

B01

EOFDZRSBESG

00010000

271114

POP10 411

O:MDR1DZTCEDSEG

00010000

271114

02TCED.P11 31-AUG-77 14:08

TCS - TC11 TEST 5

MAY11 30:10467

31-AUG-77

14:11 PAGE 1

.REM !

IDENTIFICATION

PRODUCT CODE: MAINDEC-11-0ZTCE-D-C  
PRODUCT NAME: TCS-TC11 TEST 5  
DATE: AUGUST 1977  
MAINTAINER: DIAGNOSTIC ENGINEERING  
COPYRIGHT: (C) 1971, 1977 DIGITAL EQUIPMENT CORPORATION  
MAYNARD, MASS 01754  
REVISED BY: PRODUCT ENHANCEMENT

THE INFORMATION IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY DIGITAL EQUIPMENT CORPORATION. DIGITAL EQUIPMENT CORPORATION ASSUMES NO RESPONSIBILITY FOR ANY ERRORS THAT MAY APPEAR IN THIS DOCUMENT

THE SOFTWARE DESCRIBED IN THIS DOCUMENT IS FURNISHED UNDER A LICENSE AND MAY ONLY BE USED OR COPIED IN ACCORDANCE WITH THE TERMS OF SUCH LICENSE.

DIGITAL EQUIPMENT CORPORATION ASSUMES NO RESPONSIBILITY FOR THE USE OR RELIABILITY OF ITS SOFTWARE ON EQUIPMENT THAT IS NOT SUPPLIED BY DIGITAL.

COPYRIGHT (C) 1971, 1977 BY DIGITAL EQUIPMENT CORPORATION

## 1. ABSTRACT

TCS - TCII TEST 5 IS PART 5 OF A FIVE PROGRAM PACKAGE USED TO TEST THE TCII DECTAPE CONTROL. TCS EXERCISES THE TCII CONTROL AND FROM ONE TO EIGHT SELECTED TRANSPORTS. ALL AVAILABLE CORE STORAGE UP TO 28K IS USED IN ORDER TO EXECUTE THE MAXIMUM NUMBER OF DATA TRANSFERS POSSIBLE.

ALL EXECUTION TIMES QUOTED ARE TYPICAL OF A 11/20 SYSTEM.  
EXECUTION TIMES IN OTHER PDP-11 SYSTEMS WILL VARY.

## 2. REQUIREMENTS

## 2.1 EQUIPMENT

- A. PDP-11 SYSTEM (4K CORE).
- B. ASR33/35 TELETYPE.
- C. TCII DECTAPE CONTROL AND AT LEAST ONE TUSB DUAL TRANSPORT.
- D. ONE STANDARD PDP-11 FORMAT DECTAPE FOR EACH TRANSPORT TO BE TESTED. OF THE TAPE BLOCKS MUST BE ZERO. IF NECESSARY, REFORMAT THE TAPE.

THE TELETYPE AND TCII CONTROL MUST HAVE THEIR STANDARD PERIPHERAL ADDRESSES, INTERRUPT LEVELS, AND INTERRUPT VECTOR ADDRESSES. REFER TO SECTION 7.2 IF YOUR SYSTEM DOES NOT HAVE STANDARD PERIPHERAL ADDRESSES.

## 2.2 STORAGE

THIS PROGRAM USES LOCATIONS 000000 THROUGH 010120. ALL REMAINING CORE STORAGE UP TO 28K IS USED FOR DEVICE BUFFER AREAS.

## 3. LOADING PROCEDURE

THIS PROGRAM'S OBJECT TAPE IS PUNCHED IN ABSOLUTE FORMAT.  
THE ABS LOADER IS USED TO LOAD THE PROGRAM.

4. USE PROCEDURE  
-----

- A. LOAD UNITS TO BE TESTED WITH STANDARD FORMAT DECTAPE. SET TO REMOTE/WRITE ENABLE.  
 B. SET WRM SWITCH OFF. WALL SWITCH TO OFF.  
 C. LOAD ADDRESS 000200.  
 D. PRESS START.  
 E. THE PROGRAM IDENTIFIES ITSELF, TYPES SETUP INSTRUCTIONS, AND HALTS.  
 F. PERFORM SETUP (STEPS A AND B), AND SET SR SWITCHES 0 THROUGH 7 TO INDICATE THE UNITS TO BE TESTED. (SR0 FOR UNIT 0, SR1 FOR UNIT 1, ETC.)  
 G. THE PROGRAM TYPES SR OPTIONS MESSAGE. SET DESIRED SR OPTIONS IF ANY. NORMAL SR IS 000000. PRESS CONT.

THIS PROGRAM'S SR OPTIONS ARE:

SR15 = 1	HALT ON ERROR
SR14 = 1	ENTER SCOPE MODE
SR13 = 1	INHIBIT ERROR PRINTOUT
SR11 = 1	INHIBIT ITERATION
SR10 = 1	HALT AT END OF TEST CURRENTLY EXECUTING
SR9 = 1	SELECT THE TEST SPECIFIED BY SR7 THROUGH SR0
SR7 THROUGH SR0	- NUMBER OF TEST TO BE SELECTED

SECTION 7.1 GIVES A COMPLETE EXPLANATION OF SR OPTIONS.

- H. THE PROGRAM BEGINS EXECUTION.  
 I. AT THE END OF EACH PASS THE TELETYPE BELL RINGS ONCE, AND THE CHARACTER "\*" IS TYPED.  
 J. REFER TO SECTION 6.2 IF ERROR PRINTOUTS OCCUR.

EXECUTION TIME:

- A. ONE NORMAL ERROR FREE PASS TAKES APPROXIMATELY 1 HOUR.  
 B. ONE SINGLE ITERATION PASS (SR11=1) TAKES ABOUT 5 MINUTES.

4.1 RESTART PROCEDURE  
-----

TO RESTART THE PROGRAM WITHOUT GENERATING THE INITIAL PRINTOUTS PROCEED AS FOLLOWS: (TRANSPORTS UNDER TEST REMAIN THE SAME)

- A. LOAD ADDRESS 001000  
 B. DO UNIT SETUP AS DESCRIBED IN STEPS A AND B OF USE PROCEDURE.  
 C. SELECT ANY DESIRED OPTIONS.  
 D. PRESS START.  
 E. GO TO STEP H OF USE PROCEDURE.

5. PROGRAM AND/OR OPERATOR ACTION  
-----5.1 NORMAL HALTS  
-----

LOC 002464 COMMON HALT. THIS HALT IS CALLED BY THOSE PARTS  
OF THE PROGRAM THAT REQUIRE THAT THE PROCESSOR STOP.  
THIS HALT NORMALLY OCCURS UPON COMPLETION OF NON-ERROR  
PRINTOUTS. THE CONSOLE DATA LIGHTS DISPLAY THE ADDRESS OF  
INSTRUCTION THAT GENERATED THE HALT REQUEST.

LOC 002016 ROUTINE END HALT. THIS HALT OCCURS UPON COMPLETION  
OF THE CURRENT TEST ROUTINE IF SR10 IS SET. THE  
CONSOLE DATA LIGHTS DISPLAY THE NUMBER OF THE TEST  
JUST COMPLETED.

5.2 NORMAL PRINTOUTS  
-----

ALL NON-ERROR PRINTOUTS ARE NORMAL PRINTOUTS. INSTRUCTION,  
TITLE, AND USER ERROR PRINTOUTS ARE NORMAL PRINTOUTS.

5. ERRORS  
-----

ERRORS ARE REPORTED IN THIS PROGRAM BY THE FOLLOWING METHODS:

- A. UNCONDITIONAL ERROR HALTS, OR
- B. ERROR PRINTOUT FOLLOWED BY OPTIONAL ERROR HALT.

## 6.1 UNCONDITIONAL ERROR HALTS

AN UNCONDITIONAL ERROR HALT WILL OCCUR AT THE ADDRESSES LISTED BELOW IF THROUGH HARDWARE OR SOFTWARE FAILURE, PROGRAM CONTROL IS TRANSFERRED TO AN UNEXPECTED AREA BETWEEN 000000 AND 000176.

000002 RESERVED AREA  
 000005 ERROR TRAP  
 000012 RESERVED INSTRUCTION TRAP  
 000016 DEBUG TRAP  
 000022 IOT TRAP  
 000026 POWER FAIL TRAP  
 000040 THROUGH 000176 - SYSTEM SOFTWARE AND INTERRUPT VECTOR AREA,  
 EXCEPT FOR T011 AND TTY VECTORS.

TO FIND OUT WHERE THE PROGRAM WAS AT THE TIME THE FAILURE OCCURRED,

- A. EXAMINE CONTENTS OF REGISTER 6. (ADDRESS 177706).
- B. TRANSFER THE CONTENTS OF REG 6 TO THE SR, LOAD ADDRESS AND EXAMINE.
- C. THE DATA SHOWN IN THE DATA LIGHTS IS THE VALUE OF THE PC WHEN THE FAILURE OCCURRED.
- D. LOCATE IN PROGRAM LISTING THE DISPLAYED PC VALUE.
- E. THE INSTRUCTION THAT IMMEDIATELY PRECEDES THE ONE REFERENCED BY THE DISPLAYED PC VALUE IS THE INSTRUCTION THAT WAS/WAS BEING EXECUTED WHEN THE FAILURE OCCURRED.

AN UNCONDITIONAL ERROR HALT FAILURE IS AN ABNORMAL CONDITION INDICATING A HARDWARE FAILURE, OR MOST UNLIKELY, A PROGRAM FAILURE. THIS PROGRAM ASSUMES THAT THE PROCESSOR IS IN OPERATING CONDITION IN ORDER TO PERFORM ITS TESTS.

6.2 ERROR PRINTOUTS  
-----

ERROR PRINTOUTS ARE GENERATED BY THE "ERRN" SUBROUTINE. THE "ERRN" SUBROUTINE IS CALLED BY AN "ERRORN" STATEMENT. AN ERROR PRINTOUT LOOKS AS FOLLOWS:

```
T XXX PC DYYYYY ICNT ZZZZ UNIT W
XFRONT XXXXXX WADDR YYYYYY RADDR ZZZZZZ FPC DVVVVV
UP TO 2 ADDITIONAL LINES OF ERROR INFORMATION.
```

WHERE:

T XXX IS THE NUMBER OF FAILING ROUTINE (OCTAL).

PC DYYYYY IS THE ADDRESS OF ERROR CALL.

ICNT ZZZZ IS THE ITERATION COUNT AT TIME OF FAILURE.

XFRONT XXXXXX WADDR YYYYYY AND RADDR ZZZZZZ INDICATE THE PARAMETERS IN USE AT TIME OF FAILURE.

FPC DVVVVV IS TYPED WHEN THE ERROR CALL IS GENERATED BY A SUBROUTINE, AND IT IS NECESSARY TO INDICATE WHERE THE SUBROUTINE WAS CALLED FROM.

AFTER THE PRINTOUT IS COMPLETED, THE PROGRAM WILL HALT AT COMMON ERROR HALT AT LOC 002500 IF SR15 IS SET.

WHEN AN ERROR PRINTOUT OCCURS:

- A. LOOK UP THE ADDRESS REFERENCED BY PC DYYYYY IN THE LISTING.
- B. OPPOSITE THE PC VALUE AN ERRORN STATEMENT WILL BE FOUND, AND IN THE COMMENTS SECTION, A DESCRIPTION OF THE ERROR.
- C. AT THE BEGINNING OF THE TEST ROUTINE A DESCRIPTION OF THE TEST WILL BE FOUND.

UP TO 2 LINES OF ADDITIONAL ERROR INFORMATION MAY APPEAR ON AN ERROR PRINTOUT. SOME OF THE ITEMS THAT MAY APPEAR ARE:

- A. BLKRO XXXX. BLKRO REPRESENTS THE INITIAL BLOCK NUMBER USED WHEN AN OPERATION WAS INITIATED. (IN A 2 OR MORE BLOCK TRANSFER, BLKRO REPRESENTS THE INITIAL BLOCK NUMBER, EVEN THOUGH A FAILURE MAY NOT HAVE OCCURRED UNTIL A SUBSEQUENT BLOCK.)
- B. IN A DATA ERROR PRINTOUT THE "WORD #" THAT FAILED REPRESENTS THE POSITION OF THE CORRECT WORD IN THE WRITE BUFFER, AND IT IS NOT MEANT TO DESCRIBE THE WORD'S POSITION IN A DECATAPE BLOCK.

7. MISCELLANEOUS  
-----

7.1 SR OPTIONS  
-----

THE STANDARD SR OPTIONS ARE DESCRIBED HERE.

SR15 HALT ON ERROR. WITH SR15 SET TO A 1, THE PROGRAM WILL HALT AFTER AN ERROR OCCURS. PRESSING CONT WILL CAUSE PROGRAM TO RESUME OPERATION.

SR14 SCOPE. THIS OPTION CAUSES THE PROGRAM TO REMAIN IN THE CURRENT TEST ROUTINE. WHEN THE OPTION IS REMOVED, THE PROGRAM WILL COMPLETE THE CURRENT ROUTINE, AND WILL THEN GO ON TO THE NEXT ROUTINE.

SR13 INHIBIT ERROR PRINTOUT. THIS OPTION REMOVES ALL ERROR PRINTOUTS.

\*\*\*\*\*NOTE\*\*\*\*\*

SCOPE MODE OPERATION IS ACHIEVED BY LOCKING THE PROGRAM IN THE CURRENT ROUTINE, INHIBITING ERROR PRINTOUTS, AND BYPASSING ERROR HALTS.

SR11 INHIBIT ITERATION. SETTING THIS OPTION WILL CAUSE THE PROGRAM TO EXECUTE EACH TEST ONLY ONCE, INSTEAD OF THE NORMAL NUMBER OF ITERATIONS SELECTED FOR EACH TEST. TWO POSSIBLE USES OF THIS OPTION ARE:

- A. QUICK PASS. EACH TEST IS RUN ONLY ONCE.
- B. TO SKIP OVER A FAILING ROUTINE.

