              CMP      R1,R2              ;ARE THEY EQUAL
7287 053636 001406              BEQ      130$              ;BR, IF STATUS IS GOOD (OK)
7288 053640 004737 020070      JSR      PC,FATCHK      ;INC AND CHECK FOR MORE THAN 25 ERRORS
7292 053644              ERRHRD   ERRNO,T34STM,PKTSSR ;SKIP TAPE MARK REVERSE FAILED
                                TRAP      C$ERHRD
                                .WORD     510
                                .WORD     T34STM
                                .WORD     057213
7293 053644 104456
7294 053646 000776
7295 053650 057213

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```
053652 011670
7293 053654 104406
053654 104406
7294
7295
7296
7297
7298
7299
7300
7301 053656 013701 055426
7302 053662 010102
7303 053664 052702 000001
7304 053670 020102
7305 053672 001406
7306 053674 004737 020070
7310 053700
053700 104456
053702 000777
053704 057307
053706 016334
7311 053710
053710 104406
7312
7313
7314
7315
7316
7317
7318
7319 053712 013701 055426
7320 053716 010102
7321 053720 052702 100000
7322 053724 020102
7323 053726 001406
7324 053730 004737 020070
7328 053734
053734 104456
053736 001000
053740 056637
053742 016334
7329 053744
053744 104406
7330
7331
7332
7333
7334
7335
7336
7337 053746 012737 140410 055530
7338 053754 012737 000001 055532
7339 053762 012704 055530
7340 053766 010465 177776
7341 053772 004737 017110
7342 053776 016501 000000
7343 054002 012702 100204

130$: CKLOOP                                ;LOOP IF SELECTED
                                           .WORD PKTSSR
                                           TRAP CSCLP1
:
*****
:
EOT SHOULD STILL BE SET
*****
:
MOV T34BFR+6,R1      ;PICK UP XSTO
MOV R1,R2             ;SET UP EXPECTED
BIS #BIT0,R2          ;SET THE EOT BIT ON IN EXPECTED
CMP R1,R2             ;WAS THE BIT ON
BEQ 140$              ;BR, IF EOT WAS FOUND
JSR PC,FATCHK         ;INC AND CHECK FOR MORE THAN 25 ERRORS
ERRHRD ERRNO,T34STE,EXPREC ;EOT BIT (XSTO) NOT SET
                                           TRAP CSERHRD
                                           .WORD 511
                                           .WORD T34STE
                                           .WORD EXPREC

140$: CKLOOP                                ;LOOP IF SELECTED
                                           TRAP CSCLP1
:
*****
:
THE TMK BIT SHOULD BE SET ALSO
*****
:
MOV T34BFR+6,R1      ;PICK UP XSTO
MOV R1,R2             ;SET UP EXPECTED
BIS #BIT15,R2        ;SET THE TMK BIT ON IN EXPECTED
CMP R1,R2             ;WAS THE BIT ON
BEQ 150$              ;BR, IF TMK WAS FOUND
JSR PC,FATCHK         ;INC AND CHECK FOR MORE THAN 25 ERRORS
ERRHRD ERRNO,T34TMK,EXPREC ;TMK (XSTO) NOT SET
                                           TRAP CSERHRD
                                           .WORD 512
                                           .WORD T34TMK
                                           .WORD EXPREC

150$: CKLOOP                                ;LOOP IF SELECTED
                                           TRAP CSCLP1
:
*****
:
ISSUE SPACE RECORDS REVERSE FOR 1 RECORD, STILL BEYOND EOT
*****
:
MOV #140410,T34PK3    ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD
MOV #1,T34WB          ;SPACE ONE RECORD REVERSE
MOV #T34PK3,R4        ;R4 = POINTER TO PACKET
MOV R4,TSDB(R5)       ;ISSUE COMMAND
JSR PC,WAITF          ;WAIT FOR SSR TO SET
MOV TSSR(R5),R1       ;GET TSSR CONTENTS
MOV #SC!SSR!BIT2,R2   ;SET UP EXPECTED
```

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 TEST 5: OPERATIONS AT EOT

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7344 054006 020102          CMP      R1,R2          ;ARE THEY EQUAL
7345 054010 001006          BNE      160$          ;BR, IT MIGHT BE END OF TAPF
7346 054012 004737 020070    JSR      PC,FATCHK      ;INC AND CHECK FOR MORE THAN 25 ERRORS
7350 054016          ERRHRD  ERRNO,T34POS,PKTSSR      ;SPACE RECORDS REVERSE FAILED
          054016 104456          TRAP      C$ERHRD
          054020 001001          .WORD    513
          054022 055564          .WORD    T34POS
          054024 011670          .WORD    PKTSSR
7351 054026          160$:  CKLOOP          ;LOOP IF SELECTED
          054026 104406          TRAP      C$CLP1
7352
7353          :*****
7354          :
7355          :      EOT SHOULD STILL BE SET
7356          :
7357          :*****
7358          :
7359 054030 013701 055426    MOV      T34BFR+6,R1      ;PICK UP XST0
7360 054034 010102          MOV      R1,R2          ;SET UP EXPECTED
7361 054036 052702 000001    BIS      #BIT0,R2        ;SET THE EOT BIT ON IN EXPECTED
7362 054042 020102          CMP      R1,R2          ;WAS THE BIT ON
7363 054044 001406          BEQ      163$          ;BR, IF EOT WAS FOUND
7364 054046 004737 020070    JSR      PC,FATCHK      ;INC AND CHECK FOR MORE THAN 25 ERRORS
7368 054052          ERRHRD  ERRNO,T34ETS,EXPREC      ;EOT BIT (XST0) NOT SET
          054052 104456          TRAP      C$ERHRD
          054054 001002          .WORD    514
          054056 056467          .WORD    T34ETS
          054060 016334          .WORD    EXPREC
7369 054062          163$:  CKLOOP          ;LOOP IF SELECTED
          054062 104406          TRAP      C$CLP1
7370
7371          :*****
7372          :
7373          :      HOWEVER, THE TMK BIT SHOULD NOW BE CLEAR
7374          :
7375          :*****
7376          :
7377 054064 013701 055426    MOV      T34BFR+6,R1      ;PICK UP XST0
7378 054070 010102          MOV      R1,R2          ;SET UP EXPECTED
7379 054072 042702 100000    BIC      #BIT15,R2       ;CLEAR THE TMK BIT ON IN EXPECTED
7380 054076 020102          CMP      R1,R2          ;WAS THE BIT ON
7381 054100 001406          BEQ      165$          ;BR, IF TMK WAS FOUND
7382 054102 004737 020070    JSR      PC,FATCHK      ;INC AND CHECK FOR MORE THAN 25 ERRORS
7386 054106          ERRHRD  ERRNO,T34TMN,EXPREC      ;COULD NOT CLEAR TMK (ZST0)
          054106 104456          TRAP      C$ERHRD
          054110 001003          .WORD    515
          054112 057403          .WORD    T34TMN
          054114 016334          .WORD    EXPREC
7387 054116          165$:  CKLOOP          ;LOOP IF SELECTED
          054116 104406          TRAP      C$CLP1
7388
7389          :*****
7390          :
7391          :      NOW SPACE 3 RECORDS IN REVERSE
7392          :
7393          :*****
7394

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 TEST 5: OPERATIONS AT EOT

7395	054120	012737	140410	055530	MOV	#140410,T34PK3	;SPACE RECORDS REVERSE, ACK, CVC=1 CMD
7396	054126	012737	000003	055532	MOV	#3,T34WB	;SPACE THREE RECORD REVERSE
7397	054134	012704	055530		MOV	#T34PK3,R4	;R4 = POINTER TO PACKET
7398	054140	010465	177776		MOV	R4,TSDDB(R5)	;ISSUE COMMAND
7399	054144	004737	017110		JSR	PC,WAITF	;WAIT FOR SSR TO SET
7400	054150	016501	000000		MOV	TSSR(R5),R1	;GET TSSR CONTENTS
7401	054154	012702	000200		MOV	#SSR,R2	;SET UP EXPECTED
7402	054160	020102			CMP	R1,R2	;ARE THEY EQUAL
7403	054162	001406			BEQ	167\$	;BR, IT MIGHT BE END OF TAPE
7404	054164	004737	020070		JSR	PC,FATCHK	;INC AND CHECK FOR MORE THAN 25 ERRORS
7408	054170				ERRHRD	ERRNO,T34POS,PKTSSR	;SPACE RECORDS COMMAND FAILED
	054170	104456					TRAP CSERHRD
	054172	001004					.WORD 516
	054174	055564					.WORD T34POS
	054176	011670					.WORD PKTSSR
7409	054200				167\$: CKLOOP		;LOOP IF SELECTED
	054200	104406					TRAP CSCLP1
7410							
7411							
7412							
7413							
7414							
7415							
7416							
7417	054202	013701	055426		MOV	T34BFR+6,R1	;PICK UP XSTO
7418	054206	010102			MOV	R1,R2	;SET UP EXPECTED
7419	054210	042702	000001		BIC	#BIT0,R2	;CLEAR THE EOT BIT ON IN EXPECTED
7420	054214	020102			CMP	R1,R2	;WAS THE BIT OFF
7421	054216	001404			BEQ	170\$	;BR, IF EOT WAS FOUND
7425	054220				ERRHRD	ERRNO,T34ETC,PKTSSR	;UNABLE TO CLEAR EOT INDICATION
	054220	104456					TRAP CSERHRD
	054222	001005					.WORD 517
	054224	056043					.WORD T34ETC
	054226	011670					.WORD PKTSSR
7426							
7427	054230				170\$: CKLOOP		;LOOP IF SELECTED
	054230	104406					TRAP CSCLP1
7428							
7429							
7430							
7431							
7432							
7433							
7434							
7435	054232	012737	140010	055530	MOV	#140010,T34PK3	;SPACE RECORDS FORWARD, ACK, CVC=1
7436	054240	012737	000004	055532	MOV	#4,T34WB	;SPACE FOUR RECORDS
7437	054246	012704	055530		MOV	#T34PK3,R4	;R4 = POINTER TO PACKET
7438	054252	010465	177776		MOV	R4,TSDDB(R5)	;ISSUE COMMAND
7439	054256	004737	017110		JSR	PC,WAITF	;WAIT FOR SSR TO SET
7440	054262	016501	000000		MOV	TSSR(R5),R1	;GET TSSR CONTENTS
7441	054266	012702	000200		MOV	#SSR,R2	;SET UP EXPECTED
7442	054272	020102			CMP	R1,R2	;ARE THEY EQUAL
7443	054274	001406			BEQ	190\$	;BR, IT MIGHT BE END OF TAPE
7444	054276	004737	020070		JSR	PC,FATCHK	;INC AND CHECK FOR MORE THAN 25 ERRORS
7448	054302				ERRHRD	ERRNO,T34POS,PKTSSR	;SPACE RECORDS COMMAND FAILED
	054302	104456					TRAP CSERHRD
	054304	001006					.WORD 518

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TEST 5: OPERATIONS AT EOT

054306	055564						.WORD	T34POS
054310	011670						.WORD	PKTSSR
7449 054312		190\$:	CKLOOP			:LOOP IF SELECTED	TRAP	C\$CLP1
054312	104406							
7450								
7451								
7452								
7453								
7454								
7455								
7456								
7457 054314	013701	055426		MOV	T34BFR+6,R1	:PICK UP XSTO		
7458 054320	010102			MOV	R1,R2	:SET UP EXPECTED		
7459 054322	052702	000001		BIS	#BIT0,R2	:SET THE EOT BIT ON IN EXPECTED		
7460 054326	020102			CMP	R1,R2	:WAS THE BIT ON		
7461 054330	001406			BEQ	200\$	:BR, IF EOT WAS FOUND		
7462 054332	004737	020070		JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS		
7466 054336				ERRHRD	ERRNO,T34ETS,EXPREC	:EOT BIT (XSTO) NOT SET		
	054336	104456					TRAP	C\$ERHRD
	054340	001007					.WORD	519
	054342	056467					.WORD	T34ETS
	054344	016334					.WORD	EXPREC
7467 054346			200\$:	CKLOOP		:LOOP IF SELECTED	TRAP	C\$CLP1
054346	104406							
7468								
7469								
7470								
7471								
7472								
7473								
7474								
7475 054350	012737	140401	055530	MOV	#140401,T34PK3	:READ REVERSE, ACK, CVC=1		
7476 054356	013737	003072	055532	MOV	FREE,T34RB	:SET UP WRITE BUFFER ADDRESS		
7477 054364	012704	055530		MOV	#T34PK3,R4	:R4 = POINTER TO PACKET		
7478 054370	010465	177776		MOV	R4,TSDB(R5)	:ISSUE COMMAND		
7479 054374	004737	017110		JSR	PC,WAITF	:WAIT FOR SSR TO SET		
7480 054400	016501	000000		MOV	TSSR(R5),R1	:GET TSSR CONTENTS		
7481 054404	012702	000200		MOV	#SSR,R2	:SET UP EXPECTED		
7482 054410	020102			CMP	R1,R2	:ARE THEY EQUAL		
7483 054412	001406			BEQ	205\$	:BR, ONLY SSR IS SET		
7484 054414	004737	020070		JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS		
7488 054420				ERRHRD	ERRNO,T34RRE,PKTSSR	:READ REVERSE COMMAND FAILED		
	054420	104456					TRAP	C\$ERHRD
	054422	001010					.WORD	520
	054424	055742					.WORD	T34RRE
	054426	011670					.WORD	PKTSSR
7489 054430			205\$:	CKLOOP		:LOOP IF SELECTED	TRAP	C\$CLP1
054430	104406							
7490								
7491								
7492								
7493								
7494								
7495								
7496 054432	012737	140401	055530	MOV	#140401,T34PK3	:READ REVERSE, ACK, CVC=1		
7497 054440	013737	003072	055532	MOV	FREE,T34RB	:SET UP WRITE BUFFER ADDRESS		
7498 054446	012704	055530		MOV	#T34PK3,R4	:R4 = POINTER TO PACKET		

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TEST 5: OPERATIONS AT EOT

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7499 054452 010465 177776      MOV      R4,TSDB(R5)      ;ISSUE COMMAND
7500 054456 004737 017110      JSR      PC,WAITF      ;WAIT FOR SSR TO SET
7501 054462 016501 000000      MOV      TSSR(R5),R1    ;GET TSSR CONTENTS
7502 054466 012702 000200      MOV      #SSR,R2      ;SET UP EXPECTED
7503 054472 020102              CMP      R1,R2      ;ARE THEY EQUAL
7504 054474 001406              BEQ      210$      ;BR, IT MIGHT BE END OF TAPE
7505 054476 004737 020070      JSR      PC,FATCHK    ;INC AND CHECK FOR MORE THAN 25 ERRORS
7509 054502              ERRHRD  ERRNO,T34RRE,PKTSSR ;SECOND READ REVERSE COMMAND FAILED
                                TRAP      C$ERHRD
                                .WORD     521
                                .WORD     T34RRE
                                .WORD     PKTSSR
                                054502 104456
                                054504 001011
                                054506 055742
                                054510 011670
7510 054512              210$:  CKLOOP      ;LOOP IF SELECTED
                                054512 104406      TRAP      C$CLP1
7511
7512
7513
7514
7515
7516
7517 054514 012737 140001 055530      MOV      #140001,T34PK3 ;READ DATA, ACK, CVC=1
7518 054522 013737 003072 055532      MOV      FREE,T34RB    ;SET UP WRITE BUFFER ADDRESS
7519 054530 012737 006654 055536      MOV      #3500.,T34SZ ;SET UP BUFFER SIZE (3.5K BYTES)
7520 054536 012704 055530      MOV      #T34PK3,R4    ;R4 = POINTER TO PACKET
7521 054542 010465 177776      MOV      R4,TSDB(R5)    ;ISSUE COMMAND
7522 054546 004737 017110      JSR      PC,WAITF      ;WAIT FOR SSR TO SET
7523 054552 016501 000000      MOV      TSSR(R5),R1    ;GET TSSR CONTENTS
7524 054556 012702 000200      MOV      #SSR,R2      ;SET UP EXPECTED
7525 054562 020102              CMP      R1,R2      ;ARE THEY EQUAL
7526 054564 001406              BEQ      230$      ;BR, IT MIGHT BE END OF TAPE
7527 054566 004737 020070      JSR      PC,FATCHK    ;INC AND CHECK FOR MORE THAN 25 ERRORS
7531 054572              ERRHRD  ERRNO,T34RRF,PKTSSR ;READ FORWARD COMMAND FAILED
                                TRAP      C$ERHRD
                                .WORD     522
                                .WORD     T34RRF
                                .WORD     PKTSSR
                                054572 104456
                                054574 001012
                                054576 057466
                                054600 011670
7532 054602              230$:  CKLOOP      ;LOOP IF SELECTED
                                054602 104406      TRAP      C$CLP1
7533 054604 012737 140001 055530      MOV      #140001,T34PK3 ;READ DATA, ACK, CVC=1
7534 054612 013737 003072 055532      MOV      FREE,T34RB    ;SET UP WRITE BUFFER ADDRESS
7535 054620 012737 006654 055536      MOV      #3500.,T34SZ ;SET UP BUFFER SIZE (3.5K BYTES)
7536 054626 012704 055530      MOV      #T34PK3,R4    ;R4 = POINTER TO PACKET
7537 054632 010465 177776      MOV      R4,TSDB(R5)    ;ISSUE COMMAND
7538 054636 004737 017110      JSR      PC,WAITF      ;WAIT FOR SSR TO SET
7539 054642 016501 000000      MOV      TSSR(R5),R1    ;GET TSSR CONTENTS
7540 054646 012702 000200      MOV      #SSR,R2      ;SET UP EXPECTED
7541 054652 020102              CMP      R1,R2      ;ARE THEY EQUAL
7542 054654 001406              BEQ      235$      ;BR, IT MIGHT BE END OF TAPE
7543 054656 004737 020070      JSR      PC,FATCHK    ;INC AND CHECK FOR MORE THAN 25 ERRORS
7547 054662              ERRHRD  ERRNO,T34RRF,PKTSSR ;SECOND READ FORWARD FAILED
                                TRAP      C$ERHRD
                                .WORD     523
                                .WORD     T34RRF
                                .WORD     PKTSSR
                                054662 104456
                                054664 001013
                                054666 057466
                                054670 011670
7548 054672              235$:  CKLOOP      ;LOOP IF SELECTED
                                054672 104406      TRAP      C$CLP1
7549

