

LSI-11

TRAPS TEST
MD-11-DVKAD-B

EP DVKAD B DL B
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The image displays a grid of 60 small tables, arranged in 10 rows and 6 columns. Each table contains technical data, likely test results or configuration parameters for the LSI-11. The text within the tables is small and difficult to read, but the layout is consistent across all cells. The tables are organized into a structured grid, with each cell containing a separate set of data.

LSI-11

801

POP: DVKADBSE0
DVKADB.P11

00010000

770308

POP10 411

.MAIN. MACY11 27:1006

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PAGE 1
SEC 0003

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.REM !

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IDENTIFICATION

PRODUCT NAME:	DVKAD-B (LSI-11 ONLY)
DATE CREATED:	FEBRUARY, 1977
MAINTAINER:	DIAGNOSTIC GROUP
AUTHOR:	AL LOSCHAK
REVISED BY:	M. McNALLY JUNE 1976

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1. ABSTRACT

THIS IS A TEST OF ALL OPERATIONS AND INSTRUCTIONS THAT CAUSE TRAPS, ODDITIES OF REGISTER 6, INTERRUPTS, THE RESET AND WAIT INSTRUCTIONS.

2. REQUIREMENTS

2.1 EQUIPMENT

LSI-11 STANDARD COMPUTER WITH AN SLU UNIT AND 4K OF MEMORY

2.2 STORAGE

2.2.1 PROGRAM STORAGE - THE ROUTINE USES 4K MEMORY

3. LOADING PROCEDURE

3.1 METHOD

PROCEDURE FOR NORMAL ABSOLUTE TAPES SHOULD BE FOLLOWED.

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4. STARTING PROCEDURE

THE PROGRAM STARTS AT 200. IF THIS PROGRAM RUNS UNDER APT
NO CHANGE IS NECESSARY. IF THIS PROGRAM RUNS ALONE THE
OPERATOR HAS THE FOLLOWING OPTIONS BY SETTING
THE SOFTWARE SWITCH REGISTER (LOCATION 422)

BIT 6=1 (100 OCTAL) IF WE HAVE EIS AND FIS OPTION

BIT 5=1 (40 OCTAL) IF WE WANT TO SUPRESS "END OF PASS" TYPEOUT

BIT 4=1 (20 OCTAL) WILL NOT ALLOW OPCODES 75400-76777 TO DO
RESERVED INSTRUCTIONS TRAPS IN THE LAST TEST OF
THIS DIAGNOSTIC.

BIT 3=1 (10 OCTAL) WILL NOT ALLOW OPCODES 170000-177777 TO DO
RESERVED INSTRUCTIONS TRAPS IN THE LAST TEST OF
THIS DIAGNOSTIC.

BIT 2=1 (4 OCTAL) WILL NOT ALLOW OPCODES 76030-76057 (DIS RESERVED OPCODE SPACE)
NOR EIS OPCODES TO DO RESERVED INSTRUCTION TRAPS IN THE LAST
TEST OF THIS DIAGNOSTIC

THE PROGRAM STARTS AT 200.
IF IT IS DESIRED TO RESET THE PASS COUNT BACK TO ZERO
START AT LOCATION 210.

4.3 PROGRAM AND/OR OPERATOR ACTION

LOAD PROGRAM INTO MEMORY. (BOTTOM 4K)
SET THE DESIRED SWITCH REGISTER BITS, IF ANY.
LOAD ADDRESS.
START.

THE PROGRAM WILL PRINT END OF PASS AFTER THE 1ST ITERATION AND
THEN PRINT IT EVERY 15 TIMES; APROXIMATELY 2 MINUTES.

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5. OPERATION PROCEDURE

5.2 SUBROUTINE ABSTRACTS

5.2.1 TRAPCATCHER

THIS IS A SERIES OF INSTRUCTIONS DESIGNED TO DETECT AND ISOLATE UNEXPECTED TRAPS AND INTERRUPTS, THAT OCCUR IN THE TRAP AND INTERRUPT VECTOR AREA OF MEMORY.

THE PRINCIPLE OF THIS ROUTINE IS: THE VECTOR ENTRANCE ADDRESS POINTS TO THE NEXT SEQUENTIAL WORD WHICH WILL CONTAIN A HALT (000000) (THIS LOCATION IS ALSO THE STATUS WORD FOR THAT VECTOR ENTRANCE. BUT THIS WILL HAVE NO EFFECT ON IT.

IF A HALT OCCURS IN THE TRAP OR INTERRUPT VECTOR AREA, REGISTER SIX SHOULD BE EXAMINED TO DETERMINE ITS CONTENTS, THEN USE REGISTER SIX CONTENTS AS AN ADDRESS TO DETERMINE THE LOCATION THE PROGRAM WAS AT, WHEN THE INTERRUPT OR TRAP OCCURRED. (MEMORY AS SPECIFIED BY R6 CONTAINS THE PC OF THE INSTRUCTION FOLLOWING THE INSTRUCTION WHERE THE TRAP OCCURRED.
ALSO THE CONTENTS OF 'STESTN' CONTAIN THE TEST NUMBER THAT IT WAS DOING BEFORE IT TRAPPED.

5.3 PROGRAM AND/OR OPERATOR ACTION

5.3.1 LOADING AND STARTING AT 200 STARTS THE TEST. IF AN ERROR IS DETECTED, THERE WILL BE A HALT.

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6. ERRORS

6.1 ALL ERRORS WILL CAUSE A HALT.
THE PC+2 OF THE HALT INSTRUCTION IS PRINTED
ON THE CONSOLE DEVICE BY THE LSI-1!

6.1.1 THE PROGRAM CHECKS TO SEE THAT THE P.C. DOESN'T JUMP
WITHIN THE TESTS, BY A SEQUENCE COUNT CALLED 'STSTN'
THIS TEST IS A SEQUENTIAL INCREMENT AND COMPARE COUNT.

EX: CODE

```
INC    @#STESTN    ;UPDATE TEST NUMBER
CMP    @N,@#STESTN ;SEQUENCE ERROR?
BNE    SOME LOCATION ;BRANCH TO ERROR HALT ON SEQ ERROR
IMPORTANT
```

IF AN ERROR IS DETECTED :IT COULD BE BECAUSE OF TWO REASONS.
A) WRONG TEST NUMBER
B) ERROR IN THE PRESENT TEST.

////////////////////////////////////
THE TEST SEQUENCE LOCATION "TESTN" SHOULD BE CHECKED FIRST
TO SEE IF IT MATCHES THE PRESENT TEST.
IF IT DOESN'T MATCH ; THEN THE CONTENTS OF THIS LOCATION
TELL YOU WHICH TEST IT WAS DOING BEFORE IT HALTED.
////////////////////////////////////

6.2 ERROR RECOVERY
ON TRAP ERRORS - RESTART AT STARTING ADDRESS

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7. RESTRICTIONS
 7.1 STARTING RESTRICTION

NONE

7.2 OPERATIONAL RESTRICTION

NONE

8. MISCELLANEOUS
 THERE IS A TEST THAT WILL CHECK THAT ODD ADDRESSING
 WILL IGNORE BIT "0"

8.1 EXECUTION TIME

FOR ONE PASS APROXIMATELY 8 SECONDS; THEN IT TYPES
 "END OF PASS" APROXIMATELY EVERY 2 MINUTES.

9. PROGRAM DESCRIPTION

THIS PROGRAM CHECKS THAT ON ALL TRAP OPERATIONS REGISTER
 6 IS DECREMENTED THE CORRECT AMOUNT, THAT THE CORRECT
 PC IS SAVED ON THE STACK, THAT THE OLD CONDITION CODES AND
 PRIORITY ARE PLACED ON THE STACK AND THAT THE NEW STATUS AND
 CONDITION CODES ARE CORRECT. BOTH THE "TRAP" AND "EMT"
 TRAP INSTRUCTIONS ARE TESTED TO SEE THAT ALL COMBINATIONS WILL
 TRAP. CHECKED ALSO ARE THE RTT AND THE RTI INSTRUCTIONS AND THAT ALL
 RESTRICTED INSTRUCTIONS WILL TRAP. VERIFICATION OF THE "BPT" INSTRUCTION (000C3
 WHICH IS USED FOR SOFTWARE DEBUG ROUTINES: ODT,DDT, IS DONE.
 ALSO, THE TRACE BIT IS CHECKED TO SEE IF IT CAUSES A TRAP.
 SPECIAL CHECKS ARE MADE TO SEE IF BUS
 ERROR TRAPS OCCUR ON NON-EXISTENT MEMORY.

!