SR10 HALT AT END OF CURRENT ROUTINE. WITH THE OPTION SET, THE PROGRAM WILL HALT AT THE END OF EACH TEST, AND DISPLAY IN DATA LIGHTS THE NUMBER OF THE TEST JUST COMPLETED. THREE POSSIBLE USES OF THIS OPTION ARE:

- A. TO STEP THROUGH THE PROGRAM ONE ROUTINE AT A TIME.
- B. WHEN THE PROGRAM HAS BEEN RUNNING FOR A WHILE, TO FIND OUT HOW FAR IT HAS PROGRESSED.
- C. IN CASE OF A BLOW UP, ETC., TO STEP THROUGH ONE TEST AT A TIME UNTIL THE FAILURE REOCCURS. THE ROUTINE FOLLOWING THE PREVIOUSLY COMPLETED ROUTINE WOULD BE THE FAILING ROUTINE.

SR9 SELECT ROUTINE. WITH SR9 SET, THE PROGRAM WILL GO AND EXECUTE THE ROUTINE INDICATED BY SR7 THROUGH SR0. AFTER THE CURRENT ROUTINE HAS BEEN COMPLETED, IF THE OPTION IS REMOVED, THE PROGRAM WILL PROCEED TO EXECUTE THE ROUTINES FOLLOWING THE SELECTED ROUTINE.

7.2 TESTING TC11 AT NON-STANDARD ADDRESSES AND/OR VECTORS  
 -----

THIS PROGRAM CAN TEST THE TC11 AT NON-STANDARD ADDRESSES AND VECTORS PROVIDED THOSE ADDRESSES AND VECTORS ARE PROVIDED TO THE PROGRAM AS FOLLOWS:

- A. AFTER LOADING PROGRAM REFER TO PROGRAM LISTING AND CHANGE LOCATIONS 001004 THROUGH 001020 TO REFLECT THE NEW TC11 ADDRESSES AND VECTORS.
- B. IF THE TELETYPE IS ALSO AT NON STANDARD ADDRESSES, CHANGE LOCATIONS 001022 AND 001024 ALSO.
- C. PROCEED TO USE THE PROGRAM, OR
- D. USING STANDARD DUMP ROUTINES, DUMP OUT THE ENTIRE PROGRAM IN ABSOLUTE FORMAT TO HAVE AN OBJECT TAPE THAT REFLECTS YOUR SYSTEM, OR
- E. DUMP OUT ONLY LOCATIONS 001004 THROUGH 001024 IN ABSOLUTE FORMAT, AND LOAD IT ALSO AFTER LOADING THE MAIN PROGRAM.

8. DESCRIPTION  
 -----

THIS PROGRAM IS ORGANIZED INTO THREE MAIN SECTIONS:

- A. CONTROL ROUTINE.
- B. TEST ROUTINES.
- C. COMMON SUBROUTINES

8.1 CONTROL ROUTINE  
 -----

THE CONTROL ROUTINE ASSUMES CONTROL WHEN THE PROGRAM IS STARTED. IT HAS THE FOLLOWING FUNCTIONS:

- A. CONTROLS SEQUENCE OF TEST ROUTINES.
- B. HONORS AND ACTS ON SR OPTIONS.

THE CONTROL ROUTINE IS CALLED FROM A TEST ROUTINE BY THE "SCOPE" STATEMENT.



9.2 TEST ROUTINES  
-----

THE ACTUAL TESTING IS PERFORMED BY A SET OF TEST ROUTINES THAT ARE NUMBERED SEQUENTIALLY FROM 0 TO 10 (OCTAL). EACH TEST ROUTINE IS PRECEDED BY A TEST HEADER THAT IS USED BY THE CONTROL ROUTINE IN ORDER TO PROPERLY SEQUENCE THROUGH THE TESTS. THE HEADER LOOKS AS FOLLOWS: (EXAMPLE)

```
*****
T10: 10 :ROUTINE NUMBER 10. *
      111 :ADDRESS OF NEXT ROUTINE *
      10. :TEST ITERATION COUNT *
      BAGA :SCOPE ENTRY POINT *
*****
```

THE FIRST 2 ITEMS ARE SELF EXPLANATORY. THE TEST ITERATION COUNT INDICATES TO THE CONTROL ROUTINE THE NUMBER OF TIMES THE TEST SHOULD BE PERFORMED BEFORE GOING ON TO THE NEXT ROUTINE.

THE SCOPE ENTRY POINT INDICATES TO THE CONTROL ROUTINE THE ADDRESS IT SHOULD RETURN TO AFTER THE FIRST ITERATION. THE ADDRESS MAY NOT NECESSARILY POINT TO THE FIRST INSTRUCTION OF THE TEST.

9.3 COMMON SUBROUTINES  
-----

ALL SUBROUTINES NEEDED BY EITHER THE CONTROL ROUTINE OR TEST ROUTINES ARE GROUPEED TOGETHER. THE MOST SIGNIFICANT SUBROUTINE IS THE "ERRN" SUBROUTINE, WHICH IS CALLED BY AN "ERRORN" STATEMENT AND TYPES THE TEST NUMBER AND PC VALUE WHEN A FAILURE OCCURS.

```

100000
100001
100002
100003
100004
100005
100006
100007
100008
100009
100010
100011
100012
100013
100014
100015
100016
100017
100018
100019
100020
100021
100022
100023
100024
100025
100026
100027
100028
100029
100030
100031
100032
100033
100034
100035
100036
100037
100038
100039
100040
100041
100042
100043
100044
100045
100046
100047
100048
100049
100050
100051
100052
100053
100054
100055
100056
100057
100058
100059
100060
100061
100062
100063
100064
100065
100066
100067
100068
100069
100070
100071
100072
100073
100074
100075
100076
100077
100078
100079
100080
100081
100082
100083
100084
100085
100086
100087
100088
100089
100090
100091
100092
100093
100094
100095
100096
100097
100098
100099
100100

```

```

000000
000002
000004
000006
000010
000012
000014
000016
000020
000022
000024
000026
000030
000032
000034
000036
177570
177776
001000
000240
000000
100000
100000
040000
020000
010000
004000
002000
001000
000400
000200
000100
000040
000020
000010
000004
000002
000001
000000
000001
000002
000003
000004
000005
000006
000007
000007

```

```

      LIST      SEQ,BIN,ME
      INLIST    MC,MO
      ABC
:
      =0
      .+2      ;UNASSIGNED TRAP
      HALT
MACHER: .+2      ;SP OVERFLOW, BUS ERROR TRAP
      HALT
      .+2      ;RESERVED INSTRUCTION TRAP
      HALT
TRCV:   SVSS      ;TRACE TRAP
      PRTY7
IOTV:   R555      ;TRAP TO CALL IOX
      PRTY7
      .+2      ;POWER FAIL TRAP
      HALT
EMTV:   EMTINT    ;EMT TRAP
      PRTY7
TRPV:   DLY       ;TRAP TRAP. SIMILAR TO EMT
      PRTY0
;LOC 40 THROUGH 376 ARE FILLED WITH .+2 AND HALT EXCEPT LOC 46 AND 52.
;EQUATE STATEMENTS
      SR=177570
      PSW=177776
      SPB01=1000
      NOP=240
      OPEN=0
      MANUAL=BIT15
      BIT15=100000
      BIT14=40000
      BIT13=20000
      BIT12=10000
      BIT11=4000
      BIT10=2000
      BIT9=1000
      BIT8=400
      BIT7=200
      BIT6=100
      BIT5=40
      BIT4=20
      BIT3=10
      BIT2=4
      BIT1=2
      BIT0=1
      R0=X0
      R1=X1
      R2=X2
      R3=X3
      R4=X4
      R5=X5
      R6=X6
      R7=X7
      PC=X7

```

005746	PUSH=005746
024646	PUSH2=024646
005726	POPS1=005726
022626	POPS2=022626
000740	PRTY7=340
000300	PRTY6=300
000240	PRTY5=240
000200	PRTY4=200
000140	PRTY3=140
000100	PRTY2=100
000040	PRTY1=40
000000	PRTY0=0
000007	BELL=007
177777	TLAST=-1
000003	TRC=3
000040	I=40
177777	X=-1
100000	A=BIT15
040000	B=BIT14
020000	C=BIT13
000000	V0=0
000004	V1=4
000010	V2=10
000014	V3=14
000020	V4=20
000024	V5=24
000030	V6=30
000034	V7=34
020000	MAINT=BIT13
010000	DINH=BIT12
004000	REV=BIT11
000000	FWD=0
000000	U0=0
000400	U1=BIT8
001000	U2=BIT9
001400	U3=BIT9!BIT8
002000	U4=BIT10
002400	U5=BIT10!BIT8
003000	U6=BIT10!BIT9
003400	U7=BIT10!BIT9!BIT8
000100	IE=BIT6
000000	SAT=0
000002	RNUM=BIT1
000004	ROATA=BIT2
000006	RALL=BIT2!BIT1
000010	SST=BIT3
000012	WATM=BIT3!BIT1
000014	WATA=BIT3!BIT2
000016	WALL=BIT3!BIT2!BIT1
000001	DO=BIT0
000200	UPS=BIT7
010000	ILO=BIT12
004000	SELE=BIT11
000000	EMTX=0
000003	SAVSS=3
000004	RSTSS=4

498 104400  
 499 000046 000046  
 500 000052 000052  
 501 000052 000052  
 502 000200 000200  
 503 000200 000200  
 504 001000 001000  
 505 001004 001004  
 506 001006 001006  
 507 001010 001010  
 508 001012 001012  
 509 001014 001014  
 510 001016 001016  
 511 001020 001020  
 512 001022 001022  
 513 001024 001024  
 514 001026 001026  
 515 001030 001030  
 516 001032 001032  
 517 001034 001034  
 518 001036 001036  
 519 001040 001040  
 520 001042 001042  
 521 001044 001044  
 522 001046 001046  
 523 001050 001050  
 524 001052 001052  
 525 001054 001054  
 526 001056 001056  
 527 001060 001060  
 528 001062 001062  
 529 001064 001064  
 530 001066 001066  
 531 001070 001070  
 532 001072 001072  
 533 001074 001074  
 534 001076 001076  
 535 001100 001100  
 536 001102 001102  
 537 001104 001104  
 538 001106 001106  
 539 001110 001110  
 540 001112 001112  
 541 001114 001114  
 542 001116 001116  
 543 001120 001120  
 544 001122 001122  
 545 001124 001124  
 546 001126 001126  
 547 001130 001130  
 548 001132 001132  
 549 001134 001134  
 550 001136 001136

001054  
000576

DELAY=TRAP  
 LOGIC  
 =52  
 40000  
 =200  
 JMP START ;GO TO START OF PROGRAM.  
 =1000  
 JMP GETRDY ;BYPASS INITIAL PRINTOUTS.  
 TCST: 177340 ;TC11 STATUS REGISTER.  
 TCCM: 177342 ;TC11 COMMAND REGISTER.  
 TCWC: 177344 ;TC11 WORD COUNT REGISTER.  
 TCBA: 177346 ;TC11 BUS ADDRESS REGISTER.  
 TCDT: 177350 ;TC11 DATA REGISTER.  
 TCVTR: 214 ;TC11 INTERRUPT VECTOR  
 TOLVL: PRTY6 ;TC11 INTERRUPT PRIORITY LEVEL.  
 TPS: 177564 ;LSP CSR  
 TPB: 177566 ;LSP BUFFER  
 ICTR: OPEN ;CONTAINS CURRENT ITERATION COUNT  
 ICNT: OPEN ;CONTAINS ACCUMULATED ITERATION COUNT.  
 KSTART: TO ;CONTAINS STARTING ROUTINE ADDR.  
 SCOPTR: OPEN ;CONTAINS CURRENT SCOPE POINTER.  
 RTNNO: OPEN  
 NXTST: OPEN  
 CURTST: OPEN  
 CTRA: OPEN  
 TCCMT: OPEN  
 TCSTT: OPEN  
 TCOTT: OPEN  
 TCWCT: OPEN  
 TCBAT: OPEN  
 BLKRQ: OPEN  
 BLKRQS: OPEN  
 UNIT: OPEN  
 UNITN: OPEN  
 UNITS: OPEN  
 COMND: OPEN  
 TEMP: OPEN  
 FPC: OPEN  
 RBFLIM: OPEN  
 WBFLIM: OPEN  
 BFSIZE: OPEN  
 XFRCNT: OPEN  
 WADDR: OPEN  
 RADDR: OPEN  
 VFBLKN: OPEN  
 VRBLKN: OPEN  
 ERR LIM: 5  
 EMTTAB:

WORD CHAINN  
 .WORD SRSETT  
 .WORD SV03  
 .WORD RS03  
 .WORD SV05  
 .WORD RS05  
 .WORD SV05S

: POINTER FOR EMT CALL SCOPE  
 : POINTER FOR EMT CALL SRESET  
 : POINTER FOR EMT CALL SAV03  
 : POINTER FOR EMT CALL RST03  
 : POINTER FOR EMT CALL SAV05  
 : POINTER FOR EMT CALL RST05  
 : POINTER FOR EMT CALL SAV05S

554 001140 002306  
555 001142 002742  
556 001144 003040  
557 001146 003304  
558 001150 003320  
559 001152 003312  
560 001154 003560  
561 001156 003696  
562 001160 003770  
563 001162 003760  
564 001164 002472  
565 001166 002416  
566 001170 004354  
567 001172 004314  
568 001174 004450  
569 001176 004400  
570 001200 004524  
571 001202 005160  
572 001204 005186  
573 001206 005630  
574 001210 005700  
575 001212 005654  
576 001214 005724  
577 001216 005060  
578 001220 005006  
579 001222 005026  
580 001224 004616  
581 001226 004600  
582 001230 003122  
583 001232 003154  
584 001234 003676  
585 001236 003726  
586 001240 003770  
587 001242 004032  
588 001244 004166  
589 001250 004220  
590 001252 004400  
591 001254 004556  
592 001256 004262  
593 001256 003654  
594

.WORD B5055  
.WORD TYPB  
.WORD TYPB  
.WORD ERRN  
.WORD OACNVV  
.WORD BDCNVV  
.WORD ANGEN  
.WORD INRND  
.WORD BMOVV  
.WORD CHLT  
.WORD CHLT  
.WORD SITOV  
.WORD STCOM  
.WORD STAS  
.WORD STPOT  
.WORD CKERZ  
.WORD NOINTR  
.WORD SRCHFF  
.WORD SRCHFF  
.WORD WDATAF  
.WORD WDATAF  
.WORD RDATAF  
.WORD RDATAF  
.WORD RDATAF  
.WORD CKCBA  
.WORD CLEAR  
.WORD BINFL  
.WORD DATCK  
.WORD DTCKI  
.WORD INBIN  
.WORD GETBIN  
.WORD RNORVV  
.WORD RNORVV  
.WORD XFRSTT  
.WORD RNORVB  
.WORD RNORVB  
.WORD DRVFL  
.WORD DTCKSS  
.WORD RNORFL  
.WORD SEQDRV

