

SVC.MLB SOURCE FILE MACY: 30A(1052) 04-JAN-82 16:25 PAGE 2
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.TITLE CZTRACO TR79F XXDP+ DRS COMPATIBLE MAG TAPE DIAGNOSTIC
.SBTTL PROGRAM DOCUMENT
.REM ^

I D E N T I F I C A T I O N

PRODUCT CODE: AC-9426C-MC
PRODUCT NAME: CZTRACO TR79F TAPE DIAG
PRODUCT DATE FEBRUARY 1982
MAINTAINER: DIAGNOSTIC ENGINEERING

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1.0 INTRODUCTION

THIS IS AN XXDP+ DRS COMPATIBLE DIAGNOSTIC TEST PROGRAM FOR THE TR79F MAGNETIC TAPE TRANSPORT AND CONTROL UNIT. IT IS DESIGNED FOR USE ON A PDP-11/70 WITH XXDP+ V1.1. THE TESTS IN THIS PROGRAM ARE MODIFIED VERSIONS OF THE TESTS IN THE DIAGNOSTIC PROGRAM CZTRAB. IN THIS PROGRAM TEST1 IS A NULL TEST WITH NO FUNCTION. TESTS 2,3,4 AND 5 ARE BASED ON TESTS 2,3,4 AND 5 IN CZTRAB. TEST6, THE TEST OF OPERATOR INTERVENTION FUNCTIONS, IS BASED ON TEST1 IN CZTRAB.

2.0 HARDWARE REQUIREMENTS

THE FOLLOWING HARDWARE IS REQUIRED TO RUN THE TR79F MAG TAPE DIAGNOSTIC.

PDP-11/70
16K MEMORY
CONSOLE TERMINAL
TR79F MAGNETIC TAPE TRANSPORT AND CONTROL UNIT

3.0 OPERATING INSTRUCTIONS

THIS PROGRAM MAY BE LOADED UNDER XXDP+ FROM ANY XXDP+ MEDIA. IT IS DESIGNED TO RUN WITH XXDP+ DRS (DIAGNOSTIC RUN TIME SERVICES), USING XXDP+ V1.1.

TO EXECUTE THIS DIAGNOSTIC STANDALONE UNDER XXDP+ V1.1 PROCEED AS FOLLOWS.

- A. LOAD AND START THE DIAGNOSTIC USING THE RUN COMMAND.
- B. WAIT FOR THE RUN TIME SERVICES PROMPT DR>
- C. TYPE IN START<CR>
- D. ANSWER HARDWARE AND SOFTWARE QUESTIONS.
- E. RESPOND TO REQUESTS TO PERFORM TR79F MANUAL OPERATIONS.
- F. END OF PASS AND ERROR REPORTS WILL PRINT ON THE SYSTEM CONSOLE.
- G. TO END PROGRAM EXECUTION TYPE IN CTRL/C.

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4.0 DEVICE INFORMATION TABLES

COMMAND REGISTER BIT DEFINITIONS

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GOBIT = BIT0      ;GOBIT = 1 INITIATE TAPE OPERATION
FNB00 = BIT1      ;FNB03-FBN00 VALUE SPECIFIES TAPE FUNCTION
FNB01 = BIT2      ;
FNB02 = BIT3      ;
FNB03 = BIT4      ;
BUSY = BIT5       ;TR79F OPERATION IN PROGRESS
INTENB = BIT6     ;INTENB = 1 TR79 INTERRUPT ENABLE ASSERTED
CURDY = BIT7     ;CURDY = 1 TR79F CONTROL UNIT READY
SBIT8 = BIT8     ;SBIT8-9 VALUE SPECIFIES UNIT
SBIT9 = BIT9     ;
MTRDY = BIT10    ;MTRDY = 1 TR79F TRANSPORT READY
PWRCLR = BIT11   ;PWRCLR = 1 INITIATE TR79F POWER CLEAR OPERATION
XBA16 = BIT12    ;EXTENDED UBIBUS ADDRESS BIT 16
XBA17 = BIT13    ;EXTENDED UBIBUS ADDRESS BIT 17
ILCMD = BIT14    ;ILLEGAL TR79F COMMAND ATTEMPTED ERROR INDICATOR
ERRBIT = BIT15   ;TR79F ERROR CONDITION DETECTED INDICATOR

```

TR79 STATUS REGISTER BIT DEFINITIONS

```

INHBT = BIT0      ;INHBT = 1 TR79F OPERATION INHIBITED
RWDS = BIT1       ;RWDS = 1 REWIND IN PROGRESS
FPTS = BIT2       ;FPTS = 1 WRITE ENABLE RING NOT INSTALLED
EOFF = BIT3       ;EOFF = 1 TAPE MARK DETECTED ON READ OR WRITE
IDBF = BIT4       ;IDBF = 1 IDENTIFICATION BURST DETECTED ON READ OR WRITE
LDPTS = BIT5      ;LDPTS = 1 TAPE AT LOAD POINT
NXMF = BIT6       ;NXMF = 1 TR79F BUS ADDRESS REGISTER REFERENCES NON-EXISTENT MEM
EOTS = BIT7       ;EOTS = 1 END OF TAPE REFLECTOR DETECTED
TMOUT = BIT8      ;TMOUT = 1 TR79F OPERATION NOT COMPLETED IN TIME ALLOWED
RDCNT = BIT9      ;RDCNT = 1 BYTES READ NOT EQUAL COUNT IN WORD COUNT REGISTER
ONLNS = BIT10     ;ONLNS = 1 TR79F TRANSPORT IS ON-LINE
BGL = BIT11       ;BGL = 1 BUS GRANT LATE ON READ OR WRITE
STEF = BIT12      ;STEF = 1 ERROR DETECTED ON A SINGLE TAPE TRACK
MTEF = BIT13      ;MTEF = 1 ERROR DETECTED ON MORE THAN ONE TAPE TRACK
WPEF = BIT14      ;WPEF = 1 PARITY ERROR DETECTED DURING WRITE
RPEF = BIT15      ;RPEF = 1 PARITY ERROR DETECTED DURING READ

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////////////////////////////////////
:TR79 FUNCTION CODES USED IN THIS PROGRAM
:////////////////////////////////////

THE FOLLOWING CODES REPRESENT THE VALUES USED IN COMMAND REGISTER
BITS FN803-FN800 (BIT4-BIT1) TO INVOKE PARTICULAR TR79F OPERATIONS.
COMMAND REGISTER BIT0 MUST BE SET = 1 TO INITIATE AN OPERATION.
UNIT VALUES ARE INCLUDED FOR TESTING CONTROL UNIT LOGIC.

		:UNIT	COMMAND
ILC00	=0	:0	ILLEGAL COMMAND
WRITE	=402	:1	WRITE FORWARD
READ	=4	:0	READ FORWARD
ILC03	=406	:1	ILLEGAL COMMAND
SPACER	=1410	:3	SPACE REVERSE 1 RECORD
ILC05	=1012	:2	ILLEGAL COMMAND
ILC06	=1414	:3	ILLEGAL COMMAND
ERASE	=16	:0	ERASE WORD COUNT FORWARD
REWIND	=1020	:1	REWIND TAPE
ILC11	=22	:0	ILLEGAL COMMAND
ILC12	=424	:1	ILLEGAL COMMAND
GOEOT	=1026	:2	FAST FORWARD TO EOT
ILC14	=1030	:2	ILLEGAL COMMAND
WIDB	=432	:1	WRITE I.D. BLOCK
WEOF	=1034	:2	WRITE END OF FILE
OFLINE	=1436	:3	TAKE UNIT OFF UNIT

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5.0 TEST DESCRIPTIONS

TEST1 THIS IS A NULL TEST INCLUDED TO PRESERVE THE TEST NUMBERING
USED IN CZTRAB. MANUAL INTERVENTION TESTS ARE INCLUDED IN TEST6

TEST2 CHECKS THE INTERFACE LOGIC WITH MINIMUM TAPE MOTION

TEST2 INCLUDES: TEST NAME IN CZTRAB

REWIND FROM LOAD POINT	TESTI
INSURE WRITE RING	TESTC
UNIBUS EXTENSION BIT TEST	TESTD
INTERRUPT BIT SET TEST	TESTE
INTERRUPT BIT CLEAR TEST	TESTF
ILLEGAL COMMAND TEST	TESTJ
WRITE FROM LOAD POINT	TESTK
WRITE EOF FROM LOAD POINT	TESTM
TEST TR79 POWER CLEAR	TESTG
SPACE REVERSE AT LOAD POINT	TESTAT
NXM TEST	TESTAB
BUS ADDRESS BIT TEST	TESTAU
WORD COUNT BIT TEST	TESTBA

TEST3 CHECKS TR79 TRANSPORTS RESPONSE TO COMMANDS
CHECKS IDB AND EOF OPERATIONS
CHECKS COUNT AND PARITY ERROR DETECTION

TEST3 INCLUDES: TEST NAME IN CZTRAB

INSURE WRITE ENABLE RING	TESTC
REWIND THE TAPE	TESTI
WRITE ID BLOCK	TESTO
ILLEGAL ID BLOCK TEST	TESTH
SPACE REVERSE OVER ID BLOCK	TESTAV
READ ID BLOCK	TESTAW
WRITE EOF MARKS	RUNL
SPACE REVERSE OVER EOF MARKS	RUNU
READ EOF MARKS	RUNV
TIME OUT TEST	TESTW
READ WITH COUNT LONG	TESTAC
READ WITH COUNT SHORT	TESTAD
SPACE REVERSE WITH COUNT SHORT	TESTAE
SPACE REVERSE WITH COUNT LONG	TESTAF
WRITE EVEN PARITY	TESTAX
SPACE REVERSE OVER EVEN PARITY	TESTAY
READ EVEN PARITY	TESTAZ

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TEST4 WRITES, READS AND TESTS DATA WRITTEN ON TAPE

TEST4 WRITES A FILE OF DATA TO TAPE A NUMBER OF TIMES.
THE FILE CONTAINS 15 BLOCKS OF DATA. EACH TIME A BLOCK
IS WRITTEN THE DATA IS READ BACK AND CHECKED. THE NUMBER
OF TIMES WRITING AND CHECKING A FILE IS REPEATED IS
SPECIFIED IN THE SOFTWARE P-TABLE. THE DEFAULT VALUE
FOR THIS REPEAT COUNT IS 10. (DECIMAL).

TEST4 INCLUDES:	TEST NAME IN CZTRAB
INSURE WRITE RING	TESTC
REWIND AND WRITE ID BLOCK	TESTO
WRITE,SPACE REV, READ AND TEST DATA	TESTXX

TEST5 READ DATA WRITTEN BY TEST4

TEST5 INCLUDES:	TEST NAME IN CZTRAB
REWIND THE TAPE	TESTI
READ THE ID BLOCK	TESTAW
READ THE TAPE	TESTXY

TEST6 CHECKS MANUAL INTERVENTION OPERATIONS

TEST6 CORRESPONDS TO TEST GROUP 1 FROM CZTRAB

TEST6 INCLUDES:	TEST NAME IN CZTRAB
REMOVE WRITE RING	TESTB
TRY TO WRITE WITHOUT RING	RUNAS
INSERT WRITE RING	TESTC
DELAY 10 SECONDS	TESTAJ
TAKE UNIT OFF LINE	TESTP
TELL OPERATOR TO RESET	TESTAK
REWIND THE TAPE	TESTI
WRITE PAST EOT	TESTAL
SPACE REVERSE PAST EOT	TESTAM
READ PAST EOT	TESTAN
WRITE EOF PAST EOT	TESTAO
SPACE REVERSE OVER EOF PAST EOT	TESTAP
READ EOF PAST EOT	TESTAQ
REWIND AND GO OFF LINE	TESTQ

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6.0 ERROR INFORMATION

ERRORS ARE REPORTED BY THE PROGRAM AS THEY OCCUR IF ERROR REPORTING IS NOT INHIBITED. THIS PROGRAM CONSIDERS AN UNANTICIPATED VALUE IN ONE OR MORE OF THE TR79F CONTROL AND STATUS REGISTERS TO BE AN ERROR. ERROR REPORTS CONFORM TO THE XXDP+ DIAGNOSTIC RUN TIME SERVICES ERROR REPORT FORMAT. THE REPORTS SPECIFY THE ERROR TYPE AND NUMBER, THE TEST AND SUBTEST IN WHICH THE ERROR OCCURED, THE PC OF THE CALL TO THE ERROR REPORT SUBROUTINE, AND A DESCRIPTION OF THE TR79F OPERATION WHOSE INVOCATION GENERATED AN ERROR CONDITION. IN ADDITION, ACTUAL AND EXPECTED TR79F CONTROL AND STATUS REGISTER, AND I/O DATA VALUES ARE SHOWN IN BASIC ERROR REPORTS IF BASIC REPORTS ARE NOT INHIBITED.

THE FOLLOWING EXAMPLE IS A TYPICAL ERROR REPORT. IN THIS CASE THE REPORT IS PRODUCED BY THE DETECTION OF A PARITY ERROR DURING A WRITE OPERATION.

CZTRACO SFT ERR 00020 ON UNIT 00 TST 003 SUB 001 PC: 027070
WRITE

REGISTER	LOCATION	EXPECTED	ACTUAL
COMMAND	164000	002602	102602
STATUS	164002	002001	102001
WORD COUNT	164004	000000	000000

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.SBTTL LISTING & ASSEMBLY CONTROL

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LISTING & ASSEMBLY CONTROL

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308
309          000000      HELP=0          ; CONTROL LISTING OF HELP INFORMATION
310                                     ; HELP=0   NO LIST
311                                     ; HELP=1   LIST
312
313      .SBTTL  INITIALIZE SUPERVISOR
314
315          002000      .=2000
316
317          .MCALL  SVC
318 002000      SVC          ; INITIALIZE SUPERVISOR MACROS
319
320
321 002000      BGNMOD  TR79
322
323
324          000001      $LSTIN= 1
325          000001      $LSTTAG= 1
326          000000      SVCINS= 0      ; LIST INSTRUCTIONS, SHIFTED RIGHT
327          000000      SVCTST= 0      ; LIST TEST TAGS, SHIFTED RIGHT
328          000000      SVCSUB= 0      ; LIST SUBTEST TAGS, SHIFTED RIGHT
329          000000      SVCGBL= 0      ; LIST GLOBAL TAGS, SHIFTED RIGHT
330          000000      SVCTAG= 0      ; LIST OTHER TAGS, SHIFTED RIGHT
331
332      :      CHANGE THE VALUES OF THE SVC... SYMBOLS TO BE ZERO IF YOU WISH
333      :      TO ALIGN THE MACRO CALLS AND THEIR EXPANSIONS.  CHANGE THE
334      :      SYMBOLS TO BE MINUS-ONE TO NOT LIST THE EXPANSIONS.  YOU MAY
335      :      CHANGE THE SYMBOLS AT ANY POINT IN YOUR PROGRAM.
336
337
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340
341      .SBTTL  SELECT OPTIONAL SECTIONS
342

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SELECT OPTIONAL SECTIONS

343
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346 002000
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352

;* SELECTION OF OPTIONAL PROGRAM SECTIONS
POINTER ERRIBL,BGNSW,BGNSFT

.SBTTL PROGRAM HEADER

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PROGRAM HEADER

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361
362
363
364 002000
365 002000
366 002000      103
367 002001      132
368 002002      124
369 002003      122
370 002004      101
371 002005      000
372 002006      000
373 002007      000
374 002010
375 002010      103
376 002011
377 002011      060
378 002012
379 002012 000000
380 002014
381 002014 016040
382 002016
383 002016 034460
384 002020
385 002020 034624
386 002022
387 002022 002142
388 002024
389 002024 002152
390 002026
391 002026 035402
392 002030
393 002030 000000
394 002032
395 002032 000000
396 002034
397 002034 000000
398 002036
399 002036 000000
400 002040
401 002040 002124
402 002042
403 002042 000000
404 002044
405 002044 000000
406 002046
407 002046 000000
408 002050

;+
;THE PROGRAM HEADER MACRO CHARACTERIZES THIS DIAGNOSTIC. THE
;HEADER MACRO'S ARGUMENTS ARE FILE NAME, RELEASE LEVEL, PATCH
;DISPOSITION OF THE MOST RECENT PATCH, MAXIMUM TEST TIME IN SEC.,
;AND THE TYPE OF DIAGNOSTIC (0-SEQUENTIAL, 1-EXERCISER). THESE
;ARGUMENTS ARE IN RESPECTIVE ORDER.
;--

LSNAME::  HEADER CZTRA,C,0,7200.,0
          ;DIAGNOSTIC NAME
          .ASCII /C/
          .ASCII /Z/
          .ASCII /T/
          .ASCII /R/
          .ASCII /A/
          .BYTE 0
          .BYTE 0
          .BYTE 0
LSREV::   ;REVISION LEVEL
          .ASCII /C/
LSDEPO::  ;0
          .ASCII /0/
LSUNIT::  ;NUMBER OF UNITS
          .WORD 0
LSTIML::  ;LONGEST TEST TIME
          .WORD 7200.
LSHPCP::  ;PTR. TO H.W. QUES.
          .WORD LSHARD
LSSPCP::  ;PTR. TO S.W. QUES.
          .WORD LSSOFT
LSHPTP::  ;PTR. TO DEF. H.W. PTABLE
          .WORD LSHW
LSSPTP::  ;PTR. TO S.W. PTABLE
          .WORD LSSW
LSLADP::  ;DIAG. END ADDRESS
          .WORD LSLAST
LSSTA::   ;RESERVED FOR APT STATS
          .WORD 0
LSCO::    ;DIAGNOSTIC TYPE
          .WORD 0
LSDTYP::  ;APT EXPANSION
          .WORD 0
LSAPT::   ;PTR. TO DISPATCH TABLE
          .WORD 0
LSDTP::   ;DIAGNOSTIC RUN PRIORITY
          .WORD L$DISPATCH
LSPRIO::  ;FLAGS DESCRIBE HOW IT WAS SETUP
          .WORD 0
LSENV1::  ;EXPANSION WORD
          .WORD 0
LSMREV::  ;SVC REV AND EDIT #
          .WORD 0

```

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PROGRAM HEADER

409	002050	003	.BYTE	C\$REVISION	
410	002051	003	.BYTE	C\$EDIT	
411	002052		L\$EF::		;DIAG. EVENT FLAGS
412	002052	000000	.WORD	0	
413	002054	000000	.WORD	0	
414	002056		L\$SPC::		
415	002056	000000	.WORD	0	
416	002060		L\$DEVP::		; POINTER TO DEVICE TYPE LIST
417	002060	012322	.WORD	L\$DVTYP	
418	002062		L\$REPP::		;PTR. TO REPORT CODE
419	002062	000000	.WORD	0	
420	002064		L\$EXP4::		
421	002064	000000	.WORD	0	
422	002066		L\$EXP5::		
423	002066	000000	.WORD	0	
424	002070		L\$AUT::		;PTR. TO ADD UNIT CODE
425	002070	000000	.WORD	0	
426	002072		L\$DUT::		;PTR. TO DROP UNIT CODE
427	002072	000000	.WORD	0	
428	002074		L\$LUN::		;LUN FOR EXERCISERS TO FILL
429	002074	000000	.WORD	0	
430	002076		L\$DESP::		;POINTER TO DIAG. DESCRIPTION
431	002076	012330	.WORD	L\$DESC	
432	002100		L\$LOAD::		;GENERATE SPECIAL AUTOLOAD EMT
433	002100	104035	EMT	E\$LOAD	
434	002102		L\$ETP::		;POINTER TO ERRRTBL
435	002102	002154	.WORD	L\$ERRTBL	
436	002104		L\$ICP::		;PTR. TO INIT CODE
437	002104	024034	.WORD	L\$INIT	
438	002106		L\$CCP::		;PTR. TO CLEAN-UP CODE
439	002106	024202	.WORD	L\$CLEAN	
440	002110		L\$ACP::		;PTR. TO AUTO CODE
441	002110	024200	.WORD	L\$AUTO	
442	002112		L\$PRT::		;PTR. TO PROTECT TABLE
443	002112	024026	.WORD	L\$PROT	
444	002114		L\$TEST::		;TEST NUMBER
445	002114	000000	.WORD	0	
446	002116		L\$DLY::		;DELAY COUNT
447	002116	000000	.WORD	0	
448	002120		L\$HIME::		;PTR. TO HIGH MEM
449	002120	000000	.WORD	0	
450					
451			.EVEN		
452					
453					
454			.SBTTL	DISPATCH TABLE	

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DISPATCH TABLE

455
 456
 457
 458
 459
 460
 461
 462 002122
 463 002122 000006
 464 002124
 465 002124 024204
 466 002126 024206
 467 002130 026522
 468 002132 031316
 469 002134 032040
 470 002136 032344
 471
 472
 473
 474
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```

:////////////////////
:// THE DISPATCH TABLE CONTAINS THE STARTING ADDRESS OF EACH TEST.
:// IT IS USED BY THE SUPERVISOR TO DISPATCH TO EACH TEST.
:////////////////////

```

```

DISPATCH 6.
.WORD 6
L$DISPATCH::
.WORD T1
.WORD T2
.WORD T3
.WORD T4
.WORD T5
.WORD T6

```

.SBTTL DEFAULT HARDWARE P-TABLE

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DEFAULT HARDWARE P-TABLE

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002140
002140 000003
002142
002142
002142 164000
002144 000170
002146 000240

////////////////////////////////////
:/ 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-TAE_E.
////////////////////////////////////

BGNHW DFPTBL
.WORD L10000-LSHW/2
LSHW::
DFPTBL::
.WORD 164000 ;TR79 CSR UNIBUS ADDRESS
.WORD 170 ;TR79 INTERRUPT VECTOR
.WORD PRI05 ;TR79 INTERRUPT PRIORITY LEVEL = 5

ENDHW
L10000:

.SBTTL SOFTWARE P-TABLE

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SOFTWARE P-TABLE

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516
517

002150
002150 000001
002152
002152
002152 000012
002154
002154

////////////////////////////////////
: THE SOFTWARE P-TABLE CONTAINS PROGRAM PARAMETERS WHOSE VALUE
: CAN BE CHANGED BY THE OPERATOR.
:////////////////////////////////////

 BGNSW SFPTBL
 .WORD L10001-L\$SW/2
L\$SW: :
SFPTBL: :
RPTCNT: .WORD 10. ;DEFAULT VALUE FOR NUMBER OF FILES WRITTEN
 ; IN TEST4
 ENDSW
L10001: :

.SBTTL GLOBAL EQUATES SECTION

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GLOBAL EQUATES SECTION

```

518
519
520 :////////////////////////////////////////////////////////////////////
521 :// THE GLOBAL EQUATES SECTION CONTAINS PROGRAM EQUATES THAT
522 :// ARE USED IN MORE THAN ONE TEST.
523 :////////////////////////////////////////////////////////////////////
524 002154 EQUALS
525
526 : BIT DIFINITIONS
527
528 100000 BIT15== 100000
529 040000 BIT14== 40000
530 020000 BIT13== 20000
531 010000 BIT12== 10000
532 004000 BIT11== 4000
533 002000 BIT10== 2000
534 001000 BIT09== 1000
535 000400 BIT08== 400
536 000200 BIT07== 200
537 000100 BIT06== 100
538 000040 BIT05== 40
539 000020 BIT04== 20
540 000010 BIT03== 10
541 000004 BIT02== 4
542 000002 BIT01== 2
543 000001 BIT00== 1
544
545 001000 BIT9== BIT09
546 000400 BIT8== BIT08
547 000200 BIT7== BIT07
548 000100 BIT6== BIT06
549 000040 BIT5== BIT05
550 000020 BIT4== BIT04
551 000010 BIT3== BIT03
552 000004 BIT2== BIT02
553 000002 BIT1== BIT01
554 000001 BIT0== BIT00
555
556 : EVENT FLAG DEFINITIONS
557 : EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION
558
559 000040 EF.START== 32. ; START COMMAND WAS ISSUED
560 000037 EF.RESTART== 31. ; RESTART COMMAND WAS ISSUED
561 000036 EF.CONTINUE== 30. ; CONTINUE COMMAND WAS ISSUED
562 000035 EF.NEW== 29. ; A NEW PASS HAS BEEN STARTED
563 000034 EF.PWR== 28. ; A POWER-FAIL/POWER-UP OCCURRED
564
565
566 : PRIORITY LEVEL DEFINITIONS
567
568 000340 PRI07== 340
569 000300 PRI06== 300
570 000240 PRI05== 240
571 000200 PRI04== 200
572 000140 PRI03== 140
573 000100 PRI02== 100

```


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GLOBAL EQUATES SECTION

574 000040
575 0000C0
576
577
578
579 000004
580 000010
581 00C020
582 000040
583 00C100
584 000200
585 000400
586 001000
587 002000
588 004000
589 010000
590 020000
591 040000
592 100000
593
594
595
596
597
598

PRI01== 40
PRI00== 0
:OPERATOR FLAG BITS
:
EVL== 4
LOT== 10
ADR== 20
IDU== 40
ISR== 100
UAM== 200
BOE== 400
PNT== 1000
PRI== 2000
IXE== 4000
IBE== 10000
IER== 20000
LOE== 40000
HOE== 100000

:SBTTL GLOBAL EQUATES FROM CZTRA

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GLOBAL EQUATES FROM CZTRA

```

599
600
601      ;REGISTER DEFINITIONS
602      ;-----
603      000000      R0=X0          ;GENERAL REGISTER
604      000001      R1=X1          ;GENERAL REGISTER
605      000002      R2=X2          ;GENERAL REGISTER
606      000003      R3=X3          ;GENERAL REGISTER
607      000004      R4=X4          ;GENERAL REGISTER
608      000005      R5=X5          ;GENERAL REGISTER
609      000006      SP=X6          ;PROCESSOR STACK POINTER
610      000007      PC=X7          ;PROGRAM COUNTER
611
612      ;LOCATION EQUIVALENCES
613      ;-----
614
615      177776      PS=177776      ;PROCESSOR STATUS WORD
616
617
618      ;DEFAULT TR79 REGISTER ADDRESSES
619
620      164000      TCR= 164000      ;DEFAULT CONTROL REGISTER ADDRESS
621      164002      TSR= 164002      ;DEFAULT STATUS REGISTER ADDRESS
622      164004      TWC= 164004      ;DEFAULT WORD COUNT ADDRESS
623      164006      TBA= 164006      ;DEFAULT BUS ADDRESS ADDRESS
624      000170      TVA= 170         ;DEFAULT TAPE VECTOR ADDRESS
625      000172      TSA= 172         ;DEFAULT TAPE STATUS ADDRESS
626

```

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GLOBAL EQUATES FROM CZTRA

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:TR79 FUNCTION DEFINITIONS

:TAPE TEST EQUALS

			:UNIT	COMMAND
	000000	ILC00 =0	:0	ILLEGAL COMMAND
	000402	WRITE =402	:1	WRITE FORWARD
	000004	READ =4	:0	READ FORWARD
	000406	ILC03 =406	:1	ILLEGAL COMMAND
	001410	SPACER =1410	:3	SPACE REVERSE 1 RECORD
	001012	ILC05 =1012	:2	ILLEGAL COMMAND
	001414	ILC06 =1414	:3	ILLEGAL COMMAND
	000016	ERASE =16	:0	ERASE WORD COUNT FORWARD
	001020	REWIND =1020	:1	REWIND TAPE
	000022	ILC11 =22	:0	ILLEGAL COMMAND
	000424	ILC12 =424	:1	ILLEGAL COMMAND
	001026	GOEOT =1026	:2	FAST FORWARD TO EOT
	001030	ILC14 =1030	:2	ILLEGAL COMMAND
	000432	WIDB =432	:1	WRITE I.D. BLOCK
	001034	WEOF =1034	:2	WRITE END OF FILE
	001436	OFFLINE =1436	:3	TAKE UNIT OFF UNIT

.SBTTL BIT DEFINITIONS FOR TR79 REGISTERS

:TRCR COMMAND REGISTER BIT DEFINITIONS

656	000001	GOBIT = 1
657	000002	FNBO0 = 2
658	000004	FNBO1 = 4
659	000010	FNBO2 = 10
660	000020	FNBO3 = 20
661	000040	BUSY = 40
662	000100	INTENB = 100
663	000200	CLRDY = 200
664	000400	SBIT8 = 400
665	001000	SBIT9 = 1000
666	002000	MTRDY = 2000
667	004000	PWRCLR = 4000
668	010000	XBA16 = 10000
669	020000	XBA17 = 20000
670	040000	ILCMD = 40000
671	100000	ERRBIT = 100000

:TR79 STATUS REGISTER BIT DEFINITIONS

675	000001	INHBT = 1
676	000002	RWDS = 2
677	000004	FPTS = 4
678	000010	EOFF = 10
679	000020	IDBF = 20
680	000040	LDPTS = 40
681	000100	NXMF = 100
682	000200	EOTS = 200

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BIT DEFINITIONS FOR TR79 REGISTERS

683	000400	TMOUT	=	400
684	001000	RDCNT	=	1000
685	002000	ONLNS	=	2000
686	004000	BGL	=	4000
687	010000	STEF	=	10000
688	020000	MTEF	=	20000
689	040000	WPEF	=	40000
690	100000	RPEF	=	100000
691				

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BIT DEFINITIONS FOR TR79 REGISTERS

692
 693
 694
 695
 696 000000
 697 000000
 698 000001
 699 000002
 700 000003

.SBTTL MISCELLANEOUS EQUATES FOR ERROR CALLS

ENUM = 0 ; INITIALIZE ERROR NUMBER
 T.ESF= 0 ; SYSTEM FATAL ERROR TYPE
 T.EDF= 1 ; DEVICE FATAL ERROR TYPE
 T.EHRD= 2 ; UNRECOVERABLE ERROR TYPE
 T.ESFT= 3 ; SOFT ERROR TYPE

701
 702
 703
 704
 705
 706
 707
 708
 709
 710

.SBTTL GLOBAL DATA SECTION

:/ THE GLOBAL DATA SECTION CONTAINS DATA THAT ARE USED
 :/ IN MORE THAN ONE TEST.
 :/

711 002154
 712 002154
 713 002154 000000
 714 002156 000000
 715 002160 000000
 716 002162 000000
 717
 718 002164 000000
 719 002166 000000
 720 002170 000000
 721 002172 000000
 722 002174 000000
 723 002176 000000
 724 002200 000000
 725 002202 000000
 726 002204 000000
 727 002206 000000
 728 002210 000000
 729 002212 000000
 730 002214 000000
 731 002216 000000

ERRTBL
 L\$ERRTBL::
 ERRTP:: .WORD 0
 ERRNBR:: .WORD 0
 ERRMSG:: .WORD 0
 ERRBLK:: .WORD 0

 ATRCR: .WORD 0 ; COPY OF TR79 COMMAND REGISTER
 ATRSR: .WORD 0 ; COPY OF TR79 STATUS REGISTER
 ATRWC: .WORD 0 ; COPY OF TR79 WORD COUNT REGISTER
 ATRBA: .WORD 0 ; COPY OF TR79 BUS ADDRESS REGISTER
 ETRCR: .WORD 0 ; EXPECTED VALUE FOR TR79 COMMAND REGISTER
 ETRSR: .WORD 0 ; EXPECTED VALUE FOR TR79 STATUS REGISTER
 ETRWC: .WORD 0 ; EXPECTED VALUE FOR TR79 WORD COUNT REGISTER
 ETRBA: .WORD 0 ; EXPECTED VALUE FOR TR79 BUS ADDRESS REGISTER
 AINPUT: .WORD 0 ; COPY OF WORD FROM INPUT AREA
 EINPUT: .WORD 0 ; EXPECTED DATA IN INPUT AREA
 LINPUT: .WORD 0 ; LOCATION OF DATA WORD IN INPUT AREA
 USEA: .WORD 0 ; TR79 FUNCTION TO EXECUTE
 USEB: .WORD 0 ; TR79 WORD COUNT FOR FUNCTION TO EXECUTE
 USEC: .WORD 0 ; TR79 BUS ADDRESS FOR FUNCTION TO EXECUTE
 ; IF NEGATIVE THEN REPEAT LOOP UNTIL EOT

732
 733
 734
 735
 736
 737

; DELAY CONSTANTS AND MULTIPLIERS
 ; THESE CONSTANTS ARE BASED ON 11/70 WITH CACHE, ALL HITS
 ; TIMING LOOPS (INC/DEC A REGISTER, BNE) = 0.9 MICROSECONDS/TICK

738 002220 000000
 739 002222 000036
 740 002224 000030
 741 002226 000310
 742 002230 000620
 743 002232 000062

DLX: .WORD 0 ; DELAY MULTIPLIER
 DLXRW: .WORD 30. ; READ/WRITE DELAY MULTIPLIER (1.5 SECONDS)
 DLXPWR: .WORD 24. ; POWER CLEAR DELAY MULTIPLIER (900 MILLISECONDS)
 DLXBEL: .WORD 200. ; 10 SECOND DELAY MULTIPLIER
 DLXTOF: .WORD 400. ; DELAY MULTIPLIER FOR PUTTING TAPE ON LINE
 DLXLNG: .WORD 50. ; FORCE TIMEOUT DELAY MULTIPLIER

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GLOBAL DATA SECTION

```

744
745
746
747 002234 000000
748 002236 000000
749 002240 000000
750
751
752
753
754
755
756
757
758
759
760
761 002242 164000
762 002244 164002
763 002246 164004
764 002250 164006
765
766 002252 000170
767 002254 000240
768
769
770
771

```

```

:PROGRAM CONTROL PARAMETERS
:-----
LOGDEV: .WORD 0           ;LOGICAL DEVICE NUMBER
PSTACK: .WORD 0           ;CONTAINS BASE LEVEL PROGRAM STACK POINTER
INTFLG: .WORD 0           ;INTERRUPT RECEIVED FLAG.SET = -1 WHEN
                          ; TR79 INTERRUPT ENABLE BIT IS SET. CLEARED
                          ; BY INTERRUPT HANDLER WHEN TR79 INTERRUPT
                          ; IS RECEIVED.

:PROGRAM VARIABLES
:-----

:TR79 VECTOR AND REGISTER POINTERS
TRCR: 164000             ;ADDRESS OF TR79 COMMAND REGISTER
TRSR: 164002             ;ADDRESS OF TR79 STATUS REGISTER
TRWC: 164004             ;ADDRESS OF TR79 WORD COUNT REGISTER
TRBA: 164006             ;ADDRESS OF TR79 BUS ADDRESS REGISTER

TRVCT: 170               ;ADDRESS OF TR79 INTERRUPT VECTOR
TRPRT: PRI05             ;TR79 INTERRUPT PRIORITY LEVEL

:-----
.SBTTL IOBUF INPUT-OUTOUT BUFFERS
:-----

```

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IOBUF INPUT-OUTOUT BUFFERS

772
773

002256 000000 000000
002262

.NLIST BEX
BADOUT: 0,0
OUTPUT: ;OUTPUT BUFFER STARTS HERE

002262 000652 000525 000652 652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
002322 000652 000525 000652 652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
002362 000652 000525 000652 652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
002422 000652 000525 000652 652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
:100

002462 000001 000002 000403 001,002,403,004,405,406,007,010,411,412,013,414,015,016,417,020
002522 000421 000422 000023 421,422,023,424,025,026,427,430,031,032,433,034,435,436,037,040
002562 000441 000442 000043 441,442,043,444,045,046,447,450,051,052,453,054,455,456,057,460
002622 000061 000062 000463 061,062,463,064,465,466,067,070,471,472,073,474,075,076,477,100
:200

002662 000501 000502 000103 501,502,103,504,105,106,507,510,111,112,513,114,515,516,117,520
002722 000121 000122 000523 121,122,523,124,525,526,127,130,531,532,133,534,135,136,537,540
002762 000141 000142 000543 141,142,543,144,545,546,147,150,551,552,153,554,155,156,557,160
003022 000561 000562 000163 561,562,163,564,165,166,567,570,171,172,573,174,575,576,177,200
:300

003062 000601 000602 000203 601,602,203,604,205,206,607,610,211,212,613,214,615,616,217,620
003122 000221 000222 000623 221,222,623,224,625,626,227,230,631,632,233,634,235,236,637,640
003162 000241 000242 000643 241,242,643,244,645,646,247,250,651,652,253,654,255,256,657,260
003222 000661 000662 000263 661,662,263,664,265,266,667,670,271,272,673,274,675,676,277,700
:400

003262 000301 000302 000703 301,302,703,304,705,706,307,310,711,712,313,714,315,316,717,320
003322 000721 000722 000323 721,722,323,724,325,326,727,730,331,332,733,334,735,736,337,340
003362 000741 000742 000343 741,742,343,744,345,346,747,750,351,352,753,354,755,756,357,760
003422 000361 000362 000763 361,362,763,364,765,766,367,370,771,772,373,774,375,376,777,400
:500

003462 000652 000525 000652 652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
003522 000652 000525 000652 652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
003562 000652 000525 000652 652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
003622 000652 000525 000652 652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
:600

003662 000777 000400 000777 777,400,777,400,777,400,777,400,777,400,777,400,777,400,777,400,777,400
003722 000001 000001 000001 001,001,001,001,001,001,001,001,001,001,001,001,001,001,001,001
003762 000010 000010 000010 010,010,010,010,010,010,010,010,010,010,010,010,010,010,010,010
004022 000100 000100 000100 100,100,100,100,100,100,100,100,100,100,100,100,100,100,100,100
:700

004062 000777 000400 000777 777,400,777,400,777,400,777,400,777,400,777,400,777,400,777,400,777,400
004122 000002 000002 000002 002,002,002,002,002,002,002,002,002,002,002,002,002,002,002,002
004162 000020 000020 000020 020,020,020,020,020,020,020,020,020,020,020,020,020,020,020,020
004222 000200 000200 000200 200,200,200,200,200,200,200,200,200,200,200,200,200,200,200,200
:1000

004262 000777 000400 000777 777,400,777,400,777,400,777,400,777,400,777,400,777,400,777,400,777,400
004322 000004 000004 000004 004,004,004,004,004,004,004,004,004,004,004,004,004,004,004,004
004362 000040 000040 000040 040,040,040,040,040,040,040,040,040,040,040,040,040,040,040,040
004422 000400 000400 000400 400,400,400,400,400,400,400,400,400,400,400,400,400,400,400,400

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IOBUF INPUT-OUTPUT BUFFERS

:1100

004462	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
004522	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
004562	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
004622	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525

:1200

004662	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
004722	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
004762	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
005022	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525

:1300

005062	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
005122	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
005162	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
005222	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525

:1400

005262	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
005322	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
005362	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
005422	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525

:1500

005462	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
005522	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
005562	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
005622	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525

:1600

005662	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
005722	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
005762	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
006022	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525

:1700

006062	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
006122	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
006162	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525
006222	000652	000525	000652	652,525,652,525,652,525,652,525,652,525,652,525,652,525,652,525

:2000

006262	000777	000777	000777	777,777,777,777,777,777,777,777,777,777,777,777,777,777,777
--------	--------	--------	--------	---

006322 002000

INPUT: .BLKW 2000

.LIST BEX
.SBTTL GLOBAL TEXT SECTION

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GLOBAL TEXT SECTION

```

775
776 :XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
777 :X THE GLOBAL TEXT SECTION CONTAINS FORMAT STATEMENTS,
778 :X MESSAGES, AND ASCII INFORMATION THAT ARE USED IN
779 :X MORE THAN ONE TEST.
780 :XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
781
782
783 :*****
784 :* NAMES OF DEVICE TYPE SUPPORTED BY DIAGNOSTIC
785 :*****
786
787          DEVTYP <TR79>
788 012322   LSDVTYP::
789 012322   051124 034467 000      .ASCIZ /TR79/
790          012330      .EVEN
791
792 :*****
793 :* TITLE OF PROGRAM
794 :*****
795
796 012330   DESCRIPT <TR79 MAG TAPE DIAGNOSTIC>
797 012330   L$DESC::
798 012330   051124 034467 046440      .ASCIZ /TR79 MAG TAPE DIAGNOSTIC/
799 012336   043501 052040 050101
800 012344   020105 044504 043501
801 012352   047516 052123 041511
802 012360   000
803          012362      .EVEN
804
805
806
807 012362   047045 022462 020101      .NLIST BEX
808          012416      NOTR79: .ASCIZ /%N2%A P-TABLE SAYS NO TR79/
809          .EVEN
810          .LIST BEX
          .SBTTL GLOBAL SUBROUTINES