H01

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SEQ 0009

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 209 000000' 000000G
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 215 000007
 216 000006
 217 000003
 218 000000
 219 000001
 220 000002
 221 000000
 222 104400
 223 104000
 224 000003
 225 000004
 226 000004
 227 000014
 228 000030
 229 000020
 230 000034
 231 177564
 232 177560
 233 177564
 234 177566
 235 000240
 236 000240
 237 000007
 238 000010
 239 004700
 240 000100
 241 000404
 242 000402
 243

LISTING

.NLIST MD.CND.MC
 .LIST ME

PC=%7
 SP=%6
 TAB=%3
 RO=%0
 LAST=%1
 FIRST=%2
 HLT=HALT
 TRAP=104400
 EMT=104000
 TRT=3
 ITRAP5=4
 RTRAP5=4
 RTRAP4=14
 RTRAP3=30
 RTRAP2=20
 RTRAP1=34
 TTCSR=177564
 TRCSR=177560
 TPS=177564
 TPB=177566
 BELL=240
 NOP=240
 TRAPA=000007
 RTRAP=10
 ILLA=004700
 ILLB=100
 \$STNM=\$TESTN
 \$ERROR=\$FATAL
 .ABS

;RESERVED INST AND ILLEGAL ADDRESSES
 ;FOR TRACE TRAP
 ;FOR EMULATOR TRAP
 ;FOR IOT TRAP
 ;FOR TRAP INST

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000446
000450

```
.=400
.SBTTL ACT11 HOOKS
:*****
:HOOKS REQUIRED BY ACT11
  $SVPC=.          ;SAVE PC
  .=46            ;;1)SET LOC.46 TO ADDRESS OF SENDAD IN .SEOP
  $ENDAD          ;;2)SET LOC.52 TO ZERO
  .=52
  .WORD 0         ;; RESTORE PC
  .=$SVPC
.SBTTL APT MAILBOX-ETABLE
:*****
.EVEN
$MAIL:          ;; APT MAILBOX
$MSGTY: .WORD   AMSGTY ;; MESSAGE TYPE CODE
$FATAL: .WORD   AFATAL ;; FATAL ERROR NUMBER
$TESTN: .WORD   ATESTN ;; TEST NUMBER
$PASS:   .WORD   APASS  ;; PASS COUNT
$DEVCT:  .WORD   ADEVCT ;; DEVICE COUNT
$UNIT:   .WORD   AUNIT  ;; I/O UNIT NUMBER
$MSGAD:  .WORD   AMSGAD ;; MESSAGE ADDRESS
$MSGLG:  .WORD   AMSGLG ;; MESSAGE LENGTH
$ETABLE:          ;; APT ENVIRONMENT TABLE
$ENV:     .BYTE   AENV   ;; ENVIRONMENT BYTE
$ENVM:    .BYTE   AENVM  ;; ENVIRONMENT MODE BITS
$SWREG:   .WORD   ASWREG ;; APT SWITCH REGISTER
$USWR:    .WORD   AUSWR  ;; USER SWITCHES
$CPUOP:   .WORD   ACPUOP ;; CPU TYPE, OPTIONS
: *
: *          BITS 15-11=CPU TYPE
: *          11/04=01,11/05=02,11/20=03,11/40=04,11/45=05
: *          11/70=06,PDQ=07,9=10
: *          BIT 10=REAL TIME CLOCK
: *          BIT 9=FLOATING POINT PROCESSOR
: *          BIT 8=MEMORY MANAGEMENT
: *          ;; HIGH ADDRESS, M.S. BYTE
: *          ;; MEM. TYPE, BLK#1
: *          MEM. TYPE BYTE -- (HIGH BYTE)
: *          900 NSEC CORE=001
: *          300 NSEC BIPOLAR=002
: *          500 NSEC MOS=003
: *          ;; HIGH ADDRESS, BLK#1
: *          MEM. LAST ADDR.=3 BYTES, THIS WORD AND LOW OF "TYPE" ABOVE
: *          ;; HIGH ADDRESS, M.S. BYTE
: *          ;; MEM. TYPE, BLK#2
: *          ;; MEM. LAST ADDRESS, BLK#2
: *          ;; HIGH ADDRESS, M.S. BYTE
: *          ;; MEM. TYPE, BLK#3
: *          ;; MEM. LAST ADDRESS, BLK#3
: *          ;; HIGH ADDRESS, M.S. BYTE
: *          ;; MEM. TYPE, BLK#4
: *          ;; MEM. LAST ADDRESS, BLK#4
$MADR1: .WORD   AMADR1
: *
$MAMS2: .BYTE   AMAMS2
$MTYP2: .BYTE   AMTYP2
$MADR2: .WORD   AMADR2
$MAMS3: .BYTE   AMAMS3
$MTYP3: .BYTE   AMTYP3
$MADR3: .WORD   AMADR3
$MAMS4: .BYTE   AMAMS4
$MTYP4: .BYTE   AMTYP4
$MADR4: .WORD   AMADR4
$ETEND:
```

300
301
302
303
304
305
306 000450
307 000024
308 000024 000200
309 000044
310 000044 000450
311 000450
312
313
314
315
316 000450
317 000450 000000
318 000452 000400
319 000454 000011
320 000456 000011
321 000460 000000
322 000462 000024

```
.MEXIT
.SBTTL  APT PARAMETER BLOCK

:*****
:SET LOCATIONS 24 AND 44 AS REQUIRED FOR APT
:*****
      .SX=      ;; SAVE CURRENT LOCATION
      =24      ;; SET POWER FAIL TO POINT TO START OF PROGRAM
      200      ;; FOR APT START UP
      =44      ;; POINT TO APT INDIRECT ADDRESS PNTR.
      $APTHDR  ;; POINT TO APT HEADER BLOCK
      =.SX     ;; RESET LOCATION COUNTER
:*****
:SETUP APT PARAMETER BLOCK AS DEFINED IN THE APT-PDP11 DIAGNOSTIC
:INTERFACE SPEC.

$APT40:
$HIBTS: .WORD 0      ;; TWO HIGH BITS OF 18 BIT MAILBOX ADDR.
$MBADR: .WORD $MAIL  ;; ADDRESS OF APT MAILBOX (BITS 0-15)
$TSTM:  .WORD 11    ;; RUN TIM OF LONGEST TEST
$PASTM: .WORD 11    ;; RUN TIME IN SECS. OF 1ST PASS ON 1 UNIT (QUICK VERIFY)
$UNITM: .WORD 0     ;; ADDITIONAL RUN TIME (SECS) OF A PASS FOR EACH ADDITIONAL UNIT
      .WORD $ETEND-$MAIL/2 ;; LENGTH MAILBOX-ETABLE(WORDS)
```

```

323
324
325      000200      000200      . =200
326      000200      000167      000276      JMP      START
327      000210      000210      . =210
328      000210      005077      000406      CLR      2#SPASS      ;CLEAR THE PASS COUNT
329      000214      000214      000262      JMP      START
330      000500      000500      . =500
331      000500      000000      000000      BUFF:
332      000502      012767      013276      177314      START: MOV      #PWDOWN,24      ;SET UP THE POWER DOWN VECTOR
333      000510      012767      000340      177310      MOV      #340,26      ;SET UP POWER DOWN PRIORITY
334      000516      105767      -77676      TSTB     $ENV      ;ARE WE UNDER APT?
335      000522      001023      BNE      BEGIN      ;YES
336      000524      005067      -77671      CLR      $ENVM
337      000530      005067      -77672      CLR      $CPUOP
338      000534      132767      000040      177660      BITB     #40,$SWREG      ;DO WE PRINT END OF PASS
339      000542      001403      BEQ      1$      ;YES
340      000544      152767      000040      177647      BISB     #40,$ENVM
341
342      000552      016700      177644      1$:      MOV      $SWREG,R0      ;GET CONTENT OF $SWREG
343      000556      032700      000100      BIT      #100,R0      ;DO WE HAVE EIS,FIS OPTION?
344      000562      001403      BEQ      BEGIN      ;NO
345      000564      052767      000300      177634      BIS      #300,$CPUOP      ;YES SET UP LOCATION #CPUOP
346
347
348
349      000572      012737      177777      013256      BEGIN:  MOV      #-1,2#PASSPT
350      000600      012702      000400      RESTR:  MOV      #MSGTY,%2
351      000604      005067      177570      CLR      $MSGTY
352      000610      005067      177570      CLR      $STNM
353      000614      005067      177562      CLR      $ERROR
354      000620      000167      000026      JMP      TST1
355      000624      000000      K1:      0
356      000626      000000      K2:      0
357      000630      000000      K3:      0
358      000632      000000      K4:      0
359      000634      000000      K5:      0
360      000636      000000      K6:      0
361      000640      052525      K7:      052525
362      000642      052400      K10:     052400
363      000644      000000      K11:     0
364      000646      000000      K12:     0
365      000650      000000      HERE:    0
  
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 CVKADB.P11 17-FEB-77 15:34 APT PARAMETER BLOCK

SEG 0014

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367
368 ;*****
369 ;TEST 1 TEST AUTO INCREMENT AND DECREMENT OF R6 FOR WORD AND BYTES
370 ;*****
370 000652 005237 000404 TST1: INC 2#STESTN ;UPDATE TEST NUMBER
371 000656 022737 000001 000404 CMP #1,2#STESTN ;SEQUENCE ERROR?
372 000664 001124 BNE TST2-12 ;BR TO ERROR HALT ON SEQ ERROR
373 000666 005006 R6TST: CLR %6
374 000670 112667 177754 MOV (6)+,HERE ;SIX SHOULD INCREMENT BY TWO
375 000674 020627 000002 CMP %6,#2
376 000700 001405 BEQ 1$
377 000702 012737 000001 000402 MOV #1,2#$FATAL ;MOVE TO MAILBOX # ***** 1 *****
378 000710 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
379 000712 000000 HALT ;R6 DID NOT AUTO INCREMENT BY TWO
380 ; TO SCOPE REPLACE HALT W/ 240
381 ; AND REPLACE NEXT INST W/ 764
382
383 000714 012706 001000 1$: MOV #1000,%6
384 000720 114667 177724 MOV (6)+,HERE ;SHOULD DECREMENT BY TWO
385 000724 020627 000776 CMP %6,#776
386 000730 001405 BEQ 2$
387 000732 012737 000002 000402 MOV #2,2#$FATAL ;MOVE TO MAILBOX # ***** 2 *****
388 000740 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
389 000742 000000 HALT ;R6 DID NOT AUTO DECREMENT BY 2
390 ; TO SCOPE REPLACE HALT W/ 240
391 ; AND REPLACE NEXT INST W/ 750
392
393 000744 005006 2$: CLR %6
394 000746 112626 MOV (6)+,(6)+ ;DOUBLES AUTO INCREMENT OF R6
395 000750 020627 000004 CMP %6,#4
396 000754 001405 BEQ 3$
397 000756 012737 000003 000402 MOV #3,2#$FATAL ;MOVE TO MAILBOX # ***** 3 *****
398 000764 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
399 000766 000000 HALT ;WRONG AUTO INCREMENT OF R6
400 ; TO SCOPE REPLACE HALT W/ 240
401 ; AND REPLACE NEXT INST W/ 736
402
403 000770 005006 3$: CLR %6
404 000772 005004 CLR %4
405 000774 122624 CMP (6)+,(4)+ ;TEST INCREMENT OF R6
406 000776 020627 000002 CMP %6,#2
407 001002 001405 BEQ 4$
408 001004 012737 000004 000402 MOV #4,2#$FATAL ;MOVE TO MAILBOX # ***** 4 *****
409 001012 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
410 001014 000000 HALT ;WRONG INCREMENT OF R6
411 ; TO SCOPE REPLACE HALT W/ 240
412 ; AND REPLACE NEXT INST W/ 723
413
414 001016 005006 4$: CLR %6
415 001020 005004 CLR %4
416 001022 122426 CMP (4)+,(6)+ ;TEST INCREMENT OF R6
417 001024 020627 000002 CMP %6,#2
418 001030 001405 BEQ 5$
419 001032 012737 000005 000402 MOV #5,2#$FATAL ;MOVE TO MAILBOX # ***** 5 *****
420 001040 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
421 001042 000000 HALT ;WRONG INCREMENT OF R6
  
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TEST AUTO INCREMENT AND DECREMENT OF R6 FOR WORD AND BYTES

SEG 0015

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422 ; TO SCOPE REPLACE HALT W/ 240
423 ; AND REPLACE NEXT INST W. 71C
424
425 001044 005006 5S: CLR %6
426 001046 005004 CLR %4
427 001050 122624 CMPB (6)+ (4)+ ; TEST INCREMENT OF R4
428 001052 020427 000001 CMP %4, #1
429 001056 001405 BEQ 6S
430 001060 012737 000006 000402 MOV #6, @#SFATAL ; MOVE TO MAILBOX # ***** 6 *****
431 001066 005212 INC ; SET MSGTYP TO FATAL ERROR
432 001070 000000 HALT (R2) ; WRONG INCREMENT OF R4
433 ; TO SCOPE REPLACE HALT W/ 240
434 ; AND REPLACE NEXT INST W/ 675
435
436 001072 005006 6S: CLR %6
437 001074 005004 CLR %4
438 001076 122426 CMPB (4)+ (6)+ ; TEST INCREMENT OF R4
439 001100 020427 000001 CMP %4, #1
440 001104 001405 BEQ 7S
441 001106 012737 000007 000402 MOV #7, @#SFATAL ; MOVE TO MAILBOX # ***** 7 *****
442 001114 005212 INC ; SET MSGTYP TO FATAL ERROR
443 001116 000000 HALT (R2) ; WRONG INCREMENT OF R4
444 ; TO SCOPE REPLACE HALT W/ 240
445 ; AND REPLACE NEXT INST W/ 662
446
447 001120 012706 001000 7S: MOV #1000, %6
448 001124 124667 177520 CMPB -(6), HERE ; TEST DECREMENT OF R6
449 001130 022706 000776 CMP #776, %6
450 001134 001405 BEQ TST2
451 001136 012737 000010 000402 MOV #10, @#SFATAL ; MOVE TO MAILBOX # ***** 10 *****
452 001144 005212 INC ; SET MSGTYP TO FATAL ERROR
453 001146 000000 HALT (R2) ; WRONG DECREMENT OF R6, OR WRONG $TESTN
454 ; TO SCOPE REPLACE HALT W/ 240
455 ; AND REPLACE NEXT INST W/ 646
  