```

CZTUZAO TU80 FRONT END PRT D
TEST 5: OPERATIONS AT EOT

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```

7550
7551
7552
7553
7554
7555
7556 054674 013701 055426      MOV      T34BFR+6,R1      ;PICK UP XSTO
7557 054700 010102      MOV      R1,R2      ;SET UP EXPECTED
7558 054702 052702 000001      BIS      #BIT0,R2      ;SET THE EOT BIT ON IN EXPECTED
7559 054706 020102      CMP      R1,R2      ;WAS THE BIT ON
7560 054710 001406      BEQ      2408      ;BR, IF EOT WAS FOUND
7561 054712 004737 020070      JSR      PC,FATCHK      ;INC AND CHECK FOR MORE THAN 25 ERRORS
7565 054716      ERRHRD  ERRNO,T34ETZ,EXPREC      ;EOT BIT (XSTO) NOT SET
                                TRAP      C$ERHRD
                                .WORD     524
                                .WORD     T34ETZ
                                .WORD     EXPREC
7566 054726      2408:  CKLOOP      ;LOOP IF SELECTED      TRAP      C$CLP1
                                054726 104406
7567
7568
7569
7570
7571
7572
7573
7574 054730 012737 140410 055530      MOV      #140410,T34PK3      ;SPACE RECORDS REVERSE, ACK, CVC=1 CMD.
7575 054736 012737 000005 055532      MOV      #5,T34RB      ;NUMBER OF RECORDS TO SPACE
7576 054744 012704 055530      MOV      #T34PK3,R4      ;R4 = POINTER TO PACKET
7577 054750 010465 177776      MOV      R4,TSDB(R5)      ;ISSUE COMMAND
7578 054754 004737 017110      JSR      PC,WAITF      ;WAIT FOR SSR TO SET
7579 054760 016501 000000      MOV      TSSR(R5),R1      ;GET TSSR CONTENTS
7580 054764 012702 000200      MOV      #SSR,R2      ;SET UP EXPECTED
7581 054770 020102      CMP      R1,R2      ;ARE THEY EQUAL
7582 054772 001406      BEQ      2508      ;BR, IT MIGHT BE END OF TAPE
7583 054774 004737 020070      JSR      PC,FATCHK      ;INC AND CHECK FOR MORE THAN 25 ERRORS
7587 055000      ERRHRD  ERRNO,T34POS,PKTSSR      ;SPACE 5 RECORDS REVERSE COMMAND FAILED
                                TRAP      C$ERHRD
                                .WORD     525
                                .WORD     T34POS
                                .WORD     PKTSSR
7588 055010      2508:  CKLOOP      ;LOOP IF SELECTED      TRAP      C$CLP1
                                055010 104406
7589
7590
7591
7592
7593
7594
7595
7596 055012 013701 055426      MOV      T34BFR+6,R1      ;PICK UP XSTO
7597 055016 010102      MOV      R1,R2      ;SET UP EXPECTED
7598 055020 042702 000001      BIC      #BIT0,R2      ;CLEAR THE EOT BIT ON IN EXPECTED
7599 055024 020102      CMP      R1,R2      ;WAS THE BIT ON
7600 055026 001406      BEQ      2608      ;BR, IF EOT WAS FOUND
7601 055030 004737 020070      JSR      PC,FATCHK      ;INC AND CHECK FOR MORE THAN 25 ERRORS
7605 055034      ERRHRD  ERRNO,T34ETC,EXPREC      ;EOT BIT (XSTO) NOT CLEAR

```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 105-11
 TEST 5: OPERATIONS AT EOT

055034	104456					TRAP	C\$ERHRD
055036	001016					.WORD	526
055040	056043					.WORD	T34ETC
055042	016334					.WORD	EXPREC
7606	055044	104406	260\$:	CKLOOP		:LOOP IF SELECTED	
	055044	104406				TRAP	C\$CLP1
7607			*****				
7608			: NOW SPACE FORWARD 5 RECORDS AGAIN				
7609			*****				
7610			:				
7611			:				
7612			:				
7613			:				
7614	055046	012737	140010	055530	MOV	#140010,T34PK3	;SPACE RECORDS FORWARD, ACK, CVC=1 CMD
7615	055054	012737	000005	055532	MOV	#5,T34RB	;NUMBER OF RECORDS TO SPACE
7616	055062	012704	055530		MOV	#T34PK3,R4	;R4 = POINTER TO PACKET
7617	055066	010465	177776		MOV	R4,TSDB(R5)	;ISSUE COMMAND
7618	055072	004737	017110		JSR	PC,WAITF	;WAIT FOR SSR TO SET
7619	055076	016501	000000		MOV	TSSR(R5),R1	;GET TSSR CONTENTS
7620	055102	012702	000200		MOV	#SSR,R2	;SET UP EXPECTED
7621	055106	020102			CMP	R1,R2	;ARE THEY EQUAL
7622	055110	001406			BEQ	270\$	;BR, IT MIGHT BE END OF TAPE
7623	055112	004737	020070		JSR	PC,FATCHK	;INC AND CHECK FOR MORE THAN 25 ERRORS
7627	055116				ERRHRD	ERRNO,T34POS,PKTSSR	;SPACE RECORDS FORWARD COMMAND FAILED
	055116	104456				TRAP	C\$ERHRD
	055120	001017				.WORD	527
	055122	055564				.WORD	T34POS
	055124	011670				.WORD	PKTSSR
7628	055126	104406	270\$:	CKLOOP		:LOOP IF SELECTED	
	055126	104406				TRAP	C\$CLP1
7629			*****				
7630			: EOT SHOULD BE SET AGAIN				
7631			*****				
7632			:				
7633			:				
7634			:				
7635			:				
7636	055130	013701	055426		MOV	T34BFR+6,R1	;PICK UP XSTO
7637	055134	010102			MOV	R1,R2	;SET UP EXPECTED
7638	055136	052702	000001		BIS	#BIT0,R2	;SET THE EOT BIT ON IN EXPECTED
7639	055142	020102			CMP	R1,R2	;WAS THE BIT ON
7640	055144	001404			BEQ	280\$	;BR, IF EOT WAS FOUND
7644	055146				ERRHRD	ERRNO,T34ETS,PKTSSR	;EOT FAILED TO SET AFTER SPACE CMD.
	055146	104456				TRAP	C\$ERHRD
	055150	001020				.WORD	528
	055152	056467				.WORD	T34ETS
	055154	011670				.WORD	PKTSSR
7645	055156	104406	280\$:	CKLOOP		:LOOP IF SELECTED	
	055156	104406				TRAP	C\$CLP1
7646			*****				
7647			: NOW ISSUE A SKIP FILE MARKS REVERSE COMMAND, BUT WE KNOW THAT				
7648			: THERE AREN'T ANY THERE SO WE SHOULD RUN INTO BOT				
7649			*****				
7650			:				
7651			:				
7652	055160	012737	141410	055530	MOV	#141410,T34PK3	;SKIP FILE MARKS REVERSE,ACK,CVC=1 COMMAND
7653	055166	012737	000003	055532	MOV	#3,T34RB	;NUMBER OF FILE MARKS

7654	055174	012704	055530		MOV	#T34PK3,R4	;R4 = POINTER TO PACKET		
7655	055200	010465	177776		MOV	R4,TSD8(R5)	:ISSUE COMMAND		
7656	055204	012737	176750	055544	MOV	#65000.,T34DLY	:SET UP DELAY COUNTER		
7657	055212	004737	017110	285\$:	JSR	P%.WAITF	:WAIT FOR SSR TO SET		
7658	055216	016501	000000		MOV	TSSN(R5),R1	:GET TSSR CONTENTS		
7659	055222	032701	000200		BIT	#SSR,R1	:CHECK FOR SSR SET		
7660	055226	001017			BNE	286\$	:BR, WHEN SSR IS SET		
7661	055230				DELAY	250	:WAIT ABOUT .25 SECONDS		
	055230	012727	000250					MOV	#250,(PC)+
	055234	000000						.WORD	0
	055236	013727	002116					MOV	LSDLY,(PC)+
	055242	000000						.WORD	0
	055244	005367	177772					DEC	-6(PC)
	055250	001375						BNE	.-4
	055252	005367	177756					DEC	-22(PC)
	055256	001367						BNE	.-20
7662	055260	005337	055544		DEC	T34DLY	:BUMP COUNTER		
7663	055264	001352			BNE	285\$	:BR, IF MORE TO COUNT		
7664	055266	012702	100204	286\$:	MOV	#SSR!SC!BIT2,R2	:SET UP EXPECTED TAPE STATUS ALERT		
7665	055272	020102			CMP	R1,R2	:ARE THEY EQUAL		
7666	055274	001407			BEQ	300\$	:BR, IT MIGHT BE END OF TAPE		
7667	055276	005303			DEC	R3	:DEC RECORD COUNTER		
7668	055300	004737	020070		JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS		
7672	055304				ERRHRD	ERRNO,T34WOL,PKTSSR	:SKIP FILE MARK REVERSE CMD. FAILED		
	055304	104456						TRAP	C\$ERHRD
	055306	001021						.WORD	529
	055310	057540						.WORD	T34WOL
	055312	011670						.WORD	PKTSSR
7673					*****				
7674					THE BOT INDICATION BETTER BE SET				
7675					*****				
7676									
7677									
7678	055314			300\$:	CKLOOP		:LOOP IF SELECTED		
	055314	104406						TRAP	C\$CLP1
7679	055316	013701	055426		MOV	T34BFR+6,R1	:PICK UP XSTO		
7680	055322	010102			MOV	R1,R2	:SET UP EXPECTED		
7681	055324	052702	000002		BIS	#BIT1,R2	:SET THE BOT BIT ON IN EXPECTED		
7682	055330	020102			CMP	R1,R2	:WAS THE BIT ON		
7683	055332	001406			BEQ	320\$	:BR, IF BOT WAS FOUND		
7684	055334	004737	020070		JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS		
7688	055340				ERRHRD	ERRNO,T34BOT,EXPREC	:BOT NOT SET AFTER SPACE CMD.		
	055340	104456						TRAP	C\$ERHRD
	055342	001022						.WORD	530
	055344	056120						.WORD	T34BOT
	055346	016334						.WORD	EXPREC
7689	055350			320\$:	CKLOOP		:LOOP IF SELECTED		
	055350	104406						TRAP	C\$CLP1
7690	055352			600\$:	ENDSUB		:>>>>>>>>> END SUBTEST >>>>>>>>>		
	055352						L10060:		
	055352	104403						TRAP	C\$ESUB
7691	055354	004737	017344		JSR	PC,TSTLOOP	:DO WE NEED TO ITERATE TEST		
7692	055360	103002			BCC	163\$	:BR, IF NO LOOP REQUIRED		
7693	055362	000137	052706		JMP	T34LOOP	:EXECUTE AGAIN		
7694	055366			163\$:	EXIT	TST	:ALL DONE THIS TEST		
	055366	104432						TRAP	C\$EXIT
	055370	00							

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TEST 5: OPERATIONS AT EOT

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```

7696
7697
7698
7700 055372
7702 055400
7703 055400 100004
7704 055402 055410
7705 055404 000000
7706 055406 000010
7707 055410
7708 055410 055420
7709 055412 000000
7710 055414 000012
7711 055416 000000
7712 055420
7713
7714
7715
7717 055502
7719 055510
7720 055510 100006
7721 055512 055546
7722 055514 000000
7723 055516 000006
7724
7726 055520
7728 055530
7729 055530 100005
7730 055532
7731 055532 000000
7732 055534 000000
7733 055536 000000
7734
7735
7736 055540 000000
7737 055542 000000
7738 055544 000000
7739
7740
7741 055546
7742 055546 010
7743 055547 200
7744 055550 000000
7745 055552 000000
7746
7747
7748
7749
7750
7751 055554 100005
7752 055556 100405
7753 055560 102005
7754 055562 177777
7755
7756