```

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GLOBAL SUBROUTINES

```

811
812
813
814
815
816
817
818
819
820
821
822 012416 042777 000001 167620 RWIND: BIC #BIT0,@TRSR ;CLEAR TR79 INHIBIT BIT
823 012424 012777 000000 167614 MOV #0,@TRWC ;SET DATA WORD COUNT
824 012432 012777 000000 167610 MOV #0,@TRBA ;SET DATA ADDRESS
825 012440 012777 001020 167574 MOV #REWIND,@TRCR ;SET FUNCTION
826 012446 052777 000001 167566 BIS #BIT0,@TRCR ;SET GO BIT
827 012454 000240 NOP ;
828 012456 004737 013402 JSR PC,TESTA ;WAIT FOR OPERATION
829 012462 000207 RTS PC
830
831
832
833
834
835
836
837
838 012464 042777 000001 167552 WTIDB: BIC #BIT0,@TRSR ;CLEAR INHIBIT BIT
839 012472 012777 000000 167546 MOV #0,@TRWC ;SET DATA WORD COUNT
840 012500 012777 000000 167542 MOV #0,@TRBA ;SET DATA ADDRESS
841 012506 012777 000432 167526 MOV #WIDB,@TRCR ;SET FUNCTION
842 012514 052777 000001 167520 BIS #BIT0,@TRCR ;SET GO BIT IN FUNCTION
843 012522 000240 NOP ;
844 012524 004737 013402 JSR PC,TESTA ;WAIT FOR OPERATION
845 012530 000207 RTS PC
846
847
848
849
850
851
852
853
854 012532 042777 000001 167504 OFFLN: BIC #BIT0,@TRSR ;CLEAR TR79 INHIBIT BIT
855 012540 012777 000000 167500 MOV #0,@TRWC ;SET DATA WORD COUNT
856 012546 012777 000000 167474 MOV #0,@TRBA ;SET DATA ADDRESS
857 012554 012777 001436 167460 MOV #OFFLINE,@TRCR ;SET FUNCTION
858 012562 052777 000001 167452 BIS #BIT0,@TRCR ;SET GO BIT
859 012570 000240 NOP ;
860 012572 004737 013402 JSR PC,TESTA ;WAIT FOR OPERATION
861 012576 000207 RTS PC
862
863
864
865
866

```

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GEOT GLOBAL SUBROUTINE --PERFORM FAST FORWARD TO EOT--

867

;------

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GEOT GLOBAL SUBROUTINE --PERFORM FAST FORWARD TO EOT--

```

868
869
870 012600 042777 000001 167436 GEOT: BIC #BIT0,@TRSR ;CLEAR TR79 INHIBIT BIT
871 012606 012777 000000 167432      MOV #0,@TRWC ;SET DATA WORD COUNT
872 012614 012777 000000 167426      MOV #0,@TRBA ;SET DATA ADDRESS
873 012622 012777 001026 167412      MOV #GEOT,@TRCR ;SET FUNCTION
874 012630 052777 000001 167404      BIS #BIT0,@TRCR ;SET GO BIT
875 012636 000240                NOP ;
876 012640 000207                RTS PC ;

```

```

-----
:SBTTL WRT GLOBAL SUBROUTINE --PERFORM WRITE FROM OUTPUT--
-----

```

```

877
878
879
880
881
882
883
884 012642 042777 000001 167374 WRT: BIC #BIT0,@TRSR ;CLEAR TR79 INHIBIT BIT
885 012650 013777 002214 167370      MOV USEB,@TRWC ;SET DATA WORD COUNT
886 012656 012777 002262 167364      MOV #OUTPUT,@TRBA ;SET DATA ADDRESS
887 012664 012777 000402 167350      MOV #WRITE,@TRCR ;SET FUNCTION
888 012672 052777 000001 167342      BIS #BIT0,@TRCR ;SET GO BIT
889 012700 000240                NOP ;
890 012702 004737 013402                JSR PC,TESTA ;WAIT FOR OPERATION
891 012706 000207                RTS PC ;

```

```

-----
:SBTTL WRTC GLOBAL SUBROUTINE --PERFORM WRITE FROM @USEC--
-----

```

```

892
893
894
895
896
897
898
899 012710 042777 000001 167326 WRTC: BIC #BIT0,@TRSR ;CLEAR TR79 INHIBIT BIT
900 012716 013777 002214 167322      MOV USEB,@TRWC ;SET DATA WORD COUNT
901 012724 013777 002216 167316      MOV USEC,@TRBA ;SET DATA ADDRESS
902 012732 012777 000402 167302      MOV #WRITE,@TRCR ;SET FUNCTION
903 012740 052777 000001 167274      BIS #BIT0,@TRCR ;SET GO BIT
904 012746 000240                NOP ;
905 012750 004737 013402                JSR PC,TESTA ;WAIT FOR OPERATION
906 012754 000207                RTS PC ;

```

```

-----
:SBTTL RD GLOBAL SUBROUTINE --PERFORM READ FROM INPUT--
-----

```

```

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```

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RD GLOBAL SUBROUTINE --PERFORM READ FROM INPUT--

```

913
914
915 012756 042777 000001 167260 RD:   BIC   #BIT0,@TRSR   ;CLEAR TR79 INHIBIT BIT
916 012764 013777 002214 167254      MOV   USEB,@TRWC   ;SET DATA WORD COUNT
917 012772 012777 006322 167250      MOV   #INPUT,@TRBA ;SET DATA ADDRESS
918 013000 012777 000004 167234      MOV   #READ,@TRCR  ;SET FUNCTION
919 013006 052777 000001 167226      BIS   #BIT0,@TRCR  ;SET GO BIT
920 013014 000240                NOP
921 013016 004737 013402      JSR   PC,TESTA    ;WAIT FOR OPERATION
922 013022 000207                RTS   PC

```

```

-----
:SBTTL SPR GLOBAL SUBROUTINE --PERFORM SPACE REVERSE--
-----

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930 013024 042777 000001 167212 SPR:  BIC   #BIT0,@TRSR   ;CLEAR TR79 INHIBIT BIT
931 013032 013777 002214 167206      MOV   USEB,@TRWC   ;SET DATA WORD COUNT
932 013040 012777 000000 167202      MOV   #0,@TRBA     ;SET DATA ADDRESS
933 013046 012777 001410 167166      MOV   #SPACER,@TRCR ;SET FUNCTION
934 013054 052777 000001 167160      BIS   #BIT0,@TRCR  ;SET GO BIT
935 013062 000240                NOP
936 013064 004737 013402      JSR   PC,TESTA    ;WAIT FOR OPERATION
937 013070 000207                RTS   PC

```

```

-----
:SBTTL WTEOF GLOBAL SUBROUTINE --WRITE EOF(TAPE MARK)--
-----

```

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944
945 013072 042777 000001 167144 WTEOF: BIC   #BIT0,@TRSR   ;CLEAR TR79 INHIBIT BIT
946 013100 012777 000000 167140      MOV   #0,@TRWC     ;SET DATA WORD COUNT
947 013106 012777 000000 167134      MOV   #0,@TRBA     ;SET DATA ADDRESS
948 013114 012777 001034 167120      MOV   #WEOF,@TRCR  ;SET FUNCTION
949 013122 052777 000001 167112      BIS   #BIT0,@TRCR  ;SET GO BIT
950 013130 000240                NOP
951 013132 004737 013402      JSR   PC,TESTA    ;WAIT FOR OPERATION
952 013136 000207                RTS   PC

```

```

-----
:SBTTL ERS GLOBAL SUBROUTINE --PERFORM ERASE--
-----

```

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```

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ERS GLOBAL SUBROUTINE --PERFORM ERASE--

```

957
958
959 013140 042777 000001 167076 ERS:   BIC   #BIT0,@TRSR      ;CLEAR TR79 INHIBIT BIT
960 013146 013777 002214 167072      MOV   USEB,@TRWC      ;SET DATA WORD COUNT
961 013154 012777 002262 167066      MOV   #OUTPUT,@TRBA   ;SET DATA ADDRESS
962 013162 012777 000016 167052      MOV   #ERASE,@TRCR    ;SET FUNCTION
963 013170 052777 000001 167044      BIS   #BIT0,@TRCR    ;SET GO BIT
964 013176 000240                NOP                    ;
965 013200 004737 013402      JSR   PC,TESTA        ;WAIT FOR OPERATION
966 013204 000207                RTS   PC               ;RETURN

```

```

-----
:SBTTL DOILC GLOBAL SUBROUTINE --PERFORM ILLEGAL OPERATION--
-----

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```

967
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973
974 013206 042777 000001 167030 DOILC: BIC   #BIT0,@TRSR      ;CLEAR INHIBIT BIT
975 013214 012777 000000 167024      MOV   #0,@TRWC       ;SET DATA WORD COUNT
976 013222 012777 000000 167020      MOV   #0,@TRBA       ;SET DATA ADDRESS
977 013230 052737 000001 002212      BIS   #BIT0,USEA     ;SET GO BIT IN FUNCTION
978 013236 013777 002212 166776      MOV   USEA,@TRCR    ;INITIATE OPERATION
979 013244 000240                NOP                    ;
980 013246 004737 013402      JSR   PC,TESTA        ;WAIT FOR OPERATION
981 013252 000207                RTS   PC               ;RETURN

```

```

-----
:SBTTL CPYTRR COPY TR79 REGISTERS AND CLEAR EXPECTED RESULTS
-----

```

```

982
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987
988
989 013254                CPYTRR:
990 013254 012702 002164      MOV   #ATRCR,R2      ;POINT TO 1ST COPY LOCATION
991 013260 010246                MOV   R2,-(SP)       ;SAVE POINTER
992 013262 012701 000010      MOV   #10,R1        ;SPECIFY COUNTER
993 013266 005022                CLR   (R2)+          ;CLEAR COPY LOCATIONS
994 013270 077102                SOB   R1,10$        ;IF MORE TO CLEAR THEN REPEAT CLEAR
995 013272 012602                MOV   (SP)+,R2      ;RESTORE COPY LOCATION POINTER
996 013274 017722 166742      MOV   @TRCR,(R2)+   ;COPY TR79 COMMAND REGISTER
997 013300 017722 166740      MOV   @TRSR,(R2)+   ;COPY TR79 STATUS REGISTER
998 013304 017722 166736      MOV   @TRWC,(R2)+   ;COPY TR79 WORD COUNT REGISTER
999 013310 017722 166734      MOV   @TRBA,(R2)+   ;COPY TR79 BUS ADDRESS REGISTER
1000 013314 004737 013442      JSR   PC,CHKBRK     ;CHECK FOR OPERATOR INTERRUPT
1001 013320 005002                CLR   R2             ;CLEAR ERROR INDICATOR
1002 013322 000207                RTS   PC             ;RETURN

```

```

-----
:SBTTL CPWR SUBROUTINE TO CLEAR TR79 INTERFACE
-----

```

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```

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CPWR SUBROUTINE TO CLEAR TR79 INTERFACE

```

1008
1009 013324 052777 004000 166710 CPWR: BIS #PWRCLR,@TRCR ;CLEAR TR79 COMMAND AND STATUS
1010 013332 032777 004000 166702 10$: BIT #PWRCLR,@TRCR ;HAS CLEAR OPERATION COMPLETED?
1011 013340 001374 ;BNE 10$ ;IF NO, WAIT UNTIL IT DOES
1012 013342 000207 ;RTS PC ;RETURN
1013
1014
1015 -----
1016 :SBTTL WWAIT SUBROUTINE TO WAIT A SPECIFIED TIME INTERVAL
1017 :-----
1018
1019 013344 013737 002230 002220 TWAIT: MOV DLXTOF,DLX ;SPECIFY DELAY MULTIPLIER FOR TAPE OFF LINE
1020 013352 000403 ;BR WWAIT ;WAIT
1021
1022 013354 013737 002222 002220 RWWAIT: MOV DLXRW,DLX ;SPECIFY READ/WRITE DELAY MULTIPLIER
1023 013362 005001 ;WAIT: CLR R1 ;CLEAR DELAY CONSTANT REGISTER
1024 013364 013702 002220 ;MOV DLX,R2 ;COPY DELAY MULTIPLIER
1025 013370 005201 ;10$: INC R1 ;COUNT A TICK
1026 013372 001376 ;BNE 10$ ;KEEP TICKING
1027 013374 005302 ;DEC R2 ;COUNT DOWN DELAY MULTIPLIER
1028 013376 001374 ;BNE 10$ ;KEEP TICKING
1029 013400 000207 ;RTS PC ;RETURN TO CALLER
1030
1031
1032 -----
1033 :SBTTL TESTA GLOBAL SUBROUTINE WAIT FOR TR79 OPERATION
1034 :-----
1035

```

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TESTA GLOBAL SUBROUTINE WAIT FOR TR79 OPERATION

```

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1043
1044 013402 005001 TESTA: CLR R1 ;SET DELAY CONSTANT
1045 013404 1$:
1046 013404 005201 INC R1 ;TICK
1047 013406 001414 BEQ 2$ ;IF DELAY CONSTANT = 0 THEN EXIT
1048 013410 032777 100000 166624 BIT #BIT15,@TRCR ;IF TR79 ERROR BIT = 1
1049 013416 001010 BNE 2$ ; THEN EXIT
1050 013420 032777 002000 166614 BIT #BIT10,@TRCR ;IF MTRDY BIT = 0
1051 013426 001766 BEQ 1$ ; THEN KEEP CHECKING
1052 013430 032777 000200 166604 BIT #BIT7,@TRCR ;IF CURDY BIT = 0
1053 013436 001762 BEQ 1$ ; THEN KEEP CHECKING
1054 013440
1055 013440 000207 2$: RTS PC ;RETURN
1056
1057
1058
1059
1060
1061
1062

```

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-----
:SBTTL CHKBRK SUBROUTINE CHECKS FOR OPERATOR INTERRUPT
-----

```

```

1063 013442 CHKBRK:
1064 013442 BREAK ;CHECK FOR OPERATOR INTERRUPT
1065 013442 TRAP CSBRK
1066 013444 104422 RTS PC
1067
1068
1069
1070
1071

```

```

-----
:SBTTL TESTC GLOBAL SUBROUTINE ASK OPERATOR TO INSTALL WRITE ENABLE RING
-----

```

```

1072
1073
1074
1075
1076 013446 TESTC: ;ASK OPERATOR TO INSTALL RING
1077 013446 032777 000004 166570 BIT #BIT2,@TRSR ;IF RING IS PRESENT
1078 013454 001426 BEQ 30$ ;THEN RETURN
1079 013456 10$: PRINTF #FMTRGI,#FMTRGI ;ASK OPERATOR TO INSTALL RING
1080 013456 012746 022103 MOV #FMTRGI,-(SP)
1081 013462 012746 020473 MOV #FMTRGI,-(SP)
1082 013466 012746 000002 MOV #2,-(SP)
1083 013472 010600 MOV SP,R0
1084 013474 104417 TRAP CSPTF
1085 013476 062706 000006 ADD #6,SP
1086 013502 013702 002230 MOV DLXTOF,R2 ;SPECIFY DELAY MULTIPLIER
1087 013506 005001 CLR R1 ;SPECIFY DELAY CONSTANT
1088 013510 032777 000004 166526 20$: BIT #BIT2,@TRSR ;IF RING IS PRESENT
1089 013516 001405 BEQ 30$ ;THEN RETURN
1090 013520 005201 INC R1 ;COUNT A TICK
1091 013522 001372 BNE 20$ ;KEEP CHECKING

```


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TESTC GLOBAL SUBROUTINE ASK OPERATOR TO INSTALL WRITE ENABLE RING

1092 013524 005302
 1093 013526 001370
 1094 013530 000752
 1095 013532
 1096 013532 000207
 1097
 1098
 1099
 1100
 1101

```

    DEC R2 ;COUNT DOWN DELAY MULTIPLIER
    BNE 20$ ;KEEP CHECKING
    BR 10$ ;ASK AGAIN
30$: ;RING IS PRESENT
    RTS PC
    
```

 :SBTTL CHEKI GLOBAL SUBROUTINE CHECKS TR79 REGISTERS AFTER VALID REWIND
 :-----

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CHEKJ GLOBAL SUBROUTINE CHECKS TR79 REGISTERS AFTER VALID REWIND

```

1102
1103 013534
1104 013534 032777 000002 166502 CHEKJ:
1105 013542 001374 1$: BIT #BIT1,@TRSR ;WAIT FOR REWIND IN PROGRESS BIT
1106 013544 032777 000040 166472 2$: BIT #BITS,@TRSR ; TO CLEAR
1107 013552 001774 ;WAIT FOR AT LOAD POINT STATUS
1108 013554 004737 013254 ;TO BE ASSERTED
1109 013560 012737 003220 002174 JSR PC,CPYTRR ;COPY TR79 REGISTERS
1110 013566 012737 002041 002176 MOV #3220,ETRCR ;SPECIFY EXPECTED TRCR
1111 013574 023737 002174 002164 MOV #2041,ETRSR ;SPECIFY EXPECTED RESULT
1112 013602 001401 CMP ETRCR,ATRCR ;TEST COMMAND REGISTER
1113 013604 005202 BEQ 10$ ;OK
1114 013606 INC R2 ;INDICATE ERROR
1115 013606 023737 002176 002166 10$: CMP ETRSR,ATRSR ;TEST STATUS REGISTER
1116 013614 001401 BEQ 20$ ;OK
1117 013616 005202 INC R2 ;INDICATE ERROR
1118 013620 20$:
1119 013620 005702 TST R2 ;ANY ERRORS?
1120 013622 001415 BEQ 30$ ;NO.
1121 000001 ENUM = ^D<ENUM + 1> ;INCREMENT ERROR NUMBER
1122 013624 012737 000003 002154 MOV #T.ESFT,ERRTYP ;SPECIFY SOFT ERROR
1123 013632 012737 000001 002156 MOV #ENUM,ERRNBR ;SPECIFY ERROR NUMBER
1124 013640 012737 021156 002160 MOV #MRW,ERRMSG ;SPECIFY ERROR MESSAGE
1125 013646 012737 020064 002162 MOV #ERR4,ERRBLK ;SPECIFY ERROR HANDLER
1126 013654 000261 SEC ;SET C = 1
1127 013656 004737 013324 30$: JSR PC,CPWR ;RESET TR79
1128 013662 000207 RTS PC
1129
1130 :SBTTL TESTJ SUBROUTINE CHECKS TR79 REGISTERS AFTER ILLEGAL COMMANDS
1131 :

```

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TESTJ SUBROUTINE CHECKS TR79 REGISTERS AFTER ILLEGAL COMMANDS

```

1132
1133 013664
1134 013664 004737 013354
1135 013670 004737 013254
1136 013674 012737 142200 002174
1137 013702 012737 002040 002176
1138 013710 042737 001436 002164
1139 013716 023737 002174 002164
1140 013724 001401
1141 013726 005202
1142 013730
1143 013730 023737 002176 002166
1144 013736 001401
1145 013740 005202
1146 013742
1147 013742 005702
1148 013744 001401
1149 013746 000261
1150 013750 004737 013324
1151 013754 000207
1152
1153
1154
1155
1156

```

```

CHEKJ:
      JSR PC,RWAIT
      JSR PC,CPYTRR
      MOV #142200,ETRCR
      MOV #2040,ETRSR
      BIC #1436,ATRCR
      CMP ETRCR,ATRCR
      BEQ 10$
      INC R2
10$:  CMP ETRSR,ATRSR
      BEQ 20$
      INC R2
20$:  TST R2
      BEQ 30$
      SEC
1150: JSR PC,CPWR
      RTS PC

```

```

;CHECKS TR79 REGISTERS AFTER ILLEGAL COMMANDS
;WAIT
;COPY TR79 REGISTERS
;SPECIFY EXPECTED TRCR
;EXPECTED STATUS
;CLEAR UNWANTED BITS IN COMMAND REGISTER
;TEST COMMAND REGISTER
;COMMAND REGISTER OK
;INDICATE ERROR
;TEST STATUS REGISTER
;STATUS OK
;INDICATE ERROR
;IF NO REGISTER ERRORS
;EXIT WITH C = 0
;SET C = 1
;TR79 POWER CLEAR

```

```

-----
.SBTTL CHEKL GLOBAL SUBROUTINE CHECKS REGISTERS AFTER WRITING EOF(TAPE MARK)
-----

```

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CHEKL GLOBAL SUBROUTINE CHECKS REGISTERS AFTER WRITING EOF(TAPE MARK)

```

1157
1158
1159 013756 004737 013354          CHEKL: JSR      PC,RWAIT          ;WAIT
1160 013762 004737 013254          JSR      PC,CPYTRR          ;COPY TR79 REGISTERS
1161 013766 012737 003234 002174    MOV      #3234,ETRCR        ;EXPECTED
1162 013774 012737 002011 002176    MOV      #2011,ETRSR        ;EXPECTED
1163 014002 023737 002174 002164    CMP      ETRCR,ATRCR        ;TEST COMMAND REGISTER
1164 014010 001401                   BEQ      10$                 ;OK
1165 014012 005202                   INC      R2                  ;INDICATE ERROR
1166 014014
1167 014014 023737 002176 002166    10$:    CMP      ETRSR,ATRSR        ;TEST THE STATUS REGISTER
1168 014022 001401                   BEQ      20$                 ;OK
1169 014024 005202                   INC      R2                  ;INDICATE ERROR
1170 014026
1171 014026 005702                   TST     R2                   ;ANY ERRORS
1172 014030 001415                   BEQ     30$                  ;NO
1173 014032 000002                   ENUM = ^D<ENUM + 1>         ;INCREMENT ERROR NUMBER
1174 014032 012737 000003 002154    MOV      #T.ESFT,ERRTYP     ;SPECIFY SOFT ERROR
1175 014040 012737 000002 002156    MOV      #ENUM,ERRNBR       ;SPECIFY ERROR NUMBER
1176 014046 012737 022413 002160    MOV      #MWEFFL,ERRMSG     ;SPECIFY ERROR MESSAGE
1177 014054 012737 020064 002162    MOV      #ERR4,ERRBLK      ;SPECIFY ERROR HANDLER
1178 014062 000261                   SEC
1179 014064 000207                   30$:    RTS      PC              ;RETURN
1180
1181
1182
1183

```

-----*
.SBTTL TESTN GLOBAL SUBROUTINE CHECK IF TR79 READY FOR OPERATION
-----*

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TESTN GLOBAL SUBROUTINE CHECK IF TR79 READY FOR OPERATION

```

1184      :TESTN:
1185      :IF TRANSPORT IS NOT ON LINE
1186      :   THEN RECORD ERROR
1187      :   RETURN WITH C = 1
1188      :   ELSE IF CONTROL UNIT OR TRANSPORT NOT READY
1189      :   THEN RECORD ERROR
1190      :   RETURN WITH C = 1
1191      :   ELSE RETURN WITH C = 0 (TR79 READY FOR OPERATION)
1192
1193      .ENABL  LSB                      ;BEGIN LOCAL SYMBOL BLOCK
1194
1195 014066 032777 002000 166150 TESTN: BIT  #BIT10,@TRSR          ;IF TRANSPORT IS ON LINE
1196 014074 001007                      BNE  10$                ; THEN CHECK READY
1197                                     ;NOT ON LINE
1198                                     ;INCREMENT ERROR NUMBER
1199 014076 000003          ENUM = ^D<ENUM + 1>          ;SPECIFY POINTER TO ERROR MESSAGE
1200 014104 012737 020766 002160          MOV  #EM2,ERRMSG          ;SPECIFY ERROR NUMBER
1201 014112 000415          MOV  #ENUM,ERRNBR          ;GOTO COMPLETE ERROR REPORT
1202 014114                      BR  30$
1203 014114 032777 002000 166120 10$: TSTRDY: BIT  #MTRDY,@TRCR          ;ON LINE
1204 014122 001403          BEQ  20$                ;IF TRANSPORT NOT READY
1205 014124 105777 166112          TSTB @TRCR          ; THEN RECORD ERROR
1206 014130 100415          BMI  40$                ;IF CONTROL UNIT READY
1207 014132                      ; THEN EXIT WITH C = 0
1208 000004          20$: ENUM = ^D<ENUM + 1>          ;NOT READY
1209 014132 012737 021040 002160          MOV  #EM2A,ERRMSG          ;INCREMENT ERROR NUMBER
1210 014140 012737 000004 002156          MOV  #ENUM,ERRNBR          ;SPECIFY POINTER TO ERROR MESSAGE
1211 014146                      ;SPECIFY ERROR NUMBER
1212 014146 012737 000003 002154 30$: MOV  #T.E$FT,ERRTYP          ;COMPLETE ERROR RECORD
1213 014154 012737 017754 002162          MOV  #ERR3,ERRBLK          ;SPECIFY 'SOFT' ERROR
1214 014162 000261          SEC                      ;SPECIFY POINTER TO ERROR HANDLER
1215 014164 000207          40$: RTS  PC                ;SET C = 1
1216                                     ;RETURN
1217                                     ;END LOCAL SYMBOL BLOCK
1218
1219 -----
1220      .SBTTL TESTN GLOBAL SUBROUTINE ASK OPERATOR TO PUT TAPE ON LINE
1221 -----

```

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TESTNN GLOBAL SUBROUTINE ASK OPERATOR TO PUT TAPE ON LINE

```

1222
1223
1224      :+
1225      :TESTNN:      IF TRANSPORT IS ON LINE THEN TEST IF READY
1226      :TESTN1:     IF 1 MINUTE HAS ELAPSED THEN
1227      :              ASK OPERATOR TO PUT TRANSPORT ON LINE
1228      :              GOTO TESTNN
1229      :-
1230
1231      .ENABL  LSB                      ;BEGIN LOCAL SYMBOL BLOCK
1232
1233      TESTNN:      ;WAIT FOR TRANSPORT ON LINE
1234      014166      013702  002230      10$:  MOV     DLXTOF,P2          ;SPECIFY DELAY MULTIPLIER
1235      014172      005001                      CLR     R1              ;SPECIFY DELAY CONSTANT
1236      014174      032777  002000  166042  20$:  BIT     #BIT10,@TRSR      ;IF TRANSPORT IS ON LINE
1237      014202      001017                      BNE     30$            ; THEN CHECK ERROR INDICATOR
1238      014204      005201                      INC     R1              ;COUNT A TICK
1239      014206      001372                      BNE     20$            ;KEEP CHECKING
1240      014210      005302                      DEC     R2              ;COUNT DOWN DELAY MULTIPLIER
1241      014212      001370                      BNE     20$            ;KEEP CHECKING
1242
1243      014214                      TESTN1: PRINTF  #FMTTXT,#M2A      ;ASK OPERATOR TO PUT TRANSPORT ON LINE
1244      014214      012746  021057      MOV     #M2A,-(SP)      ;ASK OPERATOR TO PUT TRANSPORT ON LINE
1245      014220      012746  020473      MOV     #FMTTXT,-(SP)
1246      014224      012746  000002      MOV     #2,-(SP)
1247      014230      010600                      MOV     SP,R0
1248      014232      104417                      TRAP   C$PNTF
1249      014234      062706  000006      ADD     #6,SP
1250      014240      000752                      BR     10$
1251      014242                      30$:      ;ON LINE      ;CHECK IF ON LINE
1252      014242      005777  165774      TST     @TRCR          ;IF NO ERROR
1253      014246      100001                      BPL     40$            ; THEN RETURN WITH C = 0
1254      014250      000261                      SEC
1255      014252      000207                      RTS     PC              ; ELSE RETURN WITH C = 1
1256
1257      .DSABL  LSB                      ;END LOCAL SYMBOL BLOCK
1258
1259      -----
1260      :SBTTL  CHEKO  - TEST RESULT AFTER WRITE IDB FROM LOAD POINT
1261      :-----

```

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CHEKO TEST RESULT AFTER WRITE IDB FROM LOAD POINT

```

1261
1262
1263 014254
1264 014254 004737 013354
1265 014260 004737 013254
1266 014264 012737 002632 002174
1267 014272 012737 002021 002176
1268 014300 023737 002174 002164
1269 014306 001401
1270 014310 005202
1271 014312
1272 014312 023737 002176 002166
1273 014320 001401
1274 014322 005202
1275 014324
1276 014324 005702
1277 014326 001415
1278 000005
1279 014330 012737 000003 002154
1280 014336 012737 000005 002156
1281 014344 012737 022504 002160
1282 014352 012737 020064 002162
1283 014360 000261
1284 014362 000207
1285
1286
1287
1288
1289
    
```

```

CHEKO:
      JSR      PC,RWAIT          ;WAIT
      JSR      PC,CPYTRR        ;COPY TR79 REGISTERS,CLEAR EXPECTED RESULTS
      MOV      #2632,ETRCR       ;SPECIFY EXPECTED RESULT
      MOV      #2021,ETRSR       ;SPECIFY EXPECTED RESULT
      CMP      ETRCR,ATRCR       ;TEST COMMAND REGISTER
      BEQ      10$              ;OK
      INC      R2                ;INDICATE ERROR
10$:   CMP      ETRSR,ATRSR       ;TEST THE STATUS REGISTER
      BEQ      20$              ;OK
      INC      R2                ;INDICATE ERROR
20$:   TST      R2                ;ANY ERRORS?
      BEQ      30$              ;NO
      MOV      ^D<ENUM + 1>      ;INCREMENT ERROR NUMBER
      MOV      #T.ESFT,ERRTYP    ;SPECIFY 'SOFT' ERROR
      MOV      #ENUM,ERRNBR      ;SPECIFY ERROR NUMBER
      MOV      #MWILPFL,ERRMSG   ;SPECIFY POINTER TO ERROR MESSAGE
      MOV      #ERR4,ERRBLK      ;SPECIFY POINTER TO ERROR HANDLER
      SEC                          ;SET C = 1
30$:   RTS      PC                ;RETURN
    
```

:SBTTL CHEKS SUBROUTINE CHECKS DATA READ IN TEST4 AND TEST5
:-----

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CHEKS SUBROUTINE CHECKS DATA READ IN TEST4 AND TEST5

```

1290
1291
1292
1293
1294
1295
1296
1297 014364 012701 006322
1298 014370 012702 002262
1299 014374 013703 002214
1300 014400 010137 002210
1301 014404 011137 002204
1302 014410 011237 002206
1303 014414 022122
1304 014416 001003
1305 014420 005203
1306 014422 001366
1307 014424 000416
1308 014426
1309 000006
1310 014426 012737 000003 002154
1311 014434 012737 000006 002156
1312 014442 012737 022643 002160
1313 014450 012737 020202 002162
1314 014456 000261
1315 014460 000401
1316 014462
1317 014462 000241
1318 014464 000207
1319
1320
1321
1322
1323

```

```

;COMPARE DATA WRITTEN FROM OUTPUT AREA
; WITH DATA READ INTO INPUT AREA
;IF ALL COMPARES YIELD 'EQUAL'
; THEN EXIT WITH C = 0
; ELSE RECORD ERROR AND EXIT WITH C = 1

CHEKS:  MOV    #INPUT,R1          ;POINT TO DATA READ
        MOV    #OUTPUT,R2       ;POINT TO DATA WRITTEN
        MOV    USEB,R3          ;COPY COUNT
10$:    MOV    R1,LINPUT         ;SPECIFY INPUT LOCATION
        MOV    @R1,AINPUT        ;COPY DATA READ
        MOV    @R2,EINPUT        ;COPY DATA WRITTEN
        CMP    (R1)+,(R2)+      ;CHECK INPUT WITH OUTPUT
        BNE    20$              ;ERROR
        INC    R3                ;OK.INCREMENT WORD COUNT
        BNE    10$              ;CHECK NEXT WORD OF DATA
        BR     30$              ;ALL DONE. NO ERRORS

20$:    ENUM = ^D<ENUM + 1>      ;INCREMENT ERROR NUMBER
        MOV    #T.ESFT,ERRTYP   ;SPECIFY 'SOFT' ERROR
        MOV    #ENUM,ERRNBR     ;SPECIFY ERROR NUMBER
        MOV    #MRDERR,ERRMSG   ;SPECIFY POINTER TO ERROR MESSAGE
        MOV    #ERR14,ERRBLK    ;SPECIFY POINTER TO ERROR HANDLER
        SEC                      ;SET C = 1
        BR     40$

30$:    CLC                      ;SET C = 0
40$:    RTS     PC               ;RETURN

-----
;SBTTL  CHEKS1  SUBROUTINE CLEARS INPUT AREA
;-----

```


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CHEKS1 SUBROUTINE CLEARS INPUT AREA

```

1324
1325 014466
1326 014466 012701 006322
1327 014472 012702 177000
1328 014476 005021
1329 014500 005202
1330 014502 001375
1331 014504 000207
1332
1333
1334
1335
1336

```

```

CHEKS1:
10$:  MOV    #INPUT,R1          ;POINT TO INPUT AREA
      MOV    #-1000,R2        ;SPECIFY COUNT FOR CLEAR INPUT
      CLR    (R1)+            ;CLEAR INPUT WORD
      INC    R2                ;COUNT
      BNE   10$               ;CONTINUE CLEARING
      RTS    PC                ;RETURN

```

```

-----
:SBTTL CHEKU GLOBAL SUBROUTINE CHECK REGISTERS AFTER SPACE REVERSE OVER EOF
-----

```

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CHEKU GLOBAL SUBROUTINE CHECK REGISTERS AFTER SPACE REVERSE OVER EOF

```

1337
1338 014506 004737 013354 CHEKU: JSR PC,RWAIT ;WAIT
1339 014512 004737 013254 JSR PC,CPYTRR ;COPY TR79 REGISTERS
1340 014516 012737 003610 002174 MOV #3610,ETRCR ;EXPECTED
1341 014524 012737 002011 002176 MOV #2011,ETRSR ;EXPECTED
1342 014532 023737 002174 002164 CMP ETRCR,ATRCR ;TEST COMMAND REGISTER
1343 014540 001401 BEQ 10$ ;OK
1344 014542 005202 INC R2 ;INDICATE ERROR
1345 014544
1346 014544 023737 002176 002166 10$: CMP ETRSR,ATRSR ;TEST THE STATUS REGISTER
1347 014552 001401 BEQ 20$ ;OK
1348 014554 005202 INC R2 ;INDICATE ERROR
1349 014556
1350 014556 005737 002172 20$: TST ATRBA ;TEST BUFFER ADDRESS
1351 014562 001401 BEQ 30$ ;OK
1352 014564 005202 INC R2 ;INDICATE ERROR
1353 014566
1354 014566 005737 002170 30$: TST ATRWC ;TEST WORD COUNT
1355 014572 001401 BEQ 40$ ;OK
1356 014574 005202 INC R2 ;INDICATE ERROR
1357 014576
1358 014576 005702 40$: TST R2 ;ANY ERRORS?
1359 014600 001415 BEQ 50$ ;NO
1360 000007 ENUM = ^D<ENUM + 1> ;INCREMENT ERROR NUMBER
1361 014602 012737 000003 002154 MOV #T,ESFT,ERRTYP ;SPECIFY SOFT ERROR
1362 014610 012737 000007 002156 MOV #ENUM,ERRNBR ;SPECIFY ERROR NUMBER
1363 014616 012737 022665 002160 MOV #MSREFFL,ERRMSG ;SPECIFY ERROR MESSAGE
1364 014624 012737 020102 002162 MOV #ERR5,ERRBLK ;SPECIFY ERROR HANDLER
1365 014632 000261 SEC ;SET C = 1
1366 014634 000207 50$: RTS PC ;RETURN
1367
1368
1369
1370
1371
:-----:
:SBTTL CHEKV GLOBAL SUBROUTINE CHECK REGISTERS AFTER READING EOF (TAPE MARK)
:-----:

```

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CHEKV GLOBAL SUBROUTINE CHECK REGISTERS AFTER READING EOF(TAPE MARK)

```

1372
1373 014636 004737 013354
1374 014642 004737 013254
1375 014646 012737 002204 002174
1376 014654 012737 002011 002176
1377 014662 012737 006322 002202
1378 014670 023737 002174 002164
1379 014676 001401
1380 014700 005202
1381 014702
1382 014702 023737 002176 002166
1383 014710 001401
1384 014712 005202
1385 014714
1386 014714 023737 002202 002172
1387 014722 001401
1388 014724 005202
1389 014726
1390 014726 005737 002170
1391 014732 001401
1392 014734 005202
1393 014736
1394 014736 005702
1395 014740 001415
1396 000010
1397 014742 012737 000003 002154
1398 014750 012737 000010 002156
1399 014756 012737 022726 002160
1400 014764 012737 020102 002162
1401 014772 000261
1402 014774 000207
1403
1404
1405
1406
1407

CHEKV: JSR PC,RWAIT ;WAIT
        JSR PC,CPYTRR ;COPY TR79 REGISTERS
        MOV #2204,ETRCR ;EXPECTED
        MOV #2011,ETRSR ;EXPECTED
        MOV #INPUT,ETRBA ;EXPECTED
        CMP ETRCR,ATRCR ;TEST COMMAND REGISTER
        BEQ 10$ ;OK
        INC R2 ;INDICATE ERROR
10$:    CMP ETRSR,ATRSR ;TEST THE STATUS REGISTER
        BEQ 20$ ;OK
        INC R2 ;INDICATE ERROR
20$:    CMP ETRBA,ATRBA ;TEST BUFFER ADDRESS
        BEQ 30$ ;OK
        INC R2 ;INDICATE ERROR
30$:    TST ATRWC ;TEST WORD COUNT
        BEQ 40$ ;OK
        INC R2 ;INDICATE ERROR
40$:    TST R2 ;ANY ERRORS?
        BEQ 50$ ;NO
        ENUM = ^D<ENUM + 1> ;INCREMENT ERROR NUMBER
        MOV #T.ESFT,ERRTYP ;SPECIFY SOFT ERROR
        MOV #ENUM,ERRNBR ;SPECIFY ERROR NUMBER
        MOV #MREFFL,ERRMSG ;SPECIFY ERROR MESSAGE
        MOV #ERR5,ERRBLK ;SPECIFY ERROR HANDLER
        SEC ;SET C = 1
50$:    RTS PC ;RETURN

-----
:SBTTL CHEKAC GLOBAL SUBROUTINE CHEK REGISTERS AFTER READ WITH LONG WORD COUNT
:-----

```

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CHEKAC GLOBAL SUBROUTINE CHEK REGISTERS AFTER READ WITH LONG WORD COUNT

```

1408
1409 014776 004737 013354
1410 015002 004737 013254
1411 015006 012737 102204 002174
1412 015014 012737 003001 002176
1413 015022 012737 006520 002202
1414 015030 023737 002174 002164
1415 015036 001401
1416 015040 005202
1417 015042
1418 015042 023737 002176 002166
1419 015050 001401
1420 015052 005202
1421 015054
1422 015054 023737 002202 002172
1423 015062 001401
1424 015064 005202
1425 015066
1426 015066 005737 002170
1427 015072 001401
1428 015074 005202
1429
1430 015076
1431 015076 005702
1432 015100 001415
1433 000011
1434 015102 012737 000003 002154
1435 015110 012737 000011 002156
1436 015116 012737 023166 002160
1437 015124 012737 020102 002162
1438 015132 000261
1439 015134 004737 013324
1440 015140 000207
1441
1442
1443
1444
1445

```

```

CHEKAC: JSR PC,RWAIT ;WAIT
JSR PC,CPY1RR ;COPY TR79 REGISTERS
MOV #102204,ETRCR ;EXPECTED
MOV #3001,ETRSR ;EXPECTED
MOV #INPUT+176,ETRBA ;EXPECTED
CMP ETRCR,ATRCR ;TEST COMMAND REGISTER
BEQ 10$ ;OK
INC R2 ;INDICATE ERROR
10$: CMP ETRSR,ATRSR ;TEST THE STATUS REGISTER
BEQ 20$ ;OK
INC R2 ;INDICATE ERROR
20$: CMP ETRBA,ATRBA ;TEST BUFFER ADDRESS
BEQ 30$ ;OK
INC R2 ;INDICATE ERROR
30$: TST ATRWC ;TEST THE WORD COUN.
BEQ 40$ ;OK
INC R2 ;INDICATE ERROR
40$: TST R2 ;ANY ERRORS?
BEQ 50$ ;NO
ENUM = ^D<ENUM + 1> ;INCREMENT ERROR NUMBER
MOV #T.ESFT,ERRTYP ;SPECIFY SOFT ERROR
MOV #ENUM,ERRNBR ;SPECIFY ERROR NUMBER
MOV #MRCFL,ERRMSG ;SPECIFY ERROR MESSAGE
MOV #ERRS,ERRBLK ;SPECIFY ERROR HANDLER
SEC ;SET C = 1
50$: JSR PC,CPWR ;RESET TR79
RTS PC ;RETURN

```