```

B02

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TEST AUTO INCREMENT AND DECREMENT OF R6 FOR WORD AND BYTES

SEG 0016

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460 001150 005237 000404
461 001154 022737 000002 000404
462 001162 001137
463 001164 012767 123456 177442
464 001172 012767 050505 177424
465 001200 012705 000624
466 001204 012706 000634
467 001210 112625
468 001212 022767 050456 177404
469 001220 001405
470 001222 012737 000011 000402
471 001230 005212
472 001232 000000
473
474
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476 001234 012767 123456 177372 15:
477 001242 012767 050505 177354
478 001250 012705 000624
479 001254 012706 000636
480 001260 114625
481 001262 026727 177336 050456
482 001270 001405
483 001272 012737 000012 000402
484 001300 005212
485 001302 000000
486
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489 001304 012767 123456 177312 25:
490 001312 012767 050505 177314
491 001320 012705 000624
492 001324 012706 000634
493 001330 112526
494 001332 022767 050456 177274
495 001340 001405
496 001342 012737 000013 000402
497 001350 005212
498 001352 000000
499
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501
502 001354 012767 123456 177242 35:
503 001362 012767 050505 177244
504 001370 012705 000625
505 001374 012706 000634
506 001400 112526
507 001402 026727 177226 050647
508 001410 001405
509 001412 012737 000014 000402
510 001420 005212
511 001422 000000

```

```

*****
:TEST 2 TEST TRANSFER OF BYTE USING R6
*****
↑ST2: INC @#STESTN ;UPDATE TEST NUMBER
      CMP @2,@#STESTN ;SEQUENCE ERROR?
      BNE TST3-12 ;BR TO ERROR HALT ON SEQ ERROR
      MOV @123456,K5
      MOV @050505,K1
      MOV #K1,%5 ;%5=(050505)K1
      MOV #K5,%6 ;%6=(123456)K5
      MOVB (6)↑,(5)↑ ;LOW .BYTE OF R6 TO R5
      CMP @050456,K1
      BEQ 15
      MOV @11,@#SFATAL ;MOVE TO MAILBOX # ***** 11 *****
      INC (R2) ;SET MSGTYP TO FATAL ERROR
      HALT ;FALSE TRANSFER OF .BYTE
           ; TO SCOPE REPLACE HALT W/ 240
           ; AND REPLACE NEXT INST W/ 753

15: MOV @123456,K5
     MOV @050505,K1
     MOV #K1,%5 ;%5(050505)K1
     MOV #K6,%6 ;%6(123456)K5
     MOVB -(6)↑,(5)↑ ;LOW .BYTE OF R6 TO R5 (DECREMENT)
     CMP K1,@050456
     BEQ 25
     MOV @12,@#SFATAL ;MOVE TO MAILBOX # ***** 12 *****
     INC (R2) ;SET MSGTYP TO FATAL ERROR
     HALT ;FALSE R6 .BYTE TRANSFER
           ; TO SCOPE REPLACE HALT W/ 240
           ; AND REPLACE NEXT INST W/ 727

25: MOV @123456,K1
     MOV @050505,K5
     MOV #K1,%5 ;(123456)
     MOV #K5,%6 ;(050505)
     MOVB (5)↑,(6)↑ ;LOW OF R5 TO LOW OF R6
     CMP @050456,K5
     BEQ 35
     MOV @13,@#SFATAL ;MOVE TO MAILBOX # ***** 13 *****
     INC (R2) ;SET MSGTYP TO FATAL ERROR
     HALT ;FALSE R6 .BYTE TRANSFER
           ; TO SCOPE REPLACE HALT W/ 240
           ; AND REPLACE NEXT INST W/ 703

35: MOV @123456,K1
     MOV @050505,K5
     MOV #K1+1,%5 ;123456
     MOV #K5,%6 ;050505
     MOVB (5)↑,(6)↑ ;HIGH OF R5 TO LOW OF R6
     CMP K5,@050647
     BEQ 45
     MOV @14,@#SFATAL ;MOVE TO MAILBOX # ***** 14 *****
     INC (R2) ;SET MSGTYP TO FATAL ERROR
     HALT ;FALSE R6 .BYTE TRANSFER

```



```

527
528
529
530
531 001474 005237 000404
532 001509 022737 000003 000404
533 001506 001103
534 001510 126767 177124 177123
535 001516 001405
536 001520 012737 000016 000402
537 001526 005212
538 001530 000000
539
540
541
542 001532 126767 177103 177100 1$: CMPB K7+1,K7 ;COMPARE ODD TO .EVEN SAME .WORD
543 001540 001405 BEQ 2$
544 001542 012737 000017 000402 MOV #17,#$FATAL ;MOVE TO MAILBOX # ***** 17 *****
545 001550 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
546 001552 000000 HALT ;ODD TO .EVEN .BYTE FAILURE
547 ; TO SCOPE REPLACE HALT W/ 240
548 ; AND REPLACE NEXT INST W/ 755
549
550 001554 126767 177063 177056 2$: CMPB K10+1,K7 ;SEQUENTIAL .BYTES
551 ;DIFFERENT .WORDS
552 001562 001462 BEQ TST4
553 001564 012737 000020 000402 MOV #20,#$FATAL ;MOVE TO MAILBOX # ***** 20 *****
554 001572 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
555 001574 000000 HALT ;ODD TO .EVEN FAILED
556 ; TO SCOPE REPLACE HALT W/ 240
557 ; AND REPLACE NEXT INST W/ 744
558
559 001576 126767 177040 177032 CMPB K10,K6
560 001604 001405 BEQ 3$
561 001606 012737 000021 000402 MOV #21,#$FATAL ;MOVE TO MAILBOX # ***** 21 *****
562 001614 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
563 001616 000000 HALT ;.EVEN TO EVEN FAILED
564 ; TO SCOPE REPLACE HALT W/ 240
565 ; AND REPLACE NEXT INST W/ 733
566 001620 126767 177015 177015 3$: CMPB K7+1,K10+1
567 001626 001405 BEQ 4$
568 001630 012737 000022 000402 MOV #22,#$FATAL ;MOVE TO MAILBOX # ***** 22 *****
569 001636 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
570 001640 000000 HALT ;ODD TO ODD FAILED
571 ; TO SCOPE REPLACE HALT W/ 240
572 ; AND REPLACE NEXT INST W/ 722
573
574 001642 126767 176774 176773 4$: CMPB K10,K10+1
575 001650 001005 BNE 5$
576 001652 012737 000023 000402 MOV #23,#$FATAL ;MOVE TO MAILBOX # ***** 23 *****
577 001660 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
578 001662 000000 HALT ;LOW TO HIGH IN SAME .WORD FAILED
579 ; TO SCOPE REPLACE HALT W/ 240
580 ; AND REPLACE NEXT INST W/ 711
581
582 001664 126767 176753 176751 5$: CMPB K10+1,K10+1
    