POINTERR FORB ENT CALL B5055  
POINTERR FORB ENT CALL TYPE  
POINTERR FORB ENT CALL TYPES  
POINTERR FORB ENT CALL ERRORN  
POINTERR FORB ENT CALL OACNV  
POINTERR FORB ENT CALL BOONV  
POINTERR FORB ENT CALL RNONUM  
POINTERR FORB ENT CALL INRND  
POINTERR FORB ENT CALL BMOVE  
POINTERR FORB ENT CALL CHALT  
POINTERR FORB ENT CALL CHALT  
POINTERR FORB ENT CALL SVECTR  
POINTERR FORB ENT CALL SETCOM  
POINTERR FORB ENT CALL STATUS  
POINTERR FORB ENT CALL STOPOT  
POINTERR FORB ENT CALL CKERRZ  
POINTERR FORB ENT CALL NOINT  
POINTERR FORB ENT CALL SRCHFF  
POINTERR FORB ENT CALL SRCHFF  
POINTERR FORB ENT CALL WDATAF  
POINTERR FORB ENT CALL WDATAF  
POINTERR FORB ENT CALL RDATAF  
POINTERR FORB ENT CALL RDATAF  
POINTERR FORB ENT CALL RDATAF  
POINTERR FORB ENT CALL CKCBA  
POINTERR FORB ENT CALL CLEAR  
POINTERR FORB ENT CALL BINFIL  
POINTERR FORB ENT CALL DATCHK  
POINTERR FORB ENT CALL DTCKI  
POINTERR FORB ENT CALL INBIN  
POINTERR FORB ENT CALL GETBIN  
POINTERR FORB ENT CALL RNORIV  
POINTERR FORB ENT CALL SELDRV  
POINTERR FORB ENT CALL RNORVB  
POINTERR FORB ENT CALL XFRSET  
POINTERR FORB ENT CALL RNORVB  
POINTERR FORB ENT CALL RNORVB  
POINTERR FORB ENT CALL DRVFIL  
POINTERR FORB ENT CALL DTCKS  
POINTERR FORB ENT CALL RNORFIL  
POINTERR FORB ENT CALL SEQDRV

```

598 001260 012706 001000 START: MOV #SPBOT,R6 ;SET BOTTOM OF 3P STACK.
599 001264 104010 ;TYPE TITLE.
600 001268 007145 ;
601 001270 004767 002126 JSR PC,CORSTP ;GO ASSIGN BUFFER SPACE.
602 001274 104013 ;INIT BINARY COUNT PATTERN.
603 001276 104015 ;INIT RANDOM NUMBER GENERATOR.
604 001300 005737 000042 INAND ;PROGRAM LOADED VIA MONITOR?
605 001304 001524 ;BR IF NOT.
606 001306 012767 000402 001376 ;ROUTINE TO DETERMINE TRANSPORTS AVAILABLE FOR TEST.
607 001314 112767 000376 177546 MOV #402,ERRNC ;DISABLE ERROR PRINTOUTS.
608 001322 012700 000010 MOV #376,UNITS ;ASSUME DRIVES 1-7 AVAILABLE.
609 001326 005267 000010 DTRMN: INC #8,R0 ;SET UP TO TEST 8 TIMES.
610 001332 042767 177770 000002 BIC #177770,SQDRV1
611 001340 104046 SELDRV ;SELECT A TRANSPORT.
612 001342 000000 SQDRV1: OPEN ;TRANSPORT #.
613 001344 000431 BR DTRMNA ;UNIT NOT AVAILABLE RETURN.
614 001350 104023 SETCOM ;REWIND TO REVERSE END ZONE.
615 001352 000437 RNUM+REV
616 001354 005777 177426 BR DTRMNB ;ERROR RETURN.
617 001360 100375 TST @TCCH ;WAIT.
618 001362 005777 177416 BPL -4
619 001366 100031 TST @TCST ;END ZONE?
620 001370 012777 010210 177414 BPL DTRMNB ;BR IF NOT.
621 001376 012777 177777 177404 MOV #CODENC,@TCBA ;SET CURRENT ADDR.
622 001404 104023 MOV #-1,@TCWC ;SET WORD COUNT.
623 001406 000015 SETCOM ;YES. ISSUE WRITE DATA COMMAND.
624 001410 000420 BR DTRMNB ;ERROR RETURN.
625 001412 032777 100200 177366 BIT #BIT15+BIT7,@TCCH ;WAIT FOR ERROR/READY.
626 001420 001774 BPL -6
627 001422 005777 177360 TST @TCCH ;ERROR?
628 001426 100411 BAI DTRMNB ;BR IF YES.
629 001430 104025 DTRMNA: STOPDT ;STOP DECTAPE.
630 001432 005300 DEC R0 ;DONE 8 TIMES?
631 001434 001334 BNE DTRMN ;BR IF NOT.
632 001436 105767 177426 TSTB UNITS ;ANY UNITS AVAILABLE?
633 001442 001015 BNE DTRMNC ;BR IF YES.
634 001444 104010 ;TYPE NON AVAILABLE MESSAGE.
635 001446 010125 NOUNIT
636 001450 000575 BR CHNC ;GO EXIT.
637 001452 032777 014000 177324 DTRMNB: BIT #BIT12+BIT11,@TCST ;ILO OR SELE ERROR?
638 001460 001763 BEQ DTRMNA ;BR IF NOT.
639 001462 016701 177654 MOV SQDRV1,R1
640 001466 146167 003760 177374 BICB UNTAB(1),UNITS ;DESELECT NON AVAILABLE TRANSPORT.
641 001474 000755 BR DTRMNA
642 001476 104010 DTRMNC: TYPE ;TYPE UNITS TO BE TESTED.
643 001500 010152 GOOD
644 001502 012767 000001 000010 MOV #1,CPENA
645 001510 012767 000007 177326 MOV #7,CTRA ;CHECK UP TO 7 UNITS.
646 001516 104046 SELDRV ;SELECT DRIVE.
647 001520 000000 CPENA: OPEN ;UNIT TO BE SELECTED.
648 001522 000407 BR CPENB ;UNIT NOT AVAILABLE.
649 001524 016700 177336 MOV UNITN,R0 ;SUCCESS.
650 001530 116067 010200 006437 MOVB GTAB(0),GTAPES ;GET ASCII # FOR GOOD TAPE.

```



707	002030	022767	177777	177002	COMP	#-1,NXTST	:LAST TEST?
708	002036	001267			BNE	GTROYX	:BRANCH IF NOT LAST TEST.
709	002040	104010			TYPE		:TYPE PROGRAM END BELL.
710	002042	007453			APGEN0		
711	002044	013700	000042		MOV	#42,R0	:GET CONTENTS OF 42.
712	002050	001410			BFC	HERE	:BR IF 0.
713	002052	000005			RESET		:NOT 0, ISSUE RESET.
714	002054	004710			R	PC(10)	:RETURN TO MONITOR.
715	002056	000240	000240	000240	JRD	NOP,NOP,NOP	
716	002058	105767	177000		IB	UNITS	:ANY UNITS AVAILABLE FOR TESTING?
717	002070	001765			BNE	CHNC	:BR IF NOT.
718	002072	000643			BR	GTROY	:GO REPEAT PROGRAM.
719	002074	016705	176740		FORWD:	NXTST,R5	:ADDR OF NEXT ROUTINE TO R5.
720	002100	012567	176732		MOV	(S)+,RTNNO	:GET NEXT ROUTINE NUMBER.
721	002104	012567	176730		MOV	(S)+,NXTST	:GET ADDR OF NEXT "NEXT" ROUTINE.
722	002110	012567	176712		MOV	(S)+,ICTR	:GET ITERATION COUNT.
723	002114	012567	176714		MOV	(S)+,SCOPTA	:GET SCOPE LOOP ENTRY POINTER.
724	002120	010267	176716		FORWDA:	R5,CURTST	:ADDR OF NOW CURRENT TEST TO CURTST
725	002124	012767	000001	176676	MOV	#1,ICNT	:PRESET ICNT TO 1.
726	002132	016767	176700	175430	MOV	RTNNO,SR	:DISPLAY ROUTINE #.
727	002140	000207			RTS	R7	:EXIT FORWD SUBROUTINE.
728							:EMT INTERPRETER ROUTINE.
729	002142	010046			EMTINT:	RO,-(6)	:PUSH RO.
730	002144	016600	000002		MOV	2(6),RO	:GET EMT PC.
731	002150	014000			MOV	-(0),RO	:GET EMT CALL.
732	002152	006300			ASL	RO	:TIMES 2.
733	002154	016000	171122		MOV	EMTTAB-10000(0),RO	:FORM EMT ADDR.
734	002160	000200			RTS	RO	:GO TO EMT RTN. RESTORE RO.
735							:SAVE REGS 0 TO 3 SUBROUTINE.
736	002162	012666	177766		SV03:	(6)+,-10,(6)	:MOVE PC UPSTACK.
737	002166	012666	177766		MOV	(6)+,-10,(6)	:MOVE STATUS UPSTACK.
738	002172	012767	000002	000046	MOV	#RTI,SV05C	
739	002200	000415			BR	SV05B	
740							:SUB TO SAVE REGS 0 TO 5 AND PLACE EMT PC IN R5.
741	002202	012767	000240	000036	SV05S:	#NOP,SV05C	
742	002210	000403			BR	SV05A	
743							:SUB TO SAVE REGS 0 TO 5.
744	002212	012767	000002	000026	SV05:	#RTI,SV05C	
745	002220	012666	177762		SV05A:	(6)+,-14,(6)	:MOVE PC AND PSW UPSTACK.
746	002224	012666	177762		MOV	(6)+,-14,(6)	
747	002230	010546			MOV	R5,-(6)	
748	002232	010446			MOV	R4,-(6)	
749	002234	010346			SV05B:	MOV R3,-(6)	
750	002236	010246			MOV	R2,-(6)	
751	002240	010146			MOV	R1,-(6)	
752	002242	010046			MOV	RO,-(6)	
753	002244	024646			SV05C:	PUSH2	
754	002246	000002			RTI		:RTI OR NOP.
755	002250	016605	000020		MOV	16,(6),R5	:EMT PC TO R5.
756	002254	010504			MOV	R5,R4	
757	002256	005744			TST	-14	
758	002260	000002			RTI		:EXIT.
759							:RESTORE REGS 0 TO 3 SUBROUTINE.
760	002262	022626			AS03:	POPSP2	
761	002264	012600			MOV	(6)+,RO	:RESTORE REGS 0 TO 4.
762	002266	012601			MOV	(6)+,R1	



```

763 002270 012602      MOV      (6)+,R2
764 002272 012603      MOV      (6)+,R3
765 002274 016646 177766      MOV      -10.(6),-(6) ;MOVE PC AND PSW DOWN STACK.
766 002300 016646 177766      MOV      -10.(6),-(6)
767 002304 000002      RTI      ;EXIT
768
769 002306 010566 000020      ;SUB TO SET RS IN EMT PC AND RESTORE REGS 0 TO 5.
ASOSS: MOV      RS,16.(6) ;SET EMT PC TO RS CONTENTS.
ASOS:  RESTORE REGS 0 TO 5.
       POPSP2
771 002312 022626      MOV      (6)+,R0
772 002314 012600      MOV      (6)+,R1
773 002316 012601      MOV      (6)+,R2
774 002320 012602      MOV      (6)+,R3
775 002322 012603      MOV      (6)+,R4
776 002324 012604      MOV      (6)+,R5
777 002326 012605      MOV      (5)+,R5
778 002330 016646 177762      MOV      -14.(6),-(6) ;MOVE PC AND PSW DOWNSTACK.
779 002334 016646 177762      MOV      -14.(6),-(6)
780 002340 000002      RTI      ;EXIT.
781 002342 012666 177772      SVSS: MOV      (6)+,-6(6) ;PC AND PSW UPSTACK.
782 002346 012666 177772      MOV      (6)+,-6(6)
783 002350 010546      MOV      R5,-(6) ;SAVE R5.
784 002354 010446      MOV      R4,-(6) ;SAVE R4.
785 002356 024646      PUSH2
786 002360 016605 000010      MOV      8.(6),R5 ;EMT PC TO R5.
787 002364 010504      MOV      R5,R4 ;EMT PC TO R4.
788 002366 005744      TST      -(4)
789 002370 000002      RTI      ;EXIT EMT SUB.
790 002372 010566 000010      RSSS: MOV      R5,8.(6) ;R5 TO EMT PC.
791 002376 022626      POPSP2
792 002400 012604      MOV      (6)+,R4 ;RESTORE R4.
793 002402 012605      MOV      (6)+,R5 ;RESTORE R5.
794 002404 016646 177772      MOV      -6(6),-(6)
795 002410 016646 177772      MOV      -6(6),-(6)
796 002414 000002      RTI      ;EXIT.
797
798 002416 104006      ;ROUTINE TO SET T011 INTERRUPT VECTOR AND PRIORITY
STTCV: SAVDSS
       MOV      TCVTR,R1 ;VECTOR TO R1.
       MOV      (5)+,(1)+ ;SET DESIRED VECTOR.
       MOV      TOLVL,(1)+ ;SET T011 PRIORITY.
       RSTOSS
       RTI
799
800 002420 016701 176372      ;ROUTINE TO ISSUE RESET.
SRSETT: MOV      R0,-(6) ;PUSH R0.
801 002424 012521      MOV      #52525,R0 ;DATA TO R0.
802 002426 016721 176366      COM      R0 ;COMPLEMENT (R0).
803 002432 104007      MOV      R0,SRSETT+4 ;(R0) TO SRSETT+4.
804 002434 000002      RESET ;ISSUE RESET. (R0) IS
805 002436 010046      MOV      (6)+,R0 ;RESTORE R0.
806 002440 012700 052525      RTI      ;DISPLAYED. EXIT.
807 002444 005100
808 002446 010067 177770
809 002452 000005
810 002454 012600
811 002456 000002
812
813 002460 104006      ;COMMON HALT ROUTINE
CHLT:  SAVDSS
814 002462 010400      MOV      R4,R0 ;DEVELOP ADDR OF CALLER.
815 002464 000000      HALT ;HALT CALL ADDR IN DATA LIGHTS.
816 002466 104007      RSTOSS
817 002470 000002      RTI      ;EXIT.
818
;CONDITIONAL ERROR HALT ROUTINE.
    
```