```

-----
:SBTTL CHEKAD GLOBAL SUBROUTINE CHECKS REGISTER AFTER READ WITH SHORT COUNT
-----

```

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CHEKAD GLOBAL SUBROUTINE CHECKS REGISTER AFTER READ WITH SHORT COUNT

```

1446
1447 015142 004737 013354
1448 015146 004737 013254
1449 015152 012737 102204 002174
1450 015160 012737 003001 002176
1451 015166 012737 006522 002202
1452 015174 012737 177777 002200
1453 015202 023737 002174 002164
1454 015210 001401
1455 015212 005202
1456 015214
1457 015214 023737 002176 002166
1458 015222 001401
1459 015224 005202
1460 015226
1461 015226 023737 002202 002172
1462 015234 001401
1463 015236 005202
1464 015240
1465 015240 023737 002200 002170
1466 015246 001401
1467 015250 005202
1468
1469 015252
1470 015252 005702
1471 015254 001415
1472 015254 000012
1473 015256 012737 000003 002154
1474 015264 012737 000012 002156
1475 015272 012737 023166 002160
1476 015300 012737 020102 002162
1477 015306 000261
1478 015310 004737 013324
1479 015314 000207
1480
1481
1482
1483
1484

```

```

CHEKAD: JSR PC,RWAIT ;WAIT
        JSR PC,CPYTRR ;COPY TR79 REGISTERS
        MOV #102204,ETRCR ;EXPECTED
        MOV #3001,ETRSR ;EXPECTED
        MOV #INPUT+200,ETRBA ;EXPECTED
        MOV #-1,ETRWC ;EXPECTED
        CMP ETRCR,ATRCR ;TEST COMMAND REGISTER
        BEQ 10$ ;OK
        INC R2 ;INDICATE ERROR
10$:    CMP ETRSR,ATRSR ;TEST THE STATUS REGISTER
        BEQ 20$ ;OK
        INC R2 ;INDICATE ERROR
20$:    CMP ETRBA,ATRBA ;TEST BUFFER ADDRESS
        BEQ 30$ ;OK
        INC R2 ;INDICATE ERROR
30$:    CMP ETRWC,ATRWC ;TEST THE WORD COUNT
        BEQ 40$ ;OK
        INC R2 ;INDICATE EPRCR
40$:    TST R2 ;ANY ERRORS?
        BEQ 50$ ;NO
        ENUM = ^D<ENUM + 1> ;INCREMENT ERROR NUMBER
        MOV #T.ESFT,ERRTYP ;SPECIFY SOFT ERROR
        MOV #ENUM,ERRNBR ;SPECIFY ERROR NUMBER
        MOV #MRCFL,ERRMSG ;SPECIFY ERROR MESSAGE
        MOV #ERR5,ERRBLK ;SPECIFY ERROR HANDLER
        SEC ;SET C = 1
50$:    JSR PC,CPWR ;RESET TR79
        RTS PC ;RETURN

```

```

-----
:SBTTL CHEKAE GLOBAL SUBROUTINE CHECK REGISTERS AFTER SPACE REVERSE WITH SHORT COUNT
-----

```

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CHEKAE GLOBAL SUBROUTINE CHECK REGISTERS AFTER SPACE REVERSE WITH SHORT COUNT

1485										
1486	015316	004737	013354			CHEKAE:	JSR	PC,RWAIT		;WAIT
1487	015322	004737	013254				JSR	PC,CPYTRR		;COPY TR79 REGISTERS
1488	015326	012737	003610	002174			MOV	#3610,ETRCR		;EXPECTED
1489	015334	012737	002001	002176			MOV	#2001,ETRSR		;EXPECTED
1490	015342	012737	177701	002200			MOV	#177701,ETRWC		;EXPECTED
1491	015350	023737	002174	002164			CMP	ETRCR,ATRCR		;TEST COMMAND REGISTER
1492	015356	001401					BEQ	10\$;OK
1493	015360	005202					INC	R2		;INDICATE ERROR
1494	015362					10\$:				
1495	015362	023737	002176	002166			CMP	ETRSR,ATRSR		;TEST THE STATUS REGISTER
1496	015370	001401					BEQ	20\$;OK
1497	015372	005202					INC	R2		;INDICATE ERROR
1498	015374					20\$:				
1499	015374	005737	002172				TST	ATRBA		;TEST BUFFER ADDRESS
1500	015400	001401					BEQ	30\$;OK
1501	015402	005202					INC	R2		;INDICATE ERROR
1502	015404					30\$:				
1503	015404	023737	002200	002170			CMP	ETRWC,ATRWC		;TEST THE WORD COUNT
1504	015412	001401					BEQ	40\$;OK
1505	015414	005202					INC	R2		;INDICATE ERROR
1506	015416					40\$:				
1507	015416	005702					TST	R2		;ANY ERRORS?
1508	015420	001415					BEQ	50\$;NO
1509		000013				ENUM =	^D<ENUM + 1>			;INCREMENT ERROR NUMBER
1510	015422	012737	000C03	002154			MOV	#T,ESFT,ERRTYP		;SPECIFY SOFT ERROR
1511	015430	012737	000013	002156			MOV	#ENUM,ERRNBR		;SPECIFY ERROR NUMBER
1512	015436	012737	023166	002160			MOV	#MRCFL,ERRMSG		;SPECIFY ERROR MESSAGE
1513	015444	012737	020102	002162			MOV	#ERRS,ERRBLK		;SPECIFY ERROR HANDLER
1514	015452	000261					SEC			;SET C = 1
1515	015454	004737	013324			50\$:	JSR	PC,CPWR		;TR79 POWER CLEAR
1516	015460	000207					RTS	PC		;RETURN
1517										
1518										
1519										
1520										
1521										

```

-----
;SBTTL CHEKAF SUBROUTINE CHECK REGISTERS AFTER SPACE REVERSE WITH LONG COUNT
-----

```

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CHEKAF SUBROUTINE CHECK REGISTERS AFTER SPACE REVERSE WITH LONG COUNT

```

1522
1523 015462 004737 013354          CHEKAF: JSR    PC,RWAIT          ;WAIT
1524 015466 004737 013254          JSR    PC,CPYTRR         ;COPY TR79 REGISTERS
1525 015472 012737 003610 002174  MOV    #3610,ETRCR       ;EXPECTED
1526 015500 012737 002001 002176  MOV    #2001,ETRSR       ;EXPECTED
1527 015506 012737 177677 002200  MOV    #177677,ETRWC     ;EXPECTED
1528 015514 023737 002174 002164  CMP    ETRCR,ATRCR       ;TEST COMMAND REGISTER
1529 015522 001401          BEQ    10$              ;OK
1530 015524 005202          INC    R2               ;INDICATE ERROR
1531 015526
1532 015526 023737 002176 002166 10$:  CMP    ETRSR,ATRSR       ;TEST THE STATUS REGISTER
1533 015534 001401          BEQ    20$              ;OK
1534 015536 005202          INC    R2               ;INDICATE ERROR
1535 015540
1536 015540 005737 002172          20$:  TST    ATRBA            ;TEST BUFFER ADDRESS
1537 015544 001401          BEQ    30$              ;OK
1538 015546 005202          INC    R2               ;INDICATE ERROR
1539 015550
1540 015550 023737 002200 002170 30$:  CMP    ETRWC,ATRWC       ;TEST THE WORD COUNT
1541 015556 001401          BEQ    40$              ;OK
1542 015560 005202          INC    R2               ;INDICATE ERROR
1543 015562
1544 015562 005702          40$:  TST    R2               ;ANY ERRORS?
1545 015564 001415          BEQ    50$              ;NO
1546 015566 000014          ENUM = <2><ENUM + 1>    ;INCREMENT ERROR NUMBER
1547 015566 012737 000003 002154  MOV    #T,ESFT,ERRTP     ;SPECIFY SOFT ERROR
1548 015574 012737 000014 002156  MOV    #ENUM,ERRNBR      ;SPECIFY ERROR NUMBER
1549 015602 012737 023166 002160  MOV    #MRCFL,ERRMSG     ;SPECIFY ERROR MESSAGE
1550 015610 012737 020102 002162  MOV    #ERR5,ERRBLK     ;SPECIFY ERROR HANDLER
1551 015616 000261          SEC                    ;SET C = 1
1552 015620 004737 013324          50$:  JSR    PC,CPWR          ;TR79 POWER CLEAR
1553 015624 000207          RTS    PC               ;RETURN
1554
1555
1556 -----
1557 ;SBTTL CHEKAG CHECK REGISTERS AFTER FAST FORWARD TO EOT
1558 ;-----

```

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CHEKAG CHECK REGISTERS AFTER FAST FORWARD TO EOT

1559									
1560	015626								
1561	015626	004737	013354						
1562	015632	005777	164404						
1563	015636	100407							
1564	015640	032777	002000	164374					
1565	015646	001403							
1566	015650	105777	164366						
1567	015654	100366							
1568	015656	004737	013254						
1569	015662	012737	003226	002174					
1570	015670	012737	002201	002176					
1571	015676	023737	002174	002164					
1572	015704	001401							
1573	015706	005202							
1574	015710								
1575	015710	023737	002176	002166					
1576	015716	001401							
1577	015720	005202							
1578	015722								
1579	015722	005737	002172						
1580	015726	001401							
1581	015730	005202							
1582	015732								
1583	015732	005737	002170						
1584	015736	001401							
1585	015740	005202							
1586	015742								
1587	015742	005702							
1588	015744	001415							
1589		000015							
1590	015746	012737	000003	002154					
1591	015754	012737	000015	002156					
1592	015762	012737	023203	002160					
1593	015770	012737	020102	002162					
1594	015776	000261							
1595	016000	000207							
1596									
1597									
1598									
1599									
1600									

```

CHEKAG:
10$: JSR PC,RWAIT ;WAIT
      TST @TRCR ;IF ERROR INDICATED
      BMI 15$ ; THEN RECORD TR79 REGISTERS
      BIT #MTRDY,@TRCR ;IF NOT MTRDY
      BEQ 15$ ; THEN RECORD TR79 REGISTERS
      TSTB @TRCR ;IF NOT CURDY
      BPL 10$ ;THEN KEEP CHECKING
15$: JSR PC,CPYTRR ;COPY TR79 REGISTERS
      MOV #3226,ETRCR ;EXPECTED
      MOV #2201,ETRSR ;EXPECTED
      CMP ETRCR,ATRCR ;TEST COMMAND REGISTER
      BEQ 20$ ;OK
      INC R2 ;INDICATE ERROR
20$: CMP ETRSR,ATRSR ;TEST THE STATUS REGISTER
      BEQ 30$ ;OK
      INC R2 ;INDICATE ERROR
30$: TST ATRBA ;TEST BUFFER ADDRESS
      BEQ 40$ ;OK
      INC R2 ;INDICATE ERROR
40$: TST ATRWC ;TEST THE WORD COUNT
      BEQ 50$ ;OK
      INC R2 ;INDICATE ERROR
50$: TST R2 ;ANY ERRORS?
      BEQ 60$ ;NO
      ENUM = ^D<ENUM + 1> ;INCREMENT ERROR NUMBER
      MOV #T.ESFT,ERRTYP ;SPECIFY SOFT ERROR
      MOV #ENUM,ERRNBR ;SPECIFY ERROR NUMBER
      MOV #METFL,ERRMSG ;SPECIFY ERROR MESSAGE
      MOV #ERRS,ERRBLK ;SPECIFY ERROR HANDLER
      SEC ;SET C = 1
60$: RTS PC ;RETURN
    
```

:SBT'L CHKAG1 SUBROUTINE CHECKS REGISTERS AFTER WRITE BEYOND EOT
:-----

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CHKAG1 SUBROUTINE CHECKS REGISTERS AFTER WRITE BEYOND EOT

```

1601
1602 016002 004737 013354          CHKAG1: JSR    PC,RWAIT          ;WAIT
1603 016006 004737 013254          JSR    PC,CPYTRR          ;COPY TR79 REGISTERS
1604 016012 012737 002602 002174  MOV    #2602,ETRCR        ;EXPECTED
1605 016020 012737 002201 002176  MOV    #2201,ETRSR        ;EXPECTED
1606 016026 023737 002174 002164  CMP    ETRCR,ATRCR        ;TEST COMMAND REGISTER
1607 016034 001401          BEQ    60$                ;OK
1608 016036 005202          INC    R2                 ;INDICATE ERROR
1609 016040
1610 016040 023737 002176 002166 60$:  CMP    ETRSR,ATRSR        ;TEST THE STATUS REGISTER
1611 016046 001401          BEQ    70$                ;OK
1612 016050 005202          INC    R2                 ;INDICATE ERROR
1613 016052
1614 016052 005737 002170          70$:  TST    ATRWC             ;TEST THE WORD COUNT
1615 016056 001401          BEQ    80$                ;OK
1616 016060 005202          INC    R2                 ;INDICATE ERROR
1617 016062
1618 016062 005702          80$:  TST    R2              ;ANY ERRORS
1619 016064 001415          BEQ    90$                ;NO
1620 016066 000016          ENUM = *D<ENUM + 1>      ;INCREMENT ERROR NUMBER
1621 016066 012737 000003 002154  MOV    #T,ESFT,ERRTYP     ;SPECIFY ERROR TYPE
1622 016074 012737 000016 002156  MOV    #ENUM,ERRNBR       ;ERROR NUMBER
1623 016102 012737 023301 002160  MOV    #MWPETFL,ERRMSG    ;ERROR MESSAGE
1624 016110 012737 020120 002162  MOV    #ERR6,ERRBLK       ;ERROR HANDLER
1625 016116 000261          SEC                     ;SET C = 1
1626 016120 000207          90$:  RTS    PC
1627
1628
1629
1630 -----
1631 ;SBTTL CHEKAV SUBROUTINE CHECKS REGISTERS AFTER SPACE REVERSE OVER ID BLOCK

```

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CHEKAV SUBROUTINE CHECKS REGISTERS AFTER SPACE REVERSE OVER ID BLOCK

```

1632
1633 016122 004737 013354 CHEKAV: JSR PC,RWAIT ;WAIT
1634 016126 004737 013254 JSR PC,CPYTRR ;COPY TR79 REGISTERS
1635 016132 012737 003610 002174 MOV #3610,ETRCR ;EXPECTED
1636 016140 012737 002061 002176 MOV #2061,ETRSR ;EXPECTED
1637 016146 013737 002214 002200 MOV USEB,ETRWC ;EXPECTED
1638 016154 023737 002174 002164 CMP ETRCR,ATRCR ;TEST COMMAND REGISTER
1639 016162 001401 BEQ 10$ ;OK
1640 016164 005202 INC R2 ;INDICATE ERROR
1641 016166
1642 016166 023737 002176 002166 10$: CMP ETRSR,ATRSR ;TEST THE STATUS REGISTER
1643 016174 001401 BEQ 20$ ;OK
1644 016176 005202 INC R2 ;INDICATE ERROR
1645 016200
1646 016200 005737 002172 20$: TST ATRBA ;TEST BUFFER ADDRESS
1647 016204 001401 BEQ 30$ ;OK
1648 016206 005202 INC R2 ;INDICATE ERROR
1649 016210
1650 016210 023737 002200 002170 30$: CMP ETRWC,ATRWC ;TEST THE WORD COUNT
1651 016216 001401 BEQ 40$ ;OK
1652 016220 005202 INC R2 ;INDICATE ERROR
1653 016222
1654 016222 005702 40$: TST R2 ;ANY ERRORS?
1655 016224 001415 BEQ 50$ ;NO
1656 000017 ENUM = ^D<ENUM + 1> ;INCREMENT ERROR NUMBER
1657 016226 012737 000003 002154 MOV #T.ESFT,ERRTYP ;SPECIFY SOFT ERROR
1658 016234 012737 000017 002156 MOV #ENUM,ERRNBR ;SPECIFY ERROR NUMBER
1659 016242 012737 023620 002160 MOV #MSRIFL,ERRMSG ;SPECIFY ERROR MESSAGE
1660 016250 012737 020102 002162 MOV #ERR5,ERRBLK ;SPECIFY ERROR HANDLER
1661 016256 000261 SEC ;SET C = 1
1662 016260 000207 50$: RTS PC ;RETURN
1663
1664
1665
1666

```

```

-----
:SBTTL CHEKAV SUBROUTINE CHECKS REGISTERS AFTER READING AN ID BLOCK
-----

```

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CHEKAW SUBROUTINE CHECKS REGISTERS AFTER READING AN ID BLOCK

```

1667
1668 016262 004737 013354      CHEKAW: JSR      PC,RUWAIT      ;WAIT
1669 016266 004737 013254      JSR      PC,CPYTRR      ;COPY TR79 REGISTERS
1670 016272 012737 002204 002174  MOV      #2204,ETRCR    ;EXPECTED
1671 016300 012737 002021 002176  MOV      #2021,ETRSR    ;EXPECTED
1672 016306 012737 006322 002202  MOV      #INPUT,ETRBA   ;EXPECTED
1673 016314 013737 002214 002200  MOV      USEB,ETRWC     ;EXPECTED
1674 016322 023737 002174 002164  CMP      ETRCR,ATRCR    ;TEST COMMAND REGISTER
1675 016330 001401      BEQ      10$           ;OK
1676 016332 005202      INC      R2           ;INDICATE ERROR
1677 016334
1678 016334 023737 002176 002166 10$:    CMP      ETRSR,ATRSR    ;TEST THE STATUS REGISTER
1679 016342 001401      BEQ      20$           ;OK
1680 016344 005202      INC      R2           ;INDICATE ERROR
1681 016346
1682 016346 023737 002202 002172 20$:    CMP      ETRBA,ATRBA   ;TEST BUFFER ADDRESS
1683 016354 001401      BEQ      30$           ;OK
1684 016356 005202      INC      R2           ;INDICATE ERROR
1685 016360
1686 016360 023737 002200 002170 30$:    CMP      ETRWC,ATRWC   ;TEST THE WORD COUNT
1687 016366 001401      BEQ      40$           ;OK
1688 016370 005202      INC      R2           ;INDICATE ERROR
1689 016372
1690 016372 005037 002206      CLR      EINPUT        ;CLEAR WORD FOR EXPECTED VALUE
1691 016376 005037 002204      CLR      AINPUT        ;CLEAR WORD FOR ACTUAL VALUE
1692 016402 005737 006322      TST      INPUT         ;TEST INPUT AREA
1693 016406 001404      BEQ      50$           ;OK
1694 016410 013737 006322 002204  MOV      INPUT,AINPUT   ;ACTUAL
1695 016416 005202      INC      R2           ;INDICATE ERROR
1696 016420
1697 016420 005702      TST      R2           ;ANY ERRORS?
1698 016422 001415      BEQ      60$           ;NO
1699 000020      ENUM = *D<ENUM + 1>  ;INCREMENT ERROR NUMBER
1700 016424 012737 000003 002154  MOV      #T.E$FT,ERRTYP ;SPECIFY SOFT ERROR
1701 016432 012737 000020 002156  MOV      #ENUM,ERRNBR  ;SPECIFY ERROR NUMBER
1702 016440 012737 023654 002160  MOV      #MRIBFL,ERRMSG ;SPECIFY ERROR MESSAGE
1703 016446 012737 020244 002162  MOV      #ERR15,ERRBLK ;SPECIFY ERROR HANDLER
1704 016454 000261      SEC      ;SET C = 1
1705 016456 000207 60$:    RTS      PC           ;RETURN
1706
1707
1708
1709
1710
-----
;SBTTL CHEKAX SUBROUTINE CHECKS REGISTERS AFTER WRITE DATA WITH EVEN PARITY
-----

```

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CHEKAX SUBROUTINE CHECKS REGISTERS AFTER WRITE DATA WITH EVEN PARITY

```

1711
1712 016460 004737 013354
1713 016464 004737 013254
1714 016470 012737 102602 002174
1715 016476 012737 162001 002176
1716 016504 023737 002174 002164
1717 016512 001401
1718 016514 005202
1719 016516
1720 016516 023737 002176 002166
1721 016524 001401
1722 016526 005202
1723 016530
1724 016530 013701 002214
1725 016534 005101
1726 016536 005201
1727 016540 006301
1728 016542 062701 002256
1729 016546 010137 002202
1730 016552 020137 002172
1731 016556 001401
1732 016560 005202
1733 016562
1734 016562 005737 002170
1735 016566 001401
1736 016570 005202
1737 016572
1738 016572 005702
1739 016574 001415
1740 000021
1741 016576 012737 000003 002154
1742 016604 012737 000021 002156
1743 016612 012737 023674 002160
1744 016620 012737 020102 002162
1745 016626 000261
1746 016630 004737 013324
1747 016634 000207
1748
1749
1750
1751
1752

CHEKAX: JSR PC,RWAIT ;WAIT
        JSR PC,CPYTRR ;COPY TR79 REGISTERS
        MOV #102602,ETRCR ;EXPECTED
        MOV #162001,ETRSR ;EXPECTED
        CMP ETRCR,ATRCR ;TEST COMMAND REGISTER
        BEQ 10$ ;OK
        INC R2 ;INDICATE ERROR
10$:    CMP ETRSR,ATRSR ;TEST THE STATUS REGISTER
        BEQ 20$ ;OK
        INC R2 ;INDICATE ERROR
20$:    MOV USEB,R1 ;GET WORD COUNT
        COM R1 ;FIX IT
        INC R1 ;INCREMENT IT
        ASL R1 ;DOUBLE IT
        ADD #BADOUT,R1 ;FINISH IT
        MOV R1,ETRBA ;EXPECTED
        CMP R1,ATRBA ;TEST BUFFER ADDRESS
        BEQ 30$ ;OK
        INC R2 ;INDICATE ERROR
30$:    TST ATRWC ;TEST THE WORD COUNT
        BEQ 40$ ;OK
        INC R2 ;INDICATE ERROR
40$:    TST R2 ;ANY ERRORS?
        BEQ 50$ ;NO
        ENUM = *D<ENUM + 1> ;INCREMENT ERROR NUMBER
        MOV #T,ESFT,ERRTYP ;SPECIFY SOFT ERROR
        MOV #ENUM,ERRNBR ;SPECIFY ERROR NUMBER
        MOV #MPARFL,ERRMSG ;SPECIFY ERROR MESSAGE
        MOV #ERRS,ERRBLK ;SPECIFY ERROR HANDLER
        SEC ;SET C = 1
50$:    JSR PC,CPWR ;RESET TR79
        RTS PC ;RETURN
    
```

:SBTTL CHEKAY SUBROUTINE CHECKS REGISTERS AFTERREVERSE OVER EVEN PARITY DATA
:-----

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CHEKAY SUBROUTINE CHECKS REGISTERS AFTER REVERSE OVER EVEN PARITY DATA

```

1753
1754 016636 004737 013354 CHEKAY: JSR PC,RWAIT ;WAIT
1755 016642 004737 013254 JSR PC,CPYTRR ;COPY TR79 REGISTERS
1756 016646 012737 103610 002174 MOV #103610,ETRCR ;EXPECTED
1757 016654 012737 122001 002176 MOV #122001,ETRSR ;EXPECTED
1758 016662 012737 177700 002200 MOV #177700,ETRWC ;EXPECTED
1759 016670 023737 002174 002164 CMP ETRCR,ATRCR ;TEST COMMAND REGISTER
1760 016676 001401 BEQ 10$ ;OK
1761 016700 005202 INC R2 ;INDICATE ERROR
1762 016702
1763 016702 023737 002176 002166 10$: CMP ETRSR,ATRSR ;TEST THE STATUS REGISTER
1764 016710 001401 BEQ 20$ ;OK
1765 016712 005202 INC R2 ;INDICATE ERROR
1766 016714
1767 016714 005737 002172 20$: TST ATRBA ;TEST BUFFER ADDRESS
1768 016720 001401 BEQ 30$ ;OK
1769 016722 005202 INC R2 ;INDICATE ERROR
1770 016724
1771 016724 023737 002200 002170 30$: CMP ETRWC,ATRWC ;TEST THE WORD COUNT
1772 016732 001401 BEQ 40$ ;OK
1773 016734 005202 INC R2 ;INDICATE ERROR
1774 016736
1775 016736 005702 TST R2 ;ANY ERRORS?
1776 016740 001415 BEQ 50$ ;NO
1777 000022 ENUM = ^D<ENUM + 1> ;INCREMENT ERROR NUMBER
1778 016742 012737 000003 002154 MOV #1,ESFT,ERRTYP ;SPECIFY SOFT ERROR
1779 016750 012737 000022 002156 MOV #ENUM,ERRNBR ;SPECIFY ERROR NUMBER
1780 016756 012737 023712 002160 MOV #MEPSRFL,ERRMSG ;SPECIFY ERROR MESSAGE
1781 016764 012737 020102 002162 MOV #ERRS,ERRBLK ;SPECIFY ERROR HANDLER
1782 016772 000261 SEC ;SET C = 1
1783 016774 004737 013324 50$: JSR PC,CPWR ;RESET TR79
1784 017000 000207 RTS PC ;RETURN
1785
1786
1787
1788

```

```

.SBTTL CHEKAZ SUBROUTINE CHECK REGISTERS AFTER READING EVEN PARITY DATA
;-----

```

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CHEKAZ SUBROUTINE CHECK REGISTERS AFTER READING EVEN PARITY DATA

```

1789
1790 017002
1791 017002 004737 013354
1792 017006 004737 013254
1793 017012 012737 102204 002174
1794 017020 012737 163001 002176
1795 017026 012737 006324 002202
1796 017034 012737 177701 002200
1797 017042 023737 002174 002164
1798 017050 001401
1799 017052 005202
1800 017054
1801 017054 023737 002176 002166
1802 017062 001401
1803 017064 005202
1804 017066
1805 017066 023737 002202 002172
1806 017074 001401
1807 017076 005202
1808 017100
1809 017100 023737 002200 002170
1810 017106 001401
1811 017110 005202
1812 017112
1813 017112 005702
1814 017114 001415
1815
1816 017116 012737 000003 002154
1817 017124 012737 000023 002156
1818 017132 012737 023746 002160
1819 017140 012737 020102 002162
1820 017146 000261
1821 017150 004737 013324
1822 017154 000207
1823
1824
1825
1826

CHEKAZ:
      JSR    PC,RWAIT           ;WAIT
      JSR    PC,CPYTRR        ;COPY TR79 REGISTERS
      MOV    #102204,ETRCR    ;EXPECTED
      MOV    #163001,ETRSR    ;EXPECTED
      MOV    #INPUT+2,ETRBA   ;EXPECTED
      MOV    #177701,ETRWC    ;EXPECTED
      CMP    ETRCR,ATRCR      ;TEST COMMAND REGISTER
      BEQ    10$              ;OK
      INC    R2               ;INDICATE ERROR
10$:
      CMP    ETRSR,ATRSR      ;TEST THE STATUS REGISTER
      BEQ    20$              ;OK
      INC    R2               ;INDICATE ERROR
20$:
      CMP    ETRBA,ATRBA     ;TEST BUFFER ADDRESS
      BEQ    30$              ;OK
      INC    R2               ;INDICATE ERROR
30$:
      CMP    ETRWC,ATRWC     ;TEST THE WORD COUNT
      BEQ    40$              ;OK
      INC    R2               ;INDICATE ERROR
40$:
      TST    R2               ;ANY ERRORS?
      BEQ    50$              ;NO
      ENUM = *D<ENUM + 1>    ;INCREMENT ERROR NUMBER
      MOV    #T.ESFT,ERRTYP   ;SPECIFY SOFT ERROR
      MOV    #ENUM,ERRNBR     ;SPECIFY ERROR NUMBER
      MOV    #MREPFL,ERRMSG   ;SPECIFY ERROR MESSAGE
      MOV    #ERR5,ERRBLK     ;SPECIFY ERROR HANDLER
      SEC                    ;SET C = 1
50$:
      JSR    PC,CPWR          ;TR79 POWER CLEAR
      RTS    PC               ;RETURN

.SBTTL CHEKCX SUBROUTINE CHECKS TR79 REGISTERS AFTER WRITE
;----->

```

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CHEKCX SUBROUTINE CHECKS TR79 REGISTERS AFTER WRITE

```

1827
1828
1829 017156 004737 013354 CHEKCX: JSR PC,RWAIT ;WAIT
1830 017162 004737 013254 JSR PC,CPYTRR ;COPY TR79 REGISTERS
1831 017166 012737 002602 002174 MOV #2602,ETRCR ;EXPECTED
1832 017174 012737 002001 002176 MOV #2001,ETRSR ;EXPECTED
1833 017202 023737 002174 002164 CMP ETRCR,ATRCR ;TEST COMMAND REGISTER
1834 017210 001401 BEQ 10$ ;OK
1835 017212 005202 INC R2 ;INDICATE ERROR
1836 017214
1837 017214 023737 002176 002166 10$: CMP ETRSR,ATRSR ;TEST THE STATUS REGISTER
1838 017222 001401 BEQ 20$ ;OK
1839 017224 005202 INC R2 ;INDICATE ERROR
1840 017226
1841 017226 005737 002170 20$: TST ATRWC ;TEST WORD COUNT
1842 017232 001401 BEQ 30$ ;OK
1843 017234 005202 INC R2 ;INDICATE ERROR
1844 017236
1845 017236 005702 30$: TST R2 ;ANY ERRORS?
1846 017240 001415 BEQ 40$ ;NO
1847 000024 ENUM = ^D<ENUM + 1> ;INCREMENT ERROR NUMBER
1848 017242 012737 000003 002154 MOV #T,ESFT,ERRTYP ;SPECIFY SOFT ERROR
1849 017250 012737 000024 002156 MOV #ENUM,ERRNBR ;SPECIFY ERROR NUMBER
1850 017256 012737 021755 002160 MOV #MWRFL,ERRMSG ;SPECIFY ERROR MESSAGE
1851 017264 012737 020120 002162 MOV #ERR6,ERRBLK ;SPECIFY ERROR HANDLER
1852 017272 000261 SEC ;SET C = 1
1853 017274 000207 40$: RTS PC ;RETURN
1854
1855
1856
1857
.SBTTL CHEKDX SUBROUTINE CHECKS TR79 REGISTERS AFTER READ
:-----*

```

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CHEKDX SUBROUTINE CHECKS TR79 REGISTERS AFTER READ

```

1858
1859 017276 004737 013354          CHEKDX: JSR      PC,RWAIT          ;WAIT
1860 017302 004737 013254          JSR      PC,CPYTRR         ;COPY TR79 REGISTERS
1861 017306 012737 002204 002174   MOV      #2204,ETRCR       ;EXPECTED
1862 017314 012737 002001 002176   MOV      #2001,ETRSR       ;EXPECTED
1863 017322 023737 002174 002164   CMP      ETRCR,ATRCR       ;TEST COMMAND REGISTER
1864 017330 001401                      BEQ      10$                ;OK
1865 017332 005202                      INC      R2                  ;INDICATE ERROR
1866 017334
1867 017334 023737 002176 002166   10$:  CMP      ETRSR,ATRSR     ;TEST THE STATUS REGISTER
1868 017342 001401                      BEQ      20$                ;OK
1869 017344 005202                      INC      R2                  ;INDICATE ERROR
1870 017346
1871 017346 005737 002170          20$:  TST      ATRWC           ;TEST WORD COUNT
1872 017352 001401                      BEQ      30$                ;OK
1873 017354 005202                      INC      R2                  ;INDICATE ERROR
1874 017356
1875 017356 005702          30$:  TST      R2              ;ANY ERRORS?
1876 017360 001415                      BEQ      40$                ;NO
1877 000025          ENUM = ^D<ENUM + 1> ;INCREMENT ERROR NUMBER
1878 017362 012737 000003 002154   MOV      #T.ESFT,ERRTYP    ;SPECIFY SOFT ERROR
1879 017370 012737 000025 002156   MOV      #ENUM,ERRNBR     ;SPECIFY ERROR NUMBER
1880 017376 012737 021765 002160   MOV      #MRDFL,ERRMSG    ;SPECIFY ERROR MESSAGE
1881 017404 012737 020120 002162   MOV      #ERR6,ERRBLK     ;SPECIFY ERROR HANDLER
1882 017412 000261                      SEC                          ;SET C = 1
1883 017414 000207          40$:  RTS      PC              ;RETURN
1884
1885
1886          .SBTTL  CHEKEX SUBROUTINE CHECKS TR79 REGISTERS AFTER SPACE REVERSE
1887          -----

```


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CHEKEX SUBROUTINE CHECKS TR79 REGISTERS AFTER SPACE REVERSE

```

1888
1889
1890 017416 004737 013354          CHEKEX: JSR      PC,RWAIT          ;WAIT
1891 017422 004737 013254          JSR      PC,CPYTRR         ;COPI TR79 REGISTERS
1892 017426 012737 003610 002174  MOV      #3610,ETRCR       ;EXPECTED
1893 017434 012737 002001 002176  MOV      #2001,ETRSR      ;EXPECTED
1894 017442 013737 002214 002200  MOV      USEB,ETRWC       ;EXPECTED
1895 017450 023737 002174 002164  CMP      ETRCR,ATRCR      ;TEST COMMAND REGISTER
1896 017456 001401          BEQ      10$              ;OK
1897 017460 005202          INC      R2              ;INDICATED
1898 017462
1899 017462 023737 002176 002166 10$:    CMP      ETRSR,ATRSR      ;TEST THE STATUS REGISTER
1900 017470 001401          BEQ      20$              ;OK
1901 017472 005202          INC      R2              ;INDICATE ERROR
1902 017474
1903 017474 023737 002200 002170 20$:    CMP      ETRWC,ATRWC      ;TEST WORD COUNT
1904 017502 001401          BEQ      30$              ;OK
1905 017504 005202          INC      R2              ;INDICATE ERROR
1906 017506
1907 017506 005702          TST      R2              ;ANY ERRORS?
1908 017510 001415          BEQ      40$              ;NO
1909          000026          ENUM = ^D<ENUM + 1>      ;INCREMENT ERROR NUMBER
1910 017512 012737 000003 002154  MOV      #T.ESFT,ERRTYP   ;SPECIFY SOFT ERROR
1911 017520 012737 000026 002156  MOV      #ENUM,ERRNBR     ;SPECIFY ERROR NUMBER
1912 017526 012737 021774 002160  MOV      #MSRVFL,ERRMSG   ;SPECIFY ERROR MESSAGE
1913 017534 012737 020120 002162  MOV      #ERR6,ERRBLK    ;SPECIFY ERROR HANDLER
1914 017542 000261          SEC                      ;SET C = 1
1915 017544 000207          RTS      PC              ;RETURN
1916
1917
1918
1919
1920
-----
:SBTTL CHEKFX GLOBAL SUBROUTINE --TEST TR79 REGISTERS AFTER ERASE--
-----

```

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CHEKFX GLOBAL SUBROUTINE --TEST TR79 REGISTERS AFTER ERASE--

```

1921
1922 017546 004737 013354
1923 017552 004737 013254
1924 017556 012737 002216 002174
1925 017564 012737 002001 002176
1926 017572 023737 002174 002164
1927 017600 001401
1928 017602 005202
1929 017604
1930 017604 023737 002176 002166
1931 017612 001401
1932 017614 005202
1933 017616
1934 017616 013701 002214
1935 017622 005101
1936 017624 005201
1937 017626 006301
1938 017630 062701 002262
1939 017634 010137 002202
1940 017640 020137 002172
1941 017644 001401
1942 017646 005202
1943 017650
1944 017650 005737 002170
1945 017654 001401
1946 017656 005202
1947 017660
1948 017660 005702
1949 017662 001415
1950 000027
1951 017664 012737 000003 002154
1952 017672 012737 000027 002156
1953 017700 012737 022014 002160
1954 017706 012737 020102 002162
1955 017714 000261
1956 017716 000207
1957
1958
1959
1960
1961
1962
1963

CHEKFX: JSR PC,RWWAIT ;WAIT
        JSR PC,CPYTRR ;COPY TR79 REGISTERS,CLEAR EXPECTED RESULT
        MOV #2216,ETRCR ;SPECIFY EXPECTED RESULT
        MOV #2001,ETRSR ;SPECIFY EXPECTED RESULT
        CMP ETRCR,ATRCR ;TEST COMMAND REGISTER
        BEQ 10$ ;OK
        INC R2 ;INDICATE ERROR
10$:    CMP ETRSR,ATRSR ;TEST THE STATUS REGISTER
        BEQ 20$ ;OK
        INC R2 ;INDICATE ERROR
20$:    MOV USEB,R1 ;GET WORD COUNT
        COM R1 ;FIX IT
        INC R1
        ASL R1 ;DOUBLE IT
        ADD #OUTPUT,R1 ;COMPUTE BUS ADDRESS
        MOV R1,ETRBA ;SPECIFY EXPECTED RESULT
        CMP R1,ATRBA ;TEST BUFFER ADDRESS
        BEQ 30$ ;OK
        INC R2 ;INDICATE ERROR
30$:    TST ATRWC ;TEST THE WORD COUNT
        BEQ 40$ ;OK
        INC R2 ;INDICATE ERROR
40$:    TST R2 ;ANY ERRORS?
        BEQ 50$ ;NO
        ENUM = ^D<ENUM + 1> ;INCREMENT ERROR NUMBER
        MOV #T,ESFT,ERRTYP ;SPECIFY SOFT ERROR
        MOV #ENUM,ERRNBR ;SPECIFY ERROR NUMBER
        MOV #MERFL,ERRMSG ;SPECIFY ERROR MESSAGE
        MOV #ERR5,ERRBLK ;SPECIFY ERROR HANDLER
        SEC ;SET C = 1
50$:    RTS PC

:-----:
:SBYTE INTIN-----GLOBAL SUBROUTINE==TR79 INTERRUPT HANDLER==:
:-----:

```

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INTIN GLOBAL SUBROUTINE--TR79 INTERRUPT HANDLER--

1964
 1965
 1966
 1967
 1968
 1969
 1970
 1971 017720
 1972 017720
 1973 017720 042777 000100 162314
 1974 017726 005037 002240
 1975 017732 000240
 1976 017734
 1977 017734
 1978 017734 000002
 1979
 1980
 1981
 1982

```

:*****
: CLEAR TR79 INTERRUPT ENABLE BIT *
: CLEAR TR79 INTERRUPT INDICATOR (INTFLG) *
:*****

```

```

BGNSRV INTIN
INTIN:: BIC #100,@TRCR ;DISABLE INTERRUPT
        CLR INTFLG ;CLEAR THE FLAG
        NOP
        ENDSRV
L10002: RTI

```

```

-----
:SBTTL ERRORS GLOBAL ERROR REPORTS
:-----

```

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ERRORS GLOBAL ERROR REPORTS

1983
 1984
 1985
 1986
 1987
 1988
 1989
 1990
 1991
 1992
 1993
 1994 017736
 1995 017736
 1996 017736 004737 020432
 1997 017742
 1998 017742
 1999 017742 104423
 2000
 2001
 2002
 2003
 2004
 2005
 2006
 2007
 2008
 2009
 2010 017744
 2011 017744
 2012 017744 004737 013446
 2013 017750 000401
 2014 017752
 2015 017752
 2016 017752 104423
 2017
 2018
 2019
 2020
 2021
 2022
 2023
 2024
 2025 017754
 2026 017754
 2027 017754
 2028 017754 004737 014166
 2029 017760 103012
 2030 017762
 2031 017762 012746 021140
 2032 017766 012746 020473
 2033 017772 012746 000002
 2034 017776 010600
 2035 020000 104414
 2036 020002 062706 000006
 2037 020006 004737 013354
 2038 020012 004737 013324

```

:////////////////////
:/ THE GLOBAL ERROR REPORT SECTION CONTAINS ERROR MESSAGES
:/ THAT ARE USED IN MORE THAN ONE TEST.
:////////////////////
.EVEN

```

```

-----
:SBTTL ERROR HANDLER --ERR1 -- 'NO NOTHING' HANDLER
-----
BGNMSG ERR1
ERR1::
ER1: JSR PC,NULERR ;USE COMMON ROUTINE TO TERMINATE ERROR MESSAGE
ENDMSG
L10003:
TRAP C$MSG

```