```

E02

MAIN. MACY11 27(1006) 17-FEB-77 15:39 PAGE 17
 CVKADB.P11 17-FEB-77 15:34 T3

TEST BYTE OPERATION WITH SEQUENTIAL ODD; .EVEN ADDRESS

SEG 0019

583	001672	001405				BEG	65		
584	001674	012737	000024	000402		MOV	#24, 2#FATAL	; MOVE TO MAILBOX # ***** 24 *****	
585	001702	005212				INC	(R2)	; SET MSGTYP TO FATAL ERROR	
586	001704	000000				HALT		; HIGH TO LOW IN SAME .WORD FAILED	
587								; TO SCOPE REPLACE HALT W/ 240	
588								; AND REPLACE NEXT INST W/ 700	
589									
590	001706	126767	176730	176725	ES:	CMPB	K10, K7+1		
591	001714	001005				BNE	TST4		
592	001716	012737	000025	000402		MOV	#25, 2#FATAL	; MOVE TO MAILBOX # ***** 25 *****	
593	001724	005212				INC	(R2)	; SET MSGTYP TO FATAL ERROR	
594	001726	000000				HALT		; .EVEN TO ODD FAILED, OR WRONG \$TESTN, OR WRONG \$TESTN	
595								; TO SCOPE REPLACE HALT W/ 240	
596								; AND REPLACE NEXT INST W/ 667	

F02

```

597
598
599
600
601 001730 005237 000404
602 001734 022737 000004 000404
603 001742 001070
604 001744 000277
605 001746 005067 011144
606 001752 106467 011140
607 001756 103005
608 001760 012737 000026 000402
609 001766 005212
610 001770 000000
611
612
613 001772
614 001772 102005
615 001774 012737 000027 000402
616 002002 005212
617 002004 000000
618
619
620 002006
621 002006 001005
622 002010 012737 000030 000402
623 002016 005212
624 002020 000000
625
626
627 002022
628 002022 100005
629 002024 012737 000031 000402
630 002032 005212
631 002034 000000
632
633
634
635 002036 000257
636 002040 106767 011052
637 002044 052767 000017 011044
638 002052 106467 011040
639
640 002056 103405
641 002060 012737 000032 000402
642 002066 005212
643 002070 000000
644
645
646 002072
647 002072 102405
648 002074 012737 000033 000402
649 002102 005212
650 002104 000000
651
652

```

```

:*****
:TEST 4 TEST THE CC BITS
:*****
TST4:  INC      @#STESTN      ;UPDATE TEST NUMBER
      CMP      #4,@#STESTN   ;SEQUENCE ERROR?
      BNE      TST5-12 ;BR TO ERROR HALT ON SEQ ERROR
      SCC
      CLR      STATUS        ;SET STATUS
      MTPS     STATUS        ;CLEAR STATUS
      BCC      1$
      MOV      #26,@#SFATAL   ;MOVE TO MAILBOX # ***** 26 *****
      INC      (R2)          ;SET MSGTYP TO FATAL ERROR
      HALT
      ;C NOT CLEAR
      ; TO SCOPE REPLACE HALT W/ 240
      ; AND REPLACE NEXT INST W/ 764
1$:
      BVC      2$
      MOV      #27,@#SFATAL   ;MOVE TO MAILBOX # ***** 27 *****
      INC      (R2)          ;SET MSGTYP TO FATAL ERROR
      HALT
      ;V NOT CLEAR
      ; TO SCOPE REPLACE HALT W/ 240
      ; AND REPLACE NEXT INST W/ 756
2$:
      BNE      3$
      MOV      #30,@#SFATAL   ;MOVE TO MAILBOX # ***** 30 *****
      INC      (R2)          ;SET MSGTYP TO FATAL ERROR
      HALT
      ;Z NOT CLEAR
      ; TO SCOPE REPLACE HALT W/ 240
      ; AND REPLACE NEXT INST W/ 750
3$:
      BPL      4$
      MOV      #31,@#SFATAL   ;MOVE TO MAILBOX # ***** 31 *****
      INC      (R2)          ;SET MSGTYP TO FATAL ERROR
      HALT
      ;N NOT CLEAR
      ; TO SCOPE REPLACE HALT W/ 240
      ; AND REPLACE NEXT INST W/ 742
4$:
      CCC
      MFPS     STATUS        ;CLEAR CONDITION CODES
      BIS      #17,STATUS    ;SET STATUS TO ONES
      MTPS     STATUS
      BCS      5$
      MOV      #32,@#SFATAL   ;MOVE TO MAILBOX # ***** 32 *****
      INC      (R2)          ;SET MSGTYP TO FATAL ERROR
      HALT
      ;C NOT SET
      ; TO SCOPE REPLACE HALT W/ 240
      ; AND REPLACE NEXT INST W/ 724
5$:
      BVS      6$
      MOV      #33,@#SFATAL   ;MOVE TO MAILBOX # ***** 33 *****
      INC      (R2)          ;SET MSGTYP TO FATAL ERROR
      HALT
      ;V NOT SET
      ; TO SCOPE REPLACE HALT W/ 240
      ; AND REPLACE NEXT INST W/ 716

```

G02

MAIN MACY11 271006 17-FEB-77 15:39 PAGE 19
CVKADB.P1: 17-FEB-77 15:34 T4 TEST THE CC BITS

SEG 0021

653	002106			6\$:				
654	002106	001405			BEQ	7\$		
655	002110	012737	000034	000402	MOV	#34, 2#\$FATAL	: MOVE TO MAILBOX # ***** 34 *****	
656	002116	005212			INC	(R2)	: SET MSGTYP TO FATAL ERROR	
657	002120	000000			HALT		: Z NOT SET	
658							: TO SCOPE REPLACE HALT W/ 240	
659							: AND REPLACE NEXT INST W/ 710	
660	002122			7\$:				
661	002122	100405			BMI	TST5		
662	002124	012737	000035	000402	MOV	#35, 2#\$FATAL	: MOVE TO MAILBOX # ***** 35 *****	
663	002132	005212			INC	(R2)	: SET MSGTYP TO FATAL ERROR	
664	002134	000000			HALT		: N NOT SET, OR WRONG \$TESTN	
665							: TO SCOPE REPLACE HALT W/ 240	
666							: AND REPLACE NEXT INST W/ 702	


```

699
700
701 :*****
702 :TEST 7 TEST THAT PROPER P.C. IS SAVED
703 :*****
703 002250 005237 000404
704 002254 022737 000007 000404
705 002262 001012
706 002264 012706 000500
707 002270 012767 002300 175512
708 002276 000007
709 002300 022767 002300 176166
710 002306 001405
711 002310 012737 000040 000402
712 002316 005212
713 002320 000000
714
715
716 :*****
717 :TEST 10 TEST THAT "OLD" STATUS AND PRIORITY ARE PLACED ON STACK
718 :*****
719 002322 005237 000404
720 002326 022737 000010 000404
721 002334 001044
722 002336 012706 000500
723 002342 012767 002364 175440
724 002350 005067 010542
725 002354 106467 010536
726 002360 000257
727 002362 000007
728 002364 026727 176106 000000
729 002372 001405
730 002374 012737 000041 000402
731 002402 005212
732 002404 000000
733
734
735 002406 012706 000500
736 002412 012767 002436 175370
737 002420 012767 000357 010470
738 002426 106467 010464
739 002432 000277
740 002434 000007
741 002436 026727 176034 000357
742 002444 001405
743 002446 012737 000042 000402
744 002454 005212
745 002456 000000
746
747
    