819	002472	005767	175072	EHLT:	TST	SR				
820	002476	100001			BPL	EHLTA				:CHECK FOR HALT ON ERROR.
821	002500	000000			HALT					:BRANCH IF NO HALT DESIRED.
822	002502	000003		EHLTA:	RTI					:HALT.
823	002504	104025		ERRN:	STOPDT					:IN DATA LIGHTS.
824	002506	010467	176364		MOV	R4,FPC				:ALL STOP.
825	002512	104013			OACNV					:CONVERT CALL ADDR OF SUB CALLING.
826	002514	001076			FPC					
827	002516	010011			AFPC					
828	002520	000006			6					
829	002522	000003			SAVSS					:SAVE REG 55
830	002524	010567	000166		MOV	R5,ERRB				:DETERMINE CALLING ADDR.
831	002530	162767	000002 000160		SUB	#2,ERRB				
832	002536	104013			OACNV					:CONVERT CALLING ADDR TO ASCII.
833	002540	002716			ERRB					
834	002542	007020			APC					
835	002544	000006			6					
836	002546	104013			OACNV					:CONVERT TEST # TO ASCII.
837	002550	001036			RTNNO					
838	002552	007010			ATNUMB					
839	002554	000003			3					
840	002556	104014			BDCNV					:CONVERT ICNT TO DECIMAL ASCII.
841	002560	001030			ICNT					
842	002562	007035			AICNT					
843	002564	000005			5					
844	002566	104013			OACNV					:CONVERT UNIT # TO ASCII.
845	002570	001066			UNITN					
846	002572	007051			AUNIT					
847	002574	000001			1					
848	002576	104013			OACNV					:CONVERT BLKRO TO ASCII.
849	002600	001060			BLKRO					
850	002602	007601			ABLKRO					
851	002604	000006			6					
852	002606	104013			OACNV					:CONVERT TCST TO ASCII.
853	002610	001050			TCSTT					
854	002612	007533			ATCST					
855	002614	000006			6					
856	002616	104013			OACNV					:CONVERT TCCM TO ASCII.
857	002620	001046			TCCMT					
858	002622	007517			ATCCM					
859	002624	000006			6					
860	002626	104013			OACNV					:CONVERT TCWC TO ASCII.
861	002630	001054			TCWCT					
862	002632	007465			ATCWC					
863	002634	000006			6					
864	002636	104013			OACNV					:CONVERT TCBA TO ASCII.
865	002640	001056			TCBAT					
866	002642	007502			ATCBA					
867	002644	000006			6					
868	002646	104013			OACNV					:CONVERT TRANSFER COUNT TO ASCII.
869	002650	001106			XFCNT					
870	002652	007063			AXFCNT					
871	002654	000006			6					
872	002656	104013			OACNV					:CONVERT WRITE ADDR TO ASCII.
873	002660	001110			WADDR					
874	002662	007101			RWADDR					

```

875 002664 000006      6
876 002666 104013      6 OACNV          ; CONVERT READ ADDR TO ASCII.
877 002668 001112      RADDR
878 002672 007117      RRADDR
879 002674 000006      6
880 002676 012767 007004 000012      MOV          #EMC,ERRB ; TYPE ERR HEADER MSG IF NOT INHIBITED.
881 002704 032767 020000 174656  ERRNA: BIT          #BIT13,SR ; INHIBIT ERR PRINT?
882 002712 001002      ERRND: BNE          ERRNB ; BR TO INHIBIT.
883 002714 104010      TYPE          ; TYPE MSG.
884 002716 000000      ERRB: OPEN         ; DESIRED MSG ADDR GOES HERE.
885 002720 012567 177772  ERRNB: MOV          (5)+,ERRB ; GET ADDR OF NEXT MSG.
886 002724 022767 177777 177764  CMP          #-1,ERRB ; TERMINATOR?
887 002732 001364      BNE          ERRNA ; GO TYPE IF NOT TERMINATOR.
888 002734 104021      ERRNC: EHALT       ; END OF MSGS. HALT IF REQUIRED.
889 002736 000004      RSTSS        ; RESTORE REG 5S.
890 002740 000002      RTI          ; EXIT ENT SUB.
891      ; SUBROUTINE TO OUTPUT ASCII MESSAGE ON TELETYPE PRINTER.
892 002742 104006      TYP: SAVOSS
893 002744 012500      MOV          (5)+,R0 ; ADDRESS OF MESSAGE TO R0.
894 002746 112001      TYPA: MOVB        (0)+,R1 ; GET CHARACTER
895 002750 001076      BNE          TYPD ; BRANCH IF NOT TERMINATOR..
896 002752 112701 000177      MOVB        #177,R1 ; OUTPUT RUBOUT.
897 002756 004767 000020      JSR          R7,TYPD
898 002762 104007      RSTOSS
899 002764 000002      RTI
900 002766 122701 000045      TYPD: CMPB         #45,R1 ; TERMINATOR CHAR. DONE. EXIT.
901 002772 001411      BEQ          TYPE ; CHECK FOR "%".
902 002774 004767 000002      JSR          R7,TYPD ; BRANCH IF "%".
903 003000 000762      BR          TYPA ; TYPE CHAR IN R1
904 003002 110177 176016      TYPD: MOVB        R1,R7TPB ; OUTPUT CHARACTER TO PRINTER
905 003006 105777 176010      TSTB        #TPB ; WAIT FOR DONE FLAG.
906 003012 100375      BPL         -4
907 003014 000207      RTS         R7 ; EXIT
908 003016 112701 000015      TYPF: MOVB        #15,R1 ; MOVE CARRIAGE RETURN CODE TO R1
909 003022 004767 177754      JSR          R7,TYPD ; GO TYPE CHAR.
910 003026 112701 000012      TYPG: MOVB        #12,R1 ; MOVE LF CODE TO R1.
911 003032 004767 177744      JSR          R7,TYPD ; GO TYPE CHAR.
912 003036 000743      BR          TYPA
913      ; SUBROUTINE TO OUTPUT A SERIES OF ASCII MESSAGES ON TELETYPE PRINTER
914 003040 000003      TYP5: SAVSS
915 003042 012567 000016      MOV          (5)+,TYP5B ; ADDR OF MESSAGE TO TYP5B.
916 003046 022767 177777 000010  CMP          #-1,TYP5B ; CHECK FOR TERMINATOR
917 003054 001002      BNE          TYP5A ; BRANCH IF NOT TERMINATOR.
918 003056 000004      RSTSS
919 003060 000002      RTI          ; TERMINATOR, EXIT
920 003062 104010      TYP5A: TYPE        ; CALL ON TYP SUB TO TYPE MESSAGE
921 003064 000000      TYP5B: OPEN         ; ADDRESS OF MESSAGE GOES HERE
922 003066 000765      BR          TYP5+2 ; GO PROCESS NEXT MESSAGE
923      ; SUBROUTINE TO DELAY.
924      DLYR0=DLY+4
925      DLYR1=DLYA+4
926 003070 012727 000310 000000  DLY: MOV          #200.,#0
927 003076 012727 001750 000000  DLYA: MOV         #1000.,#0 ; DELAY COUNT TO DLYR1.
928 003104 005367 177772      DLYB: DEC          DLYR1
929 003110 001375      BNE          DLYB
930 003112 005367 177756      DEC          DLYR0

```

```

931 003116 001367 BNE DLYA
932 003120 000002 RTI
933 ; SUBROUTINE TO INITIALIZE BINARY COUNT PATTERNS
934 003122 012767 177777 000016 INBINN: MOV #-1,RIND ; SET ALL VARIABLES
935 003130 016767 000012 000012 MOV RIND,PTO
936 003136 016767 000004 000006 MOV RIND,PTI
937 003144 000002 RTI
938 003146 000000 RIND: OPEN
939 003150 000000 PTO: OPEN
940 003152 000000 PTI: OPEN
941 ; SPECIAL BINARY COUNT PATTERN SUBROUTINE
942 003154 016767 177770 177770 GTBINI: MOV PTO,PTI ; PREVIOUS BIN CHAR TO PTI
943 003162 005167 177764 COM PTI
944 003166 005167 177754 COM RIND
945 003172 001002 BNE +6
946 003174 005267 177752 INC PTI
947 003200 016767 177746 177742 MOV PTI,PTO ; SAVE BIN CHAR IN PTO
948 003206 000003 SAVSS
949 003210 016725 177736 MOV PTI,(5)+
950 003214 000004 RSTSS
951 003216 000002 RTI
952 ; EMT SUB TO CONVERT OCTAL TO ASCII
953 003220 104006 OACNVV: SAVOSS ; SAVE REGS.
954 003222 013500 MOV @((5)+,R0) ; GET OCTAL VALUE
955 003224 012501 MOV (5)+,R1 ; GET DESTINATION ADDR.
956 003226 012502 MOV (5)+,R2 ; GET CONVERT COUNT
957 003230 060201 ADD R2,R1 ; DEVELOP ADDR TO STORE 1ST CHAR.
958 003232 010003 OACNVA: MOV R0,R3
959 003234 042703 177770 BIC #177770,R3 ; ISOLATE LEAST SIGNIFICANT DIGIT.
960 003240 062703 000060 ADD #60,R3 ; CONVERT DIGIT TO ASCII.
961 003244 110341 MOVB R3,-(1) ; STORE ASCII CHARACTER.
962 003246 042700 000007 BIC #7,R0
963 003252 006000 ROR R0
964 003254 006000 ROR R0
965 003256 006000 ROR R0
966 003260 005302 DEC R2
967 003262 001363 BNE OACNVA ; DONE ALL DIGITS?
968 003264 104007 RSTOSS ; RESTORE REGS.
969 003266 000002 RTI ; DONE. EXIT.
970 ; EMT SUB TO MOVE VARIABLE NUMBER OF BYTES
971 003270 104006 BMOVV: SAVOSS ; SAVE REGS.
972 003272 012501 MOV (5)+,R1 ; GET "FROM" ADDRESS
973 003274 012502 MOV (5)+,R2 ; GET "TO" ADDRESS
974 003276 012503 MOV (5)+,R3 ; GET COUNT
975 003300 112122 BMOVA: MOVB (1)+,(2)+ ; MOVE BYTE
976 003302 005303 DEC R3 ; DECREMENT COUNT
977 003304 001375 BNE BMOVA ; BRANCH IF NOT DONE.
978 003306 104007 RSTOSS ; RESTORE REGS.
979 003310 000002 RTI ; DONE. EXIT.
980 ; EMT SUB TO CONVERT BINARY TO DECIMAL ASCII.
981 003312 104006 BOCNVV: SAVOSS ; SAVE REGS.
982 003314 013501 MOV @((5)+,R1) ; GET BINARY VALUE.
983 003316 012700 003414 MOV #DECVAL,R0 ; ADDR OF DECVAL TO R0.
984 003322 012702 003402 MOV #TENPWR,R2 ; ADDR OF 10 POWER TO R2.
985 003326 012703 000006 MOV #5,R3 ; SET UP FOR 5 CONVERSIONS.
986 003332 005004 BOCNVA: CLR R4 ; CLEAR RESULT.

```

```

987 003334 161201 BDCNVB: SUB (2),R1 ;10 POWER FROM VALUE.
988 003336 103402 BDCNVC BDCNVC ;BR IF UNSUCCESSFUL.
989 003340 005204 INC R4 ;1 TO RESULT.
990 003342 000774 BR BDCNVB ;DO IT AGAIN.
991 003344 061201 BDCNVC: ADD (2),R1 ;RESTORE SUBTRACTED VALUE.
992 003346 062704 000060 ADD #60,R4 ;CONVERT RESULT TO ASCII.
993 003350 110420 MOVB R4,(0)+ ;STORE RESULT.
994 003354 005722 TST (2)+ ;UPDATE 10 POWER ADDR.
995 003356 005303 DEC R3 ;DONE 5 TIMES?
996 003360 001364 BNE BDCNVA ;BR IF NOT.
997 003362 012501 MOV (5)+,R1 ;GET ADDR TO STORE ASCII.
998 003364 012502 MOV (5)+,R2 ;GET # OF DIGITS REQUIRED.
999 003366 060201 ADD R2,R1 ;START WITH LSD.
1000 003370 114041 BDCNVD: MOVB -(0),-(1) ;TRANSFER CHARACTER.
1001 003372 005302 DEC R2 ;DONE?
1002 003374 001375 BNE BDCNVD ;BR IF NOT.
1003 003376 104007 RTSS ;RESTORE REGS.
1004 003400 000002 RTI ;EXIT.
1005 003402 023420 TENPWR: 10000.
1006 003404 001750 1000.
1007 003406 000144 100.
1008 003410 000012 10.
1009 003412 000001 1.
1010 003414 040 040 040 DECVAL: .BYTE 040,040,040,040,040,040
1011 003417 040 040 040
1012
1013 003422 012767 003552 174354 ;SUBROUTINE TO ASSIGN BUFFER AREAS PER AVAILABLE CORE.
1014 003430 005737 000042 CORSTP: MOV #CORSTB,MACHER ;SET UP BUS ERROR TRAP POINTER.
1015 003434 001407 BEQ CORSTF ;LOADED VIA MONITOR?
1016 003436 022737 002054 000042 CMP #LOGIC,#42 ;BR IF NOT.
1017 003444 001403 BEQ CORSTF ;42=LOGIC?
1018 003446 012701 172000 MOV #172000,R1 ;BR IF YES.
1019 003452 000402 BR CORSTA ;172000 TO INITIAL TEST ADDR.
1020 003454 012701 177500 CORSTF: MOV #177500,R1 ;177500 TO INITIAL TEST ADDR.
1021 003460 162701 020000 CORSTA: SUB #20000,R1 ;SUBTRACT 20000 FROM TEST ADDR.
1022 003464 062711 000000 ADD #0,(1) ;REFERENCE TEST ADDR.
1023 003470 012767 000006 174306 CORSTD: MOV #6,MACHER ;IF NO TRAP CORE IS AVAILABLE.
1024 003476 010167 175376 MOV R1,RBFLIM ;SET READ BUFFER UPPER LIMIT.
1025 003502 162701 010210 SUB #CODEND,R1 ;COMPUTE AVAILABLE BUFFER SPACE.
1026 003506 006001 ROR R1 ;COMPUTE BUFFER SIZE (READ OR WRITE).
1027 003510 006001 ROR R1
1028 003512 042701 000001 BIC #BIT0,R1
1029 003516 010167 175362 MOV R1,BFSIZE ;COMPUTED BUFFER SIZE TO BFSIZE.
1030 003522 006301 ASL R1
1031 003524 062701 010210 ADD #CODEND,R1 ;COMPUTE WRITE BUFFER UPPER LIMIT.
1032 003530 010167 175346 MOV R1,WBFLIM ;AND MOVE TO WBFLIM.
1033 003534 104013 OACNV ;TYPEOUT HIGHEST TEST ADDR.
1034 003536 001100 RBFLIM
1035 003540 007444 ACRLIM
1036 003542 000006 S
1037 003544 104010 TYPE
1038 003546 007410 HADRM
1039 003550 000207 RTS PC ;EXIT.
1040 003552 012716 003460 CORSTB: MOV #CORSTA,(6) ;SET UP TRAP EXIT.
1041 003556 000002 RTI ;EXIT BUS ERROR TRAP.
1042 ;EMT RANDOM NUMBER GENERATOR. NUMBER IS STORED AT LOC AFTER SUB CALL.