```

```

;+
;LOCAL STORAGE FOR THIS TEST
;-
      .BLKB  10-<.-TUV2A&7>
T34PACKET:
      .WORD  100004
      .WORD  T34DATA
      .WORD  0
      .WORD  8.
T34DATA:
      .WORD  T34BFR
      .WORD  0
      .WORD  10.
      .WORD  0
T34BFR: .BLKW  25.
;WRITE SUBSYSTEM MEMORY COMMAND PACKET
      .BLKB  10-<.-TUV2A&7>
T34PK2:
      .WORD  100006
      .WORD  T34BF2
      .WORD  0
      .WORD  6.
      .BLKB  10-<.-TUV2A&7>
T34PK3:
      .WORD  100005
T34RB:
T34WB: .WORD  0
      .WORD  0
T34SZ: .WORD  0
      .EVEN
      .
T34RSZ: .WORD  0
T34CNT: .WORD  0
T34DLY: .WORD  0
      .
      .
T34BF2:
T34BS0: .BYTE  10
T34BS1: .BYTE  200
T34S2: .WORD  0
T34S3: .WORD  0
      .
      .EVEN
;TAPE MOTION PACKET COMMAND VALUES
T34WD: .WORD  100005
T34WDR: .WORD  100405
T34CON: .WORD  102005
      .WORD  177777

```

```

;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

;WRITE COMMAND, AND ACK

;ADDRESS OF WRITE/READ BUFFER

;SIZE OF BUFFER (EXTENT)

;LARGEST TAPE RECORD IN BYTES
;TAPE RECORD COUNTER
;DELAY COUNTER

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

;WRITE DATA (NEXT)
;WRITE DATA RETRY
;WRITE CONTINUOUS
;END OF DATA

```

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TEST 5: OPERATIONS AT EOT

```

7758
7759
7760      ;+
7761      ;LOCAL TEXT MESSAGES FOR TEST
7762      ;--
7763
7764 055564      124      123      123      T34POS: .ASCIZ 'TSSR Incorrect After Position (SPACE RECORDS) Command'
7765 055652      127      122      111      T34ETO: .ASCIZ 'WRITE TAPE MARK Beyond EOT Failed To Set EOT Bit (XSTO)'
7766 055742      122      105      101      T34RRE: .ASCIZ 'READ REVERSE Command At EOT Didn't Give Normal Termination (TSSR)'
7767 056043      125      156      141      T34ETC: .ASCIZ 'Unable To Clear EOT Indication, (XSTO) Bit 0'
7768 056120      123      153      151      T34BOT: .ASCIZ 'Skip File Mark Reverse (over entire tape) Failed To Set BOT (XSTO) Bit'
7769 056227      127      122      111      T34WTM: .ASCIZ 'WRITE TAPE MARK At EOT Failed To Set Tape Status Alert'
7770 056316      127      122      111      T34ET2: .ASCIZ 'WRITE DATA Beyond EOT Failed To Set Tape Status Alert'
7771 056404      127      122      111      T34ETN: .ASCIZ 'WRITE DATA Beyond EOT Failed To Set EOT Bit (XSTO)'
7772 056467      123      120      101      T34ETS: .ASCIZ 'SPACE RECORDS Beyond EOT Failed To Set EOT Bit (XSTO)'
7773 056555      122      105      101      T34ETZ: .ASCIZ 'READ DATA Beyond EOT Failed To Set EOT Bit (XSTO)'
7774 056637      120      117      123      T34TMK: .ASCIZ 'POSITION Command Beyond EOT Into A Tape Mark Failed To Set TMK (XSTO)'
7775 056745      105      117      124      T34ET: .ASCIZ 'EOT Not Found In 65000 3.5K Writes, (Use Shorter Tape)'
7776 057034      127      122      111      T34EOT: .ASCIZ 'WRITE DATA OVER EOT GAVE NO TAPE STATUS ALERT'
7777
7778 057112      117      160      145      T34ID: .ASCIZ 'Operations At EOT'
7779 057134      124      123      123      T34RUN: .ASCIZ 'TSSR Incorrect After Position (REWIND) Command'
7780 057213      124      123      123      T34STM: .ASCIZ 'TSSR Incorrect After SKIP TAPE MARK REVERSE Beyond EOT Mark'
7781 057307      105      117      124      T34STE: .ASCIZ 'EOT (XSTO) Not Set After SKIP TAPE MARK REVERSE, Beyond EOT'
7782 057403      125      156      141      T34TMN: .ASCIZ 'Unable To Clear TMK (XSTO) Bit Using Space Command'
7783 057453      124      123      123      T34RRF: .ASCIZ 'TSSR Incorrect After READ FORWARD Command'
7784 057540      124      123      123      T34WOL: .ASCIZ 'TSSR Incorrect After SKIP FILE MARK REVERSE'
7785      .EVEN
7786
7787      ;+
7788      ;ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
7789      ;WRITE SUBSYSTEM MEMORY COMMAND
7790      ;--
7791
7792
7793
7794
7795 057614      012701      055400
7796 057614      012721      100004
7797 057620      012721      055410
7798 057634      005021
7799 057636      012721      000012
7800 057642      012721      055420
7801 057646      005021
7802 057650      012721      000024
7803 057654      005021
7804 057656      012711      000000
7805 057662      012702      000030
7806 057666      012762      177777      055420      648:
7807 057674      005742
7808 057676      020227      000000
7809 057702      001371
7810 057704      000207
7811
7812
7813 057706
7814 057706

      T34REST:
      SAVREG
      MOV      #T34PACKET,R1
      MOV      #100004,(R1)+
      MOV      #T34DATA,(R1)+
      CLR      (R1)+
      MOV      #10.,(R1)+
      MOV      #T34BFR,(R1)+
      CLR      (R1)+
      MOV      #20.,(R1)+
      CLR      (R1)+
      MOV      #0,(R1)
      MOV      #24.,R2
      MOV      #177777,T34BFR(R2)
      TST      -(R2)
      CMP      R2,#0
      BNE      648
      RTS      PC

      T34RT2:
      SAVREG

```

```

;SAVE THE REGISTERS
;START OF THE PACKET
;WRITE SUBSYSTEM MEM. WITH ACK
;ADDRESS OF CHARAISTICS DATA BLOCK
;EXTENDED ADDRESS
;SIZE OF DATA BLOCK IN BYTES
;ADDRESS OF MESSAGE BUFFER
;LENGTH OF MESSAGE BUFFER
;SELECT DRIVE ZERO
;NUMBER OF LOCATIONS TO BE CLEARED
;ALL ONES TO MESSAGE BUFFER
;BUMP DOWN TO NEXT LOCATION
;R2 AT ZERO YET
;KEEP GOING UNTIL DONE
;RETURN

```

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 TEST 5: OPERATIONS AT EOT

7815	057712	012701	055510	MOV	#T34PK2,R1	;START OF THE PACKET
7816	057716	012721	100006	MOV	#100006,(R1)+	;WRITE SUBSYSTEM MEM. WITH ACK
7817	057722	012721	055546	MOV	#T34BF2,(R1)+	;ADDRESS OF DATA BLOCK
7818	057726	005021		CLR	(R1)+	;EXTENDED ADDRESS
7819	057730	012721	000006	MOV	#6,(R1)+	;SIZE OF DATA BLOCK IN BYTES
7820	057734	012701	055546	MOV	#T34BF2,R1	;POINT TO DATA SEL AREA
7821	057740	005021		CLR	(R1)+	
7822	057742	005021		CLR	(R1)+	
7823	057744	005011		CLR	(R1)	
7824	057746	000207		RTS	PC	;RETURN
7825	057750			T34RT3:		
7826	057750			SAVREG		;SAVE THE REGISTERS
7827	057754	012701	055530	MOV	#T34PK3,R1	;START OF THE PACKET
7828	057760	012721	100005	MOV	#100005,(R1)+	;WRITE TAPE. WITH ACK
7829	057764	005021		CLR	(R1)+	;ADDRESS OF DATA BLOCK
7830	057766	005021		CLR	(R1)+	;EXTENDED ADDRESS
7831	057770	005011		CLR	(R1)	;SIZE OF DATA BLOCK
7832	057772	000207		RTS	PC	;RETURN
7833	057774			ENDTST		
	057774					
	057774	104401				