```

ST7: INC @#STESTN ; UPDATE TEST NUMBER
 CMP #7,@#STESTN ; SEQUENCE ERROR?
 BNE TST10-12 ; BR TO ERROR HALT ON SEQ ERROR
 MOV #BUFF,SP ; STACK POINTER SETUP
 MOV #RETC,RTRAP ; RETURN FROM TRAP POINTER
 INSTC: TRAPA ; TRAP ON THIS INSTRUCTION
 RETC: CMP #.,BUFF-4 ; CHECK FOR INCREMENTED P.C.
 BEQ TST10
 MOV #40,@#SFATAL ; MOVE TO MAILBOX # ***** 40 *****
 INC (R2) ; SET MSGTYP TO FATAL ERROR
 HALT ; INCORRECT P.C. OR WRONG \$TESTN
 ; TO SCOPE REPLACE HALT W/ 240
 ; AND REPLACE NEXT INST W/ 760

ST10: INC @#STESTN ; UPDATE TEST NUMBER
 CMP #10,@#STESTN ; SEQUENCE ERROR?
 BNE TST11-12 ; BR TO ERROR HALT ON SEQ ERROR
 MOV #BUFF,SP ; SET UP
 MOV #RETD,RTRAP ; SET UP
 CLR STATUS ; CLEAR STATUS AND PRIORITY
 MTPS STATUS
 CCC
 TRAPA ; TRAP
 RETD: CMP BUFF-2,#0 ; TEST THAT OLD STATUS WENT TO STACK
 BEQ IS
 MOV #41,@#SFATAL ; MOVE TO MAILBOX # ***** 41 *****
 INC (R2) ; SET MSGTYP TO FATAL ERROR
 HALT ; INCORRECT STATUS
 ; TO SCOPE REPLACE HALT W/ 240
 ; AND REPLACE NEXT INST W/ 753

IS: MOV #BUFF,SP ; SET UP
 MOV #RETE,RTRAP ; SET UP
 MOV #357,STATUS ; SET PRIORITY
 MTPS STATUS
 SCC ; SET STATUS
 TRAPA ; TRAP
 RETE: CMP BUFF-2,#357 ; COMPARES STATUS ON STACK
 BEQ TST11
 MOV #42,@#SFATAL ; MOVE TO MAILBOX # ***** 42 *****
 INC (R2) ; SET MSGTYP TO FATAL ERROR
 HALT ; INCORRECT STATUS ON STACK, OR WRONG \$TESTN
 ; TO SCOPE REPLACE HALT W/ 240
 ; AND REPLACE NEXT INST W/ 726

J02

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748
749
750
751
752 002460 005237 000404
753 002464 022737 000011 000404
754 002472 001125
755 002474 012706 000500
756 002500 012767 002514 175302
757 002506 005067 175300
758 002512 000007
759 002514
760 002514 100005
761 002516 012737 000043 000402
762 002524 005212
763 002526 000000
764
765
766 002530
767 002530 001005
768 002532 012737 000044 000402
769 002540 005212
770 002542 000000
771
772
773 002544
774 002544 102005
775 002546 012737 000045 000402
776 002554 005212
777 002556 000000
778
779
780 002560
781 002560 103005
782 002562 012737 000046 000402
783 002570 005212
784 002572 000000
785
786
787 002574 106767 010316
788 002600 032767 000340 010310
789 002606 001405
790 002610 012737 000047 000402
791 002616 005212
792 002620 000000
793
794
795 002622 012706 000500
796 002626 012767 002644 175154
797 002634 012767 000357 175150
798 002642 000007
799 002644
800 002644 100405
801 002646 012737 000050 000402
802 002654 005212
803 002656 000000

;*****
;TEST 11 TEST THAT "NEW" STATUS IS CORRECT
;*****
↑ST11: INC @#STESTN ;UPDATE TEST NUMBER
      CMP #11,@#STESTN ;SEQUENCE ERROR?
      BNE RSTP1 ;BR TO ERROR HALT ON SEQ ERROR
      MOV #BUFF,SP
      MOV #RETF,RTRAP
      CLR RTRAP+2 ;CLEAR FUTURE PRIORITY AND CC
      TRAPA

RETF: BPL 1$
      MOV #43,@#SFATAL ;MOVE TO MAILBOX # ***** 43 *****
      INC (R2) ;SET MSGTYP TO FATAL ERROR
      HALT ;C NOT CLEARED
      ; TO SCOPE REPLACE HALT W/ 240
      ; AND REPLACE NEXT INST W/ 761

1$: BNE 2$
      MOV #44,@#SFATAL ;MOVE TO MAILBOX # ***** 44 *****
      INC (R2) ;SET MSGTYP TO FATAL ERROR
      HALT ;Z NOT CLEARED
      ; TO SCOPE REPLACE HALT W/ 240
      ; AND REPLACE NEXT INST W/ 753

2$: BVC 3$
      MOV #45,@#SFATAL ;MOVE TO MAILBOX # ***** 45 *****
      INC (R2) ;SET MSGTYP TO FATAL ERROR
      HALT ;V NOT CLEARED
      ; TO SCOPE REPLACE HALT W/ 240
      ; AND REPLACE NEXT INST W/ 745

3$: BCC 4$
      MOV #46,@#SFATAL ;MOVE TO MAILBOX # ***** 46 *****
      INC (R2) ;SET MSGTYP TO FATAL ERROR
      HALT ;C NOT CLEARED
      ; TO SCOPE REPLACE HALT W/ 240
      ; AND REPLACE NEXT INST W/ 737

4$: MFPS STATUS
      BIT #340,STATUS ;TEST PRIORITY
      BEQ 5$
      MOV #47,@#SFATAL ;MOVE TO MAILBOX # ***** 47 *****
      INC (R2) ;SET MSGTYP TO FATAL ERROR
      HALT ;PRIORITY NOT ZERO
      ; TO SCOPE REPLACE HALT W/ 240
      ; AND REPLACE NEXT INST W/ 724

5$: MOV #BUFF,SP
      MOV #RETF,RTRAP
      MOV #357,RTRAP+2 ;SET NEW "CC" AND PRIORITY
      TRAPA ;TRAP HERE

RETG: BMI 1$
      MOV #50,@#SFATAL ;MOVE TO MAILBOX # ***** 50 *****
      INC (R2) ;SET MSGTYP TO FATAL ERROR
      HALT ;N NOT SET
  
```



```

840
841 ;*****
842 ;TEST 12 TEST THAT A TRAP OCCURES FOR A "TRAP" INSTRUCTION
843 ;*****
844 002772 005237 000404 TST12: INC @#STESTN ;UPDATE TEST NUMBER
845 002776 022737 000012 000404 CMP #12,@#STESTN ;SEQUENCE ERROR?
846 003004 001006 BNE TST13-12 ;BR TO ERROR HALT ON SEQ ERROR
847 003006 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
848 003012 012767 003034 175014 MOV #RETA1,RTRAP1 ;RETURN LOCATION
849 003020 104400 TRAP ;RESERVED INSTRUCTION, SHOULD TRAP
850 003022 012737 000055 000402 MOV #55,@#SFATAL ;MOVE TO MAILBOX # ***** 55 *****
851 003030 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
852 003032 000000 HALT ;DID NOT TRAP, OR WRONG $TESTN
853 ; TO SCOPE REPLACE HALT W/ 240
854 ; AND REPLACE NEXT INST W/ 764
855 003034 RETA1:
856 ;*****
857 ;TEST 13 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
858 ;*****
859 003034 005237 000404 TST13: INC @#STESTN ;UPDATE TEST NUMBER
860 003040 022737 000013 000404 CMP #13,@#STESTN ;SEQUENCE ERROR?
861 003046 001011 BNE TST14-12 ;BR TO ERROR HALT ON SEQ ERROR
862 003050 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
863 003054 012767 003064 174752 MOV #RETB1,RTRAP1 ;RETURN POINTER
864 003062 104400 TRAP ;RESERVED INSTRUCTION
865 003064 020627 000474 RETB1: CMP SP,#BUFF-4 ;TEST DECREMENT OF SP
866 003070 001405 BEQ TST14
867 003072 012737 000056 000402 MOV #56,@#SFATAL ;MOVE TO MAILBOX # ***** 56 *****
868 003100 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
869 003102 000000 HALT ;NOT DECREMENTED TWO WORDS, OR WRONG $TESTN
870 ; TO SCOPE REPLACE HALT W/ 240
871 ; AND REPLACE NEXT INST W/ 761
872 ;*****
873 ;TEST 14 TEST THAT PROPER P.C. IS SAVED
874 ;*****
875 003104 005237 000404 TST14: INC @#STESTN ;UPDATE TEST NUMBER
876 003110 022737 000014 000404 CMP #14,@#STESTN ;SEQUENCE ERROR?
877 003116 001012 BNE TST15-12 ;BR TO ERROR HALT ON SEQ ERROR
878 003120 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
879 003124 012767 003134 174702 MOV #RETC1,RTRAP1 ;RETURN FROM TRAP POINTER
880 003132 104400 TRAP ;TRAP ON THIS INSTRUCTION
881 003134 022767 003134 175332 RETC1: CMP #,BUFF-4 ;CHECK INCREMENTED P.C.
882 003142 001405 BEQ TST15
883 003144 012737 000057 000402 MOV #57,@#SFATAL ;MOVE TO MAILBOX # ***** 57 *****
884 003152 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
885 003154 000000 HALT ;INCORRECT P.C. OR WRONG $TESTN
886 ; TO SCOPE REPLACE HALT W/ 240
887 ; AND REPLACE NEXT INST W/ 760

```

M02

```

888
889
890
891
892 003156 005237 000404
893 003162 022737 000015 000404
894 003170 001043
895 003172 012706 000500
896 003176 012767 003220 174630
897 003204 005067 007706
898 003210 106467 007702
899 003214 000257
900 003216 104400
901 003220 026727 175252 000000 RETC:.
902 003226 001405
903 003230 012737 000060 000402
904 003236 005212
905 003240 000000
906
907
908 003242 012706 000500 1S:
909 003246 012767 003270 174560
910 003254 012767 000357 007634
911 003262 106467 007630
912 003266 104400
913 003270 026727 175202 000357 RETE1:
914 003276 001405
915 003300 012737 000061 000402
916 003306 005212
917 003310 000000
918
919

```

```

;*****
;TEST 15 TEST THAT "OLD" STATUS AND PRIORITY ARE PLACED ON STACK
;*****
TST15: INC @#STESTN ;UPDATE TEST NUMBER
CMP #15,@#STESTN ;SEQUENCE ERROR?
BNE TST16-12 ;BR TO ERROR HALT ON SEQ ERROR
MOV #BUFF SP ;SET UP
MOV #RETE1,RTRAP1 ;SET UP
CLR STATUS ;CLEAR STATUS AND PRIORITY
MTPS STATUS
CCC
TRAP ;TRAP
CMP BUFF-2,#0 ;TEST THAT OLD STATUS WENT TO STACK
BEQ 1S
MOV #60,@#SFATAL ;MOVE TO MAILBOX # ***** 60 *****
INC (R2) ;SET MSGTYP TO FATAL ERROR
HALT ;INCORRECT STATUS
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 753
1S: MOV #BUFF SP ;SET UP
MOV #RETE1,RTRAP1 ;SET UP
MOV #357,STATUS ;SET PRIORITY
MTPS STATUS
TRAP ;SET CC
CMP BUFF-2,#357 ;COMPARES STATUS ON STACK
BEQ TST16
MOV #61,@#SFATAL ;MOVE TO MAILBOX # ***** 61 *****
INC (R2) ;SET MSGTYP TO FATAL ERROR
HALT ;INCORRECT STATUS ON STACK
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 727