```

```

1043 003560 104006          RNGEN: SAVOSS
1044 003562 016700 000044      MOV      RP1,RO
1045 003566 006100          ROL      RO
1046 003570 006100          ROL      RO
1047 003572 066700 000036      ADD      RP2,RO
1048 003576 010067 000030      MOV      RO,RP1
1049 003602 006100          ROL      RO
1050 003604 006100          ROL      RO
1051 003606 066700 000022      ADD      RP2,RO
1052 003612 006100          ROL      RO
1053 003614 006100          ROL      RO
1054 003616 010067 000012      MOV      RO,RP2
1055 003622 016725 000004      MOV      RP1,(5)+ ;STORE # AT LOC AFTER SUB CALL.
1056 003626 104007          RSTOSS
1057 003630 000002          RTI      ;EXIT.
1058 003632 001233          RP1:    1233
1059 003634 007622          RP2:    7622
1060          ;EMT SUB TO INITIALIZE RANDOM NUMBER GENERATOR.
1061 003636 012767 001233 177766  INRNDN: MOV      #1233,RP1
1062 003644 012767 007622 177762  MOV      #7622,RP2
1063 003652 000002          RTI      ;EXIT.
1064          ;EMT SUB TO SELECT SEQUENTIAL DECTAPE UNIT.
1065 003654 005267 000010      SQDRV:  INC      SQDRVA
1066 003660 042767 177770 000002  BIC      #177770,SQDRVA
1067 003666 104046          SELDRV          ;SELECT TRANSPORT.
1068 003670 000000          OPEN          ;TRANSPORT NUMBER.
1069 003672 000770          BR      SQDRV   ;TRANSPORT NOT AVAILABLE RETURN.
1070 003674 000002          RTI          ;TRANSPORT SELECTED. EXIT.
1071          ;EMT SUB TO SELECT RANDOM DECTAPE UNIT.
1072          ;CALL: RNDRV
1073 003676 104015          RNDRVV: RNDNUM          ;GET RANDOM NUMBER.
1074 003700 000000          RNDRVA: OPEN          ;# IS STORED HERE.
1075 003702 042767 177770 177770  BIC      #177770,RNDRVA ;LIMIT TO 3 LSB.
1076 003710 016767 177764 000002  MOV      RNDRVA,RNDRVB
1077 003716 104046          SELDRV          ;SELECT RANDOM UNIT
1078 003720 000000          RNDRVB: OPEN          ;NUMBER OF UNIT TO BE SELECTED.
1079 003722 000765          BR      RNDRVV   ;UNIT NOT AVAILABLE FOR TESTING RETURN.
1080 003724 000002          RTI          ;EXIT. UNIT IS SELECTED.
1081          ;EMT SUB TO SELECT DECTAPE UNIT SPECIFIED IF AVAILABLE FOR TESTING.
1082          ;CALL: SELDRV ;CALL SELECT SUBROUTINE.
1083          ;
1084          ;XXX ;NUMBER OF UNIT TO BE SELECTED.
1085          ;NSI ;UNIT NOT AVAILABLE RETURN.
1086          ;SELDRR: SAVOSS ;RETURN IF UNIT IS SUCCESSFULLY SELECTED.
1087 003726 104006          MOV      (5)+,RO    ;GET NUMBER OF DESIRED UNIT.
1088 003730 012500          BITB     UNTAB(0),UNITS ;SEE IF UNIT IS TESTABLE.
1089 003732 136067 003760 175130  BEQ     SELDRA      ;BR IF NOT.
1090 003740 001405          MOV      RO,UNITN   ;TESTABLE. SAVE UNIT NUMBER.
1091 003742 010067 175120          MOV     RO,UNIT+1   ;POSITION UNIT NUMBER FOR LATER IO.
1092 003746 110067 175113          MOV     RO,UNIT+1
1093 003752 005725          TST     (5)+
1094 003754 003754          SELDRA: RSTOSS
1095 003756 000002          RTI      ;EXIT.
1096 003760          UNTAB: .BYTE  BIT0,BIT1,BIT2,BIT3,BIT4,BIT5,BIT6,BIT7
1097 003763          001      002      004
1098 003766          010      020      040
1099 00376E          100      200
          ;EMT SUB TO GENERATE RANDOM TRANSFER COUNT (XFRONT)

```

```

1099 003770 104015 RNDXFF: RNONUM ;GET RANDOM NUMBER.
1100 003772 000000 RNDXFA: OPEN ;NUMBER IS STORED HERE.
1101 003774 042767 000377 177770 BIC #377,RNDXFA
1102 004002 005767 177764 TST RNDXFA ;NUMBER MUST NOT BE 0.
1103 004006 001770 BEQ RNDXFF ;BR IF ZERO.
1104 004010 026767 177756 175066 CMP RNDXFA,BFSIZE ;COMPARE NUMBER AGAINST BUFFER SIZE.
1105 004016 101364 BHI RNDXFF ;IF LARGER, GET ANOTHER NUMBER.
1106 004020 016767 177746 175060 MOV RNDXFA,XFRCNT ;NUMBER TO XFRCNT.
1107 004026 104050 XFRSET ;PERFORM BUFFER AND BLOCK SETUP.
1108 004030 000002 RTI ;EXIT.
1109 ;EMT SUB TO SET UP BUFFER ADDRESSES AND FWD AND REV BLOCK NUMBERS
1110 ;BASED ON VALUE OF TRANSFER COUNT
1111 004032 016767 175044 175050 XFRSTT: MOV WBFLIM,WADDR ;COMPUTE WRITE ADDRESS.
1112 004040 166767 175042 175042 SUB XFRCNT,WADDR
1113 004046 166767 175034 175034 SUB XFRCNT,WADDR
1114 004054 016767 175020 175030 MOV RBFLIM,RADDR ;COMPUTE READ ADDRESS.
1115 004062 166767 175020 175022 SUB XFRCNT,RADDR
1116 004070 166767 175012 175014 SUB XFRCNT,RADDR
1117 004076 016767 175004 175012 MOV XFRCNT,VRBLKN ;COMPUTE NUMBER OF BLOCKS REQUIRED,
1118 004104 105067 175006 CLRB VRBLKN ;AND FWD MAX AND REV MIN BLOCK NUMBERS
1119 004110 000367 175002 SWAB VRBLKN
1120 004114 012767 001102 174772 MOV #1102,VFBLKN
1121 004122 166767 174770 174764 SUB VRBLKN,VFBLKN ;MAX FWD BLOCK.
1122 004130 005367 174762 DEC VRBLKN ;MIN REV BLOCK.
1123 004134 000002 RTI ;EXIT.
1124 ;EMT SUB TO FILL WRITE BUFFER WITH NUMBER OF DRIVE UNDER TEST.
1125 004136 104006 DRVFL: SAVOSS
1126 004140 016700 174744 MOV WADDR,R0
1127 004144 016701 174716 MOV UNITN,R1
1128 004150 016703 174732 MOV XFRCNT,R3
1129 004154 010120 DRVFLA: MOV R1,(0)+
1130 004156 005303 DEC R3
1131 004160 001375 BNE DRVFLA
1132 004162 104007 RSTOSS
1133 004164 000002 RTI ;EXIT.
1134 ;EMT SUB TO SELECT RANDOM FORWARD BLOCK NUMBER.
1135 004166 104015 RNDFB: RNONUM ;GET RANDOM NUMBER.
1136 004170 000000 RDFBBA: OPEN ;NUMBER IS STORED HERE.
1137 004172 026767 177772 174714 CMP RDFBBA,VFBLKN ;NUMBER MUST NOT BE LARGER THAN VFBLKN.
1138 004200 101372 BHI RNDFB ;BR IF LARGER, GET ANOTHER NUMBER.
1139 004202 016767 177762 174650 MOV RDFBBA,BLKRQ ;NEW BLOCK NUMBER TO BLKRQ.
1140 004210 016767 174644 174644 MOV BLKRQ,BLKRQ
1141 004216 000002 RTI ;EXIT.
1142 ;EMT SUB TO SELECT RANDOM REVERSE BLOCK NUMBER.
1143 004220 104015 RNDRBB: RNONUM ;GET RANDOM NUMBER.
1144 004222 000000 RDRBBA: OPEN ;NUMBER IS STORED HERE.
1145 004224 026767 174666 177770 CMP VRBLKN,RDRBBA ;NUMBER MUST NOT BE SMALLER THAN VRBLKN.
1146 004232 101372 BHI RNDRBB ;BR IF SMALLER, GET ANOTHER NUMBER.
1147 004234 026727 177762 001101 CMP RDRBBA,#1101 ;NUMBER MUST NOT EXCEED 1101.
1148 004242 101366 BHI RNDRBB ;BR IF LARGER.
1149 004244 016767 177752 174606 MOV RDRBBA,BLKRQ ;NEW BLOCK NUMBER TO BLKRQ.
1150 004252 016767 174602 174602 MOV BLKRQ,BLKRQ
1151 004260 000002 RTI ;EXIT.
1152 ;EMT SUB TO FILL WRITE BUFFER WITH RANDOM DATA.
1153 004262 104006 RNDFL: SAVOSS
1154 004264 016700 174620 MOV WADDR,R0 ;GET STARTING ADDR.

```

```

1155 004270 016701 174612
1156 004274 104015
1157 004275 000000
1158 004300 016720 177772
1159 004304 005301
1160 004306 001372
1161 004310 104007
1162 004312 000002
1163
1164 004314 017767 174464 174526
1165 004322 017767 174460 174516
1166 004330 017767 174454 174516
1167 004336 017767 174452 174506
1168 004344 017767 174442 174504
1169 004352 000002
1170
1171 004354 005067 174512
1172 004360 016767 174500 174504
1173 004366 057667 000000 174476
1174 004374 016777 174472 174404
1175 004402 032777 100200 174376
1176 004410 001414
1177 004412 032767 000001 174452
1178 004420 001410
1179 004422 000003
1180 004424 104024
1181 004426 104012
1182 004430 010003
1183 004432 007735
1184 004434 007511
1185 004436 177777
1186 004440 104000
1187 004442 062716 000002
1188 004446 000002
1189
1190 004450 042777 000116 174330
1191 004456 000002
1192
1193 004460 000003
1194 004462 005777 174320
1195 004466 100404
1196 004470 005725
1197 004472 005725
1198 004474 000004
1199 004476 000002
1200 004500 005777 174300
1201 004504 100772
1202 004506 104024
1203 004510 104012
1204 004512 010003
1205 004514 007561
1206 004516 007511
1207 004520 177777
1208 004522 000764
1209
1210 004524 000003

MOV XFRONT,R1 ;GET COUNT.
RNDFLA: RNDNUM ;GET RANDOM NUMBER.
RNDFLB: OPEN ;NUMBER IS STORED HERE.
MOV RNDFLB,(0)+ ;STORE NUMBER AWAY.
DEC R1 ;DONE?
BNE RNDFLA ;BR IF NOT DONE.
RSTOSS
RTI ;EXIT.
;EMT SUB TO SAVE TCCM, TCST, TCDT, TCWC, TCBA.
STATS: MOV @TCST,TCSTT ;SAVE TCST.
MOV @TCCM,TCCMT ;SAVE TCCM.
MOV @TCWC,TCWCT ;SAVE TCWC.
MOV @TCDT,TCOTT ;SAVE TCDT.
MOV @TCBA,TCBAT ;SAVE TCBA.
RTI ;EXIT EMT SUB.
;EMT SUB TO ISSUE DT COMMAND SPECIFIED AT CALL+2.
STCOM: CLR COMND ;CLEAR PREVIOUS COMMAND
MOV UNIT,COMND ;UNIT # TO COMND.
BIS @6,COMND ;SET DESIRED COMMAND IN COMND.
MOV COMND,@TCCM ;ISSUE COMMAND.
BIT #BIT15!BIT7,@TCCM ;READY AND ERROR BIT CLEAR?
BEQ STCOMB ;BR IF YES.
BIT #BIT0,COMND ;WAS THE DO BIT SET IN COMND?
BEQ STCOMB ;BR IF NOT.
SAVSS ;SAVE STATUS.
STATUS ;ERROR. DO BIT FAILED TO CAUSE CLEARING
ERRORN
FPCMSG
STCMMSG ;OF READY AND/OR ERROR BIT(S), OR ILO.
STAT ;BLOCK MISS, OR DATA MISS ERROR OCCURRED.
-1
SCOPE
STCOMB: ADD #2,(6) ;SET UP RETURN.
RTI ;EXIT STCOM SUB.
;EMT SUB TO STOP ALL DECTAPES.
STPDT: BIC #116,@TCCM ;ISSUE SAT COMMAND.
RTI ;EXIT EMT SUB.
;EMT SUB TO CHECK FOR DECTAPE ERROR OR END ZONE.
CKERZ: SAVSS
TST @TCCM ;ERROR BIT SET?
BMI CKERZC ;BR IF YES.
TST (5)+ ;NO. SET UP OK EXIT.
CKERZA: TST (5)+
CKERZB: RSTSS
RTI ;EXIT EMT SUB.
CKERZC: TST @TCST ;ENDZ BIT SET?
BMI CKERZA ;BR IF YES.
CKERZD: STATUS ;DECTAPE ERROR.
ERRORN
FPCMSG
DTERR
STAT
-1
BR CKERZB
;EMT SUB TO HANDLE FAILURE TO INTERRUPT.
NOINTR: SAVSS