L10057: TRAP CSETST

7875	060042			BGNSUB		:>>>>>>>>> BEGIN SUBTEST >>>>>>>>>
	060042					T6.1:
	060042	104402				TRAP CSBSUB
7876	060044	005037	002172	CLR	INTRECV	: INTERRUPT INDICATOR
7877	060050	005037	061266	CLR	T37LNT	: TIMER FOR WRITE DATA SPACING
7878	060054	005037	061270	CLR	T37CNU	: TIMER FOR WRITE DATA RETRY SPACING
7879	060060	004737	064244	JSR	PC,T37REST	: SET COMMAND PACKET
7880	060064	004737	064336	JSR	PC,T37RT2	: SET UP OTHER COMMAND PACKET
7881	060070	004737	064400	JSR	PC,T37RT3	: SET UP OTHER COMMAND PACKET
7882	060074	012737	176750	MOV	#65000.,T37DLY	: SET UP DELAY COUNTER
7883	060102	004737	016634	JSR	PC,SOFINIT	: DO INITIALIZE OF CONTROLLER
7884	060106	103426		BCS	20\$	: BR IF INIT WAS OK
7885	060110			DELAY	250	: DELAY ABOUT .25 SEC
	060110	012727	000250			MOV #250,(PC)+
	060114	000000				.WORD 0
	060116	013727	002116			MOV L\$DLY,(PC)+
	060122	000000				.WORD 0
	060124	005367	177772			DEC -6(PC)
	060130	001375				BNE .-4
	060132	005367	177756			DEC -22(PC)
	060136	001367				BNE .-20
7886	060140	005337	061272	DEC	T37DLY	: BUMP COUNTER
7887	060144	001356		BNE	10\$	: BR, IF COUNTER NOT DONE
7888	060146	004737	020070	JSR	PC,FATCHK	: INC AND CHECK FOR MORE THAN 25 ERRORS
7892	060152	010001		MOV	R0,R1	: CONTENTS OF TSSR REGISTER
7893	060154			ERRDF	ERRNO,SFIERR,SFIMSG	: FATAL ERROR TSSR WAS NOT OK
	060154	104455				TRAP CSERDF
	060156	001131				.WORD 601
	060160	003550				.WORD SFIERR
	060162	011656				.WORD SFIMSG
7894	060164					
7895						
7896	060164	012704	061110	MOV	#T37PACKET,R4	: SUBROUTINE NEEDS PACKET ADDRESS
7897	060170	004737	010322	JSR	PC,WRTCHR	: ISSUE WRITE CHARACTERISTICS
7898	060174	103407		BCS	23\$	: BR, IF COMMAND ISSUED OK
7899	060176	004737	020070	JSR	PC,FATCHK	: INC AND CHECK FOR MORE THAN 25 ERRORS
7903	060202	010001		MOV	R0,R1	: SAVE CONTENTS OF TSSR
7904	060204			ERRHRD	ERRNO,WRTMSG,SFIMSG	: WRITE CHARACTERISTIC FAILED
	060204	104456				TRAP CSERHRD
	060206	001132				.WORD 602
	060210	004754				.WORD WRTMSG
	060212	011656				.WORD SFIMSG
7905	060214					
	060214	104406				: LOOP IF SELECTED TRAP CSCLP1
7906	060216	004737	010424	JSR	PC,REWIND	: CALL TAPE REWIND COMMAND
7907	060222	103411		BCS	30\$	: BR, IF NO PROBLEM
7908	060224	016501	000000	MOV	TSSR(R5),R1	: GET TSSR CONTENTS
7909	060230	010004		MOV	R0,R4	: GET PACKET ADDRESS
7910	060232	004737	020070	JSR	PC,FATCHK	: INC AND CHECK FOR MORE THAN 25 ERRORS
7914	060236			ERRHRD	ERRNO,T37RWN,PKTSSR	: REWIND NOT ACCEPTED
	060236	104456				TRAP CSERHRD
	060240	001133				.WORD 603
	060242	062445				.WORD T37RWN
	060244	011670				.WORD PKTSSR
7915	060246					
	060246	104406				: LOOP IF SELECTED TRAP CSCLP1
7916	060250	013701	061136	MOV	T37BFR+6,R1	: PICK UP XSIO

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TEST 6: FUNCTION TIMING

7917	060254	010102		MOV	R1,R2		:SET UP EXPECTED
7918	060256	052702	000002	BIS	#BIT1,R2		:SET BOT BIT IN EXPECTED
7919	060262	020102		CMP	R1,R2		:DOES EXP = REC'D
7920	060264	001406		BEQ	40\$		:BR, IF EQUAL (OK)
7921	060266	004737	020070	JSR	PC,FATCHK		:INC AND CHECK FOR MORE THAN 25 ERRORS
7925	060272			ERRHRD	ERRNO,T37BOT,EXPREC		:TAPE NOT AT BOT AFTER REWIND
	060272	104456				TRAP	C\$ERRH70
	060274	001134				.WORD	604
	060276	062141				.WORD	T37BOT
	060300	016334				.WORD	EXPREC
7926	060302			40\$: CKLOOP			:LOOP IF SELECTED
	060302	104406				TRAP	C\$CLP1
7927	060304	012703	000144	MOV	#100.,R3		:NUMBER OF RECORDS TO BE WRITTEN
7928	060310	013737	003072	MOV	FREE,T37WB		:STARTING WRITE BUFFER ADDRESS
7929	060316	012737	140005	MOV	#140005,T37PK3		:WRITE DATA,ACK,CVC=1 COMMAND
7930	060324	012704	061240	MOV	#T37PK3,R4		:SET UP R4 WITH PACKET ADDRESS
7931	060330	012737	001130	MOV	#600.,T37SZ		:SET UP RECORD SIZE IN PACKET
7932	060336	010465	177776	MOV	R4,TSDB(R5)		:ISSUE COMMAND
7933	060342	004737	017110	JSR	PC,WAITF		:WAIT FOR SSR TO SET
7934	060346	016501	000000	MOV	TSSR(R5),R1		:GET TSSR CONTENTS
7935	060352	012702	000200	MOV	#SSR,R2		:SET UP EXPECTED
7936	060356	020102		CMP	R1,R2		:ARE THEY EQUAL
7937	060360	001406		BEQ	70\$		:BR, IF OK
7938	060362	004737	020070	JSR	PC,FATCHK		:INC AND CHECK FOR MORE THAN 25 ERRORS
7942							:SOFT ERROR, DON'T CARE ABOUT WRITE
7943							:COMMAND'S RESULTS - CHECKING THE
7944							:THE FUNCTION TIMING
7945	060366			ERRSOFT	ERRNO,T37WDC,PKTSSR		:TSSR INCORRECT AFTER WRITE DATA
	060366	104457				TRAP	C\$ERRSOFT
	060370	001135				.WORD	605
	060372	063001				.WORD	T37WDC
	060374	011670				.WORD	PKTSSR
7946	060376			70\$: CKLOOP			:LOOP IF SELECTED
	060376	104406				TRAP	C\$CLP1
7947	060400	005303		DEC	R3		:DEC RECORD COUNTER
7948	060402	001345		BNE	65\$		:BR, IF MORE RECORDS TO WRITE
7949	060404	004737	010424	JSR	PC,REWIND		:CALL TAPE REWIND COMMAND
7950	060410	103411		BCS	130\$		:BR, IF NO PROBLEM
7951	060412	016501	000000	MOV	TSSR(R5),R1		:GET TSSR CONTENTS
7952	060416	010004		MOV	R0,R4		:GET PACKET ADDRESS
7953	060420	004737	020070	JSR	PC,FATCHK		:INC AND CHECK FOR MORE THAN 25 ERROR
7957	060424			ERRHRD	ERRNO,T37RWN,PKTSSR		:REWIND NOT ACCEPTED
	060424	104456				TRAP	C\$ERRHRD
	060426	001136				.WORD	606
	060430	062445				.WORD	T37RWN
	060432	011670				.WORD	PKTSSR
7958	060434			130\$: CKLOOP			:LOOP IF SELECTED
	060434	104406				TRAP	C\$CLP1
7959	060436	013701	061136	MOV	T37BFR+6,R1		:PICK UP XSTO
7960	060442	010102		MOV	R1,R2		:SET UP EXPECTED
7961	060444	052702	000002	BIS	#BIT1,R2		:SET BOT BIT IN EXPECTED
7962	060450	020102		CMP	R1,R2		:DOES EXP = REC'D
7963	060452	001406		BEQ	140\$		:BR, IF EQUAL (OK)
7964	060454	004737	020070	JSR	PC,FATCHK		:INC AND CHECK FOR MORE THAN 25 ERRORS
7968	060460			ERRHRD	ERRNO,T37BOT,EXPREC		:TAPE NOT AT BOT AFTER REWIND
	060460	104456				TRAP	C\$ERRHRD
	060462	001137				.WORD	607

Address	Hex	Hex	Hex	Label	Instruction	Comment	Instruction	Comment
7969	060464	062141		140\$:	CKLOOP		:LOOP IF SELECTED	
	060466	016334						.WORD T37BOT
	060470							.WORD EXPREC
	060470	104406						TRAP C\$CLP1
7970	060472	012704	061240		MOV	#T3/PK3,R4	:SET UP PACKET ADDRESS	
7971	060476	012737	000037	061242	MOV	#31.,T37RB	:SET UP RECORDS TO SPACE OVER	
7972	060504	012737	140010	061240	MOV	#140010,T37PK3	:ACK,CVC=1,SPACE FORWARD COMMAND	
7973	060512	010465	177776		MOV	R4,T37DB(R5)	:ISSUE COMMAND	
7974	060516	005237	061266	150\$:	INC	T37CNT	:BUMP TIMER	
7975	060522			152\$:	DELAY	1	:DELAY ABOUT 100US	
	060522	012727	000001					MOV #1,(PC)+
	060526	000000						.WORD 0
	060530	013727	002116					MOV L\$DLY,(PC)+
	060534	000000						.WORD 0
	060536	005367	177772					DEC -6(PC)
	060542	001375						BNE -4
	060544	005367	177756					DEC -22(PC)
	060550	001367						BNE -20
7976	060552	016501	000000		MOV	TSSR(R5),R1	:GET TSSR	
7977	060556	032701	000200		BIT	#SSR,R1	:CHECK FOR TSSR'S SSR SET	
7978	060562	001755			BEQ	152\$	:KEEP COUNTING UNTIL SET	
7979	060564	012702	000200		MOV	#SSR,R2	:SET UP EXPECTED	
7980	060570	020201			CMP	R2,R1	:WAS EVERYTHING OK	
7981	060572	001406			BEQ	160\$	:BR, IF ALL IS WELL	
7982	060574	004737	020070		JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS	
7986	060600				ERRHRD	ERRNO,T37SCF,PKTSSR	:SPACE FORWARD DIDN'T WORK OUT	
	060600	104456						TRAP C\$ERHRD
	060602	001140						.WORD 608
	060604	063707						.WORD T37SCF
	060606	011670						.WORD PKTSSR
7987	060610			160\$:	CKLOOP		:LOOP IF SELECTED	
	060610	104406						TRAP C\$CLP1
7988	060612	004737	010424		JSR	PC,REWIND	:CALL TAPE REWIND COMMAND	
7989	060616	103411			BCS	170\$	:BR, IF NO PROBLEM	
7990	060620	010004			MOV	R0,R4	:GET PACKET ADDRESS	
7991	060622	016501	000000		MOV	TSSR(R5),R1	:GET STATUS FROM TSSR	
7992	060626	004737	020070		JSR	PC,FATCHK	:INC AND CHECK FOR MORE THAN 25 ERRORS	
7996	060632				ERRHRD	ERRNO,T37RWN,PKTSSR	:REWIND NOT ACCEPTED	
	060632	104456						TRAP C\$ERHRD
	060634	001141						.WORD 609
	060636	062445						.WORD T37RWN
	060640	011670						.WORD PKTSSR
7997	060642			170\$:	CKLOOP		:LOOP IF SELECTED	
	060642	104406						TRAP C\$CLP1
7998	060644	013701	061136		MOV	T37BFR+6,R1	:PICK UP XSTO	
7999	060650	010102			MOV	R1,R2	:SET UP EXPECTED	
8000	060652	052702	000002		BIS	#BIT1,R2	:SET BOT BIT IN EXPECTED	
8001	060656	020102			CMP	R1,R2	:DOES EXP = REC'D	
8002	060660	001406						