```

-----
: .SBTTL ERROR HANDLER --ERR2 -- INSTALL WRITE ENABLE RING
-----

```

```

: IF WRITE ENABLE RING IS PRESENT THEN EXIT
: ASK OPERATOR TO INSTALL RING
: WHILE RING NOT PRESENT KEEP CHECKING
: IF RING IS PRESENT THEN EXIT
:
BGNMSG ERR2
ERR2::
ER2: JSR PC,TESTC ;MAKE SURE RING IS INSTALLED
BR ER3 ;MAKE SURE ON LINE AND READY
ENDMSG
L10004:
TRAP C$MSG

```

```

-----
:SBTTL ERROR HANDLER --ERR3 -- TR79 NOT ON LINE OR NOT READY
-----

```

```

BGNMSG ERR3
ERR3::
ER3:
10$: JSR PC,TESTNN ;MAKE SURE ON LINE
BCC 20$ ;OK. ON LINE WITH NO ERROR
PRINTB #FMTTXT,#M2A1 ; ELSE SEND ERROR MESSAGE
MOV #M2A1,-(SP)
MOV #FMTTXT,-(SP)
MOV #2,-(SP)
MOV SP,R0
TRAP C$PNTB
ADD #6,SP
20$: JSR PC,RWAIT ;WAIT A BIT
JSR PC,CPWR ;RESET TR79

```

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ERROR HANDLER --ERR3 -- TR79 NOT ON LINE OR NOT READY

2039
 2040 020016 004737 014114
 2041 020022 103015
 2042 020024
 2043 020024 012746 021040
 2044 020030 012746 020473
 2045 020034 012746 000002
 2046 020040 010600
 2047 020042 104414
 2048 020044 062706 000006
 2049 020050 004737 013442
 2050 020054 000737
 2051 020056
 2052 020056 004737 020432
 2053 020062
 2054 020062
 2055 020062 104423
 2056
 2057
 2058
 2059
 2060

```

;TEST READY
JSR PC,TSTRDY ;TEST READY BITS
BCC 30$ ;READY. RETURN
PRIN1B #FM1T1T,#EM2A ;PRINT ERROR MESSAGE
MOV #EM2A,-(SP)
MOV #FM1T1T,-(SP)
MOV #2,-(SP)
MOV SP,R0
TRAP C$PNTB
ADD #6,SP
JSR PC,CHKBRK ;CHECK FOR OPERATOR INTERRUPT
BR 10$ ;REPEAT TEST ON LINE AND READY

30$: JSR PC,NULERR ;TERMINATE ERROR MESSAGE
ENDMSG

L10005: TRAP C$MSG
    
```

 :SBTTL ERROR HANDLER --ERR4-- PRINT COMMAND AND STATUS RESULTS

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ERROR HANDLER --ERR4-- PRINT COMMAND AND STATUS RESULTS

;PRINT TRCR AND TRSR RESULTS

2061
 2062
 2063 020064
 2064 020064
 2065 020064 012702 000004
 2066 020070 004737 020324
 2067 020074 004737 020432
 2068 020100
 2069 020100
 2070 020100 104423

ERR4:: BGNMSG ERR4
 MOV #4,R2 ;SPECIFY REGISTER COUNT = 2 FOR PRINT
 JSR PC,PRTREG ;PRINT RESULTS
 JSR PC,NULERR ;TERMINATE ERROR MESSAGE
 ENDMSG
 L10006: TRAP C\$MSG

 :SBTTL ERROR HANDLER --ERR5-- PRINT TR79 REGISTER RESULTS

;PRINT TRCR,TRSR,TRWC,TRBA RESULTS

2071
 2072
 2073
 2074
 2075
 2076
 2077
 2078 020102
 2079 020102
 2080 020102 012702 000010
 2081 020106 004737 020324
 2082 020112 004737 020432
 2083 020116
 2084 020116
 2085 020116 104423

ERR5:: BGNMSG ERR5
 MOV #10,R2 ;SPECIFY REGISTER COUNT = 4 FOR PRINT
 JSR PC,PRTREG ;PRINT RESULTS
 JSR PC,NULERR ;TERMINATE ERROR MESSAGE
 ENDMSG
 L10007: TRAP C\$MSG

 :SBTTL ERROR HANDLER --ERR6-- PRINT TR79 REGISTER RESULTS

;PRINT TRCR,TRSR,TRWC, RESULTS

2086
 2087
 2088
 2089
 2090
 2091
 2092
 2093 020120
 2094 020120
 2095 020120 012702 000006
 2096 020124 004737 020324
 2097 020130 004737 020432
 2098 020134
 2099 020134
 2100 020134 104423

ERR6:: BGNMSG ERR6
 MOV #6,R2 ;SPECIFY REGISTER COUNT = 3 FOR PRINT
 JSR PC,PRTREG ;PRINT RESULTS
 JSR PC,NULERR ;TERMINATE ERROR MESSAGE
 ENDMSG
 L10010: TRAP C\$MSG

 :SBTTL ERROR HANDLER --ERR11-- FAILED TO LOAD VALUE INTO BUS ADDRESS REGISTER

2101
 2102
 2103
 2104
 2105
 2106

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```

2107 020136
2108 020136
2109 020136 004737 020346
2110 020142 012701 000006
2111 020146 004737 020370
2112 020152 004737 020432
2113 020156
2114 020156
2115 020156 104423
2116
2117
2118
2119
2120
2121 020160
2122 020160
2123 020160 004737 020346
2124 020164 012701 000004
2125 020170 004737 020370
2126 020174 004737 020432
2127 020200
2128 020200
2129 020200 104423
2130
2131
2132
2133

```

ERROR HANDLER --ERR11-- FAILED TO LOAD VALUE INTO BUS ADDRESS REGISTER

```

BGNMSG ERR11
ERR11:: JSR PC,XHDR ;PRINT EXPECTED RESULT HEADER
        MOV #6,R1 ;SPECIFY BUS ADDRESS REGISTER
        JSR PC,XPRT ;PRINT EXPECTED RESULT
        JSR PC,NULERR ;USE COMMON ROUTINE TO TERMINATE ERROR MESSAGE
        ENDMSG

```

L10011: TRAP C\$MSG

```

-----
.SBTTL ERROR HANDLER --ERR12-- FAILED TO LOAD VALUE INTO WORD COUNT REGISTER
-----

```

```

BGNMSG ERR12
ERR12:: JSR PC,XHDR ;PRINT EXPECTED RESULT HEADER
        MOV #4,R1 ;SPECIFY TRWC REGISTER
        JSR PC,XPRT ;PRINT EXPECTED RESULT
        JSR PC,NULERR ;USE COMMON ROUTINE TO TERMINATE ERROR MESSAGE
        ENDMSG

```

L10012: TRAP C\$MSG

```

-----
.SBTTL ERROR HANDLER --ERR14__ DATA ERROR ON READ
-----

```

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ERROR HANDLER --ERR14__ DATA ERROR ON READ

2134 020202
 2135 020202
 2136 020202
 2137 020202 013746 002206
 2138 020206 013746 002204
 2139 020212 013746 002210
 2140 020216 012746 020500
 2141 020222 012746 000004
 2142 020226 010600
 2143 020230 104414
 2144 020232 062706 000012
 2145 020236 004737 020432
 2146 020242
 2147 020242
 2148 020242 104423
 2149
 2150
 2151
 2152

BGNMSG ERR14
 ERR14::
 PRINTB #FMT31,LINPUT,AINPUT,EINPUT ;PRINT INPUT AREA RESULT
 MOV EINPUT,-(SP)
 MOV AINPUT,-(SP)
 MOV LINPUT,-(SP)
 MOV #FMT31,-(SP)
 MOV #4,-(SP)
 MOV SP,R0
 TRAP C\$PNTB
 ADD #12,SP
 JSR PC,NULERR ;TERMINATE ERROR MESSAGE
 ENDMSG
 L10013:
 TRAP C\$MSG

```

-----
:SBTTL ERROR HANDLER --ERR15-- ERROR ON READ IDB
-----

```


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ERROR HANDLER --ERR15-- ERROR ON READ IDB

2153 020244
 2154 020244
 2155 020244 012702 000010
 2156 020250 004737 020324
 2157 020254 012737 006322 002210
 2158 020262
 2159 020262 013746 002206
 2160 020266 013746 002204
 2161 020272 013746 002210
 2162 020276 012746 020500
 2163 020302 012746 000004
 2164 020306 010600
 2165 020310 104414
 2166 020312 062706 000012
 2167 020316 004737 020432
 2168 020322
 2169 020322
 2170 020322 104423
 2171
 2172
 2173
 2174
 2175 020324
 2176 020324 004737 020346
 2177 020330 005001
 2178 020332 004737 020370
 2179 020336 005721
 2180 020340 020201
 2181 020342 101373
 2182 020344 000207
 2183
 2184
 2185
 2186
 2187
 2188 020346
 2189 020346 012746 020566
 2190 020352 012746 000001
 2191 020356 010600
 2192 020360 104414
 2193 020362 062706 000004
 2194 020366 000207
 2195
 2196
 2197
 2198
 2199
 2200
 2201
 2202 020370
 2203 020370
 2204 020370 016146 002164
 2205 020374 016146 002174
 2206 020400 016146 002242
 2207 020404 016146 020454
 2208 020410 012746 020653

BGNMSG ERR15
 ERR15::
 MOV #10,R2 ;SPECIFY COUNT TO PRINT 4 REGISTERS
 JSR PC,PRTREG ;PRINT REGISTERS
 MOV #INPUT,LINPUT ;SPECIFY INPUT LOCATION FOR PRINT
 PRINTB #FMT31,LINPUT,AINPUT,EINPUT ;PRINT INPUT AREA RESULT
 MOV EINPUT,-(SP)
 MOV AINPUT,-(SP)
 MOV LINPUT,-(SP)
 MOV #FMT31,-(SP)
 MOV #4,-(SP)
 MOV SP,R0
 TRAP C\$PNTB
 ADD #12,SP
 JSR PC,NULERR ;COMMON ERROR MESSAGE TERMINATOR
 ENDMSG

L10014:
 TRAP C\$MSG
 ;-----
 .SBTTL PRTREG SUBROUTINE TO PRINT SEVERAL REGISTER RESULTS
 ;-----

PRTREG: ;PRINT SEVERAL TR79 REGISTER RESULTS
 JSR PC,XHDR ;PRINT RESULT HEADER
 CLR R1 ;CLEAR PRINT INDEX
 10\$: JSR PC,XPRT ;PRINT RESULT
 TST (R1)+ ;INCREMENT PRINT INDEX
 CMP R2,R1 ;IF MORE REGISTERS TO PRINT
 BHI 10\$; THEN PRINT NEXT REGISTER
 RTS PC

 .SBTTL XHDR SUBROUTINE TO PRINT RESULTS HEADER

XHDR: PRINTB #FMT51 ;PRINT RESULTS HEADER
 MOV #FMT51,-(SP)
 MOV #1,-(SP)
 MOV SP,R0
 TRAP C\$PNTB
 ADD #4,SP
 RTS PC

 .SBTTL XPRT SUBROUTINE TO PRINT ONE REGISTER RESULT

XPRT:
 PRINTB #FMT52,TPT52(R1),TRCR(R1),ETRCR(R1),ATRCR(R1)
 MOV ATRCR(R1),-(SP)
 MOV ETRCR(R1),-(SP)
 MOV TRCR(R1),-(SP)
 MOV TPT52(R1),-(SP)
 MOV #FMT52,-(SP)

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XPRT SUBROUTINE TO PRINT ONE REGISTER RESULT

2209 020414 012746 000005
 2210 020420 010600
 2211 020422 104414
 2212 020424 062706 000014
 2213 020430 000207

MOV #5,-(SP)
 MOV SP,R0
 TRAP C\$PNTB
 ADD #14,SP
 RTS PC

2214
 2215
 2216
 2217
 2218

 :SBTTL SUBROUTINE TO PERFORM 'PRINTB #ENDEMB'

2219 020432
 2220 020432 012746 020464
 2221 020436 012746 000001
 2222 020442 010600
 2223 020444 104414
 2224 020446 062706 000004
 2225 020452 000207
 2226
 2227

NULERR: PRINTB #ENDEMB ;TERMINATE ERROR MESSAGE
 MOV #ENDEMB,-(SP)
 MOV #1,-(SP)
 MOV SP,R0
 TRAP C\$PNTB
 ADD #4,SP
 RTS PC

 :SBTTL FORMAT SPEC'S FOR ERROR HANDLERS -- 'FMT___'

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FORMAT SPEC'S FOR ERROR HANDLERS -- 'FMT_--'

```

2228
2229
2230 ;-----TEXT POINTERS USED IN FORMAT SPECS-----
2231
2232 020454 020702 020717 020734 TPT52: .WORD T52A,T52B,T52C,T52D ;POINTERS TO REGISTER NAME TEXT
2233 020462 020751
2234

```

```

2235 ;----- FORMAT SPEC'S USED BY ERROR HANDLERS -----
2236
2237

```

```

020464 047045 000062 .NLIST BEX
020470 047045 000 ENDEMB: .ASCIZ /%N2/
020473 045 022516 000124 NEWLIN: .ASCIZ /%N/
020500 040445 044440 050116 FMTXT: .ASCIZ /%N%T/
020566 047045 051445 022464 FMT31: .ASCIZ /%A INPUT AT LOCATION %06%A IS %06%A EXPECTED %06/
020653 045 022516 032123 FMT51: .ASCIZ /%N%S4%AREGISTER%S4%ALLOCATION%S4%AEPECTED%S4%AACTUAL/
020702 047503 046515 047101 FMT52: .ASCIZ /%N%S4%T%06%S6%06%S6%06/
020717 123 040524 052524 T52A: .ASCIZ /COMMAND /
020734 047527 042122 041440 T52B: .ASCIZ /STATUS /
020751 102 051525 040440 T52C: .ASCIZ /WORD COUNT /
T52D: .ASCIZ /BUS ADDRESS /

```

```

.SBTTL ERROR MESSAGES

```

ERROR MESSAGES

```
-----
:----- ERROR MESSAGES USED BY ERROR CALL'S -----
:-----
```

```
020766 047516 020124 047117 EM2: .ASCIZ /NOT ON LINE/
021002 051127 052111 020105 EM4A: .ASCIZ /WRITE ENABLE RING NOT PRESENT/
021040 051124 034467 047040 EM2A: .ASCIZ /TR79 NOT READY/
021057 120 040514 042503 M2A: .ASCIZ /PLACE UNIT ON LINE AFTER TAPE MOTION HAS STOPPED/
021140 047117 046040 047111 M2A1: .ASCIZ /ON LINE ERROR/
021156 051040 053505 047111 MRW: .ASCIZ /REWIND ERROR/ ;NOT FROM TEST REWIND AT LOAD POINT
021174 042440 052130 047105 M16SFL: .ASCIZ /EXTENSION BIT 16 FAILED TO SET/
021235 040 054105 042524 M16CFL: .ASCIZ /EXTENSION BIT 16 FAILED TO CLEAR/
021277 040 054105 042524 M17SFL: .ASCIZ /EXTENSION BIT 17 FAILED TO SET/
021337 040 054105 042524 M17CFL: .ASCIZ /EXTENSION BIT 17 FAILED TO CLEAR /
021402 054105 042524 051516 MXCFL: .ASCIZ /EXTENSION BIT(S) FAILED TO CLEAR/
021443 040 053520 041522 MPWCL: .ASCIZ /PWRCLR BIT CLEARED TOO SOON/
021500 050040 051127 046103 MPWST: .ASCIZ /PWRCLR BIT NOT CLEAR AFTER 900 MILLISEC/
021551 040 040506 046111 EM7: .ASCIZ /FAILED TO LOAD VALUE INTO WORD COUNT REGISTER/
021630 040506 046111 042105 EM6: .ASCIZ /FAILED TO LOAD VALUE INTO BUS ADDRESS REGISTER/
021707 040 051124 034467 MINTFL: .ASCIZ /TR79 FAILED TO INTERRUPT/
021741 040 037440 000 MQM: .ASCIZ / ?/
021745 122 051505 052105 MRSTFL: .ASCIZ /RESET /
021755 127 044522 042524 MRWTF: .ASCIZ /WRITE /
021765 122 040505 020104 MRDFL: .ASCIZ /READ /
021774 050123 041501 020105 MSRVFL: .ASCIZ /SPACE REVERSE /
022014 051105 051501 020105 MERFL: .ASCIZ /ERASE /
022024 051040 046505 053117 MRMVRG: .ASCIZ /REMOVE WRITE ENABLE RING LOAD & PLACE ONLINE /
022103 040 047111 042523 FMTRGI: .ASCIZ /INSERT WRITE ENABLE RING LOAD & PLACE ONLINE/
022161 111 052116 051105 MIENFL: .ASCIZ /INTERRUPT ENABLE /
022204 047111 042524 051122 MIDSFL: .ASCIZ /INTERRUPT DISABLE /
022227 120 053517 051105 MPCFL: .ASCIZ /POWER CLEAR /
022245 127 044522 042524 MWIPLFL: .ASCIZ /WRITE ID BLOCK PAST LOAD POINT /
022306 042522 044527 042116 MRWLPFL: .ASCIZ /REWIND FROM LOAD POINT /
022337 111 046114 043505 MILFFL: .ASCIZ /ILLEGAL FUNCTION /
022362 051127 052111 020105 MWLPFL: .ASCIZ /WRITE FROM LOAD POINT /
022413 127 044522 042524 MWEFFL: .ASCIZ /WRITE END OF FILE /
022437 127 044522 042524 MWELPFL: .ASCIZ /WRITE END OF FILE FROM LOAD POINT /
022504 051127 052111 020105 MWILPFL: .ASCIZ /WRITE ID BLOCK FROM LOAD POINT /
022545 125 044516 020124 MNNOFLN: .ASCIZ /UNIT DID NOT GO OFF LINE /
022600 043117 020106 044514 MOFLEFL: .ASCIZ /OFF LINE ERROR /
022621 122 053505 047111 MRWOF: .ASCIZ /REWIND OFF LINE /
022643 122 040505 020104 MRDERR: .ASCIZ /READ DATA ERROR /
022665 123 040520 042503 MSREFFL: .ASCIZ /SPACE REVERSE OVER END OF FILE /
022726 042522 042101 042440 MREFFL: .ASCIZ /READ END OF FILE /
022751 127 044522 042524 MWTOFL: .ASCIZ /WRITE TIME OUT /
022772 042522 042101 052040 MRTOFL: .ASCIZ /READ TIME OUT /
023012 051127 052111 020105 MNXFL: .ASCIZ /WRITE NON-EXISTENT MEMORY /
023046 054105 042524 051516 MNXBFL: .ASCIZ /EXTENSION BIT 13 NON EXISTENT MEMORY /
023115 105 020101 044502 MNXMFL: .ASCIZ /EA BITS 12 AND 13- NON EXISTENT MEMORY /
023166 042522 042101 041440 MRCFL: .ASCIZ /READ COUNT /
023203 105 042116 047440 METFL: .ASCIZ /END OF TAPE /
023221 120 051525 020110 MRSTU: .ASCIZ /PUSH RESET BUTTON ON TAPE UNIT /
023262 040515 052516 046101 MMRSFL: .ASCIZ /MANUAL RESET /
023301 127 044522 042524 MWPETFL: .ASCIZ /WRITE PAST END OF TAPE /
023333 123 040520 042503 MSRETFL: .ASCIZ /SPACE REVERSE PAST END OF TAPE /
023374 042522 042101 050040 MRPETFL: .ASCIZ /READ PAST END OF TAPE /
```

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ERROR MESSAGES

023424	051127	052111	020105	MWETF: .ASCIZ	/WRITE END OF FILE PAST END OF TAPE /
023474	042522	042101	042440	MREFET: .ASCIZ	/READ END OF FILE PAST END OF TAPE /
023543	127	044522	042524	MWENFL: .ASCIZ	/WRITE ENABLE /
023562	050123	041501	020105	MSRLPFL: .ASCIZ	/SPACE REVERSE AT LOAD POINT /
023620	050123	041501	020105	MSRIFL: .ASCIZ	/SPACE REVERSE AT ID BLOCK /
023654	042522	042101	044440	MRIBFL: .ASCIZ	/READ ID BLOCK /
023674	053105	047105	050040	MPARFL: .ASCIZ	/EVEN PARITY /
023712	053105	047105	050040	MEPSRFL: .ASCIZ	/EVEN PARITY SPACE REVERSE /
023746	042522	042101	042440	MREPFL: .ASCIZ	/READ EVEN PARITY /
023771	122	053505	047111	MEOT: .ASCIZ	/REWINDING...GOING OFF LINE /

 .LIST BEX
 .EVEN

.SBTTL LOAD DEVICE PROTECTION TABLE

2238
 2239
 2240

024026

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LOAD DEVICE PROTECTION TABLE

2241
 2242
 2243
 2244
 2245
 2246
 2247 024026
 2248 024026
 2249 024026 177777
 2250 024030 177777
 2251 024032 177777
 2252 024034
 2253
 2254

////////////////////////////////////
 :// THIS TABLE IDENTIFIES THE LOAD DEVICE TO THE SUPERVISOR, SO THAT IT CAN BE
 :// PROTECTED FROM TESTING. IF DESIRED.
 :////////////////////////////////////

BGNPROT
 L\$PROT::
 .WORD -1 ;DON'T CHK CSR ADRS
 .WORD -1 ;DON'T CHK VECTOR ADRS
 .WORD -1 ;DON'T CHK PRIORITY LEVEL
 ENDPROT

.SBTTL INITIALIZE SECTION

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INITIALIZE SECTION

```

2255 :////////////////////
2256 :// THE INITIALIZE SECTION CONTAINS THE CODING THAT IS PERFORMED
2257 :// AT THE BEGINNING OF THE TEST SEQUENCE ON THE NEXT UNIT.
2258 :////////////////////
2259
2260
2261 024034 BGNINIT
2262 024034
2263 024034 010637 002236 LSINIT:: MOV SP,PSTACK ;SAVE BASE LEVEL STACK POINTER
2264 ;GET TR79 ADDRESS, VECTOR, PRIORITY LEVEL
2265 024040 005037 002234 CLR LOGDEV ;SET LOGICAL DEVICE NUMBER = 0
2266 024044 GPHARD LOGDEV,R1 ;GET P-TABLE POINTER
2267 024044 013700 002234 MOV LOGDEV,R0
2268 024050 104442 TRAP C$GPHRD
2269 024052 010001 MOV R0,R1
2270 024054 012102 MOV (R1)+,R2 ;GET THE TR79 CSR ADDRESS
2271 024056 010237 002242 MOV R2,TRCR ;COPY COMMAND REGISTER ADDRESS
2272 024062 005722 TST (R2)+ ;GET TR79 STATUS REGISTER ADDRESS
2273 024064 010237 002244 MOV R2,TRSR ;COPY STATUS REGISTER ADDRESS
2274 024070 005722 TST (R2)+ ;GET TR79 WORD COUNT REGISTER ADDRESS
2275 024072 010237 002246 MOV R2,TRWC ;COPY WORD COUNT REGISTER ADDRESS
2276 024076 005722 TST (R2)+ ;GET TR79 BUS ADDRESS REGISTER ADDRESS
2277 024100 010237 002250 MOV R2,TRBA ;COPY BUS ADDRESS REGISTER ADDRESS
2278 024104 012137 002252 MOV (R1)+,TRVCT ;SAVE INTERRUPT VECTOR ADDRESS
2279 024110 012137 002254 MOV (R1)+,TRPRT ;SAVE TR79 DEVICE PRIORITY
2280 024114 SETPRI PRI07 ;SET PRIORITY TO INHIBIT TR79 INTERRUPTS
2281 024114 013700 000340 MOV PRI07,R0
2282 024120 104441 TRAP C$SPRI
2283 024122 042777 000100 156112 BIC #BIT6,@TRCR ;CLEAR TR79 INERRUPT ENABLE BIT
2284 024130 005037 002240 CLR INTFLG ;CLEAR TR79 INTERRUPT FLAG
2285 024134 SETVEC TRVCT,#INTIN,TRPRT ;SET UP TR79 VECTOR
2286 024134 013746 002254 MOV TRPRT,-(SP)
2287 024140 012746 017720 MOV #INTIN,-(SP)
2288 024144 013746 002252 MOV TRVCT,-(SP)
2289 024150 012746 000003 MOV #3,-(SP)
2290 024154 104437 TRAP C$SVEC
2291 024156 062706 000010 ADD #10,SP
2292 024162 005737 002152 TST RPTCNT ;IS TEST4 REPEAT COUNT = 0
2293 024166 001003 BNE ENDIN ;NO. EXIT INIT
2294 024170 012737 177777 002152 MOV #-1,RPTCNT ;YES. SET REPEAT COUNT = -1
2295 024176 ENDIN: ENDINIT ;END OF "INIT" CODE
2296 024176 L10016:
2297 024176 104411 TRAP C$INIT
2298
2299
2300 .SBTTL AUTO DROP UNIT SECTION

```

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AUTO DROP UNIT SECTION

```

2301 :////////////////////
2302 :// THE AUTO DROP CODING DETERMINES WHETHER OR NOT THE DEVICE WHOSE P-TABLE
2303 :// WAS JUST OBTAINED IS READY FOR TESTING,  NO IT IS DROPPED IF NOT READY.
2304 :////////////////////
2305
2306

```

```

2307 024200          BGNAUTO
2308 024200 L$AUTO::
2309 024200          ENDAUTO
2310 024200 L10017:
2311 024200 104461   TRAP   C$AUTO
2312

```

.SBTTL CLEANUP CODING SECTION

```

2313 :////////////////////
2314 :// THE CLEANUP CODING SECTION CONTAINS THE CODING THAT IS PERFORMED
2315 :// AT THE END OF THE TEST SEQUENCE ON A PARTICULAR UNIT.
2316 :////////////////////
2317
2318
2319

```

```

2320 024202          BGNCLN
2321 024202 L$CLEAN::
2322 024202          ENDCLN
2323 024202 L10020:
2324 024202 104412   TRAP   C$CLEAN
2325

```

```

2326
2327
2328
2329
2330
2331 .SBTTL TEST1  NULL TEST

```


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TEST1 NULL TEST

2332
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2351
2352

024204
024204
024204
024204
024204 104401

///
:TEST1 THIS IS A NULL TEST INCLUDED TO PRESERVE THE TEST NUMBERING
: USED IN CZTRAB. MANUAL INTERVENTION TESTS ARE INCLUDED IN TEST6
:///

T1:: BGNTST
L10021: ENDTST
TRAP CSETST

.SBTTL TEST2 CHECK CONTROL LOGIC WITH MINIMUM TAPE MOTION

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TEST2 CHECK CONTROL LOGIC WITH MINIMUM TAPE MOTION

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024206
024206
024206 042777 000100 156026
024214
024214 004737 013324
024220 004737 014066
024224 103001
024226
024226 104460
024230
024230 032777 000040 156006
024236 001010
024240 004737 013324
024244 004737 012416
024250 004737 013534
024254 103001
024256
024256 104460
024260
024260 004737 014066
024264 103001
024266
024266 104460
024270
024270 004737 013324
024274 004737 012416
024300 004737 013254
024304 012737 003220 002174
024312 012737 002040 002176
024320 023737 002174 002164
024326 001401

```

////////////////////////////////////
TEST2 CHECKS THE INTERFACE LOGIC WITH MINIMUM TAPE MOTION
:
TEST2 INCLUDES:                                TEST NAME IN CZTRAB
:
REWIND FROM LOAD POINT                        TESTI
INSURE WRITE RING                             TESTC
UNIBUS EXTENSION BIT TEST                     TESTD
INTERRUPT BIT SET TEST                        TESTE
INTERRUPT BIT CLEAR TEST                     TESTF
ILLEGAL COMMAND TEST                         TESTJ
WRITE FROM LOAD POINT                        TESTK
WRITE EOF FROM LOAD POINT                    TESTM
TEST TR79 POWER CLEAR                        TESTG
SPACE REVERSE AT LOAD POINT                 TESTAT
NXM TEST                                     TESTAB
BUS ADDRESS BIT TEST                         TESTAU
WORD COUNT BIT TEST                         TESTBA
////////////////////////////////////
    
```

```

BGNTST
T2::
TEST2: BIC      #BIT6,@TRCR      ;NEGATE INTERRUPT ENABLE
      ;CLEAR TR79 INTERRUPT ENABLE BIT
T2I:   JSR     PC,CPWR           ;TEST REWIND AT LOAD POINT
      ;RESET TR79
      JSR     PC,TESTN          ;MAKE SURE TRANSPORT ON LINE AND READY
      BCC    10$               ;NO ERROR
      ERROR  C$ERROR           ;REPORT ERROR
      TRAP   C$ERROR
10$:   BIT     #LDPTS,@TRSR     ;ON LINE AND READY
      BNE    30$               ;IF AT LOAD POINT
      ; THEN SKIP PRELIMINARY REWIND
      JSR     PC,CPWR           ;RESET TR79
      JSR     PC,RWIND          ;REWIND
      JSR     PC,CHEKI          ;CHECK REGISTERS
      BCC    30$               ;NO ERRORS.
      ERROR  C$ERROR           ;REPORT ERROR
      TRAP   C$ERROR
30$:   JSR     PC,TESTN          ;AT LOAD POINT
      BCC    35$               ;MAKE SURE TRANSPORT ON LINE AND READY
      ERROR  C$ERROR           ;NO ERROR
      TRAP   C$ERROR           ;REPORT ERROR
35$:   JSR     PC,CPWR           ;REWIND AT LOAD POINT
      JSR     PC,RWIND          ;RESET TR79
      JSR     PC,CPYTRR        ;REWIND AT LOAD POINT
      MOV     #3220,ETRCR      ;COPY TR79 REGISTERS
      MOV     #2040,ETRSR      ;EXPECTED
      CMP     ETRCR,ATRCR      ;EXPECTED
      BEQ    40$               ;CHECK COMMAND REGISTER
      ;OK
    
```

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TEST2 CHECK CONTROL LOGIC WITH MINIMUM TAPE MOTION

```

2409 024330 005202          INC      R2          ;INDICATE ERROR
2410 024332                40$:          CMP      ETRSR,ATRSR      ;CHECK STATUS REGISTER
2411 024332 023737 002176 002166      BEQ      50$          ;OK
2412 024340 001401          INC      R2          ;INDICATE ERROR
2413 024342 005202                50$:          TST      R2          ;ANY ERRORS?
2414 024344                BEQ      60$          ;NO
2415 024344 005702          ENUM = ^D<ENUM + 1>      ;INCREMENT ERROR NUMBER
2416 024346 001404          ERRSOFT  ENUM,MRWLPFL,ERR4      ;REPORT ERROR
2417 000030                TRAP   C$ERSOFT
2418 024350                .WORD  24
2419 024350 104457          .WORD  MRWLPFL
2420 024352 000030          .WORD  ERR4
2421 024354 022306                60$:
2422 024356 020064          T2C:
2423 024360                BIT      #FPTS,@TRSR      ;CHECK FOR WRITE ENABLE RING
2424 024360                BEQ      10$          ;IF WRITE ENABLE RING IS PRESENT
2425 024360 032777 000004 155656      ENUM = ^D<ENUM + 1>      ; THEN CONTINUE
2426 024366 001404          ERRSOFT  ENUM,EM4A,ERR2      ;INCREMENT ERROR NUMBER
2427 000031                TRAP   C$ERSOFT      ;REPORT ERROR. GET RING INSTALLED
2428 024370                .WORD  25
2429 024370 104457          .WORD  EM4A
2430 024372 000031          .WORD  ERR2
2431 024374 021002                10$:
2432 024376 017744          JSR      PC,TESTN      ;RING IS PRESENT
2433 024400                BCC     20$          ;MAKE SURE ON LINE
2434 024400 004737 014066          ERROR   ;OK
2435 024404 103001          TRAP   C$ERROR      ;REPORT ERROR
2436 024406 104460                20$:
2437 024406                T2D:
2438 024410                JSR      PC,CPWR      ;TEST SET AND CLEAR UNIBUS EXTENSION BITS
2439 024410                BIS     #010000,@TRCR      ;RESET TR79
2440 024410 004737 013324          BIT     #010000,@TRCR      ;SET UNIBUS EXTENSION BIT 16
2441 024414 052777 010000 155620      BIT     #010000,@TRCR      ;TEST UNIBUS EXTENSION BIT 16
2442 024422 032777 010000 155612      BNE     10$          ;SKIP IF OK
2443 024430 001004          ENUM = ^D<ENUM + 1>      ;INCREMENT ERROR NUMBER
2444 000032          ERRSOFT  ENUM,M16SFL      ;REPORT ERROR
2445 024432                TRAP   C$ERSOFT
2446 024432 104457          .WORD  26
2447 024434 000032          .WORD  M16SFL
2448 024436 021174          .WORD  0
2449 024440 000000                10$:
2450 024442                BIC     #010000,@TRCR      ;CLEAR THE BIT
2451 024442 042777 010000 155572      BIT     #010000,@TRCR      ;TEST THE BIT
2452 024450 032777 010000 155564      BEQ     20$          ;SKIP IF CLEAR
2453 024456 001404          ERRSOFT  ENUM,M16CFL      ;REPORT ERROR
2454 024460                TRAP   C$ERSOFT
2455 024460 104457          .WORD  26
2456 024462 000032          .WORD  M16CFL
2457 024464 021235          .WORD  0
2458 024466 000000                20$:
2459 024470                BIS     #020000,@TRCR      ;SET UNIBUS EXTENSION BIT 17
2460 024470 052777 020000 155544      BIT     #020000,@TRCR      ;TEST UNIBUS EXTENSION BIT 17
2461 024476 032777 020000 155536      BNE     30$          ;SKIP IF OK
2462 024504 001004          ERRSOFT  ENUM,M17SFL      ;REPORT ERROR
2463 024506                TRAP   C$ERSOFT
2464 024506 104457

```

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TEST2 CHECK CONTROL LOGIC WITH MINIMUM TAPE MOTION

```

2465 024510 000032          .WORD 26
2466 024512 021277          .WORD M17SFL
2467 024514 000000          .WORD 0
2468 024516
2469 024516 042777 020000 155516 30$: BIC #020000,@TRCR ;CLEAR THE BIT
2470 024524 032777 020000 155510 BIT #020000,@TRCR ;TEST THE BIT
2471 024532 001404 BEQ 40$ ;SKIP IF OK
2472 024534 ERRSOFT ENUM,M17CFL ;REPORT ERROR
2473 024534 104457 TRAP C$ERSOFT
2474 024536 000032 .WORD 26
2475 024540 021337 .WORD M17CFL
2476 024542 000000 .WORD 0
2477 024544
2478 024544 052777 030000 155470 40$: BIS #30000,@TRCR ;SET BOTH EA BITS
2479 024552 032777 010000 155462 BIT #10000,@TRCR ;TEST BIT
2480 024560 001004 BNE 50$ ;OK
2481 024562 000033 ENUM = ^D<ENUM + 1> ;INCREMENT ERROR NUMBER
2482 024562 ERRSOFT ENUM,M16SFL ;REPORT ERROR
2483 024562 104457 TRAP C$ERSOFT
2484 024564 000033 .WORD 27
2485 024566 021174 .WORD M16SFL
2486 024570 000000 .WORD 0
2487 024572
2488 024572 032777 020000 155442 50$: BIT #20000,@TRCR ;TEST SECOND BIT
2489 024600 001004 BNE 60$ ;OK
2490 024602 ERRSOFT ENUM,M17SFL ;REPORT ERROR
2491 024602 104457 TRAP C$ERSOFT
2492 024604 000033 .WORD 27
2493 024606 021277 .WORD M17SFL
2494 024610 000000 .WORD 0
2495 024612
2496 024612 042777 030000 155422 60$: BIC #30000,@TRCR ;CLEAR EA BITS
2497 024620 032777 030000 155414 BIT #30000,@TRCR ;MAKE SURE
2498 024626 001404 BEQ 70$ ;OK
2499 024630 ERRSOFT ENUM,MXCFL ;REPORT ERROR
2500 024630 104457 TRAP C$ERSOFT
2501 024632 000033 .WORD 27
2502 024634 021402 .WORD MXCFL
2503 024636 000000 .WORD 0
2504 024640
2505 024640 70$:
2506 024640 T2E: ;TEST SET INTERRUPT ENABLE BIT
2507 024640 013700 000340 SETPRI PRI07 ;SET PRIORITY TO INHIBIT INTERRUPTS
2508 024644 104441 MOV PRI07,R0
2509 024646 052777 000100 155366 TRAP C$SPRI
2510 024654 032777 000100 155360 BIS #BIT6,@TRCR ;SET INTERRUPT ENABLE BIT
2511 024662 001004 BIT #BIT6,@TRCR ;CHECK IF SET
2512 024664 000034 BNE 20$ ;OK
2513 024664 ENUM = ^D<ENUM + 1> ;INCREMENT ERROR NUMBER
2514 024664 104457 ERRSOFT ENUM,M1ENFL ;REPORT FAILURE
2515 024666 000034 TRAP C$ERSOFT
2516 024670 022161 .WORD 28
2517 024672 000000 .WORD M1ENFL
2518 024674 .WORD 0
2519 024674 20$:
2520 024674 042777 000100 155340 T2F: BIC #BIT6,@TRCR ;TEST CLEAR INTERRUPT ENABLE BIT
;CLEAR INTERRUPT ENABLE

```

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TEST2 CHECK CONTROL LOGIC WITH MINIMUM TAPE MOTION

```

2521 024702 032777 000100 155332      BIT      #BIT6,@TRCR      ;CHECK IF CLEAR
2522 024710 001404          BEQ      10$             ;SKIP IF ZERO
2523          000035      ENUM = ^D<ENUM + 1> ;INCREMENT ERROR NUMBER
2524 024712          ERRSOFT ENUM,MIDSFL ;REPORT FAILURE
2525 024712 104457          TRAP    C$ERSOFT
2526 024714 000035          .WORD   29
2527 024716 022204          .WORD   MIDSFL
2528 024720 000000          .WORD   0
2529 024722          10$:
2530 024722          T2J:      ;TEST ILLEGAL COMMANDS
2531 024722 004737 014066      JSR      PC,TESTN        ;MAKE SURE TRANSPORT ON LINE
2532 024726 103001          BCC     10$             ;ON LINE. NO ERROR
2533 024730          ERROR   TRAP    C$ERROR        ;REPORT ERROR
2534 024730 104460          TRAP    C$ERROR
2535 024732          10$:      ;READY
2536 024732 032777 000040 155304      BIT      #BITS,@TRSR    ;IF AT LOAD POINT
2537 024740 001010          BNE     20$             ;THEN SKIP REWIND
2538 024742 004737 013324      JSR      PC,CPWR         ;RESET TR79
2539 024746 004737 012416      JSR      PC,RWIND        ;REWIND
2540 024752 004737 013534      JSR      PC,CHEK1        ;CHECK FOR ERROR
2541 024756 103001          BCC     20$             ;OK
2542 024760          ERROR   TRAP    C$ERROR        ;REPORT ERROR
2543 024760 104460          TRAP    C$ERROR
2544 024762          20$:      ;AT LOAD POINT
2545 024762 012737 025052 025050      MOV      #55$,50$        ;POINT TO FIRST ILLEGAL FUNCTION
2546 024770 004737 014066      JSR      PC,TESTN        ;MAKE SURE TRANSPORT ON LINE
2547 024774 103001          BCC     30$             ;ON LINE. NO ERROR
2548 024776          ERROR   TRAP    C$ERROR        ;REPORT ERROR
2549 024776 104460          TRAP    C$ERROR
2550 025000          35$:      ;SELECT NEXT FUNCTION
2551 025000 013703 025050      MOV      50$,R3          ;POINT TO NEXT ILLEGAL FUNCTION
2552 025004 012337 002212      MOV      (R3)+,USEA      ;SPECIFY FUNCTION TO TRY
2553 025010 010337 025050      MOV      R3,50$          ;UPDATE POINTER
2554 025014 004737 013206      JSR      PC,DOILC        ;INITIATE OPERATION
2555 025020 004737 013664      JSR      PC,CHEKJ        ;CHECK RESULT
2556 025024 103004          BCC     40$             ;OK
2557          000036      ENUM = ^D<ENUM + 1> ;INCREMENT ERROR NUMBER
2558 025026          ERRSOFT ENUM,MILFFL,ERR4 ;REPORT ERROR
2559 025026 104457          TRAP    C$ERSOFT
2560 025030 000036          .WORD   30
2561 025032 022337          .WORD   MILFFL
2562 025034 020064          .WORD   ERR4
2563 025036          40$:
2564 025036 023727 025050 025066      CMP      50$,#60$        ;IS THERE ANOTHER FUNCTION TO TRY
2565 025044 001351          BNE     30$             ;YES. GO TRY IT
2566 025046 000407          BR      60$             ;NO. CONTINUE WITH NEXT SUBTEST
2567
2568 025050 025052          50$:      .WORD   #55$            ;POINTER TO NEXT FUNCTION TO TRY
2569 025052 000406 001012 001414 55$:      .WORD   ILC03,ILC05,ILC06,ILC11,ILC12,ILC14 ;LIST OF ILLEGAL FUNCTIONS
2570 025060 000022 000424 001030
2571 025066
2572