```



1211	004526	104023				STATUS		:SAVE STATUS.
1212	004528	104012				ERRORN		:DECTAPE FAIL TO INTERRUPT.
1213	004532	010003				FPCMSG		
1214	004534	007542				INTFAI		
1215	004536	007511				STAT		
1216	004540	177777				-1		
1217	004542	000004				RSTSS		
1218	004544	000002				RTI		:EXIT EMT SUB.
1219								
1220	004546	000000						:EMT SUB TO CHECK EXPECTED DATA AGAINST ACTUAL DATA AND REPORT ERRORS.
1221	004550	000000				DATIND: OPEN		
1222	004552	000000				DATKNT: OPEN		:CURRENT WORD NUMBER.
1223	004554	000000				EXPDAT: OPEN		
1224	004556	012767	001066	174324		ACTDAT: OPEN		
1225	004564	012767	021021	000202		DTCKSS: MOV #UNITN,WADDR		:UNIT NUMBER ADDR TO WADDR.
1226	004572	005067	177753			MOV #021021,DATCKE		:PREVENT INCREMENT OF S/B ADDR.
1227	004576	000414				CLR DATIND		
1228	004600	012767	022041	000166		BR DATCKK		
1229	004606	012767	177777	177732		DTCKI: MOV #022041,DATCKE		:INDICATE DECREMENT OF ACT DATA.
1230	004614	000405				MOV #-1,DATIND		
1231	004616	012767	022021	000150		BR DATCKK		
1232	004624	005067	177716			DATCK: MOV #022021,DATCKE		:INDICATE INCREMENT OF ACT DATA.
1233	004630	104006				CLR DATIND		
1234	004632	016700	174252			DATCKK: SAVOSS		
1235	004636	016701	174251			MOV WADDR,R0		:GET EXP DATA ADDR.
1236	004642	005767	177700			MOV RADDR,R1		:GET ACT DATA ADDR.
1237	004646	001406				TEST DATIND		:CHECK FOR ACT DATA DECREMENT.
1238	004650	066701	174232			AND DATCKA		:BR IF NO DECREMENT REQUIRED.
1239	004654	066701	174226			ADD XFRONT,R1		:YES. COMPUTE UPPER LIMIT OF ACT DATA.
1240	004658	162701	000002			ADD XFRONT,R1		
1241	004662	016702	174216			SUB #2,R1		
1242	004670	012767	000001	177652		DATCKA: MOV XFRONT,R2		:GET # OF WORDS TO CHECK.
1243	004674	016703	174216			MOV #1,DATKNT		:SET CURRENT WORD # TO 1.
1244	004678	012767	177644			MOV ERALIM,R3		:ERR LIMIT TO ERROR COUNTER.
1245	004682	012767	177634	177634		DATCKB: MOV (0),EXPDAT		:GET EXP DATA WORD.
1246	004686	026767	177634	177634		MOV (1),ACTDAT		:GET ACT DATA WORD.
1247	004690	026767	177634	177634		DATCKC: CMP EXPDAT,ACTDAT		:COMPARE ACT DATA AND EXP DATA.
1248	004694	026767	177634	177634		BEQ DATCKD		:BR IF NOT SAME.
1249	004698	026767	177634	177634		OACNV		:DATA NOT SAME. CONVERT WORD # TO DECIMAL ASCII.
1250	004702	026767	177634	177634		DATKNT		
1251	004706	007677				AWDCNT		
1252	004710	000004				4		
1253	004714	004013				OACNV		:CONVERT EXP DATA TO ASCII.
1254	004718	004552				EXPDAT		
1255	004722	000000				ADATSB		
1256	004726	004013				6		
1257	004730	000000				OACNV		:CONVERT ACT DATA TO ASCII.
1258	004734	000000				ACTDAT		
1259	004738	007542				ADATWS		
1260	004742	000000				6		
1261	004746	104012				ERRORN		:TYPE DATA ERROR MESSAGE.
1262	004750	010003				FPCMSG		
1263	004754	007542				SLASH		
1264	004758	007542				OPTEAR		
1265	004762	177777						
1266	004766	005303				DEC R3		:NTH ERROR?
1267	004770	001405				BEQ DATCKH		:BR IF YES.

1267 004770 005267 177554  
 1268 004774 000000  
 1269 004776 005302  
 1270 005000 001340  
 1271 005002 104007  
 1272 005004 000002  
 1273  
 1274 005006 104006  
 1275 005010 012500  
 1276 005012 012501  
 1277 005014 005020  
 1278 005016 005301  
 1279 005020 001375  
 1280 005022 104007  
 1281 005024 000002  
 1282  
 1283 005026 104006  
 1284 005030 016700 174054  
 1285 005034 016701 174046  
 1286 005040 104044  
 1287 005042 000000  
 1288 005044 016720 177772  
 1289 005050 005301  
 1290 005052 001372  
 1291 005054 104007  
 1292 005056 000002  
 1293  
 1294  
 1295 005060 000003  
 1296 005062 012567 174006  
 1297 005066 104024  
 1298 005070 005777 173714  
 1299 005074 001407  
 1300 005076 104012  
 1301 005100 010003  
 1302 005102 007610  
 1303 005104 007457  
 1304 005106 007474  
 1305 005110 177777  
 1306 005112 104000  
 1307 005114 026777 173754 173670  
 1308 005122 001414  
 1309 005124 104013  
 1310 005126 001074  
 1311 005130 007646  
 1312 005132 000006  
 1313 005134 104012  
 1314 005136 010003  
 1315 005140 007624  
 1316 005142 007640  
 1317 005144 007474  
 1318 005146 007457  
 1319 005150 177777  
 1320 005152 104000  
 1321 005154 000004  
 1322 005156 000002

```

DATECD: INL          DATKNT          ; INCREMENT WORD #
DATEKE: OPEN
DATECO: DEC          R2              ; DONE CHECKING?
                                           BR IF NOT.
DATECK: RSTOSS      DATCKB          ; DONE?
                                           EXIT.
; EMT SUB TO CLEAR SPECIFIED AREA TO 0'S.
CLEARR: SAVOSS
        MOV          (5)+,R0          ; GET STARTING ADDR.
        MOV          (5)+,R1          ; GET COUNT.
        CLR          (0)+            ; CLEAR WORD.
        DEC          R1              ; DONE?
        BNE          -4              ; BR IF NOT DONE.
        RSTOSS
        RTI                          ; DONE
                                           EXIT.
; EMT SUB TO FILL AREA WITH BINARY COUNT PATTERN.
BINFLA: SAVOSS
        MOV          MAJOR,R0         ; GET STARTING ADDR.
        MOV          XTCONT,R1        ; GET COUNT.
        GETBNI
        OPEN
        MOV          BINFLB,(0)      ; GET BINARY WORD.
                                           ; BINARY WORD IS STORED HERE.
        DEC          R1              ; STORE WORD.
        BNE          BINFLA          ; DONE?
        RSTOSS
        RTI                          ; BR IF NOT DONE.
                                           ; DONE
                                           ; EXIT.
; EMT SUB TO CHECK THAT WORD COUNT IS 0, AND THAT TCBA CONTENTS
; MATCH THE EXPECTED CONTENTS.
CWCBA: SAVOSS
        MOV          (5)+,TEMP        ; GET EXPECTED TCBA CONTENTS.
        STATUS
        TST          @TCWC           ; SAVE TCWC AND TCBA.
        BEQ          CWCBB          ; WORD COUNT 0?
        ERRORN      CWCBB          ; BR IF 0 (OK).
        FPCMSG      CWCBB          ; WORD COUNT NOT 0. TYPE
        WCNOTO      CWCBB          ; CONTENTS OF TCWC AND TCBA.
        @TCBA
        -1
        SCOPE
        CMP          TEMP,@TCBA      ; TCBA AND EXPECTED TCWC SAME?
        BEQ          CWCBB          ; BR IF YES (OK).
        OACNV
        TEMP
        ATCBAS
        6
        ERRORN
        FPCMSG
        INCTCB
        TCBA
        @TCBA
        @TCWC
        -1
        SCOPE
        RSTOSS
        RTI                          ; ACTUAL TCBA, AND TCWC.
                                           ; EXIT.

```



1379	005454	105367	000024			SRCRVC: DECB	REVCNT	: FIFTH REVERSAL ISSUED?
1380	005460	001270				BNE	SACCON	: BR IF NOT.
1381	005462	104024				STATUS		: YES ERROR. SAVE STATUS.
1382	005464	000003				SAVSS		
1383	005466	104012				ERRORN		: BLK# NOT FOUND WITHIN 5 TAPE
1384	005470	010003				PCMSG		: REVERSALS.
1385	005472	007572				BLKSB		
1386	005474	007764				SACRHR		
1387	005476	007511				STAT		
1388	005500	177777				-1		
1389	005502	104000				SCOPE		
1390	005504	000				REVCNT: .BYTE	OPEN	
1391	005505	000				DIRIND: .BYTE	OPEN	
1392						: EMT SUBS TO WDATA, RDATA, FORWARD OR REVERSE.		
1393	005506	016777	173374	173274		WRDFR: MOV	XFRCNT,@TCWC	: GET WORD COUNT AND SET IN TCWC
1394	005514	017767	173270	000100		MOV	@TCWC,WRDFRG	: 2(WORD COUNT) TO WRDFRG.
1395	005522	006367	000074			ASL	WRDFRG	
1396	005526	005477	173256			NEG	@TCWC	: IN 2'S COMPLEMENT FORM.
1397	005532	067767	173254	000062		ADD	@TCBA,WRDFRG	: 2(WORD COUNT)+TCBA=FINAL TCBA CONTENTS.
1398	005540	000000				WRDFRA: OPEN		: SRCHF OR SACRHR CALL GOES HERE.
1399	005542	012777	005600	173246		MOV	#WRDFRC,@TCVTR	: SET INTERRUPT VECTOR TO WRDFRC.
1400	005550	104023				SETCOM		: ISSUE WDATA OR RDATA.
1401	005552	000000				WRDFRB: OPEN		: COMMAND GOES HERE.
1402	005551	104400				DELAY		: WAIT FOR INTERRUPT.
1403	005556	104400				DELAY		
1404	005560	104400				DELAY		
1405	005562	104400				DELAY		
1406	005564	104400				DELAY		
1407	005566	104400				DELAY		
1408	005570	104400				DELAY		
1409	005572	104400				DELAY		
1410	005574	104027				NOINT		: FAILURE TO INTERRUPT.
1411	005576	104000				SCOPE		
1412	005600	022626				WRDFRC: POPSP2		: HERE WHEN INTERRUPT OCCURS.
1413	005602	022626				POPSP2		
1414	005604	005777	173176			TST	@TCOM	: ERROR BIT SET?
1415	005610	100003				BPL	WRDFRF	: BR IF NOT.
1416	005612	104026				CKERRZ		: CHECK FOR ERRORS.
1417	005614	104000				SCOPE		: ERROR RETURN.
1418	005616	000240				NOP		: ENDZ RETURN.
1419	005620	104036				WRDFRF: CKWCBA		: CHECK WORD COUNT AND CURRENT ADDR.
1420	005622	000000				WRDFRG: OPEN		: TCBA SHOULD EQUAL THIS.
1421	005624	000240				WRDFRE: NOP		
1422	005626	000002				RTI		: EXIT.
1423	005630	012767	000115	177714		WDATF: MOV	#WDATA!FWD!IE!DO,WRDFRB	
1424	005636	016777	173246	173146		MOV	WADDR,@TCBA	:
1425	005644	012767	104030	177666		MOV	#SRCHF,WRDFRA	:
1426	005652	000715				BR	WRDFR	:
1427	005654	012767	000105	177670		RDATAF: MOV	#RDATA!FWD!IE!DO,WRDFRB	
1428	005662	016777	173224	173122		MOV	RADDR,@TCBA	:
1429	005670	012767	104030	177642		MOV	#SRCHF,WRDFRA	:
1430	005676	000703				BR	WRDFR	:
1431	005700	012767	004115	177644		WDATA: MOV	#WDATA!REV!IE!DO,WRDFRB	
1432	005706	016777	173176	173076		MOV	WADDR,@TCBA	:
1433	005714	012767	104031	177616		MOV	#SRCHA,WRDFRA	:
1434	005722	000671				BR	WRDFR	:

```

1445 005724 012767 004105 177620 RDATA: MOV #RDATA,REV,IE!DO,WRDFRB
1446 005733 016777 173154 173052 MOV RADDR,TCBA ;
1447 005740 012767 104031 177572 MOV #SRCHA,WRDFRA ;
1448 005746 000657 WRDFR
1449 :SUB TO REWIND AVAILABLE TRANSPORTS.
1450 MRWIND: SAV03
1451 CLR BLKRG
1452 MOV #8,RO ;SET UP TO REWIND 8 TRANSPORTS.
1453 MRWINDA: INC MRWIND
1454 BIC #177770,MRWINDB
1455 SELDRV ;SELECT TRANSPORT.
1456 OPEN ;TRANSPORT NUMBER.
1457 BR MRWINDC ;TRANSPORT NOT AVAILABLE RETURN.
1458 SRCHA ;SEARCH FOR REVERSE BLOCK 0 ON
1459 STOPDT ;SELECTED DRIVE, AND STOP DECTAPE.
1460 MRWINDC: DEC RO ;DONE 8 TRANSPORTS?
1461 BNE MRWINDA ;BR IF NOT.
1462 RST03
1463 RTS PC ;DONE, EXIT.
1464 :SUB TO GET AVAILABLE TRANSPORTS MOVING FORWARD.
1465 MFWD: SAV03
1466 MOV #8,RO ;SET UP TO MOVE 8 TRANSPORTS.
1467 MFWDA: INC MFWDB
1468 BIC #177770,MFWDB
1469 SELDRV ;SELECT TRANSPORT.
1470 OPEN ;TRANSPORT NUMBER.
1471 BR MFWD C ;TRANSPORT NOT AVAILABLE RETURN.
1472 SETCOM ;ISSUE RNUM!FWD COMMAND.
1473 RNUM!FWD
1474 MFWDC: DEC RO ;DONE 8 TRANSPORTS?
1475 BNE MFWDA ;BR IF NOT.
1476 DELAY ;WAIT.
1477 RST03
1478 RTS PC ;EXIT.
1479 :*****
1480 TO: 0 ;ROUTINE NUMBER 0 *
1481 T1 ;ADDRESS OF NEXT ROUTINE *
1482 IO. ;TEST ITERATION COUNT *
1483 CA ;SCOPE ENTRY POINT *
1484 :*****
1485 :SST COMMAND TEST. CHECK THAT ISSUING SST TO A SPECIFIC TRANSPORT DOES NOT
1486 :RESULT IN SOME OTHER TRANSPORT STOPPING ALSO.
1487 CA: MOV #8,RO ;SET UP TO TEST 8 TAPES.
1488 CB: JSR PC,MRWIND ;REWIND ALL TAPES.
1489 INC CC ;GET ALL TAPES MOVING FORWARD.
1490 BIC #177770,CC
1491 SELDRV ;SELECT TRANSPORT.
1492 OPEN ;TRANSPORT NUMBER.
1493 BR CF ;TRANSPORT NOT AVAILABLE RETURN.
1494 SETCOM ;STOP SELECTED TRANSPORT.
1495 SST
1496 MOV #7,R1 ;SET UP TO CHECK OTHER 7 TRANSPORTS.
1497 MOV CC,CD ;MOVE # OF UNIT JUST STOPPEE AND INCREMENT IT.
1498 CDA: INC CD
1499 BIC #177770,CD
1490 006016 104002
1491 006020 012700 000010
1492 006024 005267 000010
1493 006030 042767 177770 000002
1494 006036 104046
1495 006040 000000
1496 006042 000402
1497 006044 104023
1498 006046 000002
1499 006050 005300
1500 006052 001364
1501 006054 104400
1502 006056 104003
1503 006060 000207
1504 006062 000000
1505 006064 006236
1506 006066 000012
1507 006070 006072
1508 006072 012700 000010
1509 006076 004767 177646
1510 006102 004767 177710
1511 006106 005267 000010
1512 006112 042767 177770 000002
1513 006120 104046
1514 006122 000000
1515 006124 000441
1516 006126 104023
1517 006130 000010
1518 006132 012701 000007
1519 006136 016767 177760 000014
1520 006144 005267 000010
1521 006150 042767 177770 000002