Address	Op Code	Op 1	Op 2	Op 3	Op 4	Op 5	Op 6	Op 7	Op 8	Op 9	Op 10	Op 11	Op 12	Op 13	Op 14	Op 15	Op 16	Op 17	Op 18	Op 19	Op 20	Op 21	Op 22	Op 23	Op 24	Op 25	Op 26	Op 27	Op 28	Op 29	Op 30	Op 31	Op 32	Op 33	Op 34	Op 35	Op 36	Op 37	Op 38	Op 39	Op 40	Op 41	Op 42	Op 43	Op 44	Op 45	Op 46	Op 47	Op 48	Op 49	Op 50	Op 51	Op 52	Op 53	Op 54	Op 55	Op 56	Op 57	Op 58	Op 59	Op 60	Op 61	Op 62	Op 63	Op 64	Op 65	Op 66	Op 67	Op 68	Op 69	Op 70	Op 71	Op 72	Op 73	Op 74	Op 75	Op 76	Op 77	Op 78	Op 79	Op 80	Op 81	Op 82	Op 83	Op 84	Op 85	Op 86	Op 87	Op 88	Op 89	Op 90	Op 91	Op 92	Op 93	Op 94	Op 95	Op 96	Op 97	Op 98	Op 99	Op 100	Op 101	Op 102	Op 103	Op 104	Op 105	Op 106	Op 107	Op 108	Op 109	Op 110	Op 111	Op 112	Op 113	Op 114	Op 115	Op 116	Op 117	Op 118	Op 119	Op 120	Op 121	Op 122	Op 123	Op 124	Op 125	Op 126	Op 127	Op 128	Op 129	Op 130	Op 131	Op 132	Op 133	Op 134	Op 135	Op 136	Op 137	Op 138	Op 139	Op 140	Op 141	Op 142	Op 143	Op 144	Op 145	Op 146	Op 147	Op 148	Op 149	Op 150	Op 151	Op 152	Op 153	Op 154	Op 155	Op 156	Op 157	Op 158	Op 159	Op 160	Op 161	Op 162	Op 163	Op 164	Op 165	Op 166	Op 167	Op 168	Op 169	Op 170	Op 171	Op 172	Op 173	Op 174	Op 175	Op 176	Op 177	Op 178	Op 179	Op 180	Op 181	Op 182	Op 183	Op 184	Op 185	Op 186	Op 187	Op 188	Op 189	Op 190	Op 191	Op 192	Op 193	Op 194	Op 195	Op 196	Op 197	Op 198	Op 199	Op 200	Op 201	Op 202	Op 203	Op 204	Op 205	Op 206	Op 207	Op 208	Op 209	Op 210	Op 211	Op 212	Op 213	Op 214	Op 215	Op 216	Op 217	Op 218	Op 219	Op 220	Op 221	Op 222	Op 223	Op 224	Op 225	Op 226	Op 227	Op 228	Op 229	Op 230	Op 231	Op 232	Op 233	Op 234	Op 235	Op 236	Op 237	Op 238	Op 239	Op 240	Op 241	Op 242	Op 243	Op 244	Op 245	Op 246	Op 247	Op 248	Op 249	Op 250	Op 251	Op 252	Op 253	Op 254	Op 255	Op 256	Op 257	Op 258	Op 259	Op 260	Op 261	Op 262	Op 263	Op 264	Op 265	Op 266	Op 267	Op 268	Op 269	Op 270	Op 271	Op 272	Op 273	Op 274	Op 275	Op 276	Op 277	Op 278	Op 279	Op 280	Op 281	Op 282	Op 283	Op 284	Op 285	Op 286	Op 287	Op 288	Op 289	Op 290	Op 291	Op 292	Op 293	Op 294	Op 295	Op 296	Op 297	Op 298	Op 299	Op 300	Op 301	Op 302	Op 303	Op 304	Op 305	Op 306	Op 307	Op 308	Op 309	Op 310	Op 311	Op 312	Op 313	Op 314	Op 315	Op 316	Op 317	Op 318	Op 319	Op 320	Op 321	Op 322	Op 323	Op 324	Op 325	Op 326	Op 327	Op 328	Op 329	Op 330	Op 331	Op 332	Op 333	Op 334	Op 335	Op 336	Op 337	Op 338	Op 339	Op 340	Op 341	Op 342	Op 343	Op 344	Op 345	Op 346	Op 347	Op 348	Op 349	Op 350	Op 351	Op 352	Op 353	Op 354	Op 355	Op 356	Op 357	Op 358	Op 359	Op 360	Op 361	Op 362	Op 363	Op 364	Op 365	Op 366	Op 367	Op 368	Op 369	Op 370	Op 371	Op 372	Op 373	Op 374	Op 375	Op 376	Op 377	Op 378	Op 379	Op 380	Op 381	Op 382	Op 383	Op 384	Op 385	Op 386	Op 387	Op 388	Op 389	Op 390	Op 391	Op 392	Op 393	Op 394	Op 395	Op 396	Op 397	Op 398	Op 399	Op 400	Op 401	Op 402	Op 403	Op 404	Op 405	Op 406	Op 407	Op 408	Op 409	Op 410	Op 411	Op 412	Op 413	Op 414	Op 415	Op 416	Op 417	Op 418
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CZTUZAO TU20 FRONT END PRT D
TEST 6: FUNCTION TIMING

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8046
8047
8048
8050 061102
8052 061110
8053 061110 100004
8054 061112 061120
8055 061114 000000
8056 061116 000012
8057 061120
8058 061120 061130
8059 061122 000000
8060 061124 000024
8061 061126 000000
8062 061130
8063
8064
8065
8067 061212
8069 061220
8070 061220 100006
8071 061222 061250
8072 061224 000000
8073 061226 000006
8074
8076 061230
8078 061240
8079 061240 100005
8080 061242
8081 061242 003072
8082 061244 000000
8083 061246 000000
8084
8085
8086
8087
8088 061250
8089 061250 010
8090 061251 200
8091 061252 000000
8092 061254 000000
8093
8094
8095
8096
8097
8098 061256 100205
8099 061260 100605
8100 061262 102205
8101 061264 177777
8102
8103
8104 061266 000000
8105 061270 000000
8106 061272 000000
8107

;+
;LOCAL STORAGE FOR THIS TEST
;-
      .BLKB 10-<.-TUV2A&7>
T37PACKET:
      .WORD 100004
      .WORD T37DATA
      .WORD 0
      .WORD 10.
T37DATA:
      .WORD T37BFR
      .WORD 0
      .WORD 20.
      .WORD 0
T37BFR: .BLKW 25.

;WRITE SUBSYSTEM MEMORY COMMAND PACKET
;
      .BLKB 10-<.-TUV2A&7>
T37PK2:
      .WORD 100006
      .WORD T37BF2
      .WORD 0
      .WORD 6.

      .BLKB 10-<.-TUV2A&7>
T37PK3:
      .WORD 100005
T37RB:
T37WB: .WORD FREE
      .WORD 0
T37SZ: .WORD 0
      .EVEN

;
;
;
T37BF2:
T37BS0: .BYTE 10
T37BS1: .BYTE 200
T37S2: .WORD 0
T37S3: .WORD 0

;
;
      .EVEN
;TAPE MOTION PACKET COMMAND VALUES

T37RN: .WORD 100205
T37WDR: .WORD 100605
T37CON: .WORD 102205
      .WORD 177777

;
T37CNT: .WORD 0
T37CNU: .WORD 0
T37DLY: .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

;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 CONTINUOUS
;END OF DATA

;TAPE TIMER COUNTER STORAGE AREA
;TAPE TIMER COUNTER STORAGE AREA
;DELAY COUNTER

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CZTUZAO TU80 FROM END PRT D
TEST 6: FUNCTION TIMING

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8109
8110
8111
8112
8113
8114

:+
:LOCAL TEXT MESSAGES FOR TEST
:-

8115 061274	124	141	160	T37WNG: .ASCIZ	'Tape Position Incorrect After REREAD Previous (OPP=1)'
8116 061362	124	123	123	T37RDF: .ASCIZ	'TSSR Incorrect After READ DATA Command'
8117 061431	122	105	122	T37RRF: .ASCIZ	'REREAD Previous (Space Reverse, Read Forward) Command Failed'
8118 061526	120	117	123	T37SC: .ASCIZ	'POSITION (Space Command) Failed, TSSR Not Correct'
8119 061610	122	111	102	T37LOR: .ASCIZ	'RIB NOT SET AFTER READ REVERSE INTO BOT'
8120 061660	124	123	123	T37WDF: .ASCIZ	'TSSR Not Correct After Illegal Mode Bits Set'
8121 061735	111	154	154	T37LOQ: .ASCIZ	'Illegal Mode Bits, Failed To Set ILC Bit In XST0'
8122 062016	122	105	122	T37SSR: .ASCIZ	'REREAD COMMAND Not Accepted'
8123 062052	124	123	123	T37WDE: .ASCIZ	'TSSR Not Correct After WRITE DATA RETRY Command, At BOT'
8124 062141	124	141	160	T37BOT: .ASCIZ	'Tape Not At BOT After REWIND Command (BOT Not Set In XST0)'
8125 062234	127	122	111	T37TIM: .ASCIZ	'WRITE DATA RETRY'S Erase Tape Not Long Enough'
8126 062311	122	105	122	T37EOT: .ASCIZ	'REREAD DATA OVER EOT GAVE NO TAPE STATUS ALERT'
8127 062370	124	123	123	T37TM: .ASCIZ	'TSSR Not Correct After REREAD COMMAND Reject'
8128 062445	122	145	167	T37RWN: .ASCIZ	'Rewind (POSITION) Command Not Accepted'
8129 062514	122	101	115	T37RNC: .ASCIZ	'RAM Error, Correct Data Pattern Not In Ram'
8130 062567	124	123	123	T37AM3: .ASCIZ	'TSSR Init. Failed After REREAD COMMAND'
8131 062636	104	162	151	T37OFL: .ASCIZ	'Drive 7 Select Failed To Set 'OFL' In TSSR'
8132 062711	124	123	123	T37WDD: .ASCIZ	'TSSR Not Correct After REREAD DATA Command, SWB Bit Set'
8133 063001	124	123	123	T37WDC: .ASCIZ	'TSSR Not Correct After REREAD DATA Command'
8134 063054	103	126	103	T37VCK: .ASCIZ	'CVC Set, Didn't Reset VCK In Message Buffer'
8135 063127	124	123	102	T37BA: .ASCIZ	'TSBA Not Correct After REHEAD DATA Command'
8136 063202	127	122	111	T37WSS: .ASCIZ	'WRITE SUBSYSTEM MEMORY Command Not Accepted (RAM Read)'
8137 063271	122	145	141	T37LON: .ASCIZ	'Reading Long Record Failed To Set RLL Bit In XST0'
8138 063353	122	145	141	T37LOP: .ASCIZ	'Reading Long Record Failed To Set RLS Bit In XST0'
8139 063435	122	145	163	T37PBP: .ASCIZ	'Residual Byte Count Incorrect After Short Record Read'
8140 063523	122	145	141	T37TRL: .ASCIZ	'Reading Long Record Failed To Give Tape Status Alert'
8141 063611	127	122	111	T37NEF: .ASCIZ	'WRITE DATA RETRY, At First Record, Failed To Set RIB Bit XST3'
8142 063707	124	123	123	T37SCF: .ASCIZ	'TSSR Not Correct After SPACE RECORDS Command'
8143 063764	124	123	123	T37TSA: .ASCIZ	'TSSR Not Correct After WRITE DATA RETRY, Into BOT'
8144 064046	124	123	123	T37WRF: .ASCIZ	'TSSR Not Correct After WRITE DATA RETRY Command'
8145 064126	104	141	164	T37DTA: .ASCIZ	'Data Compare Error, Data Read From Tape Not Equal To Written'
8146 064223	106	165	156	T37ID: .ASCIZ	'Function Timing'

.EVEN

8147
8148
8149
8150
8151
8152
8153
8154

:+
:ROUTINE TO RESTORE COMMAND PACKET TO START-UP (DEFAULT) VALUES
:WRITE SUBSYSTEM MEMORY COMMAND
:-

8155 064244
8156 064244
8157 064250 012701 061110
8158 064254 012721 100004
8159 064260 012721 061120
8160 064264 005021
8161 064266 012721 000012
8162 064272 012721 061130
8163 064276 005021
8164 064300 012721 000024
8165 064304 005021

T37REST:

SAVREG
MOV
MOV
MOV
CLR
MOV
MOV
CLR
MOV
CLR

#T37PACKET,R1
#100004,(R1)+
#T37DATA,(R1)+
(R1)+
#10.,(R1)+
#T37BFR,(R1)+
(R1)+
#20.,(R1)+
(R1)+

:SAVE THE REGISTERS
:START OF THE PACKET
:WRITE SUBSYSTEM MEM. WITH ACK,
:ADDRESS OF CHARACTERISTICS DATA BLOCK
:EXTENDED ADDRESS
:SIZE OF DATA BLOCK IN BYTES
:ADDRESS OF MESSAGE BUFFER
:LENGTH OF MESSAGE BUFFER

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TEST 6: FUNCTION TIMING

8166	064306	012711	000000		MOV	#0,(R1)	;SELECT DRIVE ZERO
8167	064312	012702	000030		MOV	#24.,R2	;NUMBER OF LOCATIONS TO BE CLEARED
8168	064316	012762	177777	061130 64\$:	MOV	#177777,T37BFR(R2)	;ALL ONES TO MESSAGE BUFFER
8169	064324	005742			TST	-R2)	;NEXT LOCATION
8170	064326	022702	000000		CMP	#0,R2	;AT END OF LOOP YET
8171	064332	001371			BNE	64\$	;KEEP GOING UNTIL DONE
8172	064334	000207			RTS	PC	;RETURN
8173							
8174							
8175	064336				T37RT2:	SAVREG	;SAVE THE REGISTERS
8176	064336				MOV	#T37PK2,R1	;START OF THE PACKET
8177	064342	012701	061220		MOV	#100006,(R1)+	;WRITE SUBSYSTEM MEM. WITH ACK,
8178	064346	012721	100006		MOV	#T37BF2,(R1)+	;ADDRESS OF DATA BLOCK
8179	064352	012721	061250		CLR	(R1)+	;EXTENDED ADDRESS
8180	064356	005021			MOV	#6.,(R1)+	;SIZE OF DATA BLOCK IN BYTES
8181	064360	012721	000006		CLR	(R1)+	
8182	064364	005021			MOV	#T37BF2,R1	;POINT TO DATA SEL AREA
8183	064366	012701	061250		CLR	(R1)+	
8184	064372	005021			CLR	(R1)	
8185	064374	005011			RTS	PC	;RETURN
8186	064376	000207					
8187	064400				T37RT3:	SAVREG	;SAVE REGISTERS
8188	064400				MOV	#T37PK3,R1	;SET UP POINTER ADDRESS
8189	064404	012701	061240		CLR	(R1)+	;COMMAND SPACE
8190	064410	005021			CLR	(R1)+	;ADDRESS OF DATA BLOCK
8191	064412	005021			CLR	(R1)+	;EXTENDED ADDRESS
8192	064414	005021			CLR	(R1)	;SIZE OF DATA TRANSFER BLOCK
8193	064416	005011			RTS	PC	;RETURN
8194	064420	000207			ENDTST		
8195	064422						
	064422						
	064422	104401					

L10061: TRAP CSETST

CZTUZAO TUBO FRONT END PRT D
DISPLAY BREAKPOINT SETTINGS

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.SBTTL HARDWARE PARAMETER CODING SECTION

```

:++
: THE HARDWARE PARAMETER CODING SECTION CONTAINS MACROS
: THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES. THE
: MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
: INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES. THE
: MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
: WITH THE OPERATOR.
:--