```

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TEST2 CHECK CONTROL LOGIC WITH MINIMUM TAPE MOTION

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 2574 025066
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 2594 025066 000137 025222
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 2596 025072 004737 014066
 2597 025076 103001
 2598 025100
 2599 025100 104460
 2600 025102
 2601 025102 012737 000406 002212
 2602 025110 052737 000101 002212
 2603 025116 042777 000001 155120
 2604 025124 012777 177777 155114
 2605 025132 012777 006322 155110
 2606 025140 012737 177777 002240
 2607 025146
 2608 025146 013700 000140
 2609 025152 104441
 2610 025154 013777 002212 155060
 2611 025162 004737 013354
 2612 025166 004737 013254
 2613 025172 005737 002240
 2614 025176 001404
 2615 000037
 2616 025200
 2617 025200 104457
 2618 025202 000037
 2619 025204 021707
 2620 025206 000000
 2621 025210
 2622 025210 013700 000340
 2623 025214 104441
 2624 025216 004737 013324
 2625 025222
 2626 025222 004737 014066
 2627 025226 103001
 2628 025230

```

TSTINT:                ;TEST TR79 INTERRUPT
                        ;NOTE:
                        THE FOLLOWING CODE TO TEST TR79 INTERRUPTS IS INCLUDED FOR
                        COMPLETENESS. THIS SECTION OPENS WITH A JUMP SO THAT, AS WRITTEN,
                        THE INTERRUPT TEST IS NOT EXECUTED.

                        TO EXECUTE THE INTERRUPT TEST, THE JUMP CAN BE CHANGED TO A NOP,NOP
                        USING OD OR CONSOLE SWITCHES WHEN THE DIAGNOSTIC IS RUN.

                        THIS APPROACH IS ADOPTED TO ACCOMADATE THE FACT THAT TR79 GENERATED
                        INTERRUPTS ALLWAYS HUNG THE PROCESSOR DURING TESTING OF THIS DRS
                        COMPATIBLE VERSION OF THE DIAGNOSTIC.

                        10-NOV-81
                        GLORIA MEREDITH
                        MERRIMACK DIAGNOSTIC ENGINEERING
                        MAIL:  MK1-1/L38
                        DTN:   264-6146
                        ENET:  VAX4::MEREDITH

40$:  JMP  TESTK                ;OMIT EXECUTION IF INTERRUPT TEST
                        ;SET UP TO INTERRUPT ON ILLEGAL COMMAND
JSR  PC,TESTN                ;MAKE SURE TRANSPORT ON LINE
BCC  50$                      ;ON LINE. NO ERROR
ERROR TRAP  C$ERROR          ;REPORT ERROR

50$:  MOV  #ILCO3,USEA         ;ENABLE INTERRUPT AND PERFORM ILLEGAL FUNCTION
      BIS  #INTENB!GOBIT,USEA ;SPECIFY ILLEGAL FUNCTION
      BIC  #BIT0,@TRSR        ;SPECIFY INTERRUPT ENABLE AND GO
      MOV  #-1,@TRWC          ;NEGATE INHIBIT TR79 OPERATION
      MOV  #INPUT,@TRBA       ;SPECIFY WORD COUNT
      MOV  #-1,INTFLG         ;SPECIFY BUS ADDRESS
      SETPRI PRI03            ;SPECIFY "EXPECTING INTERRUPT"
      MOV  PRI03,RO           ;SET PRIC..TY TO ALLOW TR79 INTERRUPTS
      TRAP C$SPRI

      MOV  USEA,@TRCR         ;INITIATE TR79 OPERATION
      JSR  PC,RWAIT           ;WAIT
      JSR  PC,CPYTRR          ;COPY REGISTERS
      TST  INTFLG             ;TEST "INTERRUPT OCCURRED" INDICATOR
      BEQ  60$                ;O.K. INTERRUPT OCCURRED
      ENUM = ^D<ENUM + 1>     ;INCREMENT ERROR NUMBER
      ERRSOFT ENUM,MINTFL    ;REPORT FRROR
      TRAP C$ERSOFT
      .WORD 31
      .WORD MINTFL
      .WORD 0

60$:  SETPRI PRI07            ;INHIBIT TR79 INTERRUPTS
      MOV  PRI07,RO
      TRAP C$SPRI
      JSR  PC,CPWR            ;TR79 POWER CLEAR

TESTK: JSR  PC,TESTN          ;TEST WRITE FROM LOAD POINT
      BCC  10$                ;MAKE SURE TRANSPORT ON LINE
      ERROR TRAP 10$          ;ON LINE. NO ERROR
      ;REPORT ERROR
    
```

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TEST2 CHECK CONTROL LOGIC WITH MINIMUM TAPE MOTION

2629	025230	104460				TRAP	C\$ERROR	
2630	025232				10\$:			
2631	025232	032777	000040	155004		BIT	#BITS,@TRSR	:IF AT LOAD POINT
2632	025240	001010				BNE	20\$: THEN SKIP REWIND
2633	025242	004737	013324			JSR	PC,CPWR	:RESET TR79
2634	025246	004737	012416			JSR	PC,RWIND	:REWIND
2635	025252	004737	013534			JSR	PC,CHEKI	:CHECK FOR ERROR
2636	025256	103001				BCC	20\$:OK
2637	025260					ERROR		:REPORT ERROR
2638	025260	104460				TRAP	C\$ERROR	
2639	025262				20\$:			:WRITE AT LOAD POINT
2640	025262	012737	177700	002214		MOV	#-100,USEB	:SPECIFY WORD COUNT FOR WRITE
2641	025270	004737	012642			JSR	PC,WRT	:TRY TO WRITE AT LOAD POINT
2642	025274	004737	013254			JSR	PC,CPYTRR	:COPY TR79 REGISTERS
2643	025300	012737	142602	002174		MOV	#142602,ETRCR	:SPECIFY EXPECTED RESULT
2644	025306	012737	002040	002176		MOV	#2040,ETRSR	:SPECIFY EXPECTED RESULT
2645	025314	023737	002174	002164		CMP	ETRCR,A1RCR	:TEST COMMAND REGISTER
2646	025322	001401				BEQ	30\$:OK
2647	025324	005202				INC	R2	:INDICATE ERROR
2648	025326				30\$:			
2649	025326	023737	002176	002166		CMP	ETRSR,ATRSR	:TEST STATUS REGISTER
2650	025334	001401				SEQ	40\$:OK
2651	025336	005202				INC	K2	:INDICATE ERROR
2652	025340				40\$:			
2653	025340	005702				TST	R2	:ANY ERRORS?
2654	025342	001404				BEQ	50\$:NO
2655		000040				ENUM = ^D<ENUM + 1>		:INCREMENT ERROR NUMBER
2656	025344					ERRSOFT	ENUM,MWLPFL,ERR4	:REPORT ERROR
2657	025344	104457				TRAP	C\$ERSOFT	
2658	025346	000040				.WORD	32	
2659	025350	022362				.WORD	MWLPFL	
2660	025352	020064				.WORD	ERR4	
2661	025354	004737	013324		50\$:	JSR	PC,CPWR	:TR79 POWER CLEAR
2662	025360				TESTM:			:TEST WRITE EOF FROM LOAD POINT
2663	025360	004737	014066			JSR	PC,TESTN	:MAKE SURE TRANSPORT ON LINE
2664	025364	103001				BCC	10\$:ON LINE. NO ERROR
2665	025366					ERROR		:REPORT ERROR
2666	025366	104460				TRAP	C\$ERROR	
2667	025370				10\$:			:READY
2668	025370	032777	000040	154646		BIT	#BITS,@TRSR	:IF AT LOAD POINT
2669	025376	001010				BNE	20\$: THEN SKIP REWIND
2670	025400	004737	013324			JSR	PC,CPWR	:RESET TR79
2671	025404	004737	012416			JSR	PC,RWIND	:REWIND
2672	025410	004737	013534			JSR	PC,CHEKI	:CHECK FOR ERROR
2673	025414	103001				BCC	20\$:OK
2674	025416					ERROR		:REPORT ERROR
2675	025416	104460				TRAP	C\$ERROR	
2676	025420				20\$:			:AT LOAD POINT
2677	025420	004737	014066			JSR	PC,TESTN	:MAKE SURE TRANSPORT ON LINE
2678	025424	103001				BCC	30\$:ON LINE. NO ERROR
2679	025426					ERROR		:REPORT ERROR
2680	025426	104460				TRAP	C\$ERROR	
2681	025430				30\$:			:WRITE EOF AT LOAD POINT
2682	025430	004737	013072			JSR	PC,WTEOF	:TRY TO WRITE EOF AT LOAD POINT
2683	025434	004737	013254			JSR	PC,CPYTRR	:COPY TR79 REGISTERS
2684	025440	012737	143234	002174		MOV	#143234,ETRCR	:SPECIFY EXPECTED RESULT

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TEST2 CHECK CONTROL LOGIC WITH MINIMUM TAPE MOTION

2685	025446	012737	002040	002176	MOV	#2040,ETRSR	:SPECIFY EXPECTED RESULT
2686	025454	023737	002174	002164	CMP	ETRCR,ATRCR	:TEST COMMAND REGISTER
2687	025462	001401			BEQ	40\$:OK
2688	025464	005202			INC	R2	:INDICATE ERROR
2689	025466				40\$:		
2690	025466	023737	002176	002166	CMP	ETRSR,ATRSR	:TEST THE STATUS REGISTER
2691	025474	001401			BEQ	50\$:OK
2692	025476	005202			INC	R2	:INDICATE ERROR
2693	025500				50\$:		
2694	025500	005702			TST	R2	:ANY ERRORS?
2695	025502	001404			BEQ	60\$:NO
2696		000041			ENUM =	*D<ENUM + 1>	:INCREMENT ERROR NUMBER
2697	025504				ERRSOFT	ENUM,MWELPFL,ERR4	:REPORT ERROR
2698	025504	104457			TRAP	C\$ERSOFT	
2699	025506	000041			.WORD	33	
2700	025510	022437			.WORD	MWELPFL	
2701	025512	020064			.WORD	ERR4	
2702	025514				60\$:		
2703						:TEST TR79 RESET (TR79 POWER CLEAR)	
2704	025514				T2G:	BRESET	:PDP-11 RESET
2705	025514	104433			TRAP	C\$RESET	
2706	025516	012777	000026	154516	MOV	#26,@TRCR	:SET A FUNCTION IN COMMAND REGISTER
2707							:THIS IS A DUMMY COMMAND TO SEE IF
2708							: IT WILL CLEAR
2709	025524	052777	004000	154510	BIS	#BIT11,@TRCR	:SET TR79 PWCLR BIT
2710	025532	012701	177300		MOV	#-500,R1	:SET DELAY CONSTANT
2711	025536				10\$:		
2712	025536	005201			INC	R1	:COUNT A DELAY TICK
2713	025540	001376			BNE	10\$:KEEP TICKING
2714	025542	032777	004000	154472	BIT	#BIT11,@TRCR	:IF TR79 POWER CLEAR BIT IS SET
2715	025550	001004			BNE	20\$:CONTINUE
2716		000042			ENUM =	*D<ENUM + 1>	:INCREMENT ERROR NUMBER
2717	025552				ERRSOFT	ENUM,MPWCL	:ELSE REPORT ERROR.POWER CLEAR BIT
2718	025552	104457			TRAP	C\$ERSOFT	
2719	025554	000042			.WORD	34	
2720	025556	021443			.WORD	MPWCL	
2721	025560	000000			.WORD	0	
2722	025562				20\$:		
2723	025562	012737	002224	002220	MOV	#DLXPWR,DLX	:SET POWER CLEAR DELAY CONSTANT
2724	025570	004737	013362		JSR	PC,WAIT	:WAIT
2725	025574	032777	004000	154440	BIT	#BIT11,@TRCR	:TEST PWCLR BIT
2726	025602	001404			BEQ	30\$:OK
2727		000043			ENUM =	*D<ENUM + 1>	:INCREMENT ERROR NUMBER
2728	025604				ERRSOFT	ENUM,MPWST	:REPORT ERROR
2729	025604	104457			TRAP	C\$ERSOFT	
2730	025606	000043			.WORD	35	
2731	025610	021500			.WORD	MPWST	
2732	025612	000000			.WORD	0	
2733	025614				30\$:		
2734	025614	032777	002000	154422	BIT	#BIT10,@TRSR	:IF NOT ON LINE
2735	025622	001435			BEQ	60\$: THEN OMIT CHECKING REGISTERS
2736	025624	004737	013254		JSR	PC,CPYTRR	:COPY TR79 REGISTERS
2737	025630	042737	000036	002164	BIC	#00036,ATRCR	:CLEAR UNWANTED BITS
2738	025636	012737	002200	002174	MOV	#2200,ETRCR	:SPECIFY EXPECTED RESULT
2739	025644	012737	002247	002176	MOV	#2247,ETRSR	:SPECIFY EXPECTED RESULT
2740	025652	023737	002174	002164	CMP	ETRCR,ATRCR	:TEST COMMAND REGISTER

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TEST2 CHECK CONTROL LOGIC WITH MINIMUM TAPE MOTION

2741	025660	001401				BEQ	40\$:SKIP IF OK
2742	025662	005202				INC	R2		:INDICATE ERROR
2743	025664				40\$:				
2744	025664	04373	002176	002166		BIC	ETRSR,ATRSR		:CLEAR UNWANTED BITS
2745	025672	00573	002166			TST	ATRSR		:TEST STATUS REGISTER
2746	025676	00140				BEQ	50\$:SKIP IF OK
2747	025700	00520				INC	R2		:INDICATE ERROR
2748	025702				50\$:				
2749	025702	005702				TST	R2		:ANY ERRORS?
2750	025704	001404				BEQ	60\$:NO
2751	025704	000044				ENUM =	^D<ENUM + 1>		:INCREMENT ERROR NUMBER
2752	025706					ERRSOFT	ENUM, MPCFL, ERR4		:REPORT ERROR
2753	025706	104457				TRAP	C\$ERSOFT		
2754	025710	000044				.WORD	36		
2755	025712	022227				.WORD	MPCFL		
2756	025714	020064				.WORD	ERR4		
2757	025716	004737	013324		60\$:	JSR	PC, CPWR		:TR79 POWER CLEAR
2758	025722				T2AT:				:TEST SPACE REVERSE AT LOAD POINT
2759	025722	004737	014066			JSR	PC, TESTN		:MAKE SURE TRANSPORT ON LINE
2760	025726	103001				BCC	10\$:ON LINE. NO ERROR
2761	025730					ERROR			:REPORT ERROR
2762	025730	104460				TRAP	C\$ERROR		
2763	025732				10\$:				:READY
2764	025732	032777	000040	154304		BIT	#BIT5, @TRSR		:IF AT LOAD POINT
2765	025740	001010				BNE	20\$:SKIP REWIND
2766	025742	004737	013324			JSR	PC, CPWR		:RESET TR79
2767	025746	004737	012416			JSR	PC, RWIND		:REWIND
2768	025752	004737	013534			JSR	PC, CHEKI		:CHECK FOR ERROR
2769	025756	103001				BCC	20\$:OK
2770	025760					ERROR			:REPORT ERROR
2771	025760	104460				TRAP	C\$ERROR		
2772	025762				20\$:				:AT LOAD POINT
2773	025762	004737	014066			JSR	PC, TESTN		:MAKE SURE TRANSPORT ON LINE
2774	025766	103001				BCC	30\$:ON LINE. NO ERROR
2775	025770					ERROR			:REPORT ERROR
2776	025770	104460				TRAP	C\$ERROR		
2777	025772				30\$:				:SPACE REVERSE AT LOAD POINT
2778	025772	012737	177777	002214		MOV	#-1, USEB		:SPECIFY COUNT
2779	026000	004737	013024			JSR	PC, SPR		:SPACE REVERSE AT LOAD POINT
2780	026004	004737	013254			JSR	PC, CPYTR		:COPY TR79 REGISTERS
2781	026010	012737	143610	002174		MOV	#143610, ETRCR		:SPECIFY EXPECTED RESULT
2782	026016	012737	002040	002176		MOV	#2040, ETRSR		:EXPECTED RESULT
2783	026024	012737	177777	002200		MOV	#-1, ETRWC		:EXPECTED
2784	026032	023737	002174	002164		CMP	ETRCR, ATRCR		:TEST COMMAND REGISTER
2785	026040	001401				BEQ	40\$:OK
2786	026042	005202				INC	R2		:INDICATE ERROR
2787	026044				40\$:				
2788	026044	023737	002176	002166		CMP	ETRSR, ATRSR		:TEST THE STATUS REGISTER
2789	026052	001401				BEQ	50\$:OK
2790	026054	005202				INC	R2		:INDICATE ERROR
2791	026056				50\$:				
2792	026056	005737	002172			TST	ATRBA		:TEST BUFFER ADDRESS
2793	026062	001401				BEQ	60\$:OK
2794	026064	005202				INC	R2		:INDICATE ERROR
2795	026066				60\$:				
2796	026066	023737	002200	002170		CMP	ETRWC, ATRWC		:TEST THE WORD COUNT

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TEST2 CHECK CONTROL LOGIC WITH MINIMUM TAPE MOTION

2797	026074	001401				BEQ	70\$:JK
2798	026076	005202				INC	R2		:INDICATE ERROR
2799	026100				70\$:				
2800	026100	005702				TST	R2		:ANY ERRORS?
2801	026102	001404				BEQ	80\$:NO
2802		000045			ENUM =	*D<ENUM + 1>			:INCREMENT ERROR NUMBER
2803	026104					ERRSOFT	ENUM,MSRLPFL,ERRS		:REPORT ERROR
2804	026104	104457				TRAP	C\$ERRSOFT		
2805	026106	000045				.WORD	37		
2806	026110	023562				.WORD	MSRLPFL		
2807	026112	020102				.WORD	ERR5		
2808	026114	004737	013324		80\$:	JSR	PC,CPWR		:TR79 POWER CLEAR
2809	026120				T2AB:				:TEST NXM ADDRESS
2810	026120	004737	014066			JSR	PC,TESTN		:ERROR USING TRCR BITS 12-13
2811	026124	103001				BCC	10\$:MAKE SURE TRANSPORT ON LINE
2812	026126					ERROR			:ON LINE. NO ERROR
2813	026126	104460				TRAP	C\$ERROR		:REPORT ERROR
2814	026130				10\$:				
2815	026130	032777	000040	154106		BIT	#BITS,@TRSR		:IF AT LOAD POINT
2816	026136	001006				BNE	15\$:SKIP REWIND
2817	026140	004737	012416			JSR	PC,RWIND		:REWIND
2818	026144	004737	013534			JSR	PC,CHEKI		:CHECK FOR ERROR
2819	026150	103001				BCC	15\$:OK
2820	026152					ERROR			:REPORT ERROR
2821	026152	104460				TRAP	C\$ERROR		
2822	026154				15\$:				:WRITE IDB
2823	026154	004737	012464			JSR	PC,WTIDB		:WRITE IDB
2824	026160	004737	014254			JSR	PC,CHEKO		:CHECK TR79 REGISTERS
2825	026164	103001				BCC	20\$:NO ERRORS
2826	026166					ERROR			:REPORT ERROR
2827	026166	104460				TRAP	C\$ERROR		
2828	026170				20\$:				
2829	026170	004737	014066			JSR	PC,TESTN		:MAKE SURE TRANSPORT ON LINE
2830	026174	103001				BCC	30\$:ON LINE. NO ERROR
2831	026176					ERROR			:REPORT ERROR
2832	026176	104460				TRAP	C\$ERROR		
2833	026200				30\$:				:ERASE
2834	026200	012737	177400	002214		MOV	#-400,USEB		:SET ERASE COUNT
2835	026206	004737	013140			JSR	PC,ERS		:ERASE
2836	026212	004737	017546			JSR	PC,CHEKFX		:CHECK REGISTERS
2837	026216	103001				BCC	40\$:OK
2838	026220					ERROR			:REPORT ERROR
2839	026220	104460				TRAP	C\$ERROR		
2840	026222				40\$:				:WRITE TO NXM ADDRESS
2841	026222	042777	000001	154014		BIC	#BIT0,@TRSR		:CLEAR INHIBIT BIT
2842	026230	012777	000402	154004		MOV	#WRITE,@TRCR		:SET COMMAND
2843	026236	052777	030000	153776		BIS	#BIT12:BIT13,@TRCR		:SET THE EXTENDED ADDRESS BITS
2844	026244	005077	153776			CLR	@TRWC		:CLEAR THE WORD COUNT
2845	026250	012777	160000	153772		MOV	#16000,@TRBA		:SET UP AN I/O PAGE REFERENCE
2846	026256	005277	153760			INC	@TRCR		:SET GO BIT
2847	026262	013737	002222	002220		MOV	DLXRW,DLX		:SPECIFY DELAY MULTIPLIER
2848	026270	004737	013362			JSR	PC,WAIT		:WAIT
2849	026274	004737	013254			JSR	PC,CPYTRR		:COPY TR79 REGISTERS & CLEAR EXPECTED RESULTS
2850	026300	012737	132602	002174		MOV	#132602,ETRCR		:EXPECTED
2851	026306	012737	006101	002176		MOV	#6101,ETRSR		:EXPECTED
2852	026314	012737	000002	002202		MOV	#2,ETRBA		:EXPECTED

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TEST2 CHECK CONTROL LOGIC WITH MINIMUM TAPE MOTION

2853	026322	012737	000001	002200	MOV	#1,ETRWC	:EXPECTED
2854	026330	023737	002174	002164	CMP	ETRCR,ATRCR	:TEST COMMAND REGISTER
2855	026336	001401			BEQ	50\$:OK
2856	026340	005202			INC	R2	:INDICATE ERROR
2857	026342						50\$:
2858	026342	023737	002176	002166	CMP	ETRSR,ATRSR	:TEST THE STATUS REGISTER
2859	026350	001401			BEQ	60\$:OK
2860	026352	005202			INC	R2	:INDICATE ERROR
2861	026354						60\$:
2862	026354	033737	002202	002172	BIT	ETRBA,ATRBA	:TEST BUFFER ADDRESS
2863	026362	001001			BNE	70\$:OK
2864	026364	005202			INC	R2	:INDICATE ERROR
2865	026366						70\$:
2866	026366	023737	002200	002170	CMP	ETRWC,ATRWC	:TEST THE WORD COUNT
2867	026374	001401			BEQ	80\$:OK
2868	026376	005202			INC	R2	:INDICATE ERROR
2869	026400						80\$:
2870	026400	005702			TST	R2	:ANY ERRORS?
2871	026402	001404			SEQ	90\$:NO
2872	026404	000046			ENUM =	^D<ENUM + 1>	:INCREMENT ERROR NUMBER
2873	026404				ERRSOFT	ENUM,MNXMFL,ERR5	:REPORT ERROR
2874	026404	104457			TRAP	CSERSOFT	
2875	026406	000046			.WORD	38	
2876	026410	023115			.WORD	MNXMFL	
2877	026412	020102			.WORD	ERR5	
2878	026414						90\$:
2879	026414	004737	013324		JSR	PC,CPWR	:RESET TR79
2880							:TEST THE BUS ADDRESS BITS BY USING A COUNT PATTERN
2881	026420	005001			T2AU: CLR	R1	:CLEAR COUNT
2882	026422	010177	153622		10\$: MOV	R1,@TRBA	:SET BUS ADDRESS
2883	026426	020177	153616		CMP	R1,@TRBA	:TEST BUS ADDRESS
2884	026432	001410			BEQ	20\$:OK
2885	026434	004737	013254		JSR	PC,CPYTRR	:COPY TR79 REGISTERS,CLEAR EXPECTED RESULTS
2886	026440	010137	002202		MOV	R1,ETRBA	:EXPECTED
2887		000047			ENUM =	^D<ENUM + 1>	:INCREMENT ERROR NUMBER
2888	026444				ERRSOFT	ENUM,EM6,ERR11	:REPORT ERROR
2889	026444	104457			TRAP	CSERSOFT	
2890	026446	000047			.WORD	39	
2891	026450	021630			.WORD	EM6	
2892	026452	020136			.WORD	ERR11	
2893	026454						20\$:
2894	026454	005201			INC	R1	:INCREMENT COUNT
2895	026456	001361			BNE	10\$:CONTINUE
2896							
2897	026460				T2BA: CLR	R1	:TEST THE BITS IN THE WORD COUNT USING A COUNT PATTERN
2898	026460	005001					:CLEAR COUNT
2899	026462	010177	153560		10\$: MOV	R1,@TRWC	:SET WORD COUNT
2900	026466	020177	153554		CMP	R1,@TRWC	:TEST WORD COUNT
2901	026472	001410			BEQ	20\$:OK
2902	026474	004737	013254		JSR	PC,CPYTRR	:COPY REGISTERS,CLEAR EXPECTED RESULT
2903	026500	010137	002200		MOV	R1,ETRWC	:EXPECTED
2904		000050			ENUM =	^D<ENUM + 1>	:INCREMENT ERROR NUMBER
2905	026504				ERRSOFT	ENUM,EM7,ERR12	:REPORT ERROR
2906	026504	104457			TRAP	CSERSOFT	
2907	026506	000050			.WORD	40	
2908	026510	021551			.WORD	EM7	

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TEST2 CHECK CONTROL LOGIC WITH MINIMUM TAPE MOTION

2909 026512 020160
2910 026514
2911 026514 005201
2912 026516 001361
2913 026520
2914 026520
2915 026520 104401
2916
2917

20\$: .WORD ERR12

INC R1 ; INCREMENT COUNT
BNE 10\$; CONTINUE
ENDTST

L10022:

TRAP CSETST

.SBTTL TEST3 CHECK IDB AND EOF OPERATIONS,COUNT AND PARITY ERRORS

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TEST3 CHECK IDB AND EOF OPERATIONS,COUNT AND PARITY ERRORS

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://////
TEST3 CHECKS IDB AND EOF OPERATIONS
CHECKS COUNT AND PARITY ERROR DETECTION

TEST3 INCLUDES:
TEST NAME IN CZTRAD

INSURE WRITE ENABLE RING TESTC
REWIND THE TAPE TESTI
WRITE ID BLOCK TESTO
ILLEGAL ID BLOCK TESTH
SPACE REVERSE OVER ID BLOCK TESTAV
READ ID BLOCK TESTAW
WRITE EOF MARKS RUNL
SPACE REVERSE OVER EOF MARKS RUNU
READ EOF MARKS RUNV
TIME OUT TEST TESTW
READ WITH COUNT LONG TESTAC
READ WITH COUNT SHORT TESTAD
SPACE REVERSE WITH COUNT SHORT TESTAE
SPACE REVERSE WITH COUNT LONG TESTAF
WRITE EVEN PARITY TESTAX
SPACE REVERSE OVER EVEN PARITY TESTAY
READ EVEN PARITY TESTAZ
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026522
026522
026522 042777 000100 153512
026530 004737 013324
026534
026534 032777 000004 153502
026542 001404
026542 000051
026544
026544 104457
026546 000051
026550 021002
026552 017744
026554
026554 004737 014066
026560 103001
026562
026562 104460
026564
026564
026564 032777 000040 153452
026572 001010
026574 004737 013324
026600 004737 012416
026604 004737 013534
026610 103001
026612

```

```

BGNTST
T3:: BIC #BIT6,@TRCR ;CLEAR TR79 INTERRUPT ENABLE BIT
JSR PC,CPWR ;RESET TR79
T3C: ;CHECK FOR WRITE ENABLE RING
BIT #FPTS,@TRSR ;IF WRITE ENABLE RING IS PRESENT
BEQ 10$ ; THEN CONTINUE
ENUM = ^D<ENUM + 1> ;INCREMENT ERROR NUMBER
ERRSOFT ENUM,EM4A,ERR2 ;REPORT ERROR. GET RING INSTALLED
TRAP CSERSOFT
.WORD 41
.WORD EM4A
.WORD ERR2
10$: ;RING IS PRESENT
JSR PC,TESTN ;MAKE SURE TRANSPORT ON LINE AND READ
BCC 20$ ;NO ERROR
ERROR ;REPORT ERROR
TRAP CSERROR
20$:
T3O: ;TEST WRITE IDB AT LOAD POINT
BIT #LDPTS,@TRSR ;IF AT LOAD POINT
BNE 30$ ; THEN SKIP PRELIMINARY REWIND
JSR PC,CPWR ;RESET TR79
JSR PC,RWIND ;REWIND
JSR PC,CHEKI ;CHECK REGISTERS
BCC 30$ ;OK.NO ERRORS. TAPE AT 'OAD POINT
ERROR ;REPORT ERROR

```

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TEST3 CHECK IDB AND EOF OPERATIONS,COUNT AND PARITY ERRORS

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2974 026612 104460
2975 026614
2976 026614 004737 014066
2977 026620 103001
2978 026622
2979 026622 104460
2980 026624
2981 026624 004737 012464
2982 026630 004737 014254
2983 026634 103001
2984 026636
2985 026636 104460
2986 026640
2987
2988 026640 012737 177400 002214
2989 026646 004737 013140
2990 026652 004737 017546
2991 026656 103001
2992 026660
2993 026660 104460
2994 026662
2995 026662
2996 026662 004737 014066
2997 026666 103001
2998 026670
2999 026670 104460
3000 026672
3001 026672 012737 177700 002214
3002 026700 004737 012642
3003 026704 004737 017156
3004 026710 103001
3005 026712
3006 026712 104460
3007 026714
3008 026714 004737 014066
3009 026720 103001
3010 026722
3011 026722 104460
3012 026724
3013 026724 004737 012464
3014 026730 004737 013254
3015 026734 012737 142632 002174
3016 026742 012737 002000 002176
3017 026750 023737 002174 002164
3018 026756 001401
3019 026760 005202
3020 026762
3021 026762 023737 002176 002166
3022 026770 001401
3023 026772 005202
3024 026774
3025 026774 005702
3026 026776 001404
3027 000052
3028 027000
3029 027000 104457

TRAP C$ERROR
30$: JSR PC,TESTN ;AT LOAD POINT
      BCC 10$ ;MAKE SURE TRANSPORT ON LINE AND READY
      ERROR ;NO ERROR
      TRAP C$ERROR ;REPORT ERROR
10$: JSR PC,WTIDB ;WRITE IDB
      JSR PC,CHEKO ;WRITE IDB
      BCC 20$ ;CHECK REGISTERS
      ERROR ;OK
      TRAP C$ERROR ;REPORT ERROR
20$: ;ERASE
      MOV #-400,USEB ;SPECIFY ERASE COUNT
      JSR PC,ERS ;ERASE
      JSR PC,CHEKFX ;CHECK REGISTERS
      BCC 40$ ;OK
      ERROR ;REPORT ERROR
      TRAP C$ERROR
40$: ;TEST WRITE IDB BEYOND LOAD POINT
      JSR PC,TESTN ;MAKE SURE TRANSPORT ON LINE AND READY
      BCC 10$ ;NO ERROR
      ERROR ;REPORT ERROR
      TRAP C$ERROR
10$: ;WRITE
      MOV #-100,USEB ;SPECIFY WORD COUNT FOR WRITE
      JSR PC,WRT ;WRITE
      JSR PC,CHEKCX ;CHECK TR79 REGISTERS
      BCC 30$ ;OK
      ERROR ;REPORT ERROR
      TRAP C$ERROR
30$: JSR PC,TESTN ;MAKE SURE TRANSPORT ON LINE AND READY
      BCC 40$ ;NO ERROR
      ERROR ;REPORT ERROR
      TRAP C$ERROR
40$: ;WRITE IDB BEYOND LOAD POINT
      JSR PC,WTIDB ;WRITE IDB
      JSR PC,CPYTRR ;COPY TR79 REGISTERS
      MOV #142632,ETRCR ;EXPECTED
      MOV #2000,ETRSR ;EXPECTED
      CMP ETRCR,ATRCR ;CHECK COMMAND REGISTER
      BEQ 50$ ;OK
      INC R2 ;INDICATE ERROR
50$: CMP ETRSR,ATRSR ;CHECK STATUS REGISTER
      BEQ 60$ ;OK
      INC R2 ;INDICATE ERROR
60$: TST R2 ;ANY ERRORS?
      BEQ 70$ ;NO
      ENUM = ^D<ENUM + 1> ;INCREMENT ERROR COUNT
      ERRSOFT ENUM,MWIPLFL,ERR4 ;REPORT ERROR
      TRAP C$ERSOFT

```

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TEST3 CHECK IDB AND EOF OPERATIONS,COUNT AND PARITY ERRORS

3030	027002	000052			.WORD	42		
3031	027004	022245			.WORD	MWIPFL		
3032	027006	020064			.WORD	ERR4		
3033	027010	004737	013324		JSR	PC,CPWR		:TR79 POWER CLEAR
3034	027014			70\$:				:TEST SPACE REVERSE OVER IDB
3035	027014	004737	014066	T3AV:	JSR	PC,TESTN		:MAKE SURE TRANSPORT ON LINE AND READY
3036	027020	103001			BCC	10\$:NO ERROR
3037	027022				ERROR			:REPORT ERROR
3038	027022	104460			TRAP	C\$ERROR		
3039	027024			10\$:				:ON LINE AND READY
3040	027024	032777	000040	153212	BIT	#LDPTS,@TRSR		:IF AT LOAD POINT
3041	027032	001006			BNE	20\$: THEN SKIP PRELIMINARY REWIND
3042	027034	004737	012416		JSR	PC,RWIND		:REWIND
3043	027040	004737	013534		JSR	PC,CHEKI		:CHECK REGISTERS
3044	027044	103001			BCC	20\$:OK,NO ERRORS. TAPE AT LOAD POINT
3045	027046				ERROR			:REPORT ERROR
3046	027046	104460			TRAP	C\$ERROR		
3047	027050			20\$:				:AT LOAD POINT
3048	027050	004737	014066		JSR	PC,TESTN		:MAKE SURE TRANSPORT ON LINE AND READY
3049	027054	103001			BCC	30\$:NO ERROR
3050	027056				ERROR			:REPORT ERROR
3051	027056	104460			TRAP	C\$ERROR		
3052	027060			30\$:				:WRITE IDB
3053	027060	004737	012464		JSR	PC,WTIDB		:WRITE IDB
3054	027064	004737	014254		JSR	PC,CHEKO		:CHECK REGISTERS
3055	027070	103001			BCC	40\$:OK
3056	027072				ERROR			:REPORT ERROR
3057	027072	104460			TRAP	C\$ERROR		
3058	027074			40\$:				:SPACE REVERSE OVER IDB
3059	027074	012737	177777	002214	MOV	#-1,USEB		:SPECIFY WORD COUNT
3060	027102	004737	013024		JSR	PC,SPR		:SPACE REVERSE
3061	027106	013737	002222	002220	MOV	DLXRW,DLX		:SPECIFY DELAU MULTIPLIER
3062	027114	004737	013362		JSR	PC,WWAIT		:WAIT
3063	027120	004737	016122		JSR	PC,CHEKAV		:CHECK REGISTERS
3064	027124	103001			BCC	50\$:OK
3065	027126				ERROR			:REPORT ERROR
3066	027126	104460			TRAP	C\$ERROR		
3067	027130			50\$:				:TEST READ IDB
3068	027130			T3AW:				
3069	027130	004737	014066		JSR	PC,TESTN		:MAKE SURE TRANSPORT ON LINE AND READY
3070	027134	103001			BCC	10\$:NO ERROR
3071	027136				ERROR			:REPORT ERROR
3072	027136	104460			TRAP	C\$ERROR		
3073	027140			10\$:				:ON LINE AND READY
3074	027140	032777	000040	153076	BIT	#LDPTS,@TRSR		:IF AT LOAD POINT
3075	027146	001006			BNE	20\$: THEN SKIP PRELIMINARY REWIND
3076	027150	004737	012416		JSR	PC,RWIND		:REWIND
3077	027154	004737	013534		JSR	PC,CHEKI		:CHECK REGISTERS
3078	027160	103001			BCC	20\$:OK,NO ERRORS. TAPE AT LOAD POINT
3079	027162				ERROR			:REPORT ERROR
3080	027162	104460			TRAP	C\$ERROR		
3081	027164			20\$:				:AT LOAD POINT
3082	027164	004737	014066		JSR	PC,TESTN		:MAKE SURE TRANSPORT ON LINE AND READY
3083	027170	103001			BCC	30\$:NO ERROR
3084	027172				ERROR			:REPORT ERROR
3085	027172	104460			TRAP	C\$ERROR		

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TEST3 CHECK IDB AND EOF OPERATIONS,COUNT AND PARITY ERRORS

3086	027174				30\$:		:READ IDB
3087	027174	005037	006322			CLR	INPUT :CLEAR INPUT WORD
3088	027200	012737	177777	002214		MOV	#-1,USEB :SPECIFY COUNT FOR READ
3089	027206	004737	012756			JSR	PC,RD :READ
3090	027212	004737	016262			JSR	PC,CHEKAW :CHECK REGISTERS
3091	027216	103001				BCC	40\$:OK
3092	027220					ERROR	:REPORT ERROR
3093	027220	104460				TRAP	C\$ERROR
3094	027222				40\$:		
3095	027222				T3L:		:TEST WRITE EOF(TAPE MARK)
3096	027222	004737	013324			JSR	PC,CPWR :RESET TR79
3097	027226	004737	014066			JSR	PC,TESTN :MAKE SURE TRANSPORT ON LINE AND READY
3098	027232	103001				BCC	10\$:NO ERROR
3099	027234					ERROR	:REPORT ERROR
3100	027234	104460				TRAP	C\$ERROR
3101	027236				10\$:		:ON LINE AND READY
3102	027236	032777	000040	153000		BIT	#LDPTS,@TRSR :IF AT LOAD POINT
3103	027244	001006				BNE	20\$: THEN SKIP PRELIMINARY REWIND
3104	027246	004737	012416			JSR	PC,RWIND :REWIND
3105	027252	004737	013534			JSR	PC,CHEKI :CHECK REGISTERS
3106	027256	103001				BCC	20\$:OK.NO ERRORS. TAPE AT LOAD POINT
3107	027260					ERROR	:REPORT ERROR
3108	027260	104460				TRAP	C\$ERROR
3109	027262				20\$:		:AT LOAD POINT
3110	027262	004737	014066			JSR	PC,TESTN :MAKE SURE TRANSPORT ON LINE AND READY
3111	027266	103001				BCC	30\$:NO ERROR
3112	027270					ERROR	:REPORT ERROR
3113	027270	104460				TRAP	C\$ERROR
3114	027272				30\$:		:WRITE IDB
3115	027272	004737	012464			JSR	PC,WTIDB :WRITE IDB
3116	027276	004737	014254			JSR	PC,CHEKO :CHECK REGISTERS
3117	027302	103001				BCC	40\$:OK
3118	027304					ERROR	:REPORT ERROR
3119	027304	104460				TRAP	C\$ERROR
3120	027306				40\$:		:ERASE
3121	027306	012737	177400	002214		MOV	#-400,USEB :SPECIFY ERASE COUNT
3122	027314	004737	013140			JSR	PC,ERS :ERASE
3123	027320	004737	017546			JSR	PC,CHEKFX :CHECK REGISTERS
3124	027324	103001				BCC	50\$:OK
3125	027326					ERROR	:REPORT ERROR
3126	027326	104460				TRAP	C\$ERROR
3127	027330				50\$:		:WRITE EOF(TAPE MARK)
3128	027330	004737	013072			JSR	PC,WTEOF :WRITE EOF
3129	027334	004737	013756			JSR	PC,CHEKL :CHECK REGISTERS
3130	027340	103001				BCC	60\$:OK
3131	027342					ERROR	:REPORT ERROR
3132	027342	104460				TRAP	C\$ERROR
3133	027344				60\$:		
3134	027344				T3U:		:TEST SPACE REVERSE OVER EOF
3135	027344	004737	014066			JSR	PC,TESTN :MAKE SURE TRANSPORT ON LINE AND READY
3136	027350	103001				BCC	10\$:NO ERROR
3137	027352					ERROR	:REPORT ERROR
3138	027352	104460				TRAP	C\$ERROR
3139	027354				10\$:		
3140	027354	005037	002214			CLR	USEB :SPECIFY COUNT
3141	027360	004737	013024			JSR	PC,SPR :SPACE REVERSE