```

```

1498 006156 104046          SELDRV          :SELECT TRANSPORT.
1499 006160 000000          OPEN            :TRANSPORT NUMBER.
1500 006164 000420          BR              CE :TRANSPORT NOT AVAILABLE RETURN.
1501 006168 104023          SETCOM         :SELECT TRANSPORT WITH DINH BIT SET.
1502 006172 010002          DINH!RNUM!FWD
1503 006176 104400          DELAY
1504 006180 032777 000200 172604 BIT             #BIT7,DTOST :WAIT
1505 006184 001011          BNE            CE :UPS BIT SET?
1506 006188 104024          STATUS        :BR IF YES.
1507 006192 000000          OACNV         :SAVE STATUS.
1508 006196 006122          CC           :CONVERT # OF UNIT STOPPED TO ASCII.
1509 006200 010123          ACEMSG
1510 006204 000001          I
1511 006208 104012          ERRORN       :SST TO SPECIFIC UNIT RESULTED IN ANOTHER
1512 006212 010064          CEMSG        :ALSO STOPPING.
1513 006216 007511          STAT
1514 006220 177777          I
1515 006224 005301          CE: DEC        R1 :TESTED 7 UNITS?
1516 006228 001346          BNE            CDA :BR IF NOT.
1517 006232 005300          CF: DEC        RO :STOP TESTED ALL UNITS?
1518 006236 001321          BNE            CB  :BR IF NOT.
1519 006240 104000          SCOPE        :YES. SCOPE.
*****
1520 006244 000001          I1: 1           :ROUTINE NUMBER 1 *
1521 006248 006376          T2           :ADDRESS OF NEXT ROUTINE *
1522 006252 000001          I           :TEST ITERATION COUNT *
1523 006256 006246          RA           :SCOPE ENTRY POINT *
*****
1524 :SELECTION TEST. WRITE EACH UNIT'S TAPE WITH THE UNIT'S NUMBER. THEN,
1525 :SEQUENTIALLY READ DATA FROM EACH UNIT. DATA READ SHOULD MATCH UNIT'S NUMBER.
1526 006260 012767 000400 172632 RA: MOV          #256.,XFRONT :SET UP 256 WORD TRANSFER.
1527 006264 104050          XFRSET
1528 006268 005067 000006          CLR          AC
1529 006272 012700 000010          MOV          #8.,RO
1530 006276 104046          AB: SELDRV    :SELECT DRIVE.
1531 006280 000000          AC: OPEN      :NUMBER OF DRIVE TO BE SELECTED.
1532 006284 000402          BR          RO  :UNIT NOT AVAILABLE RETURN.
1533 006288 004767 000044          JSR          PC,AK :AVAILABLE. GO WRITE TAPE.
1534 006292 005267 177764          AD: INC        AC
1535 006296 005300          DEC          RO
1536 006300 001367          BNE          AB  :ALL UNITS AVAILABLE WRITTEN?
1537 006304 012700 000024          MOV          #20.,RO :BR IF NOT
1538 006308 012767 177777 172536          MOV          #-1,BLKRG :SET UP TO READ 20 BLOCKS.
1539 006312 005267 172532          AG: INC        BLKRG :STARTING WITH BLOCK 0.
1540 006316 104056          SEQDRV
1541 006320 104034          RDATAF       :SELECT SEQUENTIAL TRANSPORT
1542 :CALL RDATAF SUB TO READ FWD THE NUMBER OF WORDS
1543 :SET IN LOC XFRONT. INTO ADDR SET IN LOC
1544 :RADDR AND ABOVE.
1545 006324 104025          STOPTD
1546 006328 104054          DATCKS      :STOP DECTAPE.
1547 :CALL DATCKS SUB TO CHECK DATA SPECIFIED BY LOC RADDR
1548 :AGAINST THE DATA WORD IN LOC UNITN.
1549 006332 005300          DEC          RO  :DONE 20 TIMES?
1550 006336 001370          BNE          AG  :BR IF NOT.
1551 006340 104000          SCOPE
1552 006344 104053          AF: DRVFIL    :DONE. SCOPE.
1553 006348 012701 000024          MOV          #20.,R1 :FILL WRITE BUFFER WITH SELECTED UNIT'S NUMBER.
1554 :SET UP TO WRITE 20 BLOCKS.

```

```

1547 006352 012767 177777 172500 AL: MOV # -1, BLKRQ ; STARTING WITH BLOCK 0.
1548 006360 005267 172474 INC BLKRQ ;
1549 006364 104032 WDATAF ; CALL WDATAF SUB TO WRITE FWD THE # OF WORDS
1550 ; SET IN LOC XFRONT, STARTING FROM ADDR SET
1551 ; IN LOC WADDR.
1552 006366 005301 DEC R1 ; 20 BLOCKS WRITTEN?
1553 006370 001373 BNE AL ; BR IF NOT
1554 006372 104025 STOPDT ; STOP DECTAPE.
1555 006374 000207 RTS PC ; EXIT.
1556 ; *****
1557 006376 000002 t2: 2 ; ROUTINE NUMBER 2 *
1558 006400 006450 T3 ; ADDRESS OF NEXT ROUTINE *
1559 006402 000144 100. ; TEST ITERATION COUNT *
1560 006404 006420 DA ; SCOPE ENTRY POINT *
1561 ; *****
1562 ; SEQUENTIAL UNIT RANDOM BLOCK, 3 BLOCK TRANSFERS, FWD WRITE, REV READ.
1563 ; BINARY COUNT PATTERN.
1564 006406 012767 001400 172472 MOV #768., XFRONT ; SET UP 768 WORD TRANSFER.
1565 006414 104050 XFRSET ;
1566 006416 104051 RNDRFBK ; RANDOM FWD BLOCK NUMBER.
1567 006420 016767 172436 172432 DA: MOV BLKRQS, BLKRQ ; RESTORE BLKRQ CONTENTS.
1568 006426 104040 BINFIL ; BINARY FILL WRITE BUFFER.
1569 006430 104056 SEQDRV ; SELECT SEQUENTIAL TRANSPORT.
1570 006432 104032 WDATAF ; CALL WDATAF SUB TO WRITE FWD THE # OF WORDS
1571 ; SET IN LOC XFRONT, STARTING FROM ADDR SET
1572 ; IN LOC WADDR.
1573 006434 066767 172456 172416 ADD VRBLKN, BLKRQ ; CHANGE BLK NUM TO READ DATA IN REV
1574 006442 104035 RDATAF ; CALL RDATAF SUB TO READ REV THE # OF WORDS
1575 ; SET IN LOC XFRONT, INTO ADDR SET IN LOC
1576 ; RADDR AND ABOVE.
1577 006444 104042 DATCKI ; CALL DATCKI TO CHECK DATA SPECIFIED BY LOC
1578 ; WADDR AGAINST DATA SPECIFIED BY LOC RADDR +2(XFRONT)-2
1579 ; READ DATA IS CHECKED IN DESCENDING ORDER.
1580 006446 104000 SCOPE ; SCOPE.
1581 ; *****
1582 006450 000003 t3: 3 ; ROUTINE NUMBER 3 *
1583 006452 006522 T4 ; ADDRESS OF NEXT ROUTINE *
1584 006454 000144 100. ; TEST ITERATION COUNT *
1585 006456 006472 EA ; SCOPE ENTRY POINT *
1586 ; *****
1587 ; SEQUENTIAL UNIT RANDOM BLOCK, 3 BLOCK TRANSFERS, REV WRITE, FWD READ.
1588 ; BINARY COUNT PATTERN.
1589 006460 012767 001400 172420 MOV #768., XFRONT ; SET 768 WORD TRANSFER.
1590 006466 104050 XFRSET ;
1591 006470 104052 RNDRFBK ; RANDOM REV BLOCK NUMBER.
1592 006472 016767 172364 172360 EA: MOV BLKRQS, BLKRQ ; RESTORE BLKRQ CONTENTS.
1593 006500 104040 BINFIL ; BINARY FILL WRITE BUFFER
1594 006502 104056 SEQDRV ; SELECT SEQUENTIAL TRANSPORT.
1595 006504 104033 WDATAF ; CALL WDATAF SUB TO WRITE REV THE NUMBER OF WORDS
1596 ; SET IN LOC XFRONT, FROM ADDR SET IN LOC
1597 ; WADDR AND ABOVE.
1598 006506 166767 172404 172344 SUB VRBLKN, BLKRQ ; CHANGE BLK NUM TO READ DATA FWD.
1599 006514 104034 RDATAF ; CALL RDATAF SUB TO READ FWD THE NUMBER OF WORDS
1600 ; SET IN LOC XFRONT, INTO ADDR SET IN LOC
1601 ; RADDR AND ABOVE.
1602 006516 104042 DATCKI ; CALL DATCKI TO CHECK DATA SPECIFIED BY LOC

```





```

1659 006652 000372          250.          ;TEST ITERATION COUNT
1660 006654 006674          HA          ;SCOPE ENTRY POINT
1661                                     ;*****
1662                                     ;RANDOM UNIT RANDOM LENGTH TRANSFERS, FWD WRITE, REV READ, RANDOM DATA.
1663                                     ;ALL FWD WRITE TRANSFERS START AT BLOCK 0.
1664 006656 016767 172222 172222      MOV          BFSIZE,XFRCNT
1665 006664 104051          XFRSET
1666 006666 104055          RNOFIL
1667 006670 005067 172166          CLR          BLKRQS          ;RANDOM FILL WRITE BUFFER.
1668 006674 104047          HA: RNDXFR          ;TRANSFERS START AT BLOCK 0.
1669 006676 016767 172160 172154      MOV          BLKRQS,BLKRG    ;RANDOM TRANSFER COUNT.
1670 006704 104045          RNDRIV          ;RESTORE BLKRQ CONTENTS.
1671 006706 104032          WDATAF          ;RANDOM TRANSPORT.
1672                                     ;CALL WDATAF SUB TO WRITE FWD THE # OF WORDS
1673                                     ;SET IN LOC XFRCNT, STARTING FROM ADDR SET
1674                                     ;IN LOC WADDR.
1675 006710 056767 172202 172142      ADD          VRBLKN,BLKRG    ;CHANGE BLK NUM TO READ REV.
1676 006716 104035          RDATAF          ;CALL RDATAF SUB TO READ REV THE # OF WORDS
1677                                     ;SET IN LOC XFRCNT, INTO ADDR SET IN LOC
1678 006720 104042          DATCKI          ;RADDR AND ABOVE.
1679                                     ;CALL DATCKI TO CHECK DATA SPECIFIED BY LOC
1680                                     ;WADDR AGAINST DATA SPECIFIED BY LOC RADDR +2(XFRCNT-2)
1681 006722 104000          SCOPE          ;READ DATA IS CHECKED IN DESCENDING ORDER.
1682                                     ;SCOPE
1683 006724 000007          7: 7          ;*****
1684 006726 177777          ;ROUTINE NUMBER 7
1685 006730 000372          ;ADDRESS OF NEXT ROUTINE
1686 006732 006754          250.          ;TEST ITERATION COUNT
1687          IA          ;SCOPE ENTRY POINT
1688                                     ;*****
1689                                     ;RANDOM UNIT RANDOM LENGTH TRANSFERS, REV WRITE, FWD READ, RANDOM DATA.
1690 006734 016767 172144 172144      MOV          BFSIZE,XFRCNT
1691 006742 104050          XFRSET
1692 006744 104055          RNOFIL
1693 006746 012767 001101 172106      MOV          #1101,BLKRQS    ;RANDOM FILL WRITE BUFFER.
1694 006754 104047          IA: RNDXFR          ;TRANSFERS START AT BLOCK 1101
1695 006756 016767 172100 172074      MOV          BLKRQS,BLKRG    ;RANDOM TRANSFER COUNT.
1696 006764 104045          RNDRIV          ;RESTORE BLKRQ CONTENTS.
1697 006766 104033          WDATAF          ;RANDOM TRANSPORT.
1698                                     ;CALL WDATAF SUB TO WRITE REV THE NUMBER OF WORDS
1699                                     ;SET IN LOC XFRCNT, FROM ADDR SET IN LOC
1700 006770 166767 172122 172062      SUB          VRBLKN,BLKRG    ;RADDR AND ABOVE.
1701 006776 104034          RDATAF          ;CHANGE BLK NUM TO READ FWD.
1702                                     ;CALL RDATAF SUB TO READ FWD THE NUMBER OF WORDS
1703                                     ;SET IN LOC XFRCNT, INTO ADDR SET IN LOC
1704 007000 104042          DATCKI          ;RADDR AND ABOVE.
1705                                     ;CALL DATCKI TO CHECK DATA SPECIFIED BY LOC
1706                                     ;WADDR AGAINST DATA SPECIFIED BY LOC RADDR +2(XFRCNT-2)
1707 007002 104000          SCOPE          ;READ DATA IS CHECKED IN DESCENDING ORDER.
1708 007004 022445 020124          EMO: .ASCII 'MNT '
1709 007010 020040 020040 050040      ATNUMB: .ASCII 'PC '
1710 007016 020103          APC: .ASCII 'ICNT '
1711 007020 020040 020040          ;
1712 007026 020040 041511 052116      ;
1713 007034 040          ;
1714 007036 040 020040 020040      AICNT: .ASCII '