```

```

920
921 ;*****
922 ;TEST 16 TEST THAT "NEW" STATUS IS CORRECT
923 ;*****
924 003312 005237 000404 000404 †ST16: INC 2#STESTN ;UPDATE TEST NUMBER
925 003316 022737 000016 000404 CMP #16,2#STESTN ;SEQUENCE ERROR?
926 003324 001125 BNE TST17-12 ;BR TO ERROR HALT ON SEQ ERROR
927 003326 012706 000500 MOV #BUFF,SP
928 003332 012767 003346 174474 MOV #RETG1,RTRAP1
929 003340 005067 174472 CLR RTRAP1+2 ;CLEAR FUTURE PRIORITY AND CC
930 003344 104400 TRAP
931 003346 RETG1:
932 003346 100005 BPL 1$
933 003350 012737 000062 000402 MOV #62,2#SFATAL ;MOVE TO MAILBOX # ***** 62 *****
934 003356 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
935 003360 000000 HALT ;C NOT CLEARED
936 ; TO SCOPE REPLACE HALT W/ 240
937 ; AND REPLACE NEXT INST W/ 761
938 003362 1$:
939 003362 001005 BNE 2$
940 003364 012737 000063 000402 MOV #63,2#SFATAL ;MOVE TO MAILBOX # ***** 63 *****
941 003372 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
942 003374 000000 HALT ;Z NOT CLEARED
943 ; TO SCOPE REPLACE HALT W/ 240
944 ; AND REPLACE NEXT INST W/ 753
945 003376 2$:
946 003376 102005 BVC 3$
947 003400 012737 000064 000402 MOV #64,2#SFATAL ;MOVE TO MAILBOX # ***** 64 *****
948 003406 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
949 003410 000000 HALT ;V NOT CLEARED
950 ; TO SCOPE REPLACE HALT W/ 240
951 ; AND REPLACE NEXT INST W/ 745
952 003412 3$:
953 003412 103005 BCC 4$
954 003414 012737 000065 000402 MOV #65,2#SFATAL ;MOVE TO MAILBOX # ***** 65 *****
955 003422 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
956 003424 000000 HALT ;C NOT CLEARED
957 ; TO SCOPE REPLACE HALT W/ 240
958 ; AND REPLACE NEXT INST W/ 737
959 003426 106767 007464 007456 4$: MFPS STATUS
960 003432 032767 000340 007456 BIT #340,STATUS ;TEST PRIORITY
961 003440 001405 BEQ 5$
962 003442 012737 000066 000402 MOV #66,2#SFATAL ;MOVE TO MAILBOX # ***** 66 *****
963 003450 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
964 003452 000000 HALT ;PRIORITY NOT ZERO
965 ; TO SCOPE REPLACE HALT W/ 240
966 ; AND REPLACE NEXT INST W/ 724
967 003454 012706 000500 5$: MOV #BUFF,SP
968 003460 012767 003476 174346 MOV #RETG1,RTRAP1
969 003466 012767 000357 174342 MOV #357,RTRAP1+2 ;SET NEW "CC" AND PRIORITY
970 003474 104400 TRAP ;TRAP HERE
971 003476 RETG1:
972 003476 100405 BMI 1$
973 003500 012737 000067 000402 MOV #67,2#SFATAL ;MOVE TO MAILBOX # ***** 67 *****
974 003506 00_212 INC (R2) ;SET MSGTYP TO FATAL ERROR
975 003510 000000 HALT ;N NOT SET

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1009
1010 ;*****
1011 ;TEST 17 TEST THAT ALL COMBINATION OF "TRAP" WILL CAUSE A TRAP
1012 ;*****
1013 003612 005237 000404 000404 †ST17: INC @#STESTN ;UPDATE TEST NUMBER
1014 003616 022737 000017 000404 CMP #17,@#STESTN ;SEQUENCE ERROR?
1015 003624 001011 BNE RB1AA ;BR TO ERROR HALT ON SEQ ERROR
1016 003626 012767 104400 000012 MOV #TRAP,RB1 ;INITIALIZE BASE TRAP INSTRUCTION
1017 003634 012767 003662 174172 MOV #RA1,34 ;RETURN FROM TRAP TO RA1
1018 003642 012706 000500 RC1: MOV #BUFF,SP ;SET UP STACK POINTER
1019 003646 104400 RB1: TRAP ;TRAP INST WILL BE MODIFIED TO TRAP+377
1020 003650 RB1AA:
1021 003650 012737 000074 000402 MOV #74,@#SFATAL ;MOVE TO MAILBOX # ***** 74 *****
1022 003656 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1023 003660 000000 HALT ;PREVIOUS INST FAILED TO TRAP OR WRONG $TESTN
1024 ; TO SCOPE REPLACE HALT W/ 240
1025 ; AND REPLACE NEXT INST W/ 761
1026 003662 005267 177760 RA1: INC RB1 ;TRAP+377 TO UPPER LIMIT
1027 003666 022767 104777 177752 CMP #104777,RB1 ;HAVE WE TESTED ALL
1028 003674 103362 BHIS RC1
1029 003676 012767 000036 174130 MOV #36,34
1030 003704 005067 174126 CLR 36
1031 ;*****
1032 ;TEST 20 TEST THAT A TRAP OCCURES ON AN "IOT" INSTRUCTION
1033 ;*****
1034 003710 005237 000404 000404 †ST20: INC @#STESTN ;UPDATE TEST NUMBER
1035 003714 022737 000020 000404 CMP #20,@#STESTN ;SEQUENCE ERROR?
1036 003722 001006 BNE TST21-12 ;BR TO ERROR HALT ON SEQ ERROR
1037 003724 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1038 003730 012767 003752 174062 MOV #RETA2,RTRAP2 ;RETURN LOCATION
1039 003736 000004 IOT ;RESERVE INSTRUCTION, SHOULD TRAP
1040 003740 012737 000075 000402 MOV #75,@#SFATAL ;MOVE TO MAILBOX # ***** 75 *****
1041 003746 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1042 003750 000000 HALT ;IOT DID NOT TRAP OR WRONG $TESTN
1043 ; TO SCOPE REPLACE HALT W/ 240
1044 ; AND REPLACE NEXT INST W/ 764
1045 003752 RETA2:
1046 ;*****
1047 ;TEST 21 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
1048 ;*****
1049 003752 005237 000404 000404 †ST21: INC @#STESTN ;UPDATE TEST NUMBER
1050 003756 022737 000021 000404 CMP #21,@#STESTN ;SEQUENCE ERROR?
1051 003764 001011 BNE TST22-12 ;BR TO ERROR HALT ON SEQ ERROR
1052 003766 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1053 003772 012767 004002 174020 MOV #RETB2,RTRAP2 ;RETURN POINTER
1054 004000 000004 IOT ;RESERVED INSTRUCTION
1055 004002 020627 000474 RETB2: CMP SP,#BUFF-4 ;TEST DECREMENT OF SP
1056 004006 001405 BEQ TS↑22
1057 004010 012737 000076 000402 MOV #76,@#SFATAL ;MOVE TO MAILBOX # ***** 76 *****
1058 004016 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1059 004020 000000 HALT ;NOT DECREMENTED TWO WORDS,OR WRONG $TESTN
1060 ; TO SCOPE REPLACE HALT W/ 240
1061 ; AND REPLACE NEXT INST W/ 761

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1062
1063 ;*****
1064 ;TEST 22 TEST THAT PROPER P.C. IS SAVED
1065 ;*****
1066 004022 005237 000404 †ST22: INC @STESTN ;UPDATE TEST NUMBER
1067 004026 022737 000022 000404 CMP #22,@STESTN ;SEQUENCE ERROR?
1068 004034 001012 BNE TST23-12 ;BR TO ERROR HALT ON SEQ ERROR
1069 004036 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1070 004042 012767 004052 173750 MOV #RETC2,RTRAP2 ;RETURN FROM TRAP POINTER
1071 004050 000004 IOT ;TRAP ON THIS INSTRUCTION
1072 004052 022767 004052 174414 RETC2: CMP #.BUFF-4 ;CHECK FOR INCREMENTED P.C.
1073 004060 001405 BEQ TST23
1074 004062 012737 000077 000402 MOV #77,@SFATAL ;MOVE TO MAILBOX # ***** 77 *****
1075 004070 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1076 004072 000000 HALT ;INCORRECT P.C. OR WRONG $TESTN
1077 ; TO SCOPE REPLACE HALT W/ 240
1078 ; AND REPLACE NEXT INST W/ 760
1079 ;*****
1080 ;TEST 23 TEST THAT "OLD" STATUS AND PRIORITY ARE PLACED ON STACK
1081 ;*****
1082 004074 005237 000404 †ST23: INC @STESTN ;UPDATE TEST NUMBER
1083 004100 022737 000023 000404 CMP #23,@STESTN ;SEQUENCE ERROR?
1084 004106 001044 BNE TST24-12 ;BR TO ERROR HALT ON SEQ ERROR
1085 004110 012706 000500 MOV #BUFF,SP ;SET UP
1086 004114 012767 004136 173676 MOV #RETD2,RTRAP2 ;SET UP
1087 004122 005067 006770 CLR STATUS ;CLEAR STATUS AND PRIORITY
1088 004126 106467 006764 MTPS STATUS
1089 004132 000257 CCC
1090 004134 000004 IOT ;TRAP
1091 004136 026727 174334 000000 RETD2: CMP BUFF-2,#0 ;TEST THAT OLD STATUS WENT TO STACK
1092 004144 001405 BEQ 1$
1093 004146 012737 000100 000402 MOV #100,@SFATAL ;MOVE TO MAILBOX # ***** 100 *****
1094 004154 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1095 004156 000000 HALT ;INCORRECT STATUS
1096 ; TO SCOPE REPLACE HALT W/ 240
1097 ; AND REPLACE NEXT INST W/ 753
1098 004160 012706 000500 1$: MOV #BUFF,SP ;SET UP
1099 004164 012767 004210 173626 MOV #RETE2,RTRAP2 ;SET UP
1100 004172 012767 000357 006716 MOV #357,STATUS ;SET PRIORITY
1101 004200 106467 006712 MTPS STATUS
1102 004204 000277 SCC ;SET CC
1103 004206 000004 IOT ;TRAP
1104 004210 026727 174262 000357 RETE2: CMP BUFF-2,#357 ;COMPARES STATUS ON STACK
1105 004216 001405 BEQ TST24
1106 004220 012737 000101 000402 MOV #101,@SFATAL ;MOVE TO MAILBOX # ***** 101 *****
1107 004226 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1108 004230 000000 HALT ;INCORRECT STATUS ON STACK,OR WRONG $TESTN
1109 ; TO SCOPE REPLACE HALT W/ 240
1110 ; AND REPLACE NEXT INST W/ 726

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E03

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TEST THAT "OLD" STATUS AND PRIORITY ARE PLACED ON STACK

SEG 0032

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1111
1112 :*****
1113 :TEST 24 TEST THAT "NEW" STATUS IS CORRECT
1114 :*****
1115 004232 005237 000404 †ST24: INC @#STESTN ;UPDATE TEST NUMBER
1116 004236 022737 000024 000404 CMP #24,@#STESTN ;SEQUENCE ERROR?
1117 004244 001125 BNE STP ;BR TO ERROR HALT ON SEQ ERROR
1118 004246 012706 000500 MOV #BUFF,SP
1119 004252 012767 004266 173540 MOV #RETF2,RTRAP2
1120 004260 005067 173536 CLR RTRAP2+2 ;CLEAR FUTURE PRIORITY AND CC
1121 004264 000004 IOT
1122 004266 RETF2:
1123 004266 100005 BPL 1$
1124 004270 012737 000102 000402 MOV #102,@#SFATAL ;MOVE TO MAILBOX # ***** 102 *****
1125 004276 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1126 004300 000000 HALT ;Z NOT CLEARED
1127 ; TO SCOPE REPLACE HALT W/ 240
1128 ; AND REPLACE NEXT INST W/ 761
1129 004302 1$:
1130 004302 001005 BNE 2$
1131 004304 012737 000103 000402 MOV #103,@#SFATAL ;MOVE TO MAILBOX # ***** 103 *****
1132 004312 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1133 004314 000000 HALT ;Z NOT CLEARED
1134 ; TO SCOPE REPLACE HALT W/ 240
1135 ; AND REPLACE NEXT INST W/ 753
1136 004316 2$:
1137 004316 102005 BVC 3$
1138 004320 012737 000104 000402 MOV #104,@#SFATAL ;MOVE TO MAILBOX # ***** 104 *****
1139 004326 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1140 004330 000000 HALT ;V NOT CLEARED
1141 ; TO SCOPE REPLACE HALT W/ 240
1142 ; AND REPLACE NEXT INST W/ 745
1143 004332 3$:
1144 004332 103005 BCC 4$
1145 004334 012737 000105 000402 MOV #105,@#SFATAL ;MOVE TO MAILBOX # ***** 105 *****
1146 004342 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1147 004344 000000 HALT ;C NOT CLEARED
1148 ; TO SCOPE REPLACE HALT W/ 240
1149 ; AND REPLACE NEXT INST W/ 737
1150 004346 106767 006544 4$: MFPS STATUS
1151 004352 032767 000340 006536 BIT #340,STATUS ;TEST PRIORITY
1152 004360 001405 BEQ 5$
1153 004362 012737 000106 000402 MOV #106,@#SFATAL ;MOVE TO MAILBOX # ***** 106 *****
1154 004370 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1155 004372 000000 HALT ;PRIORITY NOT ZERO
1156 ; TO SCOPE REPLACE HALT W/ 240
1157 ; AND REPLACE NEXT INST W/ 724
1158 004374 012706 000500 5$: MOV #BUFF,SP
1159 004400 012767 004416 173412 MOV #RETF2,RTRAP2