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3142	027364	004737	014506	JSR PC,CHEKU ;CHECK REGISTERS
3143	027370	103001		BCC 20\$;OK
3144	027372			ERROR ;REPORT ERROR
3145	027372	104460		TRAP C\$ERROR
3146	027374			20\$:
3147	027374			T3V: ;TEST READ EOF
3148	027374	004737	014066	JSR PC,TESTN ;MAKE SURE TRANSPORT ON LINE AND READY
3149	027400	103001		BCC 10\$;NO ERROR
3150	027402			ERROR ;REPORT ERROR
3151	027402	104460		TRAP C\$ERROR
3152	027404			10\$:
3153	027404	005037	002214	CLR USEB ;SPECIFY COUNT FOR READ
3154	027410	004737	012756	JSR PC,RD ;READ
3155	027414	004737	014636	JSR PC,CHEKV ;CHECK REGISTERS
3156	027420	103001		BCC 20\$;OK
3157	027422			ERROR ;REPORT ERROR
3158	027422	104460		TRAP C\$ERROR
3159	027424			20\$:
3160	027424			T3W: ;TEST TIMEOUT WHILE WRITING
3161	027424	004737	013324	JSR PC,CPWR ;RESET TR79
3162	027430	004737	014066	JSR PC,TESTN ;MAKE SURE TRANSPORT ON LINE AND READY
3163	027434	103001		BCC 10\$;NO ERROR
3164	027436			ERROR ;REPORT ERROR
3165	027436	104460		TRAP C\$ERROR
3166	027440			10\$: ;ON LINE AND READY
3167	027440	032777	000040	152576 BIT #LDPTS,@TRSR ;IF AT LOAD POINT
3168	027446	001006		BNE 20\$; THEN SKIP PRELIMINARY REWIND
3169	027450	004737	012416	JSR PC,RWIND ;REWIND
3170	027454	004737	013534	JSR PC,CHEKI ;CHECK REGISTERS
3171	027460	103001		BCC 20\$;OK.NO ERRORS. TAPE AT LOAD POINT
3172	027462			ERROR ;REPORT ERROR
3173	027462	104460		TRAP C\$ERROR
3174	027464			20\$: ;AT LOAD POINT
3175	027464	004737	014066	JSR PC,TESTN ;MAKE SURE TRANSPORT ON LINE AND READY
3176	027470	103001		BCC 30\$;NO ERROR
3177	027472			ERROR ;REPORT ERROR
3178	027472	104460		TRAP C\$ERROR
3179	027474			30\$: ;WRITE IDB
3180	027474	004737	012464	JSR PC,WTIDB ;WRITE IDB
3181	027500	004737	014254	JSR PC,CHEKO ;CHECK REGISTERS
3182	027504	103001		BCC 40\$;OK
3183	027506			ERROR ;REPORT ERROR
3184	027506	104460		TRAP C\$ERROR
3185	027510			40\$: ;ERASE
3186	027510	012737	177400	002214 MOV #-400,USEB ;SPECIFY ERASE COUNT
3187	027516	004737	013140	JSR PC,ERS ;ERASE
3188	027522	004737	017546	JSR PC,CHEKFX ;CHECK REGISTERS
3189	027526	103001		BCC 50\$;OK
3190	027530			ERROR ;REPORT ERROR
3191	027530	104460		TRAP C\$ERROR
3192	027532			50\$: ;FORCE WRITE FOR LONGER THAN 1.5 SEC
3193	027532	013702	002232	MOV DLXLNG,R2 ;SPECIFY DELAY MULTIPLIER
3194	027536	005001		CLR R1 ;SPECIFY DELAY CONSTANT
3195	027540	042777	000001	152476 BIC #BIT0,@TRSR ;CLEAR TR79 INHIBIT BIT
3196	027546	005077	152474	CLR @TRWC ;SPECIFY MAXIMUM WORD COUNT
3197	027552	012777	002262	152470 MOV #OUTPUT,@TRBA ;SPECIFY BUS ADDRESS

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3198	027560	012777	000402	152454	MOV #WRITE,@TRCR ;SPECIFY WRITE OPERATION
3199	027566	052777	000001	152446	BIS #BIT0,@TRCR ;SET TR79 GO BIT
3200	027574				60\$: CLR @TRWC ;RESET COUNT
3201	027574	005077	152446		MOV #OUTPUT,@TRBA ;RESET BUS ADDRESS
3202	027600	012777	002262	152442	INC R1 ;COUNT A TICK
3203	027606	005201			BNE 60\$; KEEP TICKING
3204	027610	001371			DEC R2 ;COUNT DOWN MULTIPLIER
3205	027612	005302			BNE 60\$;KEEP TICKING
3206	027614	001367			JSR PC,CPYTR ;COPY TR79 REGISTERS
3207	027616	004737	013254		MOV #102602,ETRCR ;EXPECTED
3208	027622	012737	102602	002174	MOV #2401,ETRSR ;EXPECTED
3209	027630	012737	002401	002176	MOV #OUTPUT,ETRBA ;EXPECTED
3210	027636	012737	002262	002202	CMP ETRCR,ATRCR ;CHECK COMMAND REGISTER
3211	027644	023737	002174	002164	BEQ 70\$;OK
3212	027652	001401			INC R2 ;INDICATE ERROR
3213	027654	005202			70\$: BIC #170000,ATRSR ;CLEAR UNWANTED BITS
3214	027656				CMP ETRSR,ATRSR ;CHECK STATUS
3215	027656	042737	170000	002166	BEQ 80\$;OK
3216	027664	023737	002176	002166	INC R2 ;INDICATE ERROR
3217	027672	001401			80\$: CMP ETHBA,ATRBA ;CHECK BUS ADDRESS
3218	027674	005202			BEQ 90\$;OK
3219	027676				INC R2 ;INDICATE ERROR
3220	027676	023737	002202	002172	90\$: TST ATRWC ;CHECK COUNT
3221	027704	001401			BEQ 100\$;OK
3222	027706	005202			INC R2 ;INDICATE ERROR
3223	027710				100\$: TST R2 ;ANY ERRORS?
3224	027710	005737	002170		BEQ 110\$;NO
3225	027714	001401			INC R2 ;INCREMENT ERROR COUNT
3226	027716	005202			ENUM = ^D<ENUM + 1> ;REPORT ERROR
3227	027720				ERRSOFT ENUM,MWTOFL,ERR5
3228	027720	005702			TRAP C\$ERRSOFT
3229	027722	001404			.WORD 43
3230	027724	000053			.WORD MWTOFL
3231	027724	104457			.WORD ERR5
3232	027724	000053			110\$: JSR PC,CPWR ;RESET TR79
3233	027726	000053			3238
3234	027730	022751			3239
3235	027732	020102			3240
3236	027734				3241
3237	027734	004737	013324		3242
3238					3243
3239					3244
3240	027740				3245
3241	027740	004737	013324		3246
3242	027744	004737	014066		3247
3243	027750	103001			3248
3244	027752				3249
3245	027752	104460			3250
3246	027754				3251
3247	027754	032777	000040	152262	3252
3248	027762	001006			3253
3249	027764	004737	012416		
3250	027770	004737	013534		
3251	027774	103001			
3252	027776				
3253	027776	104460			

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TEST3 CHECK IDB AND EOF OPERATIONS,COUNT AND PARITY ERRORS

3254	030000					20\$:						: AT LOAD POINT
3255	0300C0	004737	014066				JSR	PC,TESTN				: MAKE SURE TRANSPORT ON LINE AND READY
3256	030004	103001					BCC	30\$: NO ERROR
3257	030006						ERROR					: REPORT ERROR
3258	030006	104460					TRAP	C\$ERROR				
3259	030010					30\$:						: WRITE IDB
3260	030010	004737	012464				JSR	PC,WTIDB				: WRITE IDB
3261	030014	004737	014254				JSR	PC,CHEKO				: CHECK REGISTERS
3262	030020	103001					BCC	40\$: OK
3263	030022						ERROR					: REPORT ERROR
3264	030022	104460					TRAP	C\$ERROR				
3265	030024					40\$:						: ERASE
3266	030024	004737	014066				JSR	PC,TESTN				: MAKE SURE TRANSPORT ON LINE AND READY
3267	030030	103001					BCC	45\$: NO ERROR
3268	030032						ERROR					: REPORT ERROR
3269	030032	104460					TRAP	C\$ERROR				
3270	030034					45\$:						: SPECIFY ERASE COUNT
3271	030034	012737	177400	002214			MOV	#-400,USEB				: ERASE
3272	030042	004737	013140				JSR	PC,ERS				: CHECK REGISTERS
3273	030046	004737	017546				JSR	PC,CHEKFX				: OK
3274	030052	103001					BCC	50\$: REPORT ERROR
3275	030054						ERROR					
3276	030054	104460					TRAP	C\$ERROR				
3277	030056					50\$:						: WRITE
3278	030056	004737	014066				JSR	PC,TESTN				: MAKE SURE TRANSPORT ON LINE AND READY
3279	030062	103001					BCC	55\$: NO ERROR
3280	030064						ERROR					: REPORT ERROR
3281	030064	104460					TRAP	C\$ERROR				
3282	030066					55\$:						: SPECIFY COUNT FOR WRITE
3283	030066	012737	177700	002214			MOV	#-100,USEB				: WRITE
3284	030074	004737	012642				JSR	PC,WRT				: CHECK REGISTERS
3285	030100	004737	017156			60\$:	JSR	PC,CHEKCX				: OK
3286	030104	103001					BCC	70\$: REPORT ERROR
3287	030106						ERROR					
3288	030106	104460					TRAP	C\$ERROR				
3289	030110					70\$:						: SPACE REVERSE
3290	030110	004737	014066				JSR	PC,TESTN				: MAKE SURE TRANSPORT ON LINE AND READY
3291	030114	103001					BCC	75\$: NO ERROR
3292	030116						ERROR					: REPORT ERROR
3293	030116	104460					TRAP	C\$ERROR				
3294	030120					75\$:						: SPACE REVERSE
3295	030120	004737	013024				JSR	PC,SPR				: CHECK REGISTERS
3296	030124	004737	017416				JSR	PC,CHEKEX				: OK
3297	030130	103001					BCC	80\$: REPORT ERROR
3298	030132						ERROR					
3299	030132	104460					TRAP	C\$ERROR				
3300	030134					80\$:						: READ WITH LONG COUNT
3301	030134	004737	014066				JSR	PC,TESTN				: MAKE SURE TRANSPORT ON LINE AND READY
3302	030140	103001					BCC	85\$: NO ERROR
3303	030142						ERROR					: REPORT ERROR
3304	030142	104460					TRAP	C\$ERROR				
3305	030144					85\$:						: SPECIFY COUNT
3306	030144	012737	177701	002214			MOV	#-77,USEB				: READ
3307	030152	004737	012756				JSR	PC,RD				: CHECK REGISTERS
3308	030156	004737	014776				JSR	PC,CHEKAC				: OK
3309	030162	103001					BCC	90\$				

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TEST3 CHECK IDB AND EOF OPERATIONS,COUNT AND PARITY ERRORS

3366	030336	004737	014066		JSR	PC,TESTN		:MAKE SURE TRANSPORT ON LINE AND READY
3367	030342	103001			BCC	75\$:NO ERROR
3368	030344				ERROR			:REPORT ERROR
3369	030344	104460			TRAP	C\$ERROR		
3370	030346			75\$:				
3371	030346	004737	013024		JSR	PC,SPR		:SPACE REVERSE
3372	030352	004737	017416		JSR	PC,CHEKEX		:CHECK REGISTERS
3373	030356	103001			BCC	80\$:OK
3374	030360				ERROR			:REPORT ERROR
3375	030360	104460			TRAP	C\$ERROR		
3376	030362			80\$:				:READ WITH SHORT COUNT
3377	030362	004737	014066		JSR	PC,TESTN		:MAKE SURE TRANSPORT ON LINE AND READY
3378	030366	103001			BCC	85\$:NO ERROR
3379	030370				ERROR			:REPORT ERROR
3380	030370	104460			TRAP	C\$ERROR		
3381	030372			85\$:				
3382	030372	012737	177677	002214	MOV	#-101,USEB		:SPECIFY COUNT
3383	030400	004737	012756		JSR	PC,RD		:READ
3384	030404	004737	015142		JSR	PC,CHEKAD		:CHECK REGISTERS
3385	030410	103001			BCC	90\$:OK
3386	030412				ERROR			:REPORT ERROR
3387	030412	104460			TRAP	C\$ERROR		
3388	030414			90\$:				
3389								
3390								
3391								
3392	030414			T3AE:				:TEST SPACE REVERSE COUNT ERROR. SHORT COUNT
3393	030414	004737	013324		JSR	PC,CPWR		:RESET TR79
3394	030420	004737	014066		JSR	PC,TESTN		:MAKE SURE TRANSPORT ON LINE AND READY
3395	030424	103001			BCC	10\$:NO ERROR
3396	030426				ERROR			:REPORT ERROR
3397	030426	104460			TRAP	C\$ERROR		
3398	030430			10\$:				:ON LINE AND READY
3399	030430	032777	000040	151606	BIT	#LDPTS,@TRSR		:IF AT LOAD POINT
3400	030436	001006			BNE	20\$: THEN SKIP PRELIMINARY REWIND
3401	030440	004737	012416		JSR	PC,RWIND		:REWIND
3402	030444	004737	013534		JSR	PC,CHEKI		:CHECK REGISTERS
3403	030450	103001			BCC	20\$:OK,NO ERRORS. TAPE AT LOAD POINT
3404	030452				ERROR			:REPORT ERROR
3405	030452	104460			TRAP	C\$ERROR		
3406	030454			20\$:				:AT LOAD POINT
3407	030454	004737	014066		JSR	PC,TESTN		:MAKE SURE TRANSPORT ON LINE AND READY
3408	030460	103001			BCC	30\$:NO ERROR
3409	030462				ERROR			:REPORT ERROR
3410	030462	104460			TRAP	C\$ERROR		
3411	030464			30\$:				:WRITE IDB
3412	030464	004737	012464		JSR	PC,WTIDB		:WRITE IDB
3413	030470	004737	014254		JSR	PC,CHEKO		:CHECK REGISTERS
3414	030474	103001			BCC	40\$:OK
3415	030476				ERROR			:REPORT ERROR
3416	030476	104460			TRAP	C\$ERROR		
3417	030500			40\$:				:ERASE
3418	030500	004737	014066		JSR	PC,TESTN		:MAKE SURE TRANSPORT ON LINE AND READY
3419	030504	103001			BCC	45\$:NO ERROR
3420	030506				ERROR			:REPORT ERROR
3421	030506	104460			TRAP	C\$ERROR		

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3422	030510				45\$:		
3423	030510	012737	177400	002214	MOV	#-400,USEB	;SPECIFY ERASE COUNT
3424	030516	004737	013140		JSR	PC,ERS	;ERASE
3425	030522	004737	017546		JSR	PC,CHEKFX	;CHECK REGISTERS
3426	030526	103001			BCC	50\$;OK
3427	030530				ERROR		;REPORT ERROR
3428	030530	104460			TRAP	C\$ERROR	
3429	030532				50\$:		;WRITE
3430	030532	004737	014066		JSR	PC,TESTN	;MAKE SURE TRANSPORT ON LINE AND READY
3431	030536	103001			BCC	55\$;NO ERROR
3432	030540				ERROR		;REPORT ERROR
3433	030540	104460			TRAP	C\$ERROR	
3434	030542				55\$:		
3435	030542	012737	177700	002214	MOV	#-100,USEB	;SPECIFY COUNT FOR WRITE
3436	030550	004737	012642		JSR	PC,WRT	;WRITE
3437	030554	004737	017156		JSR	PC,CHEKCX	;CHECK REGISTERS
3438	030560	103001			BCC	70\$;OK
3439	030562				ERROR		;REPORT ERROR
3440	030562	104460			TRAP	C\$ERROR	
3441	030564				70\$:		;SPACE REVERSE WITH SHORT COUNT
3442	030564	004737	014066		JSR	PC,TESTN	;MAKE SURE TRANSPORT ON LINE AND READY
3443	030570	103001			BCC	75\$;NO ERROR
3444	030572				ERROR		;REPORT ERROR
3445	030572	104460			TRAP	C\$ERROR	
3446	030574				75\$:		
3447	030574	012737	177701	002214	MOV	#-77,USEB	;SPECIFY COUNT
3448	030602	004737	013024		JSR	PC,SPR	;SPACE REVERSE
3449	030606	004737	015316		JSR	PC,CHEKAE	;CHECK REGISTERS
3450	030612	103001			BCC	80\$;OK
3451	030614				ERROR		;REPORT ERROR
3452	030614	104460			TRAP	C\$ERROR	
3453	030616				80\$:		
3454							
3455							
3456							
3457	030616				13AF:		;TEST SPACE REVERSE COUNT ERROR. COUNT TOO LARGE
3458	030616	004737	013324		JSR	PC,CPWR	;RESET TR79
3459	030622	004737	014066		JSR	PC,TESTN	;MAKE SURE TRANSPORT ON LINE AND READY
3460	030626	103001			BCC	10\$;NO ERROR
3461	030630				ERROR		;REPORT ERROR
3462	030630	104460			TRAP	C\$ERROR	
3463	030632				10\$:		;ON LINE AND READY
3464	030632	032777	000040	151404	BIT	#LDPTS,@TRSR	;IF AT LOAD POINT
3465	030640	001006			BNE	20\$; THEN SKIP PRELIMINARY REWIND
3466	030642	004737	012416		JSR	PC,RWIND	;REWIND
3467	030646	004737	013534		JSR	PC,CHEKI	;CHECK REGISTERS
3468	030652	103001			BCC	20\$;OK.NO ERRORS. TAPE AT LOAD POINT
3469	030654				ERROR		;REPORT ERROR
3470	030654	104460			TRAP	C\$ERROR	
3471	030656				20\$:		;AT LOAD POINT
3472	030656	004737	014066		JSR	PC,TESTN	;MAKE SURE TRANSPORT ON LINE AND READY
3473	030662	103001			BCC	30\$;NO ERROR
3474	030664				ERROR		;REPORT ERROR
3475	030664	104460			TRAP	C\$ERROR	
3476	030666				30\$:		;WRITE IDB
3477	030666	004737	012464		JSR	PC,WTIDB	;WRITE IDB

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3478	030672	004737	014254		JSR	PC,CHEKO		:CHECK REGISTERS
3479	030676	103001			BCC	40\$:OK
3480	030700				ERROR			:REPORT ERROR
3481	030700	104460			TRAP	C\$ERROR		
3482	030702			40\$:			:ERASE	
3483	030702	004737	014066		JSR	PC,TESTN		:MAKE SURE TRANSPORT ON LINE AND READY
3484	030706	103001			BCC	45\$:NO ERROR
3485	030710				ERROR			:REPORT ERROR
3486	030710	104460			TRAP	C\$ERROR		
3487	030712			45\$:				
3488	030712	012737	177400	002214	MOV	#-400,USEB		:SPECIFY ERASE COUNT
3489	030720	004737	013140		JSR	PC,ERS		:ERASE
3490	030724	004737	017546		JSR	PC,CHEKFX		:CHECK REGISTERS
3491	030730	103001			BCC	50\$:OK
3492	030732				ERROR			:REPORT ERROR
3493	030732	104460			TRAP	C\$ERROR		
3494	030734			50\$:			:WRITE	
3495	030734	004737	014066		JSR	PC,TESTN		:MAKE SURE TRANSPORT ON LINE AND READY
3496	030740	103001			BCC	55\$:NO ERROR
3497	030742				ERROR			:REPORT ERROR
3498	030742	104460			TRAP	C\$ERROR		
3499	030744			55\$:				
3500	030744	012737	177700	002214	MOV	#-100,USEB		:SPECIFY COUNT FOR WRITE
3501	030752	004737	012642		JSR	PC,WRT		:WRITE
3502	030756	004737	017156		JSR	PC,CHEKCX		:CHECK REGISTERS
3503	030762	103001		60\$:	BCC	70\$:OK
3504	030764				ERROR			:REPORT ERROR
3505	030764	104460			TRAP	C\$ERROR		
3506	030766			70\$:			:SPACE REVERSE WITH LONG COUNT	
3507	030766	004737	014066		JSR	PC,TESTN		:MAKE SURE TRANSPORT ON LINE AND READY
3508	030772	103001			BCC	75\$:NO ERROR
3509	030774				ERROR			:REPORT ERROR
3510	030774	104460			TRAP	C\$ERROR		
3511	030776			75\$:				
3512	030776	012737	177677	002214	MOV	#-101,USEB		:SPECIFY COUNT
3513	031004	004737	013024		JSR	PC,SPR		:SPACE REVERSE
3514	031010	004737	015462		JSR	PC,CHEKAF		:CHECK REGISTERS
3515	031014	103001			BCC	80\$:OK
3516	031016				ERROR			:REPORT ERROR
3517	031016	104460			TRAP	C\$ERROR		
3518	031020			80\$:				
3519								
3520								
3521	031020			T3AX:			:TEST OPERATIONS WITH EVEN PARITY DATA	
3522	031020	004737	013324		JSR	PC,CPWR		:RESET TR79
3523	031024	004737	014066		JSR	PC,TESTN		:MAKE SURE TRANSPORT ON LINE AND READY
3524	031030	103001			BCC	10\$:NO ERROR
3525	031032				ERROR			:REPORT ERROR
3526	031032	104460			TRAP	C\$ERROR		
3527	031034			10\$:			:ON LINE AND READY	
3528	031034	032777	000040	151202	BIT	#LDPTS,@TRSR		:IF AT LOAD POINT
3529	031042	001006			BNE	20\$: THEN SKIP PRELIMINARY REWIND
3530	031044	004737	012416		JSR	PC,RWIND		:REWIND
3531	031050	004737	013534		JSR	PC,CHEKI		:CHECK REGISTERS
3532	031054	103001			BCC	20\$:OK,NO ERRORS. TAPE AT LOAD POINT
3533	031056				ERROR			:REPORT ERROR

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3534	031056	104460		TRAP C\$ERROR
3535	031060		20\$:	:AT LOAD POINT
3536	031060	004737	014066	JSR PC,TESTN ;MAKE SURE TRANSPORT ON LINE AND READY
3537	031064	103001		BCC 30\$;NO ERROR
3538	031066			ERROR ;REPORT ERROR
3539	031066	104460		TRAP C\$ERROR
3540	031070		30\$:	:WRITE IDB
3541	031070	004737	012464	JSR PC,WTIDB ;WRITE IDB
3542	031074	004737	014254	JSP PC,CHEKO ;CHECK REGISTERS
3543	031100	103001		BCC 40\$;OK
3544	031102			ERROR ;REPORT ERROR
3545	031102	104460		TRAP C\$ERROR
3546	031104		40\$:	:ERASE
3547	031104	004737	014066	JSR PC,TESTN ;MAKE SURE TRANSPORT ON LINE AND READY
3548	031110	103001		BCC 45\$;NO ERROR
3549	031112			ERROR ;REPORT ERROR
3550	031112	104460		TRAP C\$ERROR
3551	031114		45\$:	
3552	031114	012737	177400	MOV #-400,USEB ;SPECIFY ERASE COUNT
3553	031122	004737	013140	JSR PC,ERS ;ERASE
3554	031126	004737	017546	JSR PC,CHEKFX ;CHECK REGISTERS
3555	031132	103001		BCC 50\$;OK
3556	031134			ERROR ;REPORT ERROR
3557	031134	104460		TRAP C\$ERROR
3558	031136		50\$:	:WRITE DATA WITH EVEN PARITY
3559	031136	004737	014066	JSR PC,TESTN ;MAKE SURE TRANSPORT ON LINE AND READY
3560	031142	103001		BCC 55\$;NO ERROR
3561	031144			ERROR ;REPORT ERROR
3562	031144	104460		TRAP C\$ERROR
3563	031146		55\$:	
3564	031146	012737	177700	MOV #-100,USEB ;SPECIFY COUNT
3565	031154	012737	002256	MOV #BADOUT,USEC ;SPECIFY DATA ADDRESS
3566	031162	004737	012710	JSR PC,WRTC ;WRITE
3567	031166	004737	016460	JSR PC,CHEKAX ;CHECK REGISTERS
3568	031172	103001		BCC 60\$;OK
3569	031174			ERROR ;REPORT ERROR
3570	031174	104460		TRAP C\$ERROR
3571	031176		60\$:	
3572	031176		T3AY:	:SPACE REVERSE OVER EVEN PARITY DATA
3573	031176	004737	013324	JSR PC,CPWR ;RESET TR79
3574	031202	004737	014066	JSR PC,TESTN ;MAKE SURE TRANSPORT ON LINE AND READY
3575	031206	103001		BCC 10\$;NO ERROR
3576	031210			ERROR ;REPORT ERROR
3577	031210	104460		TRAP C\$ERROR
3578	031212		10\$:	:ON LINE AND READY
3579	031212	012737	177700	MOV #-100,USEB ;SPECIFY COUNT
3580	031220	004737	013024	JSR PC,SPR ;SPACE REVERSE
3581	031224	004737	016636	JSR PC,CHEKAY ;CHECK REGISTERS
3582	031230	103001		BCC 70\$;OK
3583	031232			ERROR ;REPORT ERROR
3584	031232	104460		TRAP C\$ERROR
3585	031234		70\$:	
3586	031234		T3AZ:	:TEST READ EVEN PARITY DATA
3587	031234	004737	013324	JSR PC,CPWR ;RESET TR79
3588	031240	004737	014066	JSR PC,TESTN ;MAKE SURE TRANSPORT ON LINE AND READY
3589	031244	103001		BCC 10\$;NO ERROR

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TEST3 CHECK IDB AND EOF OPERATIONS,COUNT AND PARITY ERRORS

```

3590 031246
3591 031246 104460
3592 031250
3593 031250 004737 014066
3594 031254 103001
3595 031256
3596 031256 104460
3597 031260
3598 031260 012737 177700 002214
3599 031266 012737 006322 002216
3600 031274 004737 012756
3601 031300 004737 017002
3602 031304 103001
3603 031306
3604 031306 104460
3605 031310 004737 013324
3606
3607 031314
3608 031314
3609 031314 104401
3610
3611
3612
3613

ERROR ;REPORT ERROR
TRAP C$ERROR
10$: ;ON LINE AND READY
JSR PC,TESTN ;MAKE SURE TRANSPORT ON LINE AND READY
BCC 75$ ;NO ERROR
ERROR ;REPORT ERROR
TRAP C$ERROR
75$: MOV #-100,USEB ;SPECIFY COUNT
MOV #INPUT,USEC ;SPECIFY DATA ADDRESS
JSR PC,RD ;READ
JSR PC,CHEKAZ ;CHECK REGISTERS
BCC 80$ ;OK
ERROR ;REPORT ERROR
TRAP C$ERROR
80$: JSR PC,CPWR ;TR79 FOWER CLEAR

ENDTST
L10023: TRAP C$ETST

.SBTTL TEST4 WRITE, READ AND TEST DATA WRITTEN TO TAPE

```

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TEST4 WRITE, READ AND TEST DATA WRITTEN TO TAPE

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031316
031316
031316
031316 042777 000100 150716
031324 032777 000004 150712
031332 001404
000054
031334
031334 104457
031336 000054
031340 021002
031342 017744
031344
031344 004737 013324
031350 004737 014066
031354 103001
031356
031356 104460
031360
031360 032777 000040 150656
031366 001006
031370 004737 012416
031374 004737 013534
031400 103001
031402
031402 104460
031404
031404 004737 014066
031410 103001
031412
031412 104460

```
////////////////////////////////////  
:TEST4 WRITES, READS AND TESTS DATA WRITTEN ON TAPE  
:  
:TEST4 WRITES A FILE OF DATA TO TAPE A NUMBER OF TIMES.  
:THE FILE CONTAINS 15 BLOCKS OF DATA. EACH TIME A BLOCK  
:IS WRITTEN THE DATA IS READ BACK AND CHECKED.THE NUMBER  
:OF TIMES WRITING AND CHECKING A FILE IS REPEATED IS  
:SPECIFIED IN THE SOFTWARE P-TABLE. THE DEFAULT VALUE  
:FOR THIS REPEAT COUNT IS 10.(DECIMAL).  
:  
:TEST4 INCLUDES: TEST NAME IN CZTRAB  
:  
:INSURE WRITE RING TESTC  
:REWIND AND WRITE ID BLOCK TESTO  
:WRITE,SPACE REV, READ AND TEST DATA TESTXX  
:////////////////////////////////////
```

```
T4:: BGNTST  
TEST4: ;TEST REPEATED WRITE, SPACE REVERSE, READ  
;NEGATE TR79 INTERRUPT ENABLE  
;CLEAR TR79 INTERRUPT ENABLE BIT  
;CHECK FOR WRITE ENABLE RING  
;IF WRITE ENABLE RING IS PRESENT  
; THEN CONTINUE  
;INCREMENT ERROR NUMBER  
;REPORT ERROR. GET RING INSTALLED  
ENUM = ^D<ENUM + 1>  
ERRSOFT ENUM,EM4A,ERR2  
TRAP C$ERRSOFT  
.WORD 44  
.WORD EM4A  
.WORD ERR2  
10$: ;MAKE SURE TAPE IS AT LOAD POINT  
JSR PC,CPWR ;RESET TR79  
JSR PC,TESTN ;MAKE SURE TRANSPORT ON LINE AND READY  
BCC 15$ ;NO ERROR  
ERROR ;REPORT ERROR  
TRAP C$ERROR  
15$: ;IF AT LOAD POINT  
BIT #LDPTS,@TRSR ; THEN SKIP PRELIMINARY REWIND  
BNE 20$ ;REWIND  
JSR PC,RWIND ;CHECK REGISTERS  
JSR PC,CHEKI ;NO ERRORS.  
BCC 20$ ;REPORT ERROR  
ERROR  
TRAP C$ERROR  
20$: ;AT LOAD POINT  
JSR PC,TESTN ;MAKE SURE ON LINE  
BCC 25$ ;OK  
ERROR ;REPORT ERROR  
TRAP C$ERROR
```

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TEST4 WRITE, READ AND TEST DATA WRITTEN TO TAPE

3670	031414				25\$:				;WRITE IDB
3671	031414	004737	012464			JSR	PC,WTIDB		;WRITE IDB
3672	031420	004737	014254			JSR	PC,CHEKO		;CHECK REGISTERS
3673	031424	103001				BCC	30\$;OK
3674	031426					ERROR			;REPORT ERROR
3675	031426	104460				TRAP	C\$ERROR		
3676	031430				30\$:				;ERASE
3677	031430	004737	014066			JSR	PC,TESTN		;MAKE SURE TRANSPORT ON LINE AND READY
3678	031434	103001				BCC	35\$;NO ERROR
3679	031436					ERROR			;REPORT ERROR
3680	031436	104460				TRAP	C\$ERROR		
3681	031440				35\$:				
3682	031440	012737	177400	002214		MOV	#-400,USEB		;SPECIFY ERASE COUNT
3683	031446	004737	013140			JSR	PC,ERS		;ERASE
3684	031452	004737	017546			JSR	PC,CHEKFX		;CHECK REGISTERS
3685	031456	103001				BCC	40\$;OK
3686	031460					ERROR			;REPORT ERROR
3687	031460	104460				TRAP	C\$ERROR		
3688	031462				40\$:				;TEST REPEATED SEQUENCE OF WRITE,SPACE REVERSE,READ
3689	031462	013746	002152			MOV	RPTCNT,-(SP)		;COPY LOOP REPEAT COUNT
3690	031466	012704	000017		T4XX:	MOV	#15,R4		;SPECIFY NUMBER OF BLOCKS PER LOOP
3691	031472	012703	032000			MOV	#SIZTAB,R3		;POINT TO TABLE OF BLOCK SIZES
3692	031476	012337	002214		10\$:	MOV	(R3)+,USEB		;SPECIFY WORD COUNT
3693	031502	010346				MOV	R3,-(SP)		;SAVE R3 AND R4
3694	031504	010446				MOV	R4,-(SP)		
3695									;WRITE
3696	031506	004737	014066			JSR	PC,TESTN		;MAKE SURE ON LINE AND READY
3697	031512	103001				BCC	15\$;OK
3698	031514					ERROR			;REPORT ERROR
3699	031514	104460				TRAP	C\$ERROR		
3700	031516				15\$:				
3701	031516	004737	012642			JSR	PC,WRT		;EXECUTE WRITE
3702	031522	105777	150516			TSTB	@TRSR		;IF AT EOT
3703	031526	100506				BMI	100\$; THEN REWIND AND EXIT TEST
3704	031530	004737	017156			JSR	PC,CHEKCX		;CHECK REGISTERS
3705	031534	103001				BCC	20\$;OK
3706	031536					ERROR			;REPORT ERROR
3707	031536	104460				TRAP	C\$ERROR		
3708	031540				20\$:				;SPACE REVERSE
3709	031540	004737	014066			JSR	PC,TESTN		;MAKE SURE ON LINE AND READY
3710	031544	103001				BCC	25\$;OK
3711	031546					ERROR			;REPORT ERROR
3712	031546	104460				TRAP	C\$ERROR		
3713	031550				25\$:				
3714	031550	004737	013024			JSR	PC,SPR		;SPACE REVERSE
3715	031554	004737	017416			JSR	PC,CHEKEX		;CHECK REGISTERS
3716	031560	103001				BCC	30\$;OK
3717	031562					ERROR			;REPORT ERROR
3718	031562	104460				TRAP	C\$ERROR		
3719	031564				30\$:				;READ
3720	031564	004737	014066			JSR	PC,TESTN		;MAKE SURE ON LINE AND READY
3721	031570	103001				BCC	35\$;OK
3722	031572					ERROR			;REPORT ERROR
3723	031572	104460				TRAP	C\$ERROR		
3724	031574				35\$:				
3725	031574	004737	012756			JSR	PC,RD		;EXECUTE READ

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3726	031600	004737	017276	JSR PC,CHEKDX ;CHECK REGISTERS
3727	031604	103001		BCC 40\$;OK
3728	031606			ERROR ;REPORT ERROR
3729	031606	104460		TRAP C\$ERROR
3730	031610		40\$:	
3731	031610	004737	014364	JSR PC,CHEKS ;CHECK DATA JUST READ
3732	031614	103001		BCC 50\$;OK
3733	031616			ERROR ;REPORT ERROR
3734	031616	104460		TRAP C\$ERROR
3735	031620	004737	014466	JSR PC,CHEKS1 ;CLEAR INPUT AREA
3736				;CHECK FOR REPEAT SEQUENCE
3737	031624	012604		MOV (SP)+,R4 ;RESTORE R3 AND R4
3738	031626	012603		MOV (SP)+,R3
3739	031630	005304		DEC R4 ;IF NOT ALL BLOCK SIZES DONE
3740	031632	001321		BNE 10\$; THEN DO THE NEXT ONE
3741				;WRITE EOF
3742	031634	004737	014066	JSR PC,TESTN ;MAKE SURE ON LINE AND READY
3743	031640	103001		BCC 55\$;OK
3744	031642			ERROR ;REPORT ERROR
3745	031642	104460		TRAP C\$ERROR
3746	031644		55\$:	
3747	031644	004737	013072	JSR PC,WTEOF ;WRITE EOF(TAPE MARK)
3748	031650	105777	150370	TSTB @TRSR ;IF AT EOT
3749	031654	100435		BMI 110\$; THEN REWIND AND EXIT
3750	031656	004737	013756	JSR PC,CHEKL ;CHECK REGISTERS
3751	031662	103001		BCC 60\$;OK
3752	031664			ERROR ;REPORT ERROR
3753	031664	104460		TRAP C\$ERROR
3754	031666		60\$:	
3755	031666	004737	014066	JSR PC,TESTN ;SPACE REVERSE OVER EOF
3756	031672	103001		BCC 65\$;MAKE SURE ON LINE AND READY
3757	031674			ERROR ;OK
3758	031674	104460		TRAP C\$ERROR ;REPORT ERROR
3759	031676		65\$:	
3760	031676	005037	002214	CLR USEB ;SPECIFY COUNT
3761	031702	004737	013024	JSR PC,SPR ;SPACE REVERSE OVER EOF
3762	031706	004737	014506	JSR PC,CHEKU ;CHECK REGISTERS
3763	031712	103001		BCC 70\$;OK
3764	031714			ERROR ;REPORT ERROR
3765	031714	104460		TRAP C\$ERROR
3766	031716		70\$:	
3767	031716	004737	012756	JSR PC,RD ;READ
3768	031722	004737	014636	JSR PC,CHEKV ;CHECK REGISTERS
3769	031726	103001		BCC 80\$;OK
3770	031730			ERROR ;REPORT ERROR
3771	031730	104460		TRAP C\$ERROR
3772	031732		80\$:	
3773	031732	005716		TST (SP) ;IF LOOP REPEAT COUNT IS NEGATIVE
3774	031734	100401		BMI 90\$; THEN REPEAT LOOP TO EOT
3775	031736	005316		DEC (SP) ;SUBTRACT 1 FROM LOOP REPEAT COUNT
3776	031740	001252	90\$:	BNE T4XX ;IF COUNT NOT ZERO THEN REPEAT LOOP
3777	031742	000402		BR 110\$;REWIND AND EXIT TEST4
3778	031744		100\$:	
3779	031744	012604		MOV (SP)+,R4 ;AT EOT. REWIND AND EXIT TEST
3780	031746	012603		MOV (SP)+,R3 ;RESTORE R4 AND R3
3781	031750	005726	110\$:	TST (SP)+ ;DISCARD LOOP REPEAT COUNT

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TEST4 WRITE, READ AND TEST DATA WRITTEN TO TAPE

3782 031752
 3783 031752 004737 014066
 3784 031756 103001
 3785 031760
 3786 031760 104460
 3787 031762
 3788 031762 004737 012416
 3789 031766 004737 013534
 3790 031772 103001
 3791 031774
 3792 031774 104460
 3793 031776 000417
 3794 032000 177777 177776 177775
 3795 032006 177774 177773 177772
 3796 032014 177771 177770 177760
 3797 032022 177740 177700 177600
 3798 032030 177400 177000 176000
 3799 032036
 3800 032036
 3801 032036
 3802 032036 104401
 3803
 3804

T4EX: ;REWIND
 JSR PC,TESTN ;MAKE SURE ON LINE AND READY
 BCC 10\$;OK
 ERROR ;REPORT ERROR
 TRAP C\$ERROR
 10\$: JSR PC,RWIND ;REWIND
 JSR PC,CHEKI ;CHECK REGISTERS
 BCC 20\$;OK
 ERROR ;REPORT ERROR
 TRAP C\$ERROR
 20\$: BR ENDT4 ;EXIT TEST
 SIZTAB: .WORD -1,-2,-3,-4,-5,-6,-7,-10,-20,-40,-100,-200,-400,-1000,-2000
 ENDT4:
 ENDTST
 L10024:
 TRAP C\$ETST
 .SBTTL TEST5 READ DATA WRITTEN BY TEST4

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TEST5 READ DATA WRITTEN BY TEST4

```

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3820 032040
3821 032040
3822 032040
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3824 032040 042777 000100 150174
3825
3826 032046 004737 013324
3827 032052 004737 014066
3828 032056 103001
3829 032060
3830 032060 104460
3831 032062
3832 032062 032777 000040 150154
3833 032070 001006
3834 032072 004737 012416
3835 032076 004737 013534
3836 032102 103001
3837 032104
3838 032104 104460
3839 032106
3840 032106 004737 014066
3841 032112 103001
3842 032114
3843 032114 104460
3844 032116
3845 032116
3846 032116 004737 014066
3847 032122 103001
3848 032124
3849 032124 104460
3850 032126
3851 032126 012737 177777 002214
3852 032134 004737 012756
3853 032140 004737 016262
3854 032144 103001
3855 032146
3856 032146 104460
3857 032150
3858 032150 013746 002152
3859 032154 012704 000017
3860 032160 012703 032000

```

```

:////////////////////
:TEST5 READ DATA WRITTEN BY TEST4
:
:      TEST5 INCLUDES:                TEST NAME IN CZTRAB
:      REWIND THE TAPE                TESTI
:      READ THE ID BLOCK              TESTAW
:      READ THE TAPE                  TESTXY
:////////////////////