```

1715	007043	055					
1716	007043	040	047125	052111	.ASCII	'UNIT'	
1717	007050	040					
1718	007051	040					
1719	007053	045	043130	041522	AUNIT: .ASCII	'	
1720	007060	052116			.ASCII	'%XFRCNT'	
1721	007063	040	020040	020040	AXFRCNT: .ASCII	'WADDR'	
1722	007070	020040	053440	042101			
1723	007076	051104					
1724	007101	040	020040	020040	AWADDR: .ASCII	'RADDR'	
1725	007106	020040	051040	042101			
1726	007114	051104					
1727	007117	040	020040	020040	ARADDR: .ASCIZ	'	
1728	007124	000040					
1729	007126	022445	047111	040526	AINCRT: .ASCIZ	'%INVALID TEST'	
1730	007134	044514	020104	042524			
1731	007142	052123	000				
1732	007145	045	052045	032503	PGTIT: .ASCIZ	'%TC5 - TC11 TEST 5%'	
1733	007152	026440	052040	030503			
1734	007160	020061	042524	052123			
1735	007166	032440	022445	000			
1736	007173	045	052123	047101	INST1: .ASCII	'%STANDARD TAPES ON UNITS'	
1737	007200	040504	042122	052040			
1738	007206	050101	051505	047440			
1739	007214	020116	047125	052111			
1740	007222	123					
1741	007223	045	042522	047515	.ASCII	'%REMOTE, WRITE ENABLE'	
1742	007230	042524	020054	051127			
1743	007236	052111	020105	047105			
1744	007244	041101	042514				
1745	007250	053445	046101	051514	.ASCII	'%WALLSW: OFF, WRTMSW: OFF'	
1746	007256	035127	047440	043106			
1747	007264	020054	051127	046524			
1748	007272	053523	020072	043117			
1749	007300	106					
1750	007301	045	042523	042514	.ASCII	'%SELECT UNITS WITH SR7 - SRC.'	
1751	007306	052103	052440	044516			
1752	007314	051524	053440	052111			
1753	007322	020110	051123	020067			
1754	007330	020055	051123	027060			
1755	007336	040					
1756	007337	120	042522	051523	.ASCIZ	'PRESS CONTX'	
1757	007344	041440	047117	022524			
1758	007352	000					
1759	007353	045	042523	020124	ASETSR: .ASCIZ	'%SET SR OPTIONS. NORMAL SR=0'	
1760	007360	051123	047440	052120			
1761	007366	047511	051516	020056			
1762	007374	047516	046522	046101			
1763	007402	051440	036522	000060			
1764	007410	044045	043511	042510	HADRM: .ASCII	'%HIGHEST LOC FOR TRANSFERS:'	
1765	007416	052123	046040	041517			
1766	007424	043040	051117	052040			
1767	007432	040522	051516	042506			
1768	007440	051522	020072				
1769	007444	020040	020040	020040	ACRLIM: .ASCIZ	'	
1770	007452	000					

1771	007453	007			APGEND: .BYTE	007	
1772	007454	025045	000		.ASCIZ	**	
1773	007457	040	041524	041527	CTCWC: .ASCII	' TCWC '	
1774	007464	040					
1775	007465	040	020040	020040	ATCWC: .ASCIZ	' '	
1776	007472	000040					
1777	007472	052040	041103	020101	CTCBA: .ASCII	' TCBA '	
1778	007502	020040	020040	020040	ATCBA: .ASCIZ	' '	
1779	007510	000					
1780	007511	040	041524	046503	STAT: .ASCII	' TCCM '	
1781	007516	040					
1782	007517	040	020040	020040	ATCCM: .ASCII	' TOST '	
1783	007524	020040	041524	052123			
1784	007532	040					
1785	007532	040	020040	020040	ATCST: .ASCIZ	' '	
1786	007540	000040					
1787	007542	047040	020117	052104	INTFAI: .ASCIZ	' NO DT INTRPT '	
1788	007550	044440	052116	050122			
1789	007556	020124	000				
1790							
1791	007561	040	052104	042440	DTERR: .ASCIZ	' DT ERR '	
1792	007566	051122	000040				
1793	007572	041040	045514	050522	BLKSB: .ASCII	' BLKRQ '	
1794	007500	040					
1795	007501	040	020040	020040	ABLKRQ: .ASCIZ	' '	
1796	007506	000040					
1797	007510	041524	041527	047040	WCNOTO: .ASCIZ	' TCWC NOT O '	
1798	007516	052117	030040	000040			
1799	007524	041524	040502	053440	INCTCB: .ASCIZ	' TCBA WRONG '	
1800	007632	047522	043516	000040			
1801	007640	052040	041103	020101	TCBASB: .ASCII	' TCBA '	
1802	007646	020040	020040	020040	ATCBAS: .ASCIZ	' '	
1803	007654	020040	000				
1804	007657	040	040504	040524	DATERR: .ASCII	' DATA ERR WORD '	
1805	007664	042440	051122	020040			
1806	007672	047527	042122	040			
1807	007677	040	020040	027040	AWDCNT: .ASCII	' S4B '	
1808	007704	020040	027523	020102			
1809	007712	020040	020040	020040	ADATSB: .ASCII	' WAS '	
1810	007720	020040	040527	020123			
1811	007726	020040	020040	020040	ADATWS: .ASCIZ	' '	
1812	007734	000					
1813	007736	122	054504	042457	STCMMSG: .ASCIZ	' RDY/ERR NOT O AFTER DO '	
1814	007742	051122	047040	052117			
1815	007750	030040	040440	052106			
1816	007756	051105	042040	000117			
1817	007764	041040	045514	047040	SRCHER: .ASCIZ	' BLK NOT FOUND '	
1818	007772	052117	043040	052517			
1819	010000	042116	000				
1820	010003	040	043040	041520	FPCMSG: .ASCII	' FPC '	
1821	010010	040					
1822	010011	040	020040	020040	RFPC: .ASCIZ	' % '	
1823	010016	020040	000045				
1824	010022	052445	051520	041040	BEMSG: .ASCIZ	' MUPS BIT NOT SET WITHIN 20 MSECS. '	
1825	010030	052111	047040	052117			
1826	010036	051440	052105	053440			

1800	010004	052111	044510	020116	
1801	010005	052007	046490	042523	
1802	010006	051503	030056		
1803	010007	052443	044516	020124	CEMSG: .ASCII '%UNIT STOPPED WITH SST TO UNIT '
1804	010008	052123	050117	042520	
1805	010100	020104	044527	044124	
1806	010101	051440	052123	052040	
1807	010114	020117	047125	052111	
1808	010123	040			
1809	010123	040	000		ACMSG: .ASCIZ ' '
1810	010123	045	047516	052440	NOUNIT: .ASCIZ '%NO UNITS AVAILABLE.'
1811	010132	044516	051521	040440	
1812	010140	040526	046111	041101	
1813	010146	042514	000056		
1814	010152	053445	046111	020114	GOOD: .ASCIZ '%WILL TEST UNITS: '
1815	010160	042524	052123	052440	
1816	010166	044516	051524	020072	
1817	010174	000			
1818	010175	040	000054		GTAPES: .ASCIZ ' '
1819	010200	060	061	062	GTAB: .BYTE '0','1','2','3','4','5','6','7'
1820	010203	063	064	065	
1821	010206	066	067		
1850	010210	000000			CODEND: .EVEN
1851		000001			.OPEN
					.END







EXPORT	004552	1222*	1244*	1246	1253																
FORM	006544	1610	1617*																		
FORMA	002074	675	719*																		
FORMA	002120	724*																			
FORMS	001076	536*	824*	826																	
FORMSG	010003	1192*	1207*	1213	1264	1301	1314	1384	1820*												
FORM	000000	430*	823	1423	1427	1463	1495														
FORM	006616	1633*	1643*																		
FORM	104044	587*	1286*																		
FORM	001602	587*	656*	665*	688	706	718														
FORM	010152	643*	1971*																		
FORM	001666	678*	683*																		
FORM	010200	650*	1846*																		
FORM	010175	550*	650*	1845*																	
FORM	003154	583*	942*																		
FORM	001652	675*	684*																		
FORM	001656	675*																			
FORM	001672	677*	679*																		
FORM	001710	683*																			
FORM	001616	667*	708																		
FORM	006674	1660	1668*																		
FORM	007410	1038	1764*																		
FORM	002072	712	718*																		
FORM	000040	457*																			
FORM	006754	1686	1694*																		
FORM	001030	517*	691*	693*	725*	841															
FORM	001026	516	699*	722*																	
FORM	000100	482*	1335	1423	1427	1431	1435														
FORM	010000	493*																			
FORM	104043	583*	600																		
FORM	003122	582	934*																		
FORM	007624	1315	1799*																		
FORM	104016	562*	601																		
FORM	003636	561	1061*																		
FORM	007173	658	1736*																		
FORM	007542	1214	1787*																		
FORM	000020	401*																			
FORM	001032	518*	666																		
FORM	002054	500	714*	1016																	
FORM	000004	395	1013*	1023*																	
FORM	020000	470*																			
FORM	100000	416*																			
FORM	006016	1455*	1479																		
FORM	006024	1457*	1465																		
FORM	006040	1457*	1468*	1460*																	
FORM	006050	1461	1464*																		
FORM	005750	1440*	1478																		
FORM	005762	1443*	1451																		
FORM	005776	1443*	1444*	1446*																	
FORM	006006	1447	1450*																		
FORM	104027	571*	1341	1410																	
FORM	004524	570	1210*																		
FORM	000240	414*	715	741																	
FORM	010125	635	1837*																		
FORM	001040	521*	666*	683	707	719	721*														
FORM	104012	559*	825	832	836	844	848*	852	856	860	864	866	870	878							





DTCTED.P11

31-AUG-77 14:08

CROSS REFERENCE TABLE -- USER SYMBOLS

RPR	003634	1047	1051	1054*	1059#	1062*								
RST03	104003	551#	1452	1467										
RST05	104005	555#												
RST055	104007	555#	802	816	898	968	978	1003	1056	1093	1132	1161	1271	1280
		1291												
RST55	000004	497#	889	918	950	1198	1217	1321						
RST035	002262	550#	760#											
RST035	002312	550#	771#											
RST035	002306	554#	769#											
RST55	002372	401	790#											
RST720	001036	520#	681	703	720*	726	837							
RST	000000	483#												
SAV03	104002	550#	1440	1455										
SAV05	104004	552#												
SAV055	104006	554#	798	813	892	953	971	981	1043	1086	1125	1153	1233	1274
		1283												
SAV55	000003	496#	829	914	948	1179	1193	1210	1295	1382				
SCOPF	104000	548#	1186	1306	1320	1342	1349	1389	1411	1417	1512	1544	1580	1605
		1630	1655	1681	1707									
SCOPTR	001034	519#	696	723*										
SELDRA	003754	1089	1093#											
SELDRA	003726	585	1086#											
SELDRA	104046	586#	610	646	1067	1077	1445	1459	1482	1491	1525			
SELE	004000	494#												
SEODRV	104056	594#	1535	1569	1594	1619	1644							
SETOOT	104023	567#	613	622	1334	1400	1462	1485	1494					
SEBOT	001000	413#	596	668	690									
SEDRV	003654	593	1065#	1069										
SEDRVA	003670	1065*	1066*	1068#										
SEDRV1	001342	608#	609*	611#	639									
SE	177570	411#	660	676	679	694	697	701	705	726*	819	881		
SECOON	005242	1337#	1355	1359	1361	1365	1369	1372	1380					
SECF	005376	1352	1366#											
SECHA	005174	1326	1328#											
SECHAB	005234	1332#	1334#											
SECHAB	005246	1336	1338#											
SECHAC	005260	1328	1343#											
SECHO	005266	1343	1345#											
SECHOB	005304	1347	1351#											
SECHOB	005346	1353	1360#											
SECHOR	007764	1386	1817#											
SECHAF	104030	572#	1425	1429										
SECHG	005160	571	1325#											
SECHG	005416	1367	1371#											
SECHH	005236	1330*	1333*	1335#										
SECHH	104031	573#	1433	1437	1448									
SECHHR	005166	572#	1327#											
SECRVA	005426	1350	1374#											
SECRVA	005436	1358	1376#											
SECRVB	005446	1364	1375#	1378#										
SECRVC	005454	1377	1379#											
SESET	104001	549#	669											
SESET	002436	548	805#	808*										
SET	000010	487#	1485											
START	001260	504	596#											
START	007511	1184	1206	1215	1387	1506	1780#							