```

9294 071222
071222 000015
071224

```

BGNHRD
.WORD L10063-LSHARD/2
LSHARD::

```

9295
9296 071224
071224 000031
071226 071256
071230 160000
071232 177776

```

GPRMA HPM1,0,0,160000,177776,YES ;GET TSBA/TSDB REGISTER ADDRESS.
.WORD TSCODE
.WORD HPM1
.WORD TSLOLIM
.WORD TSHILIM
GPRMA HPM2,2,0,0,776,YES ;GET VECTOR ADDRESS.
.WORD TSCODE
.WORD HPM2
.WORD TSLOLIM
.WORD TSHILIM

```

9297 071234
071234 001031
071236 071305
071240 000000
071242 000776

9298 071244
071244 002032
071246 071331
071250 000340
071252 000000
071254 000007

```

GPRMD HPM3,4,0,340,0,7,YES ;GET INTERRUPT PRIORITY.
.WORD TSCODE
.WORD HPM3
.WORD 340
.WORD TSLOLIM
.WORD TSHILIM
ENDHRD
.EVEN

```

9299 071256

071256
9300 071256 104 105 126
9301 071305 111 115 124
9302 071331 111 116 124
9303
9304

```

L10063:
HPM1: .ASCIZ 'DEVICE ADDRESS (TSSR) '
HPM2: .ASCIZ 'INTERRUPT VECTOR '
HPM3: .ASCIZ 'INTERRUPT PRIORITY '
.EVEN

```

CZTUZAO TU80 FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 137
SOFTWARE PARAMETER CODING SECTION

.SBTTL SOFTWARE PARAMETER CODING SECTION

```

9
9307
9308
9309
9310
9311
9312
9313
9314
9315
9316 071362
      071362 000006
      071364
9317 071364
      071364 000130
      071366 071400
      071370 177777
9318 071372
      071372 001130
      071374 071437
      071376 177777
9319
9320
9321 071400
      071400
9322 071400 105 116 101
9323 071437 111 116 110
9324 071467 120 105 122
9325 071517 120 105 122
9326
9327
9328
9329
9330
9331
9332
9333 071550
      071550 000006
      071552
      071552 023634
      071554 032316
      071556 041312
      071560 046630
      071562 052646
      071564 057776
9334
9335
9336
9337
9338
9339 071566
9340

      .BGNST
      .WORD L10064-LSSOFT/2
LSSOFT::
      GPRML SPM1,0,-1,YES ;GET RAM DUMP FLAG
      .WORD TSCODE
      .WORD SPM1
      .WORD -1
      GPRML SPM4,2,-1,YES ; GET ITERATION CONTROL.
      .WORD TSCODE
      .WORD SPM4
      .WORD -1
      GPRMD SPM6,4,D,7777,0,7777,YES ; GET LOCAL ERROR LIMIT
      GPRMD SPM7,6,D,7777,0,7777,YES ; GET GLOBAL ERROR LIMIT
      ENDSFT
      .EVEN
L10064:
      SPM1: .ASCIZ 'ENABLE M7454 RAM DUMP ON ERROR'
      SPM4: .ASCIZ 'INHIBIT ITERATIONS'
      SPM6: .ASCIZ 'PER TEST ERROR LIMIT'
      SPM7: .ASCIZ 'PER UNIT ERROR LIMIT'
      .EVEN
      .SBTTL PATCH AREA

      .+
      .DISPATCH TABLE
      .
      .*** MOVE TO FRONT OF PROGRAM FOR RELEASE ***
      .-
      DISPATCH TESTNO
      .WORD 6
LSDISPATCH::
      .WORD T1
      .WORD T2
      .WORD T3
      .WORD T4
      .WORD T5
      .WORD T6

      . FINALLY A GENEROUS PATCH AREA.
      .
      . AND AN ADJUSTMENT TO ACCOUNT FOR THE "LASTAD BIT7" HACK
      . DESCRIBED IN "SUPPRG.MEM" (FOR REV C).
      PATCH::

```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 138
PATCH AREA

9342	071566					MOVER:	MOV	#1000,SP	;SET STACK AT LOC 1000
9343	071566	012706	001000				RESET		;GET THINGS IN PLACE
9344	071572	000005					MOV	#-1,R1	;SET UP COUNTER
9345	071574	012701	177777			SS:	DEC	R1	;BUMP COUNTER
9346	071600	005301					BNE	SS	;BR, IF MORE COUNTING TO DO
9347	071602	001376					MOV	#MHDR+ROMBASE-MOVER,R3	;POINT TO MESSAGE
9348	071604	012703	072002				JSR	PC,PRINT	;MOVER REV ??
9349	071610	004737	071756						
9350	071614					TEST5A:			
9351	071614	012701	172340				MOV	#KIPAR0,R1	;MOVER OF KIPAR REGISTERS
9352	071620	012705	172300				MOV	#KIPDR0,R5	;MOVER OF THE KIPDR REGISTERS
9353	071624	005000					CLR	R0	;FIRST PAGE BASE ADDRESS
9354	071626	010021				20\$:	MOV	R0,(R1)+	;SET BASE FOR NEXT MAP
9355	071630	012725	077406				MOV	#77406,(R5)+	;4K READ/WRITE EACH PAGE
9356	071634	062700	030200				ADD	#200,R0	;BASE FOR THE NEXT PAGE
9357	071640	020027	001600				CMP	R0,#1600	;DONE ALL PAGES ?
9358	071644	003770					BLE	20\$	;SET UP ALL MEMORY MANAGEMENT PAGES
9359	071646	012741	007600				MOV	#7600,-(R1)	;SET UP I/O PAGE
9360	071652	012737	002000	172354	16\$:		MOV	#2000,@#KIPAR6	;MOVER MEMORY PAGE 32KWORDS
9361	071660	005005					CLR	R5	;INITIAL LOCATION 0 MOVER
9362	071662	012701	140000		17\$:		MOV	#140000,R1	;MOVER AT LOC 0, RELATIVE TO KIPAR6
9363	071666	012504			10\$:		MOV	(R5)+,R4	;GET MEMORY CONTENTS
9364	071670	052737	000001	177572			BIS	#1,@#SR0	;ENABLE MEMORY MANAGEMENT
9365	071676	C10421					MOV	R4,(R1)+	;PUT INTO UPPER MEMORY
9366	071700	042737	000001	177572			BIC	#1,@#SR0	;TURN OFF MEMORY MANGEMENT
9367	071706	020127	157776				CMP	R1,#157776	;END OF MEMORY PAGE YET ?
9368	071712	101765					BLOS	10\$	;LOOP TILL WHOLE PAGE WRITTEN
9369	071714	062737	000200	172354			ADD	#200,@#KIPAR6	;MAP INTO NEXT PAGE
9370	071722	023727	172354	003600			CMP	@#KIPAR6,#3600	;UP TO 64K YET
9371	071730	002754					BLT	17\$	;LOOP UNTIL ALL MEMORY WRITTEN
9372	071732	042737	000001	177572			BIC	#1,@#SR0	;TURN OFF MEMORY MANGEMENT
9373	071740	012703	072071				MOV	#GOOD+ROMBASE-MOVER,R3	;POINT TO MESSAGE
9374	071744	004737	071756				JSR	PC,PRINT	;CODE HAS BEEN MOVED
9375	071750	000000					HALT		;WAIT FOR DISK SWAP
9376	071752	000137	072140				JMP	RLBOOT	;GO BOOT THE XXDP PACK
9377									
9378									
9379									
9380	071756								
9381	071756	004737	071766			PRINT:	JSR	PC,TTYPR	;GO TO PRINT ROUTINE
9382	071762	001375				1\$:	BNE	1\$	;LOOP UNTIL 000000 IS FOUND
9383	071764	000207					RTS	PC	;RETURN TO CALLER
9384									
9385									
9386									
9387	071766	105737	177564			TTYPR:	ISTB	@#TTOCSR	;CHECK TTY FOR DONE
9388	071772	100375					BPL	TTYPR	;LOOP UNTIL DONE SETS
9389	071774	112337	177566				MOVB	(R3)+,@#TTOBFR	;SEND OUT CORRECT CHARACTER
9390	072000	000207					RTS	PC	;RETURN TO CALLER
9391									
9392									
9393									
9394	072002	015	012	115		MHDR:	.ASCII	<15><12>/MOVER REV 0.0/	
9395	072021	015	012	103			.ASCII	<15><12>/CODE FROM 0-72K MOVES TO 32-64K WORDS/	
9396	072071	015	012	103		GOOD:	.ASCII	<15><12>/CODE HAS BEEN MOVED/<15><12>	
9397	072121	015	012	102		BOOT:	.ASCII	<15><12>/BOOTING XXDP/	
9398							.EVEN		

CZTUZAO TU80 FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 139
PATCH AREA

9400	072140			RLBOOT:		
9401	072140	012701	174400		MOV	#CSR,R1
9402	072144	012700	174404	1\$:	MOV	#DAR,R0
9403	072150	012720	000013		MOV	#DLR,(R0)+
9404	072154	004537	072302		JSR	R5,3\$
9405	072160	000004			.WORD	DLGETS
9406	072162	032711	000001		BIT	#READY,@R1
9407	072166	001010			BNE	2\$
9408	072170	011004			MOV	(R0),R4
9409	072172	042704	177730		BIC	#DLERR,R4
9410	072176	001451			BEQ	7\$
9411	072200	022704	000006		CMP	#DLUN,R4
9412	072204	101446			BLOS	7\$
9413	072206	000756			BR	1\$
9414	072210	004537	072302	2\$:	JSR	R5,3\$
9415	072214	000010			.WORD	DLRDHD
9416	072216	011004			MOV	@R0,R4
9417	072220	042704	000177		BIC	#DLCYL,R4
9418	072224	005204			INC	R4
9419	072226	010440			MOV	R4,-(R0)
9420	072230	004537	072302		JSR	R5,3\$
9421	072234	000006			.WORD	SEEK
9422	072236	005037	174402		CLR	@#BAR
9423	072242	005020			CLR	(R0)+
9424	072244	012710	177400		MOV	#-256.,@R0
9425	072250	004537	072302		JSR	R5,3\$
9426	072254	000014			.WORD	READ
9427	072256	005000			CLR	R0
9428	072260	022737	000240 000000		CMP	#240,@#0
9429	072266	001016			BNE	8\$
9430	072270	012703	072121		MOV	#BOOT+ROMBASE-MOVER,R3
9431	072274	004737	071756		JSR	PC,PRINT
9432	072300	005007			CLR	PC
9433				:		
9434				:		
9435				:		
9436				:		
9437				:		

END TEST NUMBER SIXTEEN

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 140
 PATCH AREA

```

9439 072302 012511      3$:  MOV      (R5)+, @R1      ;ACTUAL MOVER WITH COMMAND
9440 072304 032711 100200 4$:  BIT      #DLDNER, @R1      ;CHECK FOR DONE OR ERROR BITS
9441 072310 001775      BEQ      4$              ;WAIT FOR SAME
9442 072312 100401      BMI      5$              ;BR ON ERROR
9443 072314 000205      RTS      R5              ;OK KEEP GOING
9444 072316 077266      5$:  SOB      R2, 1$      ;RETRY MINUS ONE
9445 072320 000000      HALT                      ;HALT ON ERROR
9446 072322 000000      7$:  HALT                      ;HALT ON ERROR
9447 072324 000000      8$:  HALT                      ;HALT ON ERROR
9448
9449      :      .IF      NZ, .8377
9450      :      .=. !377+1
9451      :      .ENDC
9452 072326      LASTAD      ;SET LAST USED ADDRESS.
          072326 072344      .EVEN
          072330 000005      .WORD T$FREE
          072332      .WORD T$SIZE
L$LAST::      .SBTTL  HARD CODED P-TABLE
9453      :++
9454      :      DIAGNOSTIC IS PRE-PARAMETERIZED PER THIS TABLE
9455      :
9456      :--
9457 072332      BGNSETUP      1
9458 072332      BGNPTAB
          072332 000000      .WORD 0
          072334 000003      .WORD L10067-./2-1
L10065:      .WORD      172522
          .WORD      224
          .WORD      PRI05
          ENDPTAB
L10067:      ENDSETUP
9463 072344
9464
9465      000001      .END