```

```

TS::      BGNTST
TEST5:    ;TEST READING DATA WRITTEN BY TEST4
          ;NEGATE TR79 INTERRUPT ENABLE
          ;CLEAR TR79 INTERRUPT ENABLE BIT
          ;MAKE SURE AT LOAD POINT
          ;RESET TR79
          ;MAKE SURE TRANSPORT ON LINE AND READY
          ;NO ERROR
          ;REPORT ERROR
10$:     ;ON LINE AND READY
          ;IF AT LOAD POINT
          ; THEN SKIP PRELIMINARY REWIND
          ;REWIND
          ;CHECK REGISTERS
          ;NO ERRORS.
          ;REPORT ERROR
20$:     ;AT LOAD POINT
          ;MAKE SURE TRANSPORT ON LINE AND READY
          ;NO ERROR
          ;REPORT ERROR
25$:     ;READ IDB
          ;MAKE SURE ON LINE
          ;OK
          ;REPORT ERROR
10$:     ;SPECIFY COUNT FOR READ IDB
          ;READ
          ;CHECK REGISTERS
          ;OK
          ;REPORT ERROR
20$:     ;READ DATA WRITTEN BY TEST4
          ;COPY LOOP REPEAT COUNT
          ;SPECIFY NUMBER OF BLOCKS PER LOOP
          ;POINT TO THE TABLE OF BLOCK SIZES
TSXY:    MOV      RPTCNT, -(SP)
          MOV      #15, R4
          MOV      #SIZTAB, R3

```

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TEST5 READ DATA WRITTEN BY TEST4

3861	032164	012337	002214	10\$:	MOV (R3)+,USEB		;SPECIFY WORD COUNT
3862	032170	010346			MOV R3,-(SP)		;SAVE REGISTERS
3863	032172	010446			MOV R4,-(SP)		
3864							
3865	032174	004737	014066		JSR PC,TESTN		;MAKE SURE ON LINE AND READY
3866	032200	103001			BCC 20\$;OK
3867	032202				ERROR		;REPORT ERROR
3868	032202	104460			TRAP C\$ERROR		
3869	032204			20\$:			
3870	032204	004737	012756		JSR PC,RD		; READ
3871	032210	105777	150030		TSTB @TRSR		;IF AT EOT
3872	032214	100435			BMI 60\$; THEN REWIND AND EXIT TEST
3873	032216	004737	014364		JSR PC,CHEKS		;CHECK DATA JUST READ
3874	032222	103001			BCC 30\$;OK
3875	032224				ERROR		;REPORT ERROR
3876	032224	104460			TRAP C\$ERROR		
3877	032226	004737	014466	30\$:	JSR PC,CHEKS1		;CLEAR INPUT AREA
3878	032232	012604			MOV (SP)+,R4		;RESTORE REGISTERS.
3879	032234	012603			MOV (SP)+,R3		
3880	032236	005304			DEC R4		;REDUCE COUNT. ALL BLOCK SIZES DONE?
3881	032240	001351			BNE 10\$;IF NO, GO DO THE NEXT ONE
3882							;READ EOF
3883	032242	004737	014066		JSR PC,TESTN		;MAKE SURE ON LINE AND READY
3884	032246	103001			BCC 40\$;OK
3885	032250				ERROR		;REPORT ERROR
3886	032250	104460			TRAP C\$ERROR		
3887	032252			40\$:			
3888	032252	012737	177777	002214	MOV #-1,USEB		;SPECIFY COUNT FOR READ EOF
3889	032260	004737	012756		JSR PC,RD		;READ EOF
3890	032264	105777	147754		TSTB @TRSR		;IF AT EOT
3891	032270	100411			BMI 70\$; THEN REWIND AND EXIT TEST
3892	032272	004737	014636		JSR PC,CHEKV		;CHECK REGISTERS
3893	032276	005716			TST (SP)		;IF LOOP REPEAT COUNT NEGATIVE
3894	032300	100401			BMI 50\$; THEN REPEAT TO EOT
3895	032302	005316			DEC (SP)		;SUBTRACT 1 FROM LOOP REPEAT COUNT
3896	032304	001323		50\$:	BNE T\$XY		;REPEAT LOOP
3897	032306	000402			BR 70\$;REWIND AND EXIT TEST
3898							
3899	032310			60\$:			;AT EOT. REWIND AND EXIT TEST
3900	032310	012604			MOV (SP)+,R4		;RESTORE REGISTERS.
3901	032312	012603			MOV (SP)+,R3		
3902	032314	005726		70\$:	TST (SP)+		;DISCARD LOOP REPEAT COUNT
3903	032316	004737	014066		JSR PC,TESTN		;MAKE SURE ON LINE AND READY
3904	032322	103001			BCC 75\$;OK
3905	032324				ERROR		;REPORT ERROR
3906	032324	104460			TRAP C\$ERROR		
3907	032326			75\$:			
3908	032326	004737	012416		JSR PC,RWIND		;REWIND
3909	032332	004737	013534		JSR PC,CHEK1		;CHECK REGISTERS
3910	032336	103001			BCC 80\$;OK
3911	032340				ERROR		;REPORT ERROR
3912	032340	104460			TRAP C\$ERROR		
3913	032342			80\$:			
3914	032342				ENDTST		
3915	032342			L10025:			
3916	032342	104401			TRAP C\$ETST		

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TEST5 READ DATA WRITTEN BY TEST4

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.SBTTL TEST6 CHECK MANUAL INTERVENTION OPERATIONS

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TEST6 CHECK MANUAL INTERVENTION OPERATIONS

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////////////////////////////////////
TEST6 CHECKS MANUAL INTERVENTION OPERATIONS
:
TEST6 CORRESPONDS TO TEST GROUP 1 FROM CZTRAB
:
TEST6 INCLUDES:                                TEST NAME IN CZTPAB
:
REMOVE WRITE RING                                TESTB
TRY TO WRITE WITHOUT RING                        RUNAS
INSERT WRITE RING                                TESTC
DELAY 10 SECONDS                                 TESTAJ
TAKE UNIT OFF LINE                              TESTP
TELL OPERATOR TO RESET                          TESTAK
REWIND THE TAPE                                  TESTI
WRITE PAST EOT                                   TESTAL
SPACE REVERSE PAST EOT                           TESTAM
READ PAST EOT                                    TESTAN
WRITE EOF PAST EOT                               TESTAO
SPACE REVERSE OVER EOF PAST EOT                 TESTAP
READ EOF PAST EOT                               TESTAQ
REWIND AND GO OFF LINE                           TESTQ
////////////////////////////////////

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032344
032344
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032344
042777
032352
032352
032360
032362
032362
032366
032372
032376
032400
032402
032406
032412
032414
032422
032424
032426
032430
032432
032434

000100 147670
000004 147664
022024
020473
000002
050006
002230
000004 147622
001005
005201
001372
005302
001370
000752

```

BGNTST
T6::
TEST6:
;TEST WRITE IDB WITHOUT WRITE ENABLE RING
;NEGATE TR79 INTERRUPT ENABLE
;CLEAR INTERRUPT ENABLE BIT
;REMOVE WRITE ENABLE RING
;IF WRITE ENABLE RING NOT PRESENT
; THEN CONTINUE TEST
; ELSE ASK OPERATOR TO REMOVE RING
BIC #BIT6,@TRCR
BIT #BIT2,@TRSR
BNE 30$
PRINTF #FM1T1T,#RRMVRG
MOV #RRMVRG,-(SP)
MOV #FM1T1T,-(SP)
MOV #2,-(SP)
MOV SP,R0
MOV C$PNTF
ADD #6,SP
MOV DLXTOF,R2
CLR R1
BIT #BIT2,@TRSR
BNE 30$
INC R1
BNE 20$
DEC R2
BNE 20$
BR 10$
;SPECIFY DELAY MULTIPLIER
;SPECIFY DELAY CONSTANT
;IF RING IS NOT PRESENT
; THEN KEEP CONTINUE TEST
;TICK
;KEEP CHECKING
;COUNT DOWN MULTIPLIER
;KEEP CHECKING
;REMIND OPERATOR
;MAKE SURE ON LINE

```

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TEST6 CHECK MANUAL INTERVENTION OPERATIONS

3976	032436	004737	014166		30\$:	JSR	PC,TESTNN		:WAIT FOR TRANSPORT ON LINE
3977	032442	103004				BCC	40\$:OK. ON LINE WITH NO ERROR
3978		000055			ENUM =	^D<ENUM + 1>			:INCREMENT ERROR COUNT
3979	032444					ERRSOFT	ENUM,M2A1,ERR1		:REPORT ERROR
3980	032444	104457				TRAP	CSERSOFT		
3981	032446	000055				.WORD	45		
3982	032450	021140				.WORD	M2A1		
3983	032452	017736				.WORD	ERR1		
3984	032454	004737	013354		40\$:	JSR	PC,RWAIT		:WAIT
3985	032460	004737	013324			JSR	PC,CPWR		:RESET TR79
3986					T1AS:				:WRITE IDB WITHOUT WRITE ENABLE RING
3987	032464								:WRITE IDB
3988						JSR	PC,TSTRDY		:MAKE SURE READY
3989	032464	004737	014114			BCC	10\$:OK
3990	032470	103001				ERROR			:REPORT NOT READY
3991	032472					TRAP	CSERROR		
3992	032472	104460			10\$:	JSR	PC,WTIDB		:WRITE IDB
3993	032474	004737	012464			MOV	DLXRW,DLX		:SET DELAY CONSTANT FOR WAIT
3994	032500	013737	002222	002220		JSR	PC,WWAIT		:WAIT
3995	032506	004737	013362			JSR	PC,CPYTRR		:COPY TR79 REGISTERS
3996	032512	004737	013254			MOV	#142632,ETRCR		:INDICATE EXPECTED RESULT
3997	032516	012737	142632	002174		MOV	#2004,ETRSR		:INDICATE EXPECTED RESULTS
3998	032524	012737	002004	002176		CMP	ETRCR,ATRCR		:TEST COMMAND REGISTER
3999	032532	023737	002174	002164		BEQ	40\$:COMMAND REGISTER OK
4000	032540	001401				INC	R2		:INDICATE ERROR
4001	032542	005202			40\$:	BIC	#BITS,ATRSR		:CLEAR UNWANTED BITS
4002	032544					CMP	ETRSR,ATRSR		:TEST THE STATUS REGISTER
4003	032544	042737	000040	002166		BEQ	50\$:STATUS REGISTER OK
4004	032552	023737	002176	002166		INC	R2		:INDICATE ERROR
4005	032560	001401			50\$:	TST	R2		:ANY ERRORS?
4006	032562	005202				BEQ	80\$:NO
4007	032564				ENUM =	^D<ENUM + 1>			:INCREMENT ERROR COUNT
4008	032564	005702				ERRSOFT	ENUM,MWENFL,ERR4		:REPORT ERROR
4009	032566	001404				TRAP	CSERSOFT		
4010		000056				.WORD	46		
4011	032570					.WORD	MWENFL		
4012	032570	104457				.WORD	ERR4		
4013	032572	000056			80\$:	JSR	PC,CPWR		:RESET TR79
4014	032574	023543			T1C:				:INSTALL WRITE ENABLE RING
4015	032576	020064				JSR	PC,TESTC		:GET WRITE ENABLE RING INSTALLED
4016	032600				30\$:	JSR	PC,TESTNN		:WAIT FOR TRANSPORT ON LINE
4017	032600	004737	013324			BCC	40\$:OK. ON LINE. NO ERROR
4018	032604				ENUM =	^D<ENUM + 1>			:INCREMENT ERROR COUNT
4019	032604	004737	013446			ERRSOFT	ENUM,M2A1,ERR1		:REPORT ERROR
4020	032610	004737	014166			TRAP	CSERSOFT		
4021	032614	103004				.WORD	47		
4022		000057				.WORD	M2A1		
4023	032616					.WORD	ERR1		
4024	032616	104457			40\$:	JSR	PC,RWAIT		:WAIT
4025	032620	000057				JSR	PC,CPWR		:RESET TR79
4026	032622	021140			T1AJ:	MOV	DLXBEL,DLX		:SET 10 SECOND DELAY MULTIPLIER
4027	032624	017736				JSR	PC,WWAIT		:WAIT 10 SECONDS
4028	032626	004737	013354						
4029	032632	004737	013324						
4030	032636	013737	002226	002220					
4031	032644	004737	013362						

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TEST6 CHECK MANUAL INTERVENTION OPERATIONS

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4032 032650
4033 032650 004737 012532
4034 032654 032777 002000 147362
4035 032662 001404
4036 032662 000060
4037 032664
4038 032664 104457
4039 032666 000060
4040 032670 022545
4041 032672 017736
4042 032674
4043 032674 032777 100000 147340
4044 032702 001004
4045
4046
4047 000061
4048 032704
4049 032704 104457
4050 032706 000060
4051 032710 022600
4052 032712 017736
4053 032714
4054 032714 004737 013324
4055 032720
4056 032720 004737 014214
4057 032724 103004
4058 032724 000061
4059 032726
4060 032726 104457
4061 032730 000061
4062 032732 021140
4063 032734 017736
4064 032736 004737 013354
4065 032742 004737 013324
4066 032746 004737 014114
4067 032752 103001
4068 032754
4069 032754 104460
4070 032756
4071
4072 032756 004737 013324
4073 032762
4074 032762 012746 023221
4075 032766 012746 020473
4076 032772 012746 000002
4077 032776 010600
4078 033000 104417
4079 033002 062706 000006
4080 033006 013702 002230
4081 033012 005001
4082 033014 032777 002000 147222 40$:
4083 033022 001405
4084 033024 005201
4085 033026 001372
4086 033030 005302
4087 033032 001370

T1P: ;TAKE TRANSPORT OFF LINE USING OFF LINE COMMAND
;EXECUTE OFF LINE COMMAND
;IF TRANSPORT OFF LINE
; THEN CONTINUE TEST
;INCREMENT ERROR NUMBER
;REPORT ERROR
JSR PC,OFFLN
BIT #BIT10,@TRSR
BEQ 20$
ENUM = ^D<ENUM + 1>
ERRSOFT ENUM,MUNOFL,ERR1
TRAP C$ERSOFT
.WORD 48
.WORD MUNOFL
.WORD ERR1

20$:
BIT #BIT15,@TRCR
BNE 30$
;IF TR79 ERROR BIT = 1
; THEN CONTINUE TEST
; ERROR BIT SHOULD SET WHEN TAKE UNIT
; OFF LINE OPERATION IS PERFORMED
;INCREMENT ERROR NUMBER
;REPORT ERROR
ENUM = ^D<ENUM + 1>
ERPSOFT ENUM,MOFLEFL,ERR1
TRAP C$ERSOFT
.WORD 48
.WORD MOFLEFL
.WORD ERR1

30$:
JSR PC,CPWR
T1AK: TEST OPERATOR RESET
;RESET TR79
;GET TRANSPORT ON LINE
;OK
;INCREMENT ERROR COUNT
;REPORT ERROR
JSR PC,TESTN1
BCC 10$
ENUM = ^D<ENUM + 1>
ERRSOFT ENUM,M2A1,ERR1
TRAP C$ERSOFT
.WORD 49
.WORD M2A1
.WORD ERR1

10$:
JSR PC,RWAIT
JSR PC,CPWR
JSR PC,TSTRDY
BCC 15$
ERROR
TRAP C$ERROR
;WAIT
;TR79 POWER CLEAR
;MAKE SURE READY
;IF NO ERROR THEN CONTINUE TEST
; ELSE REPORT ERROR

15$:
;REQUEST OPERATOR RESET
;RESET TR79
;ASK OPERATOR TO RESET TRANSPORT
30$:
JSR PC,CPWR
PRINTF #FMTTXT,#MRSTU
MOV #MRSTU,-(SP)
MOV #FMTTXT,-(SP)
MOV #2,-(SP)
MOV SP,R0
TRAP C$PNTF
ADD #6,SP
MOV DLXTOF,R2
CLR R1
;SPECIFY DELAY MULTIPLIER
;SPECIFY DELAY CONSTANT
;IF TRANSPORT IS OFF LINE
; THEN CONTINUE TEST
;TICK
;KEEP CHECKING
;COUNT DOWN MULTIPLIER
;KEEP CHECKING
BIT #BIT10,@TRSR
BEQ 50$
R1
INC R1
BNE 40$
DEC R2
BNE 40$

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4088 033034 000752    BR    30$    ;REMINO OPERATOR
4089
4090 033036    50$:
4091 033036 004737 013354    JSR    PC,RWAIT    ;WAIT
4092 033042 004737 013254    JSR    PC,CPYTRR    ;COPY TR79 REGISTERS
4093 033046 012737 100036 002174    MOV    #100036,ETRCR    ;INDICATE EXPECTED RESULT
4094 033054 012737 000001 002176    MOV    #1,ETRSR    ;INDICATE EXPECTED RESULT
4095 033062 032737 100000 002164    BIT    #100000,ATRCR    ;TEST COMMAND REGISTER
4096 033070 001001    BNE    60$    ;COMMAND REGISTER OK
4097 033072 005202    INC    R2    ;NOTE ERROR
4098 033074
4099 033074 042737 000040 002166    BIC    #BITS,ATRSR    ;CLEAR BIT 5(LOAD POINT)
4100 033102 023737 002176 002166    CMP    ETRSR,ATRSR    ;TEST THE STATUS(INHIBIT BIT)
4101 033110 001401    BEQ    70$    ;OK
4102 033112 005202    INC    R2    ;INDICATE ERROR
4103 033114
4104 033114 005737 002172    TST    ATRBA    ;TEST BUFFER ADDRESS
4105 033120 001401    BEQ    80$    ;ADDRESS OK
4106 033122 005202    INC    R2    ;INDICATE ERROR
4107 033124
4108 033124 005737 002170    TST    ATRWC    ;TEST THE WORD COUNT
4109 033130 001401    BEQ    90$    ;OK
4110 033132 005202    INC    R2    ;INDICATE ERROR
4111 033134
4112 033134 005702    TST    R2    ;ANY ERRORS?
4113 033136 001404    BEQ    95$    ;NO
4114 033136 000062    ENUM = ^D<ENUM + 1>    ;INCREMENT ERROR NUMBER
4115 033140    ERRSOFT ENUM,MRSFL,ERRS    ;REPORT ERROR
4116 033140 104457    TRAP    C$ERSOFT
4117 033142 000062    .WORD    50
4118 033144 023262    .WORD    MRSFL
4119 033146 020102    .WORD    ERRS
4120 033150 004737 013324    95$:    JSR    PC,CPWR    ;TR79 POWER CLEAR
4121
4122 033154    T1AL:    ;TEST TAPE FUNCTIONS EXECUTED WHILE TAPE IS BEYOND EOT
4123 033154 004737 014214    T1AG:    JSR    PC,TESTN1    ;ASK OPERATOR TO PUT TRANSPORT ON LINE
4124 033160 103004    BCC    10$    ;OK
4125 033160 000063    ENUM = ^D<ENUM + 1>    ;INCREMENT ERROR COUNT
4126 033162    ERRSOFT ENUM,M2A1,ERR1    ;REPORT ERROR
4127 033162 104457    TRAP    C$ERSOFT
4128 033164 000063    .WORD    51
4129 033166 021140    .WORD    M2A1
4130 033170 017736    .WORD    ERR1
4131 033172 004737 013354    10$:    JSR    PC,RWAIT    ;WAIT
4132 033176 004737 013324    JSR    PC,CPWR    ;TR79 POWER CLEAR
4133 033202 004737 014114    JSR    PC,TSTRDY    ;MAKE SURE READY
4134 033206 103001    BCC    15$    ;IF NO ERROR THEN CONTINUE TEST
4135 033210    ERROR    ;ELSE REPORT ERROR
4136 033210 104460    TRAP    C$ERROR
4137 033212 004737 013324    15$:    JSR    PC,CPWR    ;TR79 POWER CLEAR
4138 033216 032777 000040 147020    BIT    #BITS,ATRSR    ;IF AT LOAD POINT
4139 033224 001006    BNE    20$    ;SKIP REWIND
4140 033226 004737 012416    JSR    PC,RWIND    ;REWIND
4141 033232 004737 013534    JSR    PC,CHEKI    ;CHECK REGISTERS
4142 033236 103001    BCC    20$    ;OK
4143 033240    ERROR    ;REPORT ERROR

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4144	033240	104460			TRAP	C\$ERROR
4145	033242			20\$:		
4146	033242	004737	014066		JSR	PC,TESTN
4147	033246	103001			BCC	25\$
4148	033250				ERROR	:MAKE SURE ON LINE AND READY
4149	033250	104460			TRAP	:OK
4150	033252			25\$:	C\$ERROR	:REPORT ERROR
4151	033252	004737	013324		JSR	PC,CPWR
4152	033256	004737	012600		JSR	PC,GEOT
4153	033262	032777	000200	146754	30\$:	BIT
4154	033270	001774			BEQ	#BIT7,@TRSR
4155	033272	004737	015626		JSR	PC,CHEKAG
4156	033276	103001			BCC	30\$
4157	033300				ERROR	:CHECK REGISTERS
4158	033300	104460			TRAP	:OK
4159	033302			35\$:	C\$ERROR	:REPORT ERROR
4160	033302	004737	014066		JSR	PC,TESTN
4161	033306	103001			BCC	40\$
4162	033310				ERROR	:ERASE AFTER EOT
4163	033310	104460			TRAP	:ENSURE ON LINE AND READY
4164	033312			40\$:	C\$ERROR	:OK
4165	033312	012737	177000	002214	MOV	:REPORT ERROR
4166	033320	004737	013140		JSR	#-1000,USEB
4167	033324	004737	013354		JSR	PC,ERS
4168	033330	004737	014066		JSR	PC,RWAIT
4169	033334	103001			JSR	PC,TESTN
4170	033336				BCC	:SPECIFY COUNT FOR ERASE
4171	033336	104460			ERROR	:ERASE
4172	033340			50\$:	TRAP	:WAIT
4173	033340	012737	177700	002214	MOV	:ENSURE ON LINE AND READY
4174	033346	004737	012642		JSR	50\$
4175	033352	004737	016002		JSR	:OK
4176	033356	103001			BCC	:REPORT ERROR
4177	033360				ERROR	:WRITE AFTER EOT
4178	033360	104460			TRAP	:SPECIFY COUNT FOR WRITE
4179	033362			55\$:	C\$ERROR	:WRITE
4180	033362			11AM:		:CHECK REGISTERS
4181	033362	004737	014066		JSR	:OK
4182	033366	103001			BCC	:REPORT ERROR
4183	033370				ERROR	:SPACE REVERSE AFTER EOT
4184	033370	104460			TRAP	:ENSURE ON LINE AND READY
4185	033372			10\$:	C\$ERROR	:OK
4186	033372	004737	013024		JSR	:REPORT ERROR
4187	033376	004737	013354		JSR	:SPACE REVERSE
4188	033402	004737	013254		JSR	:WAIT
4189	033406	012737	003610	002174	JSR	:COPY TR79 REGISTERS
4190	033414	012737	002201	002176	MOV	:EXPECTED
4191	033422	013737	002214	002200	MOV	:EXPECTED
4192	033430	023737	002174	002164	MOV	:EXPECTED
4193	033436	001401			CMR	:TEST COMMAND REGISTER
4194	03344C	005202			BEQ	40\$
4195	033442			40\$:	INC	:OK
4196	033442	023737	002176	002166	CMR	:INDICATE ERROR
4197	033450	001401			BEQ	:TEST THE STATUS REGISTER
4198	033452	005202			INC	:OK
4199	033454			50\$:		:INDICATE ERROR

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TEST6 CHECK MANUAL INTERVENTION OPERATIONS

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4200 033454 005737 002172      TST   ATRBA      ;TEST BUS ADDRESS
4201 033460 001401              BEQ   55$        ;OK
4202 033462 005202              INC   R2         ;INDICATE ERROR
4203 033464                      55$:
4204 033464 023737 002200 002170  CMP   ETRWC,ATRWC ;TEST THE WORD COUNT
4205 033472 001401              BEQ   60$        ;OK
4206 033474 005202              INC   R2         ;INDICATE ERROR
4207 033476                      60$:
4208 033476 005702              TST   R2         ;ANY ERRORS
4209 033500 001404              BEQ   70$        ;NO
4210 033502 000064              ENUM = ^D<ENUM + 1> ;INCREMENT ERROR NUMBER
4211 033502                      ERRSOFT ENUM,MSRETFL,ERR5 ;REPORT ERROR
4212 033502 104457              TRAP C$ERSOFT
4213 033504 000064              .WORD 52
4214 033506 023333              .WORD MSRETFL
4215 033510 020102              .WORD ERR5
4216 033512                      70$:
4217 033512                      T1A0:
4218 033512 004737 014066      JSR   PC,TESTN   ;READ AFTER EOT
4219 033516 103001              BCC  10$        ;MAKE SURE ON LINE AND READY
4220 033520                      ERROR
4221 033520 104460              TRAP C$ERROR    ;REPORT ERROR
4222 033522                      10$:
4223 033522 004737 012756      JSR   PC,RD      ;READ
4224 033526 004737 013354      JSR   PC,RWAIT   ;WAIT
4225 033532 004737 013254      JSR   PC,CPYTRR  ;COPY TR79 REGISTERS
4226 033536 012737 002204 002174  MOV   #2204,ETRCR ;EXPECTED
4227 033544 012737 002201 002176  MOV   #2201,ETRSR ;EXPECTED
4228 033552 023737 002174 002164  CMP   ETRCR,ATRCR ;TEST COMMAND REGISTER
4229 033560 001401              BEQ   20$        ;OK
4230 033562 005202              INC   R2         ;INDICATE ERROR
4231 033564                      20$:
4232 033564 023737 002176 002166  CMP   ETRSR,ATRSR ;TEST THE STATUS REGISTER
4233 033572 001401              BEQ   30$        ;OK
4234 033574 005202              INC   R2         ;INDICATE ERROR
4235 033576                      30$:
4236 033576 005737 002170      TST   ATRWC      ;TEST THE WORD COUNT
4237 033602 001401              BEQ   40$        ;OK
4238 033604 005202              INC   R2         ;INDICATE ERROR
4239 033606                      40$:
4240 033606 005702              TST   R2         ;ANY ERRORS?
4241 033610 001404              BEQ   50$        ;NO
4242 033612 000065              ENUM = ^D<ENUM + 1> ;INCREMENT ERROR NUMBER
4243 033612                      ERRSOFT ENUM,MRPETFL,ERR6 ;REPORT ERROR
4244 033612 104457              TRAP C$ERSOFT
4245 033614 000065              .WORD 53
4246 033616 023374              .WORD MRPETFL
4247 033620 020120              .WORD ERR6
4248 033622                      50$:
4249
4250
4251
4252 033622                      T1A0:
4253 033622 004737 014066      JSR   PC,TESTN   ;TEST EOF AFTER EOT FUNCTIONS
4254 033626 103001              BCC  10$        ;GET TRANSPORT ON LINE
4255 033630                      ERROR

```

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TEST6 CHECK MANUAL INTERVENTION OPERATIONS

```

4256 033630 104460
4257 033632
4258 033632 005037 002214
4259 033636 004737 013072
4260 033642 004737 013354
4261 033646 004737 013254
4262 033652 012737 003234 002174
4263 033660 012737 002211 002176
4264 033666 023737 002174 002164
4265 033674 001401
4266 033676 005202
4267 033700
4268 033700 023737 002176 002166
4269 033706 001401
4270 033710 005202
4271 033712
4272 033712 005737 002172
4273 033716 001'01
4274 033720 005202
4275 033722
4276 033722 005737 002170
4277 033726 001401
4278 033730 005202
4279 033732
4280 033732 005702
4281 033734 001404
4282 033734 000066
4283 033736
4284 033736 104457
4285 033740 000066
4286 033742 023424
4287 033744 020102
4288 033746
4289 033746
4290 033746 004737 013024
4291 033752 004737 013354
4292 033756 004737 013254
4293 033762 012737 003610 002174
4294 033770 012737 002211 002176
4295 033776 013737 002214 002200
4296 034004 023737 002174 002164
4297 034012 001401
4298 034014 005202
4299 034016
4300 034016 023737 002176 002166
4301 034024 001401
4302 034026 005202
4303 034030
4304 034030 005737 002172
4305 034034 001401
4306 034036 005202
4307 034040
4308 034040 023737 002200 002170
4309 034046 001401
4310 034050 005202
4311 034052

TRAP C$ERROR
;WRITE EOF AFTER EOT
10$: CLR USEB ;SPECIFY WORD COUNT
JSR PC,WTEOF ;WRITE EOF
JSR PC,RWAIT ;WAIT
JSR PC,CPYTRR ;COPY TR79 REGISTERS
MOV #3234,ETRCR ;EXPECTED
MOV #2211,ETRSR ;EXPECTED
CMP ETRCR,ATRCR ;TEST COMMAND REGISTER
BEQ 20$ ;OK
INC R2 ;INDICATE ERROR
20$: CMP ETRSR,ATRSR ;TEST THE STATUS REGISTER
BEQ 30$ ;OK
INC R2 ;INDICATE ERROR
30$: TST ATRBA ;TEST BUFFER ADDRESS
BEQ 40$ ;OK
INC R2 ;INDICATE ERROR
40$: TST ATRWC ;TEST THE WORD COUNT
BEQ 50$ ;OK
INC R2 ;INDICATE ERROR
50$: TST R2 ;ANY ERRORS
BEQ 60$ ;NO
ENUM = ^D<ENUM + 1> ;INCREMENT ERROR NUMBER
ERRSOFT ENUM,MWFETF,ERRS ;REPORT ERROR
TRAP C$ERSOFT
.WORD 54
.WORD MWFETF
.WORD ERRS
60$: T1AP: ;TEST SPACE REVERSE OVER EOF BEYOND EOT
JSR PC,SPR ;SPACE REVERSE
JSR PC,RWAIT ;WAIT
JSR PC,CPYTRR ;COPY TR79 REGISTERS
MOV #3610,ETRCR ;EXPECTED
MOV #2211,ETRSR ;EXPECTED
MOV USEB,ETRWC ;EXPECTED
CMP ETRCR,ATRCR ;TEST COMMAND REGISTER
BEQ 20$ ;OK
INC R2 ;INDICATE ERROR
20$: CMP ETRSR,ATRSR ;TEST THE STATUS REGISTER
BEQ 30$ ;OK
INC R2 ;INDICATE ERROR
30$: TST ATRBA ;TEST BUFFER ADDRESS
BEQ 40$ ;OK
INC R2 ;INDICATE ERROR
40$: CMP ETRWC,ATRWC ;TEST THE WORD COUNT
BEQ 50$ ;OK
INC R2 ;INDICATE ERROR
50$:

```

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TEST6 CHECK MANUAL INTERVENTION OPERATIONS

4312	034052	005702				TST	R2		;ANY ERRORS?
4313	034054	001404				BEQ	60\$;NO
4314		000067				ENUM = ^D<ENUM + 1>			;INCREMENT ERROR NUMBER
4315	034056					ERRSOFT	ENUM,MREFETF,ERR5		;REPORT ERROR
4316	034056	104457				TRAP	C\$ERSOFT		
4317	034060	000067				.WORD	55		
4318	034062	023474				.WORD	MREFETF		
4319	034064	020102				.WORD	ERR5		
4320	034066					60\$:			
4321	034066					T1A0:			;READ EOF BEYOND EOT
4322	034066	004737	012756			JSR	PC,RD		;READ
4323	034072	004737	013354			JSR	PC,RWAIT		;WAIT
4324	034076	004737	013254			JSR	PC,CPYTR		;COPY TR79 REGISTERS
4325	034102	012737	002204	002174		MOV	#2204,ETRCR		;EXPECTED
4326	034110	012737	002211	002176		MOV	#2211,ETRSR		;EXPECTED
4327	034116	012737	006322	002202		MOV	#INPUT,ETRBA		;EXPECTED
4328	034124	013737	002214	002200		MOV	USEB,ETRCR		;EXPECTED
4329	034132	023737	002174	002164		CMP	ETRCR,ATRCR		;TEST COMMAND REGISTER
4330	034140	001401				BEQ	20\$;OK
4331	034142	005202				INC	R2		;INDICATE ERROR
4332	034144					20\$:			
4333	034144	023737	002176	002166		CMP	ETRSR,ATRSR		;TEST THE STATUS REGISTER
4334	034152	001401				BEQ	30\$;OK
4335	034154	005202				INC	R2		;INDICATE ERROR
4336	034156					30\$:			
4337	034156	023737	002202	002172		CMP	ETRBA,ATRBA		;TEST BUFFER ADDRESS
4338	034164	001401				BEQ	40\$;OK
4339	034166	005202				INC	R2		;INDICATE ERROR
4340	034170					40\$:			
4341	034170	023737	002200	002170		CMP	ETRCR,ATRCR		;TEST THE WORD COUNT
4342	034176	001401				BEQ	50\$;OK
4343	034200	005202				INC	R2		;INDICATE ERROR
4344	034202					50\$:			
4345	034202	005702				TST	R2		;ANY ERRORS?
4346	034204	001404				BEQ	60\$;NO
4347		000070				ENUM = ^D<ENUM + 1>			;INCREMENT ERROR NUMBER
4348	034206					ERRSOFT	ENUM,MREFETF,ERR5		;REPORT ERROR
4349	034206	104457				TRAP	C\$ERSOFT		
4350	034210	000070				.WORD	56		
4351	034212	023474				.WORD	MREFETF		
4352	034214	020102				.WORD	ERR5		
4353	034216					60\$:			
4354						T10:			;TEST TR79 RESET WHILE REWINDING
4355	034216					JSR	PC,TESTN		;MAKE SURE ON LINE AND READY
4356	034216	004737	014066			BCC	10\$;OK
4357	034222	103001				ERROR			;REPORT ERROR
4358	034224					TRAP	C\$ERROR		
4359	034224	104460				10\$:			;POSITION TAPE AT EOT
4360	034226					BIT	#BIT7,@TRSR		;IF AT EOT
4361	034226	032777	000200	146010		BNE	40\$; THEN OMIT REWIND AND GO EOT
4362	034234	001024				BIT	#BIT10,@TRSR		; IF AT LOAD POINT
4363	034236	032777	002000	146000		BNE	20\$; THEN OMIT REWIND
4364	034244	001006				JSR	PC,RWIND		;REWIND
4365	034246	004737	012416			JSR	PC,CHEKI		;CHECK REGISTERS
4366	034252	004737	013534			BCC	20\$;OK
4367	034256	103001							

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TEST6 CHECK MANUAL INTERVENTION OPERATIONS

SEQ 114

4424
4425

.SBTTL HARDWARE PARAMETER CODING SECTION

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HARDWARE PARAMETER CODING SECTION

4426
4427
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4430
4431
4432
4433
4434
4435
4436 034456
4437 034456 000015
4438 034460
4439 034460
4440 034460 000031
4441 034462 034512
4442 034464 164000
4443 034466 175500
4444 034470
4445 034470 001031
4446 034472 034540
4447 034474 000170
4448 034476 000174
4449 034500
4450 034500 002032
4451 034502 034571
4452 034504 000340
4453 034506 000004
4454 034510 000007
4455 034512
4456
4457 034512
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4459
4460

```

:////////////////////
:/ 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.
:////////////////////

```

```

          BGNHRD
          .WORD L10027-L$HARD/2
L$HARD::
          GPRMA  ADDRESS,0,0,164000,175500,YES
          .WORD  T$CODE
          .WORD  ADDRESS
          .WORD  TSLOLIM
          .WORD  T$HILIM
          GPRMA  VECTOR,2,0,170,174,YES
          .WORD  T$CODE
          .WORD  VECTOR
          .WORD  TSLOLIM
          .WORD  T$HILIM
          GPRMD  PRIRTY,4,0,340,4,7,YES
          .WORD  T$CODE
          .WORD  PRIRTY
          .WORD  340
          .WORD  TSLOLIM
          .WORD  T$HILIM
          ENDRD
          .EVEN

L10027:
          .EVEN

.NLIST  BEX
ADDRESS: .ASCIZ  /DEVICE CSR ADDRESS : /
VECTOR:  .ASCIZ  /DEVICE VECTOR ADDRESS : /
PRIRTY:  .ASCIZ  /DEVICE PRIORITY LEVEL : /
.LIST   BEX
.EVEN

```

034512 042504 044526 042503
034540 042504 044526 042503
034571 104 053105 041511

4461
4462
4463
4464
4465

.SBTTL SOFTWARE PARAMETER CODING SECTION

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SOFTWARE PARAMETER CODING SECTION

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```

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

```

```

          BGNSFT
          .WORD L10030-L$SOFT/2
L$SOFT::
          DISPLAY SFTTXT
          .WORD T$CODE
          .WORD SFTTXT
          GPRMD   WCOUNT,0,D,177777,0,500.,YES
          .WORD T$CODE
          .WORD WCOUNT
          .WORD 177777
          .WORD T$LOLIM
          .WORD T$HILIM
          ENDSFT
          .EVEN

L10030:
          .NLIST BEX
          SFTTXT: .ASCIZ /TEST4 REPEATEDLY WRITES A 15 BLOCK FILE TO TAPE. /
                .ASCIZ /TEST5 READS THE FILES WRITTEN BY TEST4. /
                .ASCIZ /THE FOLLOWING ENTRY SPECIFIES HOW MANY FILES TEST4 /
                .ASCIZ /WILL WRITE. THE DEFAULT IS 10. FILES. /
                .ASCIZ /ENTER 0 TO WRITE FILES UNTIL EOT IS REACHED /
                .BYTE 0

          WCOUNT: .ASCIZ /REPEAT COUNT FOR TEST4 (0-500.), 0=REPEAT TO EOT /

          .LIST BEX
          .EVEN

          .SBTTL PATCH AREA FOR DEBUG

```

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PATCH AREA FOR DEBUG

```

4498
4499 035270
4500      035370 000240
4501 035370 000240
4502 035372 000240
4503 035374 000240
4504
4505
4506 035376
4507 035376
4508
4509 035376 000000
4510 035400 000000
4511 035402
4512
4513
4514      000001

```

```

;*
PATCH:
      .=,+100
      NOP
      NOP
      NOP

.SBTTL 'ENDMOD' & 'LASTAD'
      ENDMOD
      LASTAD
      .EVEN
      .WORD 0
      .WORD 0
L$LAST::

;* NOTE: LAST ADDRESS STORAGE APPENDED
.END

```


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CROSS REFERENCE TABLE -- USER SYMBOLS