```

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 140-1
SYMBOL TABLE

ADDSSR 011762 G	CTABM 003116 G	DATASC 021124	FATERR= 000060	GSYES = 000010
ADR = 000020 G	CSAU = 000052	DEBUGM 011454	FATFLG 002170 G	HIADDR= 001400
AMBTSS 006326	CSAUTO= 000061	DEVCM 002166 G	FERCM 011544	HIMEM = 007776
ASSEMB= 000010	CSBRK = 000022	DEVDRD 023564	FIFEXP 012012 G	HOE = 100000 G
A1716 = 000003	CSBSEG= 000004	DEVNRD 023503	FIF1MS 012064	HPM1 071256
BADDAT 003110 G	CSBSUB= 000002	DEVNDR 023421	FIF2MS 012133	HPM2 071305
BADSSR 016540 G	CSCEFG= 000045	DEVONL 023351	FILLME 020362	HPM3 071331
BAR = 174402	CSCLCK= 000062	DEVSUM 023314	FNOINT 004113	IBE = 010000 G
BENBSW 002174 G	CSCLEA= 000012	DFPTBL 002124 G	FORCER 002144 G	IDU = 000040 G
BIE = 040000	CSCLP1= 000006	DIAGMC= 000000	FREE 003072 G	IER = 020000 G
BIT0 = 000001 G	CSCLP2= 000006	DLCYL = 000177	FREEHI 003076	IFALT 004154
BIT00 = 000001 G	CSCLP3= 000006	DLNER= 100200	FRESIZ 003074 G	INCERK 017732
BIT01 = 000002 G	CSCLP4= 000006	DLERR = 177730	FUSI 004015	INTCPC 017010
BIT02 = 000004 G	CSCLP5= 000006	DLGETS= 000004	FSAU = 000015	INTFLA 017005
BIT03 = 000010 G	CSCLP6= 000006	DLRDHD= 000010	FSAUTO= 000020	INTMAS 017004
BIT04 = 000020 G	CSCLP7= 000006	DLRDNH= 000016	FSBGN = 000040	INTR 017056 G
BIT05 = 000040 G	CSCLP8= 000006	DLSR = 000013	FSCLEA= 000007	INTREC 002172 G
BIT06 = 000100 G	CSCLP9= 000006	DLUN = 000006	FSDU = 000016	INTVEC 017006
BIT07 = 000200 G	CSCLP10= 000006	DSBINT 017044	FSEND = 000041	INTX 004176
BIT08 = 000400 G	CSCLP11= 000006	DUAD12 004541	FSHARD= 000004	IOCKKI= 000200
BIT09 = 001000 G	CSCLP12= 000006	DUFLG 003060 G	FSHW = 000013	IOKSTP= 000001
BIT1 = 000002 G	CSCLP13= 000006	DUMMY 003030	FSINIT= 000006	IPRI 002160 G
BIT10 = 002000 G	CSCLP14= 000006	EF.CON= 000036 G	FSJMP = 000050	ISR = 000100 G
BIT11 = 004000 G	CSCLP15= 000006	EF.NEW= 000035 G	FSMOD = 000000	IVFC = 002156 G
BIT12 = 010000 G	CSCLP16= 000006	EF.PWR= 000034 G	FSMSG = 000011	IXE = 004000 G
BIT13 = 020000 G	CSCLP17= 000006	EF.RES= 000037 G	FSPROT= 000021	ISAU = 000041
BIT14 = 040000 G	CSCLP18= 000006	EF.STA= 000040 G	FSPWR = 000017	ISAUTO= 000041
BIT15 = 100000 G	CSCLP19= 000006	EMAXDU 017665	FSRPT = 000012	ISCLN = 000041
BIT2 = 000004 G	CSCLP20= 000006	EN = 000000	FSSEG = 000003	ISDU = 000041
BIT3 = 000010 G	CSCLP21= 000006	ENAIN 017012	FSOFT= 000005	ISHRD = 000041
BIT4 = 000020 G	CSCLP22= 000006	ENVIRN 021522	FSRV = 000010	ISINIT= 000041
BIT5 = 000040 G	CSCLP23= 000006	EPRTSW 002146 G	FSUB = 000002	ISMOD = 000040
BIT6 = 000100 G	CSCLP24= 000006	EPRT1 005672	FSW = 000014	ISMSG = 000041
BIT7 = 000200 G	CSCLP25= 000006	EPRT2 005733	FSTEST= 000001	ISPROT= 000040
BIT8 = 000400 G	CSCLP26= 000006	EPRT3 006015	GDDAT 003112 G	ISPTAB= 000041
BIT9 = 001000 G	CSCLP27= 000006	ERRCM 011555	GERRMA 002142 G	ISPWR = 000041
BOE = 000400 G	CSCLP28= 000006	ERRHI 002202 G	GETPAT 021066 G	ISRPT = 000041
BOOT 072121	CSCLP29= 000006	ERRK 017644	GETSEL 021150 G	ISSEG = 000041
BRINIT 004355	CSCLP30= 000006	ERRLO 002204 G	GOOD 072071	ISSETU= 000041
BSELO = 000000	CSCLP31= 000006	ERRNO = 001144	GSCNTO= 000200	ISSFT = 000041
BSEL1 = 000001	CSCLP32= 000006	ERRVEC= 000004 G	GSDLM= 000372	ISSRV = 000041
CHKAMB 016704	CSCLP33= 000006	ERTABE 003330	GSDISP= 000003	ISSUB = 000041
CHKMAN 021372 G	CSCLP34= 000006	ERTABL 003130	GSEXCP= 000400	ISTST = 000041
CHKTSS 017224	CSCLP35= 000006	ESUM 017646	GSHILI= 000002	JSJMP = 000167
CKDROP 020142	CSCLP36= 000006	EVL = 000004 G	GSLOLI= 000001	KIPAR0= 172340
CKEMAX 017770	CSCLP37= 000006	EXBCNT= 000010	GSNO = 000000	KIPAR1= 172342
CKMSG 011202 G	CSCLP38= 000006	EXPBRE 016342 G	GSOFFS= 000400	KIPAR2= 172344
CKMSG2 011322 G	CSCLP39= 000006	EXPD 002176 G	GSOFSI= 000376	KIPAR3= 172346
CKRAM 010524 G	CSCLP40= 000006	EXPGOT 004431	GSPRMA= 000001	KIPAR4= 172350
CKRAM2 011100 G	CSCLP41= 000006	EXPGT2 004465	GSPRMD= 000002	KIPAR5= 172352
CMEM 020546	CSCLP42= 000006	EXPMG 002266 G	GSPRML= 000000	KIPAR6= 172354
CONFIG 020210	CSCLP43= 000006	EXPREC 016334 G	GSRADA= 000140	KIPAR7= 172356
COUNT 002254 G	CSCLP44= 000006	EXTA 005232	GSRADB= 000000	KIPDR0= 172300
CSR = 174400	CSCLP45= 000006	EXTEND 005230	GSRADD= 000040	KIPDR1= 172302
CSRADD 002154 G	CSCLP46= 000006	ESEND = 002100	GSRADL= 000120	KIPDR2= 172304
CTAB 003116 G	CSCLP47= 000006	ESLOAD= 000035	GSRADO= 000020	KIPDR3= 172306
CTABE 003130 G	CSCLP48= 000006	FATCHK 020070	GSEXFER= 000004	KIPDR4= 172310

CZTUZAO TUBO FRONT END PRT D MACRO M1200 29-MAR-83 13:43 PAGE 140-2
SYMBOL TABLE

KIPDR5= 172312	LSREV 002010 G	L10057 057774	OSBGNS= 000001	O.ODT 064424 G
KIPDR6= 172314	LSRPT 023052 G	L10060 055352	OSDU = 000001	O.OFST 065744
KIPDR7= 172316	LSOFT 071364 G	L10061 064422	OSERRT= 000000	O.OLD 065342
KTENAB 003102 G	LSGPC 002056 G	L10062 041062	OSGNSW= 000001	O.OP1 065346
KTFLG 003100 G	LSGPCP 002020 G	L10063 071236	OSPOIN= 000001	O.OP2 065412
KTINIT 021610	LSSTP 002024 G	L10064 071400	OSSETU= 000001	O.OP2A 065420
KTOFF 020234	LSSTA 002030 G	L10065 072336	O.ADR1 071134	O.ORAB 064652
KTON 020216	LSW 002134 G	L10067 072344	O.ALL 067520	O.ORPC 064630
LERRMA 002140 G	LSTEST 002114 G	MEMADD 013576 G	O.AS 065214	O.ORRB 064662
LISTAL= 000001	LSTIML 002014 G	MENASC 021341	O.ASC 070503	O.P 070477
LOE = 040000 G	LSUNIT 002012 G	MENERR 021266	O.ASCI 066530	O.PCS 064642
LOOPCN 002164 G	L10000 002133	MENRES 021370	O.BACK 065500	O.PRNT 066766
LOOPCO 012750	L10001 002144	MESBFA 002716 G	O.BALL 067404	O.PROC 066344
LOOPFL 003114 G	L10002 005226	MESBFN 014623	O.BD 070504	O.PROM 070512
LOT = 000010 G	L10003 011666	MESHEA 015006	O.BKP = 000016	O.RALL 065670
LSACP 002110 G	L10004 011716	MHDR 072002	O.BKPT 065526	O.RCSR= 177560
LSAPT 002036 G	L10005 011734	MMVEC = 000250	O.BRK 067034	O.RDB = 177562
LSAU 022550 G	L10006 011742	MOVER 071566	O.BW 070464	O.REG 070416
LSAUT 002070 G	L10007 011760	MPR = 174406	O.BYT 065252	O.REGT 064542
LSAUTO 022754 G	L10010 011776	MSA.FR= 000006	O.BYT1 065244	O.REM 067670
LSCCP 002106 G	L10011 012010	MSA.NO= 000000	O.CAD 070466	O.RSB 067624
LSCLEA 023030 G	L10012 012062	MSA.NR= 000004	O.CADV 070032	O.RSR 067574
LSCO 002032 G	L10013 012232	MSA.VO= 000002	O.CLGT= 000035	O.RSTT 067764
LSDEPO 002011 G	L10014 012746	MSGEXP 012000 G	O.CLSE 070330	O.S 070475
LSDESC 003342 G	L10015 013574	MSGLOO 012706 G	O.COMP 066670	O.SCAN 065006
LSDESP 002076 G	L10016 013616	MSGSTA 012172 G	O.CR 070507	O.SEMI 065206
LSDEVP 002060 G	L10017 016340	MSGSUB 013564 G	O.CRET 065334	O.SEQ 070502
LSDISP 071552 G	L10020 016346	MS.ATT= 000006	O.CRLF 070362	O.SNGL 064732
LSDL 002116 G	L10021 016354	MS.EXT= 000200	O.CRLS 070376	O.SPAC 070316
LSDTP 002040 G	L10022 016366	MS.RSD= 000001	O.CSR1 070500	O.STM = 000340
LSDTYP 002034 G	L10023 016410	MS.RSF= 000020	O.CSR2 070501	O.SVR 067534
LSOU 022646 G	L10024 016436	MS.RST= 000010	O.CT 071156	O.SVT 067736
LSOUT 002072 G	L10025 016576	NBA = 002000	O.C1 066416	O.SWCH 071126
LSDVTY 003334 G	L10026 017106	NEWPAS 022202	O.DCD 064762	O.T 070476
LSEF 002052 G	L10030 022500	NODEV 003062 G	O.DCDA 065340	O.TBIT 066274
LSEVI 002044 G	L10031 022644	NOINIT 004233	O.DCDB 065666	O.TBT = 000020
LSETP 002102 G	L10032 022752	NOINTR 004117	O.DCD1 065002	O.TCLS 064704
LSEXP1 002046 G	L10033 023026	NOITS 002136 G	O.DCD2 064776	O.TCSR= 177564
LSEXP4 002064 G	L10034 023050	NOMAN 021426	O.DOT 070470	O.TDB = 177566
LSEXP5 002066 G	L10035 023312	NP.IR = 000200	O.DUMP 066450	O.TL 070554
LSHARD 071224 G	L10036 032314	NP.LOO= 000040	O.EFF 066054	O.TRTC 070564
LSHIME 002120 G	L10037 024300	NP.OUT= 000100	O.ERR 064752	O.TVEC= 000014
LSHPCP 002016 G	L10040 024754	NP.WRP= 000020	O.ERR1 066050	O.TYPE 070302
LSHPTP 002022 G	L10041 025456	NSI 004050	O.FCHR 071130	O.UIN 071200
LSHW 002124 G	L10042 026322	NSINIT 004305	O.FCNT 071132	O.UPC 071114
LSICP 002104 G	L10043 041310	NUL 004425	O.FTYP 070146	O.UPS 071116
LSINIT 021752 G	L10044 033712	NULCR 004426	O.GET 070214	O.URO 071076
LSLADP 002026 G	L10045 035306	NXM = 004000	O.GO 066244	O.USP 071112
LSLAST 072332 G	L10046 035660	NXR 003636	O.G01 066322	O.WB1 065260
LSLOAD 002100 G	L10047 036322	NXRERR 005176 G	O.G02 066326	O.WDFG 070474
LSLUN 002074 G	L10050 046626	NXR 003675	O.HIGH 071124	O.WRD 065230
LSMREV 002050 G	L10051 042204	NXTU 022214	O.LG = 000010	O.WRD1 065274
LSNAME 002000 G	L10052 042774	OFL = 000100	O.LGCH 070517	O.WSCH 066060
LSPRIO 022042 G	L10053 052644	ONEFIL= 000000	O.LGDR 065114	O.XXX 070472
LSPROT 021742 G	L10054 047504	OSAPTS= 000000	O.LOW 071122	PASRPT 022246
LSPT 002112 G	L10055 050272	OSAU = 000001	O.MOVE 066626	PATCH 071566 G
LSREPP 002062 G	L10056 051070	OSBGNR= 000001	O.MSK 071120	PAIDAT 021122

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SYMBOL TABLE

PC.ERA= 002400	PW.RDE= 000024	RMPKTE= 000027	S2.BTI= 000004	TTOCSR= 177564
PC.IER= 002000	PW.RDR= 000001	RMR = 010000	S2.DIM= 000200	TTYPRT 071766
PC.NOO= 001000	PW.RDS= 000005	ROMBAS= 071566	S2.ILW= 000100	TUV2A 002000 G
PC.REL= 000000	PW.RFI= 000003	RWPACK 010520	S2.INR= 000020	TSARGC= 000003
PC.REW= 000400	PW.WCT= 000006	SC = 100000	S2.OUT= 000040	TSCODE= 001130
PKBCNT= 000006	PW.WFI= 000004	SCE = 020000	S2.UND= 000003	TSERRN= 001144
PKHI = 000004	PW.WFM= 000007	SCME 004711	TBLEND= 003030 G	TSEXCP= 000000
PKLOW = 000002	PW.WMI= 000010	SDELAY 010320	TCOASC 006167	TSFLAG= 000040
PKTADD 007266	PW.WNP= 000011	SEEK = 000006	TCOCOD 006370	TSFREE= 072344
PKTFRM 007230	PW.WTR= 000002	SELASC 021334	TEMP1 003064 G	TSGMAN= 000000
PKTGET 011720 G	P.ACK = 100000	SEL2 = 000004	TEMP2 003066 G	TSHILI= 000007
PKTMES 011744 G	P.CMD = 000037	SETMAP 020256	TERCLS= 000016	TSLAST= 000001
PKTNEW 007323	P.CONT= 000012	SETU 022300	TESTNO= 000006	TSLOLI= 000000
PKTRAM 004643 G	P.CVC = 040000	SFFMSG 011736 G	TEST5A 071614	TSLSYM= 010000
PKTSSR 011670 G	P.FMT = 000140	SFHERR 003603	TEXASC 006126	TSLTNO= 000006
PNT = 001000 G	P.FORM= 000011	SFIERR 003550	TFCASC 006230	TSNEST= 000000
PRAMPK 013620	P.GETS= 000017	SFIMSG 011656 G	TIMEXP 016412 G	TSNSU = 000000
PRBEXP 016330	P.IE = 000200	SFPTBL 002134 G	TIMSGO 016440	TSNS1 = 000005
PRBMSG 016176	P.INIT= 000013	SIFLAG 003106 G	TINERR 011643	TSNS2 = 000002
PRBREC 016332	P.MODE= 007400	SIMSG 011610	TKB = 177562	TSPCNT= 000000
PRBTOT 016263	P.OPP = 020000	SKIPT 003332	TKS = 177560	TSPTAB= 010066
PRBYTE 015762 G	P.POSI= 000010	SOFINI 016634 G	TMPBFR 002576 G	TSPTHV= 000001
PRI = 002000 G	P.READ= 000001	SPACE 010130 G	TNAM 017572	TSPTNU= 000001
PRIADD 007702	P.SWB = 010000	SPM1 071400	TPB = 177566	TSSAVL= 177777
PRIAO 007752	P.WRIT= 000005	SPM4 071437	TPS = 177564	TSSSEGL= 177777
PRIBXO 007334 G	P.WRTC= 000004	SPM6 071467	TRANST 002134 G	TSSIZE= 000005
PRIEQU 007602	P.WRTS= 000006	SPM7 071517	TSBA = 177776 G	TSSUBN= 000001
PRINT 071756	QVP 002152 G	SR0 = 177572	TSBAH = 177777 G	TSTAGL= 177777
PRIPKT 007062 G	RAMASC 013766	SR1 = 177574	TSBAL = 177776 G	TSTAGN= 010070
PRIRAM 007610	RAMDAT 002206 G	SR2 = 177576	TSDB = 177776 G	TSTEMP= 000007
PRITAD 010016	RAMER 010626 G	SR3 = 172516	TSDBH = 177777 G	TSTEST= 000006
PRITSS 005264	RAMERR 016350 G	SSR = 000200	TSDBL = 177776 G	TSTSTM= 177777
PRITO 010066	RAMEXP 016370 G	STATCO 012234	TSFCOD 006730	TSTSTS= 000001
PRIXOR 007464 G	RAMFHR 014532	SVCGBL= 000000	TSREJ = 000006	TSSAU = 010031
PRI00 = 000000 G	RAMFOR 007640	SVCINS= 000000	TSSDEF 006277	TSSAUT= 010033
PRI01 = 000040 G	RAMHLD 011010	SVCSUB= 000001	TSSR = 000000 G	TSSCLE= 010034
PRI02 = 000100 G	RAMIOP 011014	SVCTAG= 000000	TSSRBI 003400 G	TSSDAT= 010067
PRI03 = 000140 G	RAMPD 011065	SVCTST= 000001	TSSRFO 006106	TSSDU = 010032
PRI04 = 000200 G	RAMRSH 011012	S\$LSYM= 010000	TSSRH = 000001 G	TSSHAR= 010063
PRI05 = 000240 G	RAMSIZ 002246 G	SO.IDB= 000010	TSSX 003716	TSSHW = 010000
PRI06 = 000300 G	RAMTAD 016356 G	SO.IFB= 000002	TSTBLK 002720 G	TSSINI= 010030
PRI07 = 000340 G	RBPCRA 015120	SO.IFP= 000001	TSTCNT 002162 G	TSSMSG= 010025
PRMESS 014052	RCVHIA 002250 G	SO.ILD= 000020	TSTEND 017606	TSSPC = 000001
PRMNO 002264 G	RCVL0A 002252 G	SO.ION= 000040	TSTFLA 002260 G	TSSPRO= 010027
PRMSGE 015412 G	RDERR 005104	SO.IRD= 000100	TSTLOO 017344 G	TSSPTA= 010066
PRMSGO 015572	READ = 000014	SO.IRW= 000004	TSTPTR 002262 G	TSSRPT= 010035
PRMSG1 015637	READY = 000001	SO.ISP= 000200	TSTSET 017376 G	TSSSOF= 010064
PRMSG2 015675	RECMG 002432 G	S1.ICE= 002000	TST29I 032101	TSSSRV= 010026
PROASC 014703	RECV 002200 G	S1.IEO= 010000	TST30I 041111	TSSSUB= 010062
PR1ASC 014750	REGSAV 021026	S1.IFM= 001000	TST31I 046403	TSSSW = 010001
PST32W 003104 G	REWIND 010424 G	S1.IHE= 000400	TST32I 052440	TSTTES= 010061
PUNIT 022502	RLBOOT 072140	S1.IID= 004000	TST34I 057112	T1 023634 G
PW.D11= 000021	RMCHBE= 000167	S1.IIR= 020000	TST37I 064223	T1.1 023674
PW.D13= 000022	RMCHEN= 000200	S1.I2R= 040000	TTIBFR= 177562 G	T1.2 024302
PW.D22= 000020	RMMSGB= 000104	S1.PAR= 100000	TTICSR= 177560 G	T1.3 024756
PW.NOP= 000000	RMPKTE= 000020	S2.A7I= 000010	TTIVEC= 000060 G	T1.4 025460
PW.NO1= 000023			TTQBFR= 177566	T2 032316 G

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SYMBOL TABLE

T2.1	032352	T29WDR	026520	T30WDF	037433	T32AM3	051547	T34RT3	057750
T2.2	033714	T29WNG	026563	T31AM3	044656	T32BA	051663	T34RWN	057134
T2.3	035310	T29WRT	027704	T31BA	045216	T32BFR	051140	T34STE	057307
T2.4	035662	T29WSS	031036	T31BFR	043040	T32BOE	052166	T34STM	057213
T29AM3	030402	T3	041312 G	T31BF2	043160	T32BOT	051316	T34SZ	055536
T29BA	030744	T3.1	041352	T31BOT	044205	T32CMD	051260	T34S2	055550
T29BFR	026370	T3.2	042206	T31BS0	043160	T32CNT	051310	T34S3	055552
T29BF2	026510	T30BFR	036370	T31BS1	043161	T32CNU	051312	T34TMK	056637
T2' BOT	027751	T30BF2	036510	T31CNT	043176	T32DAT	051130	T34TMN	057403
T29BS0	026510	T30BOT	037721	T31CNU	043200	T32DLY	051314	T34WB	055532
T29BS1	026511	T30BS0	036510	T31CON	043172	T32ECF	052255	T34WD	055554
T29CNT	026534	T30BS1	036511	T31DAT	043030	T32EOT	051411	T34WDR	055556
T29CON	026522	T30CNT	036530	T31DLY	043202	T32ERA	051616	T34WOL	057540
T29DAT	026360	T30CNU	036532	T31DTA	046306	T32LOO	046670	T34WTM	056227
T29DLY	026540	T30DAT	036360	T31EOT	044400	T32OPI	052403	T37AM3	062567
T29DTA	030016	T30DLY	036536	T31LON	045360	T32PAC	051120	T37BA	063127
T29EOT	030104	T30DTA	041014	T31LOO	041352	T32PK2	051230	T37BFR	061130
T29LON	031125	T30DTR	040750	T31LOP	045442	T32PK3	051250	T37BF2	061250
T29LOO	023674	T30ETM	036366	T31LOQ	043756	T32RB	051252	T37BOT	062141
T29LOP	031207	T30FCN	036534	T31LOR	043631	T32RES	052500	T37BS0	061250
T29LOQ	027466	T30IPT	036711	T31NEF	045700	T32RIB	051736	T37BS1	061251
T29LOR	027341	T30IBU	036540	T31OFL	044725	T32RT2	052572	T37CNT	061266
T29NEF	026670	T30IMV	036516	T31PAC	043020	T32RT3	052622	T37CNU	061270
T29NEQ	031445	T30LOO	032352	T31PBP	045524	T32RWN	051500	T37CON	061262
T29OFL	026542	T30LOQ	037510	T31PK2	043130	T32SCF	052034	T37DAT	061120
T29PAC	026350	T30NEF	040456	T31PK3	043150	T32SZ	051256	T37DLY	061272
T29PBP	031271	T30OFL	040167	T31RB	043152	T32TSA	052111	T37DTA	064126
T29PK2	026460	T30PAC	036350	T31RDE	043204	T32WB	051252	T37EOT	062311
T29PK3	026500	T30PK2	036460	T31RDF	043403	T32WDC	052336	T37LON	063271
T29RB	026502	T30PK3	036500	T31RES	046450	T34BFR	055420	T37LOO	060042
T29RDF	026760	T30PTB	037122	T31RN	043166	T34BF2	055546	T37LOP	063353
T29RDG	031543	T30RB	036502	T31RNC	044603	T34BOT	056120	T37LOQ	061735
T29RES	032130	T30RDF	037273	T31RRF	043452	T34BS0	055546	T37LOR	061610
T29RIB	031706	T30RDG	037351	T31RT2	046542	T34BS1	055547	T37NEF	063611
T29RN	026516	T30RES	041132	T31RT3	046604	T34CNT	055542	T37OFL	062636
T29RNC	030327	T30RIB	036625	T31RWN	044534	T34CON	055560	T37PAC	061110
T29RRF	027027	T30RN	036516	T31SC	043547	T34DAT	055410	T37PBP	063435
T29RRG	027143	T30RRM	040535	T31SCF	046021	T34DLY	055544	T37PK2	061220
T29RRN	032006	T30RRN	040613	T31SSR	044037	T34EOT	057034	T37PK3	061240
T29RSZ	026536	T30RRP	040672	T31SZ	043156	T34ET	056745	T37RB	061242
T29RT2	032222	T30RT2	041224	T31S2	043162	T34ETC	056043	T37RDF	061362
T29RT3	032264	T30RT3	041266	T31S3	043164	T34ETN	056404	T37RES	064244
T29RWN	030260	T30RWN	040120	T31TIM	044300	T34ETO	055652	T37RN	061256
T29SC	027257	T30SKM	036774	T31TM	044457	T34ETS	056467	T37RNC	062514
T29SDG	031624	T30SSR	037571	T31TRL	045612	T34ETZ	056555	T37RRF	061431
T29SSR	027547	T30SZ	036506	T31TSA	046076	T34ET2	056316	T37RT2	064336
T29SZ	026506	T30S2	036512	T31VCK	045143	T34L00	052706	T37RT3	064400
T29S2	026512	T30S3	036514	T31WB	043152	T34PAC	055400	T37RWN	062445
T29S3	026514	T30TM	037766	T31WDC	045070	T34PK2	055510	T37SC	061526
T29TM	030202	T30TMK	040374	T31WDD	045000	T34PK3	055530	T37SCF	063707
T29TRL	031357	T30TM2	040043	T31WDE	044073	T34POS	055564	T37SSR	062016
T29VCK	030671	T30TPB	037213	T31WDF	043701	T34RB	055532	T37SZ	061246
T29WB	026502	T30VCK	040321	T31WDR	043170	T34RES	057614	T37S2	061252
T29WDC	030577	T30WB	036502	T31WNG	043331	T34RRE	055742	T37S3	061254
T29WDD	030470	T30WDC	040242	T31WNH	043250	T34RRF	057466	T37TIM	062234
T29WDE	027622	T30WDD	037050	T31WRF	046203	T34RSZ	055540	T37TM	062370
T29WDF	027411	T30WDE	037642	T31WSS	045271	T34RT2	057706	T37TRL	063523

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 SYMBOL TABLE

T37TSA 063764	UNREC = 000006	WRTMSG 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	XSFALS= 000040	X3.REV= 000040
T4.1 046670	WF.IER= 000004	XSOEOT= 000001	XSOFFS= 000400	X3.RIB= 000001
T4.2 047506	WF.IHI= 000200	XSOIE = 000040	XSTRUE= 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	X2.BUF= 000100	

. 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