CHEKAX	016460	1712#	3567																			
CHEKAY	016636	1754#	3581																			
CHEKAZ	017002	1790#	3601																			
CHEKCC	017156	1829#	3003	3285	3361	3437	3502	3704														
CHEKDX	017276	1859#	3726																			
CHEKEX	017416	1890#	3296	3372	3715																	
CHEKFX	017546	1922#	2836	2990	3123	3188	3273	3349	3425	3490	3554	3684										
CHEKI	013534	1103#	2392	2540	2635	2672	2768	2818	2971	3043	3077	3105	3170	3250								
		3326	3402	3467	3531	3661	3789	3835	3909	4141	4366											
CHEKJ	013664	1133#	2555																			
CHEKL	013756	1159#	3129	3750																		
CHEKO	014254	1263#	2824	2982	3054	3116	3181	3261	3337	3413	3478	3542	3672									
CHEKS	014364	1297#	3731	3873																		
CHEKS1	014466	1325#	3735	3877																		
CHEKU	014506	1338#	3142	3762																		
CHEKV	014636	1373#	3155	3768	3892																	
CHKAG1	016002	1602#	4175																			
CHKBRK	013442	1000	1063#	2049																		
CPWR	013324	1009#	1127	1150	1439	1478	1515	1552	1746	1783	1821	2038	2382	2390								
		2402	2440	2538	2624	2633	2661	2670	2757	2766	2808	2879	2950	2969								
		3033	3096	3161	3237	3241	3317	3393	3458	3522	3573	3587	3605	3652								
		3826	3985	4017	4029	4054	4065	4072	4120	4132	4137	4151	4380									
CPYTRR	013254	989#	1108	1135	1160	1265	1339	1374	1410	1448	1487	1524	1568	1603								
		1634	1669	1713	1755	1792	1830	1860	1891	1923	2404	2612	2642	2683								
		2736	2780	2849	2885	2902	3014	3207	3996	4092	4188	4225	4261	4292								
		4324	4385																			
CURDY =	000200	663#																				
C\$AU =	000052	319#																				
C\$AUTO=	000061	319#	2311																			
C\$BRK =	000022	319#	1065																			
C\$BSEG=	000004	319#																				
C\$BSUB=	000002	319#																				
C\$CEFG=	000045	319#																				
C\$CLK=	000062	319#																				
C\$CLEA=	000012	319#	2324																			
C\$CLOS=	000035	319#																				
C\$CLP1=	000006	319#																				
C\$CVEC=	000036	319#																				
C\$DCLN=	000044	319#																				
C\$DODU=	000051	319#																				
C\$DRPT=	000024	319#																				
C\$DU =	000053	319#																				
C\$EDIT=	000003	319#	410																			
C\$ERDF=	000055	319#																				
C\$ERHR=	000056	319#																				
C\$ERRO=	000060	319#	2386	2395	2400	2437	2534	2543	2549	2599	2629	2638	2666	2675								
		2680	2762	2771	2776	2813	2821	2827	2832	2839	2964	2974	2979	2985								
		2993	2999	3006	3011	3038	3046	3051	3057	3066	3072	3080	3085	3093								
		3100	3108	3113	3119	3126	3132	3138	3145	3151	3158	3165	3173	3178								
		3184	3191	3245	3253	3258	3264	3269	3276	3281	3288	3293	3299	3304								
		3311	3321	3329	3334	3340	3345	3352	3357	3364	3369	3375	3380	3387								
		3397	3405	3410	3416	3421	3428	3433	3440	3445	3452	3462	3470	3475								
		3481	3486	3493	3498	3505	3510	3517	3526	3534	3539	3545	3550	3557								
		3562	3570	3577	3584	3591	3596	3604	3656	3664	3669	3675	3680	3687								
		3699	3707	3712	3718	3723	3729	3734	3745	3753	3758	3765	3771	3786								
		3792	3830	3838	3843	3849	3856	3868	3876	3886	3906	3912	3992	4069								

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CROSS REFERENCE TABLE -- USER SYMBOLS

EM4A	021002	2237#	2431	2958	3649									
EM6	021630	2237#	2891											
EM7	021551	2237#	2908											
ENDEMB	020464	2220	2237#											
ENDIN	024176	2293	2295#											
ENDT4	032036	3793	3799#											
ENUM =	000071	696#	1121#	1123	1173#	1175	1198#	1200	1208#	1210	1278#	1280	1309#	1311
		1360#	1362	1396#	1398	1433#	1435	1472#	1474	1509#	1511	1546#	1548	1589#
		1591	1620#	1622	1656#	1658	1699#	1701	1740#	1742	1777#	1779	1815#	1817
		1847#	1849	1877#	1879	1909#	1911	1950#	1952	2417#	2420	2427#	2430	2444#
		2447	2456	2465	2474	2481#	2484	2492	2501	2512#	2515	2523#	2526	2557#
		2560	2615#	2618	2655#	2658	2696#	2699	2716#	2719	2727#	2730	2751#	2754
		2802#	2805	2872#	2875	2887#	2890	2904#	2907	2954#	2957	3027#	3030	3230#
		3233	3645#	3648	3978#	3981	4010#	4013	4022#	4025	4036#	4039	4047	4050
		4058#	4061	4114#	4117	4125#	4128	4210#	4213	4242#	4245	4282#	4285	4314#
		4317	4347#	4350	4406#	4409								
EOFF =	000010	678#												
EOTS =	000200	682#												
ERASE =	000016	641#	962											
ERRBIT =	100000	671#												
ERRBLK	002162 G	716#	1125*	1177*	1213*	1282*	1313*	1364*	1400*	1437*	1476*	1513*	1550*	1593*
		1624*	1660*	1703*	1744*	1781*	1819*	1851*	1881*	1913*	1954*			
ERRMSG	002160 G	715#	1124*	1176*	1199*	1209*	1281*	1312*	1363*	1399*	1436*	1475*	1512*	1549*
		1592*	1623*	1659*	1702*	1743*	1780*	1818*	1850*	1880*	1912*	1953*		
ERRMBR	002156 G	714#	1123*	1175*	1200*	1210*	1280*	1311*	1362*	1398*	1435*	1474*	1511*	1548*
		1591*	1622*	1658*	1701*	1742*	1779*	1817*	1849*	1879*	1911*	1952*		
ERRTYP	002154 G	713#	1122*	1174*	1212*	1279*	1310*	1361*	1397*	1434*	1473*	1510*	1547*	1590*
		1621*	1657*	1700*	1741*	1778*	1816*	1848*	1878*	1910*				
ERR1	017736 G	1995#	3983	4027	4041	4052	4063	4130						
ERR11	020136 G	2108#	2892											
ERR12	020160 G	2122#	2909											
ERR14	020202 G	1313	2135#											
ERR15	020244 G	1703	2154#											
ERR2	017744 G	2011#	2432	2959	3650									
ERR3	017754 G	1213	2026#											
ERR4	020064 G	1125	1177	1282	2064#	2422	2562	2660	2701	2756	3032	4015		
ERR5	020102 G	1364	1400	1437	1476	1513	1550	1593	1660	1744	1781	1819	1954	2079#
		2807	2877	3235	4119	4215	4287	4319	4352	4411				
ERR6	020120 G	1624	1851	1881	1913	2094#	4247							
ERS	013140	959#	2835	2989	3122	3187	3272	3348	3424	3489	3553	3683	4166	
ER1	017736	1996#												
ER2	017744	2012#												
ER3	017754	2013	2027#											
ETRBA	002202	725#	1377*	1386	1413*	1422	1451*	1461	1672*	1682	1729*	1795*	1805	1939*
		2852*	2862	2886*	3210*	3220	4327*	4337						
ETRCR	002174	722#	1109*	1111	1136*	1139	1161*	1163	1266*	1268	1340*	1342	1375*	1378
		1411*	1414	1449*	1453	1488*	1491	1525*	1528	1569*	1571	1604*	1606	1635*
		1638	1670*	1674	1714*	1716	1756*	1759	1793*	1797	1831*	1833	1861*	1863
		1892*	1895	1924*	1926	2205	2405*	2407	2643*	2645	2684*	2686	2738*	2740
		2781*	2784	2850*	2854	3015*	3017	3208*	3211	3997*	3999	4093*	4189*	4192
		4226*	4228	4262*	4264	4293*	4296	4325*	4329	4386*	4388			
ETRSR	002176	723#	1110*	1115	1137*	1143	1162*	1167	1267*	1272	1341*	1346	1376*	1382
		1412*	1418	1450*	1457	1489*	1495	1526*	1532	1570*	1575	1605*	1610	1636*
		1642	1671*	1678	1715*	1720	1757*	1763	1794*	1801	1832*	1837	1862*	1867
		1893*	1899	1925*	1930	2406*	2411	2644*	2649	2685*	2690	2739*	2744	2782*
		2788	2851*	2858	3016*	3021	3209*	3216	3998*	4004	4094*	4100	4190*	4196

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CROSS REFERENCE TABLE -- USER SYMBOLS

LOGDEV	002234	747#	2265*	2267
LOT	= 000010 G	580#		
LSACP	002110 G	440#		
LSAPT	002036 G	398#		
LSAUT	002070 G	424#		
LSAUTO	024200 G	441	2308#	
LSCCP	002106 G	438#		
LSCLEA	024202 G	439	2321#	
LSCO	002032 G	394#		
LSDEPO	002011 G	376#		
LSDESC	012330 G	431	797#	
LSDESP	002076 G	430#		
LSDEVP	002060 G	416#		
LSDISP	002124 G	401	464#	
LSDLY	002116 G	446#		
LSDTP	002040 G	400#		
LSDTYP	002034 G	396#		
LSDUT	002072 G	426#		
LSDVTY	012322 G	417	788#	
LSEF	002052 G	411#		
LSENVI	002044 G	404#		
LSERRT	002154 G	435	712#	
LSERP	002102 G	434#		
LSEXP1	002046 G	406#		
LSEXP4	002064 G	420#		
LSEXP5	002066 G	422#		
LSHARD	034460 G	383	4437	4438#
LSHIME	002120 G	448#		
LSHPCP	002016 G	382#		
LSHPTP	002022 G	386#		
LSHW	002142 G	387	484	485#
LSICP	002104 G	436#		
LSINIT	024034 G	437	2262#	
LSLADP	002026 G	390#		
LSLAST	035402 G	391	4511#	
LSLOAD	002100 G	432#		
LSLUN	002074 G	428#		
LSMPREV	002050 G	408#		
LSNAME	002000 G	365#		
LSPRIO	002042 G	402#		
LSPROT	024026 G	443	2248#	
LSPRI	002112 G	442#		
LSREPP	002062 G	418#		
LSREV	002010 G	374#		
LS\$OFT	034624 G	385	4478	4479#
LS\$PC	002056 G	414#		
LS\$PCP	002020 G	384#		
LS\$PTP	002024 G	388#		
LSSTA	002030 G	392#		
LS\$W	002152 G	389	506	507#
LS\$TEST	002114 G	444#		
LS\$TML	002014 G	380#		
LS\$UNIT	002012 G	378#		
L10000	002150	484	493#	
L10001	002154	506	512#	
L10002	017734	1977#		

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CROSS REFERENCE TABLE -- USER SYMBOLS

L10003	017742	1998#			
L10004	017752	2015#			
L10005	020062	2054#			
L10006	020100	2069#			
L10007	020116	2084#			
L10010	020134	2099#			
L10011	020156	2114#			
L10012	020200	2128#			
L10013	020242	2147#			
L10014	020322	2169#			
L10016	024176	2296#			
L10017	024200	2310#			
L10020	024202	2323#			
L10021	024204	2344#			
L10022	026520	2914#			
L10023	031314	3608#			
L10024	J32036	3801#			
L10025	032342	3915#			
L10026	034454	4421#			
L10027	034512	4437	4457#		
L10030	034642	4478	4491#		
MEOT	023771	2237#	4414		
MEPSRF	023712	1780	2237#		
MERFL	022014	1953	2237#		
METFL	023203	1592	2237#		
MIDSFL	022204	2237#	2527		
MIENFL	022161	2237#	2516		
MILFFL	022337	2237#	2561		
MINTFL	021707	2237#	2619		
MPRSFL	023262	2237#	4118		
PNXBFL	023046	2237#			
PNXMFL	023115	2237#	2876		
POFLEF	022600	2237#	4051		
MPARFL	023674	1743	2237#		
MPCFL	022227	2237#	2755		
MPWCL	021443	2237#	2720		
MPWST	021500	2237#	2731		
MQM	021741	2237#			
MRCFL	023166	1436	1475	1512	1549 2237#
MRDERR	022643	1312	2237#		
MRDFL	021765	1880	2237#		
MREFET	023474	2237#	4318	4351	
MREFFL	022726	1399	2237#		
MREPFL	023746	1818	2237#		
MRIBFL	023654	1702	2237#		
MRMVRG	022024	2237#	3960		
MRPETF	023374	2237#	4246		
MRSTFL	021745	2237#			
MRSTU	023221	2237#	4074		
MRTOFL	022772	2237#			
MRW	021156	1124	2237#		
MRWLPF	022306	2237#	2421		
MRWOLF	022621	2237#	4410		
MSREFF	022665	1363	2237#		
MSRETF	023333	2237#	4214		
MSRIFL	023620	1659	2237#		

FOR ADDITIONAL INFORMATION

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CROSS REFERENCE TABLE -- USER SYMBOLS

RD	012756	915#	3089	3154	3307	3383	3600	3725	3767	3852	3870	3889	4223	4322
RDCNT =	001000	684#												
READ =	000004	636#	918											
REWIND=	001020	642#	825											
RPEF =	100000	690#												
RPTCNT	002152	509#	2292	2294*	3689	3858								
RWDS =	000002	676#												
RWIND	012416	822#	2391	2403	2539	2634	2671	2767	2817	2970	3042	3076	3104	3169
		3249	3325	3401	3466	3530	3660	3788	3834	3908	4140	4365	4381	
RWAIT	013354	1022#	1134	1159	1264	1338	1373	1409	1447	1486	1523	1561	1602	1633
		1668	1712	1754	1791	1829	1859	1890	1922	2037	2511	3984	4028	4064
		4091	4131	4167	4187	4224	4260	4291	4323	4382				
SBIT8 =	000400	664#												
SBIT9 =	001000	665#												
SFPTBL	002152 G	508#												
SFITXT	034642	4482	4493#											
SIZTAB	032000	3691	3794#	3860										
SPACER=	001410	638#	933											
SPR	013024	930#	2779	3060	3141	3295	3371	3448	3513	3580	3714	3761	4186	4290
STEF =	010000	687#												
SVCGBL=	000000	319#	322	329#	365	366	374	375	376	377	378	379	380	381
		382	383	384	385	386	387	388	389	390	391	392	393	394
		395	396	397	398	399	400	401	402	403	404	405	406	407
		408	409	411	412	414	415	416	417	418	419	420	421	422
		423	424	425	426	427	428	429	430	431	432	433	434	435
		436	437	438	439	440	441	442	443	444	445	446	447	448
		449	464	465	485	486	487	507	508	509	712	713	788	789
		797	798	1972	1973	1995	1996	2011	2012	2026	2027	2064	2065	2079
		2080	2094	2095	2108	2109	2122	2123	2135	2136	2154	2155	2248	2249
		2262	2263	2308	2309	2321	2322	4438	4439	4479	4480	4511#	4512	
SVCINS=	000000	319#	326#	366	367	368	369	370	371	372	373	374	375	376
		377	378	379	380	381	382	383	384	385	386	387	388	389
		390	391	392	393	394	395	396	397	398	399	400	401	402
		403	404	405	406	407	408	409	410	411	412	413	414	415
		416	417	418	419	420	421	422	423	424	425	426	427	428
		429	430	431	432	433	434	435	436	437	438	439	440	441
		442	443	444	445	446	447	448	449	450	463	464	465	466
		467	468	469	470	471	484	485	506	507	789	790	791	798
		803	804	1065	1066	1080	1081	1082	1083	1084	1085	1086	1244	1245
		1246	1247	1248	1249	1250	1978	1979	1999	2000	2016	2017	2031	2032
		2033	2034	2035	2036	2037	2043	2044	2045	2046	2047	2048	2049	2055
		2056	2070	2071	2085	2086	2100	2101	2115	2116	2129	2130	2137	2138
		2139	2140	2141	2142	2143	2144	2145	2148	2149	2159	2160	2161	2162
		2163	2164	2165	2166	2167	2170	2171	2189	2190	2191	2192	2193	2194
		2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2220	2221	2222
		2223	2224	2225	2226	2227	2228	2229	2281	2282	2283	2286	2287	2288
		2289	2290	2291	2292	2297	2298	2311	2312	2324	2325	2345	2346	2386
		2387	2395	2396	2400	2401	2419	2420	2421	2422	2423	2429	2430	2431
		2432	2433	2437	2438	2446	2447	2448	2449	2450	2455	2456	2457	2458
		2459	2464	2465	2466	2467	2468	2473	2474	2475	2476	2477	2483	2484
		2485	2486	2487	2491	2492	2493	2494	2495	2500	2501	2502	2503	2504
		2507	2508	2509	2514	2515	2516	2517	2518	2525	2526	2527	2528	2529
		2534	2535	2543	2544	2549	2550	2559	2560	2561	2562	2563	2599	2600
		2608	2609	2610	2617	2618	2619	2620	2621	2622	2623	2624	2629	2630
		2638	2639	2657	2658	2659	2660	2661	2666	2667	2675	2676	2680	2681
		2698	2699	2700	2701	2702	2705	2706	2718	2719	2720	2721	2722	2729

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CROSS REFERENCE TABLE -- USER SYMBOLS

2730	2731	2732	2733	2753	2754	2755	2756	2757	2762	2763	2771	2772	
2776	2777	2804	2805	2806	2807	2808	2813	2814	2821	2822	2827	2828	
2832	2833	2839	2840	2874	2875	2876	2877	2878	2889	2890	2891	2892	
2893	2906	2907	2908	2909	2910	2915	2916	2956	2957	2958	2959	2960	
2964	2965	2974	2975	2979	2980	2985	2986	2993	2994	2999	3000	3006	
3007	3011	3012	3029	3030	3031	3032	3033	3038	3039	3046	3047	3051	
3052	3057	3058	3066	3067	3072	3073	3080	3081	3085	3086	3093	3094	
3100	3101	3108	3109	-113	3114	3119	3120	3126	3127	3132	3133	3138	
3139	3145	3146	3151	3152	3158	3159	3165	3166	3173	3174	3178	3179	
3184	3185	3191	3192	3232	3233	3234	3235	3236	3245	3246	3253	3254	
3258	3259	3264	3265	3269	3270	3276	3277	3281	3282	3288	3289	3293	
3294	3299	3300	3304	3305	3311	3312	3321	3322	3329	3330	3334	3335	
3340	3341	3345	3346	3352	3353	3357	3358	3364	3365	3369	3370	3375	
3376	3380	3381	3387	3388	3397	3398	3405	3406	3410	3411	3416	3417	
3421	3422	3428	3429	3433	3434	3440	3441	3445	3446	3452	3453	3462	
3463	3470	3471	3475	3476	3481	3482	3486	3487	3493	3494	3498	3499	
3505	3506	3510	3511	3517	3518	3526	3527	3534	3535	3539	3540	3545	
3546	3550	3551	3557	3558	3562	3563	3570	3571	3577	3578	3584	3585	
3591	3592	3596	3597	3604	3605	3609	3610	3647	3648	3649	3650	3651	
3656	3657	3664	3665	3669	3670	3675	3676	3680	3681	3687	3688	3699	
3700	3707	3708	3712	3713	3718	3719	3723	3724	3729	3730	3734	3735	
3745	3746	3753	3754	3758	3759	3765	3766	3771	3772	3786	3787	3792	
3793	3802	3803	3830	3831	3838	3839	3843	3844	3849	3850	3856	3857	
3868	3869	3876	3877	3886	3887	3906	3907	3912	3913	3916	3917	3960	
3961	3962	3963	3964	3965	3966	3980	3981	3982	3983	3984	3992	3993	
4012	4013	4014	4015	4016	4024	4025	4026	4027	4028	4038	4039	4040	
4041	4042	4049	4050	4051	4052	4053	4060	4061	4062	4063	4064	4069	
4070	4074	4075	4076	4077	4078	4079	4080	4116	4117	4118	4119	4120	
4127	4128	4129	4130	4131	4136	4137	4144	4145	4149	4150	4158	4159	
4163	4164	4171	4172	4178	4179	4184	4185	4212	4213	4214	4215	4216	
4221	4222	4244	4245	4246	4247	4248	4256	4257	4284	4285	4286	4287	
4288	4316	4317	4318	4319	4320	4349	4350	4351	4352	4353	4359	4360	
4369	4370	4374	4375	4408	4409	4410	4411	4412	4414	4415	4416	4417	
4418	4419	4420	4422	4423	4437	4438	4440	4441	4442	4443	4444	4445	
4446	4447	4448	4449	4450	4451	4452	4453	4454	4455	4456	4457	4478	
4479	4481	4482	4483	4484	4485	4486	4487	4488	4489	4490	4491	4508	
4509	4510	4511											
SVCSUB= 000000	319#	328#											
SVCTAG= 000000	319#	330#	493	494	512	513	1977	1978	1998	1999	2015	2016	2054
	2055	2069	2070	2084	2085	2099	2100	2114	2115	2128	2127	2147	2148
	2169	2170	2296	2297	2310	2311	2323	2324	2344	2345	2914	2915	3608
	3609	3801	3802	3915	3916	4421	4422	4457	4458	4491	4492		
SVCTST= 000000	319#	327#	2342	2343	2378	2379	2948	2949	3638	3639	3821	3822	3951
	3952												
S&LSYM= 010000	319#	494#	513#	1978#	1999#	2016#	2055#	2070#	2085#	2100#	2115#	2129#	2148#
	2170#	2297#	2311#	2324#	2345#	2915#	3609#	3802#	3916#	4422#	4458#	4492#	
TBA = 164006	623#												
TCR = 164000	620#												
TESTA 013402	828	844	860	890	905	921	936	951	965	980	1044#		
TESTC 013446	1076#	2012	4019										
TESTK 025222	2594	2625#											
TESTM 025360	2662#												
TESTN 014066	1195#	2383	2397	2434	2531	2546	2596	2626	2663	2677	2759	2773	2810
	2829	2961	2976	2996	3008	3035	3048	3069	3082	3097	3110	3135	3148
	3162	3175	3242	3255	3266	3278	3290	3301	3318	3331	3342	3354	3366
	3377	3394	3407	3418	3430	3442	3459	3472	3483	3495	3507	3523	3536

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CROSS REFERENCE TABLE -- USER SYMBOLS

	3547	3559	3574	3588	3593	3653	3666	3677	3696	3709	3720	3742	3755
	3783	3827	3840	3846	3865	3883	3903	4146	4160	4168	4181	4218	4253
	4356	4371											
TESTNN 014166	1233#	2028	3976	4020									
TESTN1 014214	1243#	4056	4123										
TEST2 024206	2379#												
TEST4 031316	3639#												
TEST5 032040	3822#												
TEST6 032344	3952#												
TMOU = 000400	683#												
TPT52 020454	2207	2232#											
TRBA 002250	764#	824*	840*	856*	872*	886*	901*	917*	932*	947*	961*	976*	999
	2277*	2605*	2845*	2882*	2883	3197*	3202*						
TRCR 002242	761#	825*	826*	841*	842*	857*	858*	873*	874*	887*	888*	902*	903*
	918*	919*	933*	934*	948*	949*	962*	963*	978*	996	1009*	1010	1048
	1050	1052	1203	1205	1252	1562	1564	1566	1973*	2206	2271*	2283*	2380*
	2441*	2442	2451*	2452	2460*	2461	2469*	2470	2478*	2479	2488	2496*	2497
	2509*	2510	2520*	2521	2610*	2706*	2709*	2714	2725	2842*	2843*	2846*	2949*
	3198*	3199*	3641*	3824*	3955*	4043	4384*						
TRPRT 002254	767#	2279*	2286										
TRSR 002244	762#	822*	838*	854*	870*	884*	899*	915*	930*	945*	959*	974*	997
	1077	1088	1104	1106	1195	1236	2273*	2388	2425	2536	2603*	2631	2668
	2734	2764	2815	2841*	2952	2967	3040	3074	3102	3167	3195*	3247	3323
	3399	3464	3528	3643	3658	3702	3748	3632	3871	3890	3957	3968	4034
	4082	4138	4153	4361	4363	4377							
TRVCT 002252	766#	2278*	2288										
TRWC 002246	763#	823*	839*	855*	871*	885*	900*	916*	931*	946*	960*	975*	998
	2275*	2604*	2844*	2899*	2900	3196*	3201*						
TR79 002000 G	322#												
TSA = 000172	625#												
TSR = 164002	621#												
TSTINT 025066	2574#												
TSTRDY 014114	1203#	2040	3989	4066	4133								
TVA = 000170	624#												
TWAIT 013344	1019#												
TWC = 164004	622#												
TSARGC= 000002	366#	367#	368#	369#	370#	371#	1080#	1085	1244#	1249	2031#	2036	2043#
	2048	2137#	2144	2159#	2166	2189#	2193	2204#	2212	2220#	2224	3960#	3965
	4074#	4079	4414#	4419									
TSCODE= 000052	4440#	4445#	4450#	4481#	4484#								
TSERRN= 000071	319#	2420#	2430#	2447#	2456#	2465#	2474#	2484#	2492#	2501#	2515#	2526#	2560#
	2618#	2658#	2699#	2719#	2730#	2754#	2805#	2875#	2890#	2907#	2957#	3030#	3233#
	3648#	3981#	4013#	4025#	4039#	4050#	4061#	4117#	4128#	4213#	4245#	4285#	4317#
	4350#	4409#											
TSEXCP= 000000	4440#	4444	4445#	4449	4450#	4455	4484#	4489					
TSGMAN= 000000	319#												
TSHILI= 000764	4440#	4443	4445#	4448	4450#	4454	4484#	4488					
TSLAST= 000001	319#	4509#											
TSLQLI= 000000	4440#	4442	4445#	4447	4450#	4453	4484#	4487					
TLSYM= 010000	319#	494	513	1978	1999	2016	2055	2070	2085	2100	2115	2129	2148
	2170	2297	2311	2324	2345	2915	3609	3802	3916	4422	4458	4492	
TSLTNO= 000006	4512#												
TSNEST= 177777	319#	322#	484#	493#	506#	512#	1972#	1977#	1995#	1998#	2011#	2015#	2026#
	2054#	2064#	2069#	2079#	2084#	2094#	2099#	2108#	2114#	2122#	2128#	2135#	2147#
	2154#	2169#	2248#	2253#	2262#	2296#	2308#	2310#	2321#	2323#	2343#	2344#	2379#
	2914#	2949#	3608#	3639#	3801#	3822#	3915#	3952#	4421#	4437#	4456#	4478#	4490#

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CROSS REFERENCE TABLE -- USER SYMBOLS

T1AJ	032636	4030#																		
T1AK	032720	4055#																		
T1AL	033154	4122#																		
T1AF	033362	4180#																		
T1AN	033512	4217#																		
T1AO	033622	4252#																		
T1AP	033746	4289#																		
T1AQ	034066	4321#																		
T1AS	032464	3987#																		
T1B	032352	3956#																		
T1C	032604	4018#																		
T1P	032650	4032#																		
T1Q	034216	4355#																		
T2	024206	466	2378#																	
T2AB	026120	2809#																		
T2AT	025722	2758#																		
T2AU	026420	2881#																		
T2BA	026460	2897#																		
T2C	024360	2424#																		
T2D	024410	2439#																		
T2E	024640	2505#																		
T2F	024674	2519#																		
T2G	025514	2704#																		
T2I	024214	2381#																		
T2J	024722	2530#																		
T3	026522	467	2948#																	
T3AC	027740	3240#																		
T3AD	030166	3316#																		
T3AE	030414	3392#																		
T3AF	030616	3457#																		
T3AV	027014	3034#																		
T3AW	027130	3068#																		
T3AX	031020	3521#																		
T3AY	031176	3572#																		
T3AZ	031234	3586#																		
T3C	026534	2951#																		
T3H	026662	2995#																		
T3L	027222	3095#																		
T3O	026564	2966#																		
T3U	027344	3134#																		
T3V	027374	3147#																		
T3W	027424	3160#																		
T4	031316	468	3638#																	
T4EX	031752	3782#																		
T4XX	031466	3690#	3776																	
T5	032040	469	3821#																	
T5AW	032116	3845#																		
T5XY	032154	3859#	3896																	
T52A	020702	2232	2237#																	
T52B	020717	2232	2237#																	
T52C	020734	2232	2237#																	
T52D	020751	2232	2237#																	
T6	032344	470	3951#																	
UAM	= 000200	584#																		
USFA	002212	729#	977*	978	2552*	2601*	2602*	2610												
USEB	002214	730#	885	900	916	931	960	1299	1637	1673	1724	1894	1934	2640*						

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CROSS REFERENCE TABLE -- USER SYMBOLS

	2778*	2834*	2988*	3001*	3059*	3088*	3121*	3140*	3153*	3186*	3271*	3285*	3306*
	3347*	3359*	3382*	3423*	3435*	3447*	3488*	3500*	3512*	3552*	3564*	3599*	3598*
	3682*	3692*	3760*	3851*	3861*	3886*	4165*	4173*	4191	4258*	4295	4328	
USEC	002216	731#	901	3565*	3599*								
VECTOR	034540	4446	4460#										
WCOUNT	035206	4485	4493#										
WEOF =	001034	648#	948										
WIDB =	000432	647#	841										
WPEF =	040000	689#											
WRITE =	000402	635#	887	902	2842	3198							
WRT	012642	884#	2641	3002	3284	3360	3436	3501	3701	4174			
WRTC	012710	899#	3566										
WTEOF	013072	945#	2682	3128	3747	4259							
WTIDB	012464	838#	2823	2981	3013	3053	3115	3180	3260	3336	3412	3477	3541
		3993											3671
WAIT	013362	1020	1023#	2724	2848	3062	3995	4031					
XBA16 =	010000	668#											
XBA17 =	020000	669#											
XHDR	020346	2109	2123	2176	2188#								
XPRT	020370	2111	2125	2178	2202#								
XSALWA=	000000	319#											
XSALS=	000040	319#											
XSOFFS=	000400	319#											
XSTRUE=	000020	319#											
SLSTIN=	000001	324#											
SLSTTA=	000001	325#											
.	= 035402	315#	773#	790#	803#	807#	2238#	4500#					

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CROSS REFERENCE TABLE -- MACRO NAMES

ENDSW	1#	319#	511												
ENDTST	1#	319#	2343	2913	3607	3800	3914	4420							
EQUALS	1#	319#	524												
ERRDF	1#	319#													
ERRHRD	1#	319#													
ERROR	1#	319#	2385	2394	2399	2436	2533	2542	2548	2598	2628	2637	2665	2674	2679
	2761	2770	2775	2812	2820	2826	2831	2838	2963	2973	2978	2984	2992	2998	3005
	3010	3037	3045	3050	3056	3065	3071	3079	3084	3092	3099	3107	3112	3118	3125
	3131	3137	3144	3150	3157	3164	3172	3177	3183	3190	3244	3252	3257	3263	3268
	3275	3280	3287	3292	3298	3303	3310	3320	3328	3333	3339	3344	3351	3356	3363
	3368	3374	3379	3386	3396	3404	3409	3415	3420	3427	3432	3439	3444	3451	3461
	3469	3474	3480	3485	3492	3497	3504	3509	3516	3525	3533	3538	3544	3549	3556
	3561	3569	3576	3583	3590	3595	3603	3605	3663	3668	3674	3679	3686	3698	3706
	3711	3717	3722	3728	3733	3744	3752	3757	3764	3770	3785	3791	3829	3837	3842
	3848	3855	3867	3875	3885	3905	3911	3991	4068	4135	4143	4148	4157	4162	4170
	4177	4183	4220	4255	4358	4368	4373								
ERRSF	1#	319#													
ERRSOF	1#	319#	2418	2428	2445	2454	2463	2472	2482	2490	2499	2513	2524	2558	2616
	2656	2697	2717	2728	2752	2803	2873	2888	2905	2955	3028	3231	3646	3979	4011
	4023	4037	4048	4059	4115	4126	4211	4243	4283	4315	4348	4407			
ERRTBL	1#	319#	711												
ESCAPE	1#	319#													
EXIT	1#	319#													
FEQUAL	1#	319#													
GETBYT	1#	319#													
GETPRI	1#	319#													
GETWOR	1#	319#													
GPIANIA	1#	319#													
GPIANID	1#	319#													
GPIANIL	1#	319#													
GPHARD	1#	319#	2266												
GPRMA	1#	319#	4439	4444											
GPRMD	1#	319#	4449	4483											
GPRML	1#	319#													
HEADER	1#	319#	364												
INLOOP	1#	319#													
IOSETU	1#	319#													
IOSTAR	1#	319#													
KT11	1#	319#													
LASTAD	1#	319#	4507												
MANUAL	1#	319#													
MEMORY	1#	319#													
MSBYTE	1#	319#	365#	371	372	373									
MSCHEC	1#	319#													
MSCNTO	1#	319#	4440#	4445#	4450#	4484#									
MSCOUN	1#	319#	1080#	1244#	2031#	2043#	2137#	2159#	2189#	2204#	2220#	3960#	4074#	4414#	
MSDATA	1#	319#	365#	374	376	378	380	382	384	386	388	390	392	394	396
	398	400	402	404#	406	408	411	414	416	418	420	422	424	426	428
	430	432	434	436	438	440	442	444	446	448	788#	797#			
MSDECR	1#	319#	493#	512#	1977#	1998#	2015#	2054#	2069#	2084#	2099#	2114#	2128#	2147#	2169#
	2253#	2296#	2310#	2323#	2344#	2914#	3608#	3801#	3915#	4421#	4456#	4490#	4507#		
MSDEFA	1#	319#	4440#	4445#	4450#	4484#									
MSENDE	1#	319#	493#	512#	1977#	1998#	2015#	2054#	2069#	2084#	2099#	2114#	2128#	2147#	2169#
	2296#	2310#	2323#	2344#	2914#	3608#	3801#	3915#	4421#	4456#	4490#	4507#			
MSERRI	1#	319#	2419#	2429#	2446#	2455#	2464#	2473#	2483#	2491#	2500#	2514#	2525#	2559#	2617#
	2657#	2698#	2718#	2729#	2753#	2804#	2874#	2889#	2906#	2956#	3029#	3232#	3647#	3980#	4012#

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CROSS REFERENCE TABLE -- MACRO NAMES

	4171#	4178#	4184#	4212#	4213#	4214#	4215#	4221#	4244#	4245#	4246#	4247#	4256#	4284#	4285#
	4286#	4287#	4316#	4317#	4318#	4319#	4349#	4350#	4351#	4352#	4359#	4369#	4374#	4408#	4409#
	4410#	4411#	4414#	4415#	4416#	4417	4418#	4419	4422#	4437#	4440#	4441	4442	4443	4445#
	4446	4447	4448	4450#	4451	4452	4453	4454	4456#	4478#	4481#	4482#	4484#	4485	4486
	4487	4488	4490#	4508#	4509#	4510#									
MSGNLS	1#	319#													
MSGNSU	1#	319#													
MSGNTA	1#	319#	493#	512#	1977#	1998#	2015#	2054#	2069#	2084#	2099#	2114#	2128#	2147#	2169#
	2296#	2310#	2323#	2344#	2914#	3608#	3801#	3915#	4421#	4456#	4457	4490#	4491		
MSGNTE	1#	319#	2342#	2378#	2948#	3638#	3821#	3951#							
MSHAPT	1#	319#	365#												
MSHNAP	1#	319#	365#	404											
MSINCR	1#	319#	322#	484#	506#	1065#	1084#	1248#	1972#	1995#	1999#	2011#	2016#	2026#	2035#
	2047#	2055#	2064#	2070#	2079#	2085#	2094#	2100#	2108#	2115#	2122#	2129#	2135#	2143#	2148#
	2154#	2165#	2170#	2192#	2211#	2223#	2248#	2262#	2268#	2282#	2290#	2297#	2308#	2311#	2321#
	2324#	2342#	2343#	2345#	2378#	2379#	2386#	2395#	2400#	2419#	2429#	2437#	2446#	2455#	2464#
	2473#	2483#	2491#	2500#	2508#	2514#	2525#	2534#	2543#	2549#	2559#	2599#	2609#	2617#	2623#
	2629#	2638#	2657#	2666#	2675#	2680#	2698#	2705#	2718#	2729#	2753#	2762#	2771#	2776#	2804#
	2813#	2821#	2827#	2832#	2839#	2874#	2889#	2906#	2915#	2948#	2949#	2956#	2964#	2974#	2979#
	2985#	2993#	2999#	3006#	3011#	3029#	3038#	3046#	3051#	3057#	3066#	3072#	3080#	3085#	3093#
	3100#	3108#	3113#	3119#	3126#	3132#	3138#	3145#	3151#	3158#	3165#	3173#	3178#	3184#	3191#
	3232#	3245#	3253#	3258#	3264#	3269#	3276#	3281#	3288#	3293#	3299#	3304#	3311#	3321#	3329#
	3334#	3340#	3345#	3352#	3357#	3364#	3369#	3375#	3380#	3387#	3397#	3405#	3410#	3416#	3421#
	3428#	3433#	3440#	3445#	3452#	3462#	3470#	3475#	3481#	3486#	3493#	3498#	3505#	3510#	3517#
	3526#	3534#	3539#	3545#	3550#	3557#	3562#	3570#	3577#	3584#	3591#	3596#	3604#	3609#	3632#
	3639#	3647#	3656#	3664#	3669#	3675#	3680#	3687#	3699#	3707#	3712#	3718#	3723#	3729#	3734#
	3745#	3753#	3758#	3765#	3771#	3786#	3792#	3802#	3821#	3822#	3830#	3838#	3843#	3849#	3856#
	3868#	3876#	3886#	3906#	3912#	3916#	3951#	3952#	3964#	3980#	3992#	4012#	4024#	4038#	4049#
	4060#	4069#	4078#	4116#	4127#	4136#	4144#	4149#	4158#	4163#	4171#	4178#	4184#	4212#	4221#
	4244#	4256#	4284#	4316#	4349#	4359#	4369#	4374#	4408#	4418#	4422#	4437#	4478#		
MSIOSE	1#	319#													
MSLDRO	1#	319#	2267#	2281#	2507#	2608#	2622#								
MSMASK	1#	319#													
MSMCHI	1#	319#													
MSMICLO	1#	319#													
MSMSK1	1#	319#													
MSPOP	1#	319#	493#	512#	1977#	1998#	2015#	2054#	2069#	2084#	2099#	2114#	2128#	2147#	2169#
	2253#	2296#	2310#	2323#	2344#	2914#	3608#	3801#	3915#	4421#	4456#	4490#	4507#		
MSPRIN	1#	319#	1080#	1244#	2031#	2043#	2137#	2159#	2189#	2204#	2220#	3960#	4074#	4414#	
MSPUSH	1#	319#	322#	484#	506#	1972#	1995#	2011#	2026#	2064#	2079#	2094#	2108#	2122#	2135#
	2154#	2248#	2262#	2308#	2321#	2342#	2343	2378#	2379	2948#	2949	3638#	3639	3821#	3822
	3951#	3952	4437#	4478#											
MSPUT	1#	319#	1080#	1244#	2031#	2043#	2137#	2159#	2189#	2204#	2220#	2286#	3960#	4074#	4414#
MSPUT1	1#	319#	1080#	1081	1082	1244#	1245	1246	2031#	2032	2033	2043#	2044	2045	2137#
	2138	2139	2140	2141	2159#	2160	2161	2162	2163	2189#	2190	2204#	2205	2206	2207
	2208	2209	2220#	2221	2286#	2287	2288	2289	3960#	3961	3962	4074#	4075	4076	4414#
	4415	4416													
MSRADI	1#	319#	4440#	4445#	4450#	4484#									
MSRBRO	1#	319#													
MSRNRO	1#	319#	2267#	2269											
MSSETS	1#	319#	322#	484#	506#	1972#	1995#	2011#	2026#	2064#	2079#	2094#	2108#	2122#	2135#
	2154#	2248#	2262#	2308#	2321#	2343#	2379#	2949#	3639#	3822#	3952#	4437#	4478#		
MSSTAR	1#	319#													
MS SVC	1#	319#	1065#	1080#	1084	1244#	1248	1998#	1999	2015#	2016	2031#	2035	2043#	2047
	2054#	2055	2069#	2070	2084#	2085	2099#	2100	2114#	2115	2128#	2129	2137#	2143	2147#
	2148	2159#	2165	2169#	2170	2189#	2192	2204#	2211	2220#	2223	2267#	2268	2281#	2282

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CROSS REFERENCE TABLE -- MACRO NAMES

	4013	4014	4015	4024#	4025	4026	4027	4038#	4039	4040	4041	4049#	4050	4051	4052
	4060#	4061	4062	4063	4116#	4117	4118	4119	4127#	4128	4129	4130	4212#	4213	4214
	425	424#	4245	4246	4247	4284#	4285	4286	4287	4316#	4317	4318	4319	4349#	4350
	4351	4352	4408#	4409	4410	4411	4440#	4445#	4450#	4481#	4482	4484#	4509	4510	
MSXFER	1#	319#													
OPEN	1#	319#													
POINTE	1#	319#	346												
PRINTB	1#	319#	2030	2042	2136	2158	2188	2203	2219						
PRINTF	1#	319#	1079	1243	3959	4073	4413								
PRINTS	1#	319#													
PRINTX	1#	319#													
PEADBU	1#	319#													
READEF	1#	319#													
RFLAGS	1#	319#													
SETPRI	1#	319#	2280	2506	2607	2621									
SETVEC	1#	319#	2285												
SLASH	1#	319#													
STARS	1#	319#													
SVC	1#	317#	318												
XFER	1#	319#													
XFERF	1#	319#													
XFERT	1#	319#													

. ABS. 035402 000

ERRORS DETECTED: 0

CZTRAC.BIN/I,CZTRAC.SEQ/CRF/SOL/NL:TOC=SVC34R.MLB,CZTRAC.P11
 RUN-TIME: 16 21 2 SECONDS
 RUN-TIME RATIO: 64/39=1.6
 CORE USED: 16K (31 PAGES)