1160 004406 012767 000357 173406 MOV #357,RTRAP2+2 ;SET NEW "CC" AND PRIORITY
1161 004414 000004 IOT ;TRAP HERE
1162 004416 RETG2:
1163 004416 100405 BMI 1$
1164 004420 012737 000107 000402 MOV #107,@#SFATAL ;MOVE TO MAILBOX # ***** 107 *****
1165 004426 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1166 004430 000000 HALT ;N NOT SET

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1203
1204
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1207 004544 005237 000404
1208 004550 022737 000025 000404
1209 004556 001006
1210 004560 012706 000500
1211 004564 012767 004606 173236
1212 004572 104000
1213 004574 012737 000114 000402
1214 004602 005212
1215 004604 000000
1216
1217
1218 004606
1219
1220
1221
1222 004606 005237 000404
1223 004612 022737 000026 000404
1224 004620 001011
1225 004622 012706 000500
1226 004626 012767 004636 173174
1227 004634 104000
1228 004636 020627 000474
1229 004642 001405
1230 004644 012737 000115 000402
1231 004652 005212
1232 004654 000000
1233
1234
1235
1236
1237
1238 004656 005237 000404
1239 004662 022737 000027 000404
1240 004670 001012
1241 004672 012706 000500
1242 004676 012767 004706 173124
1243 004704 104000
1244 004706 022767 004706 173560
1245 004714 001405
1246 004716 012737 000116 000402
1247 004724 005212
1248 004726 000000
1249
1250

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:*****
;TEST 25      TEST THAT A TRAP OCCURS ON AN EMT RESTRICTED INSTRUCTION
:*****
†ST25:  INC      @#STESTN      ;UPDATE TEST NUMBER
        CMP      #25,@#STESTN ;SEQUENCE ERROR?
        BNE     TST26-12     ;BR TO ERROR HALT ON SEQ ERROR
        MOV     #BUFF,SP     ;STACK POINTER SETUP
        MOV     #RETA3,RTRAP3 ;RETURN LOCATION
        EMT     ;RESERVE INSTRUCTION, SHOULD TRAP
        MOV     #114,@#SFATAL ;MOVE TO MAILBOX # ***** 114 *****
        INC     (R2)         ;SET MSGTYP TO FATAL ERROR
        HALT    ;EMT DID NOT TRAP OR WRONG $TESTN
                ; TO SCOPE REPLACE HALT W/ 240
                ; AND REPLACE NEXT INST W/ 764

RETA3:
:*****
;TEST 26      TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
:*****
†ST26:  INC      @#STESTN      ;UPDATE TEST NUMBER
        CMP      #26,@#STESTN ;SEQUENCE ERROR?
        BNE     TST27-12     ;BR TO ERROR HALT ON SEQ ERROR
        MOV     #BUFF,SP     ;STACK POINTER SETUP
        MOV     #RETB3,RTRAP3 ;RETURN POINTER
        EMT     ;RESERVED INSTRUCTION
        CMP     SP,#BLFF-4    ;TEST DECREMENT OF SP
        BEQ     TST27
        MOV     #115,@#SFATAL ;MOVE TO MAILBOX # ***** 115 *****
        INC     (R2)         ;SET MSGTYP TO FATAL ERROR
        HALT    ;NOT DECREMENTED TWO WORDS,OR WRONG $TESTN
                ; TO SCOPE REPLACE HALT W/ 240
                ; AND REPLACE NEXT INST W/ 761

:*****
;TEST 27      TEST THAT PROPER P.C. IS SAVED
:*****
†ST27:  INC      @#STESTN      ;UPDATE TEST NUMBER
        CMP      #27,@#STESTN ;SEQUENCE ERROR?
        BNE     TST30-12     ;BR TO ERROR HALT ON SEQ ERROR
        MOV     #BUFF,SP     ;STACK POINTER SETUP
        MOV     #RETC3,RTRAP3 ;RTURN FROM TRAP POINTER
        EMT     ;TRAP ON THIS INSTRUCTION
        CMP     #.,BUFF-4    ;CHECK FOR INCREMENTED P.C.
        BEQ     TST30
        MOV     #116,@#SFATAL ;MOVE TO MAILBOX # ***** 116 *****
        INC     (R2)         ;SET MSGTYP TO FATAL ERROR
        HALT    ;INCORRECT P.C. OR WRONG $TESTN
                ; TO SCOPE REPLACE HALT W/ 240
                ; AND REPLACE NEXT INST W/ 760

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H03

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1251
1252
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1254
1255 004730 005237 000404
1256 004734 022737 000030 000404
1257 004742 001044
1258 004744 012706 000500
1259 004750 012767 004772 173052
1260 004756 005067 006134
1261 004762 106467 006130
1262 004766 000257
1263 004770 104000
1264 004772 026727 173500 000000 RETC3:
1265 005000 001405
1266 005002 012737 000117 000402
1267 005010 005212
1268 005012 000000
1269
1270
1271 005014 012706 000500
1272 005020 012767 005044 173002
1273 005026 012767 000357 006052
1274 005034 106467 006056
1275 005040 000277
1276 005042 104000
1277 005044 026727 173426 000357 RETE3:
1278 005052 001405
1279 005054 012737 000120 000402
1280 005062 005212
1281 005064 000000
1282
1283

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*****
:TEST 30 TEST THAT "OLD" STATUS AND PRIORITY ARE PLACED ON STACK
*****
↑ST30: INC @%STESTN ;UPDATE TEST NUMBER
CMP #30,@%STESTN ;SEQUENCE ERROR?
BNE TST31-12 ;BR TO ERROR HALT ON SEQ ERROR
MOV #BUFF,SP ;SET UP
MOV #RETD3,RTRAP3 ;SET UP
CLR STATUS ;CLEAR STATUS AND PRIORITY
MTPS STATUS
CCC
EMT ;TRAP
CMP BUFF-2,#0 ;TEST THAT OLD STATUS WENT TO STACK
BEQ IS
MOV #117,@%SFATAL ;MOVE TO MAILBOX # ***** 117 *****
INC (R2) ;SET MSGTYP TO FATAL ERROR
HALT ;INCORRECT STATUS
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 753
IS: MOV #BUFF,SP ;SET UP
MOV #RETE3,RTRAP3 ;SET UP
MOV #357,STATUS ;SET PRIORITY
MTPS STATUS
SCC ;SET CC
EMT ;TRAP
CMP BUFF-2,#357 ;COMPARES STATUS ON STACK
BEQ TST31
MOV #120,@%SFATAL ;MOVE TO MAILBOX # ***** 120 *****
INC (R2) ;SET MSGTYP TO FATAL ERROR
HALT ;INCORRECT STATUS ON STACK,OR WRONG $TESTN
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 726

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1284
1285
1286
1287
1288 005066 C05237 000404
1289 005072 Q22737 000031 000404
1290 005100 001125
1291 005102 012706 000500
1292 005106 012767 005122 172714
1293 005114 005067 172712
1294 005120 104000
1295 005122
1296 005122 100005
1297 005124 012737 000121 000402
1298 005132 005212
1299 005134 000000
1300
1301
1302 005136
1303 005136 001005
1304 005140 012737 000122 000402
1305 005146 005212
1306 005150 000000
1307
1308
1309 005152
1310 005152 102005
1311 005154 012737 000123 000402
1312 005162 005212
1313 005164 000000
1314
1315
1316 005166
1317 005166 103005
1318 005170 012737 000124 000402
1319 005176 005212
1320 005200 000000
1321
1322
1323 005202 106767 005710
1324 005206 032767 000340 005702
1325 005214 001405
1326 005216 012737 000125 000402
1327 005224 005212
1328 005226 000000
1329
1330
1331 005230 012706 000500
1332 005234 012767 005252 172566
1333 005242 012767 000357 172562
1334 005250 104000
1335 005252
1336 005252 100405
1337 005254 012737 000126 000402
1338 005262 005212
1339 005264 000000

;*****
;TEST 31 TEST THAT "NEW" STATUS IS CORRECT
;*****
TST31: INC @#STESTN ;UPDATE TEST NUMBER
        CMP #31,@#STESTN ;SEQUENCE ERROR?
        BNE TST32-12 ;BR TO ERROR HALT ON SEQ ERROR
        MOV #BUFF,SP
        MOV #RTRAP3,RTRAP3
        CLR RTRAP3+2 ;CLEAR FUTURE PRIORITY AND CC
        EMT
RET3:
        BPL 1$
        MOV #121,@#SFATAL ;MOVE TO MAILBOX # ***** 121 *****
        INC (R2) ;SET MSGTYP TO FATAL ERROR
        HALT ;Z NOT CLEARED
        ; TO SCOPE REPLACE HALT W/ 240
        ; AND REPLACE NEXT INST W/ 761
1$:
        BNE 2$
        MOV #122,@#SFATAL ;MOVE TO MAILBOX # ***** 122 *****
        INC (R2) ;SET MSGTYP TO FATAL ERROR
        HALT ;Z NOT CLEARED
        ; TO SCOPE REPLACE HALT W/ 240
        ; AND REPLACE NEXT INST W/ 753
2$:
        BVC 3$
        MOV #123,@#SFATAL ;MOVE TO MAILBOX # ***** 123 *****
        INC (R2) ;SET MSGTYP TO FATAL ERROR
        HALT ;V NOT CLEARED
        ; TO SCOPE REPLACE HALT W/ 240
        ; AND REPLACE NEXT INST W/ 745
3$:
        BCC 4$
        MOV #124,@#SFATAL ;MOVE TO MAILBOX # ***** 124 *****
        INC (R2) ;SET MSGTYP TO FATAL ERROR
        HALT ;C NOT CLEARED
        ; TO SCOPE REPLACE HALT W/ 240
        ; AND REPLACE NEXT INST W/ 737
4$:
        MFPS STATUS
        BIT #340,STATUS ;TEST PRIORITY
        BEQ 5$
        MOV #125,@#SFATAL ;MOVE TO MAILBOX # ***** 125 *****
        INC (R2) ;SET MSGTYP TO FATAL ERROR
        HALT ;PRIORITY NOT ZERO
        ; TO SCOPE REPLACE HALT W/ 240
        ; AND REPLACE NEXT INST W/ 724
5$:
        MOV #BUFF,SP
        MOV #RTRAP3,RTRAP3
        MOV #357,RTRAP3+2 ;SET NEW "CC" AND PRIORITY
        EMT ;TRAP HERE
RETG3:
        BMI 1$
        MOV #126,@#SFATAL ;MOVE TO MAILBOX # ***** 126 *****
        INC (R2) ;SET MSGTYP TO FATAL ERROR
        HALT ;N NOT SET
    
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K03

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1373
1374
1375 ;*****
;TEST 32 TEST THAT ALL COMBINATION OF EMT WILL CAUSE A TRAP
1376 ;*****
1377 005366 005237 000404 000404 †ST32: INC @#STESTN ;UPDATE TEST NUMBER
1378 005372 022737 000032 000404 CMP #32,@#STESTN ;SEQUENCE ERROR?
1379 005400 001011 BNE RBBB ;BR TO ERROR HALT ON SEQ ERROR
1380 005402 012767 104000 000012 MOV #EMT,RB ;INITIALIZE BASE EMT INSTRUCTION
1381 005410 012767 005436 172412 MOV #RA,30 ;RETURN FROM TRAP TO RA
1382 005416 012706 000500 RC: MOV #BUFF,SP ;SET UP STACK POINTER
1383 005422 104000 RB: EMT ;TRAP INST. WILL BE MODIFIED TO EMT+377
1384 005424
1385 005424 012737 000133 000402 RBBB: MOV #133,@#SFATAL ;MOVE TO MAILBOX # ***** 133 *****
1386 005432 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1387 005434 000000 HALT ;PREVIOUS INST FAILED TO TRAP,OR WRONG $TESTN
1388 ; TO SCOPE REPLACE HALT W/ 240
1389 ; AND REPLACE NEXT INST W/ 761
1390 005436 005267 177760 RA: INC RB
1391 005442 022767 104377 177752 CMP #104377,RB ;EMT+377 TO EMT?
1392 005450 103362 BHIS RC ;HAVE WE TESTED ALL
1393 005452 012767 000032 172350 MOV #32,30
1394 005460 005067 172346 CLR 32 ;HALT
1395 ;*****
1396 ;TEST 33 TEST THAT A TRAP OCCURES ON AN "BPT" INSTRUCTION
1397 ;*****
1398 005464 005237 000404 000404 †ST33: INC @#STESTN ;UPDATE TEST NUMBER
1399 005470 022737 000033 000404 CMP #33,@#STESTN ;SEQUENCE ERROR?
1400 005476 001006 BNE TST34-12 ;BR TO ERROR HALT ON SEQ ERROR
1401 005500 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1402 005504 012767 005526 172302 MOV #RETA4,RTRAP4 ;RETURN LOCATION
1403 005512 000003 TRT ;RESERVED INSTRUCTION, SHOULD TRAP
1404 005514 012737 000134 000402 MOV #134,@#SFATAL ;MOVE TO MAILBOX # ***** 134 *****
1405 005522 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1406 005524 000000 HALT ;DID NOT TRAP,OR WRONG $TESTN
1407 ; TO SCOPE REPLACE HALT W/ 240
1408 ; AND REPLACE NEXT INST W/ 764
1409 005526 RETA4:

```

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1410
1411 ;*****
1412 ;TEST 34 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
1413 ;*****
1414 005526 005237 000404 TST34: INC @#STESTN ;UPDATE TEST NUMBER
1415 005532 022737 000034 000404 CMP #34,@#STESTN ;SEQUENCE ERROR?
1416 005540 001011 BNE TST35-12 ;BR TO ERROR HALT ON SEQ ERROR
1417 005542 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1418 005546 012767 005556 172240 MOV #RETB4,RTRAP4 ;RETURN POINTER
1419 005554 000003 TRT ;RESERVED INSTRUCTION
1420 005556 020627 000474 RETB4: CMP SP,#BUFF-4 ;TEST DECREMENT OF SP
1421 005562 001405 BEQ TST35
1422 005564 012737 000135 000402 MOV #135,@#SFATAL ;MOVE TO MAILBOX # ***** 135 *****
1423 005572 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1424 005574 000000 HALT ;NOT DECREMENTED TWO WORDS,OR WRONG $TESTN
1425 ; TO SCOPE REPLACE HALT W/ 240
1426 ; AND REPLACE NEXT INST W/ 761
1427 ;*****
1428 ;TEST 35 TEST THAT PROPER P.C. IS SAVED
1429 ;*****
1430 005576 005237 000404 TST35: INC @#STESTN ;UPDATE TEST NUMBER
1431 005602 022737 000035 000404 CMP #35,@#STESTN ;SEQUENCE ERROR?
1432 005610 001012 BNE TST36-12 ;BR TO ERROR HALT ON SEQ ERROR
1433 005612 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1434 005616 012767 005626 172170 MOV #RETC4,RTRAP4 ;RETURN FROM TRAP POINTER
1435 005624 000003 TRT ;TRAP ON THIS INSTRUCTION
1436 005626 022767 005626 172640 RETC4: CMP #,BUFF-4 ;CHECK FOR INCREMENTED P.C.
1437 005634 001405 BEQ TST36
1438 005636 012737 000136 000402 MOV #136,@#SFATAL ;MOVE TO MAILBOX # ***** 136 *****
1439 005644 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1440 005646 000000 HALT ;INCORRECT P.C. OR WRONG $TESTN
1441 ; TO SCOPE REPLACE HALT W/ 240
1442 ; AND REPLACE NEXT INST W/ 760

```

M03

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1443
1444 ;*****
1445 ;TEST 36 TEST THAT "OLD" STATUS AND PRIORITY ARE PLACED ON STACK
1446 ;*****
1447 005650 005237 000404 TST36: INC @#STESTN ;UPDATE TEST NUMBER
1448 005654 022737 000036 000404 CMP #36,@#STESTN ;SEQUENCE ERROR?
1449 005662 001044 BNE TST37-12 ;BR TO ERROR HALT ON SEQ ERROR
1450 005664 012706 000500 MOV #BUFF,SP ;SET UP
1451 005670 012767 005712 172116 MOV #RETD4,RTRAP4 ;SET UP
1452 005676 005067 005214 CLR STATUS ;CLEAR STATUS AND PRIORITY
1453 005702 106467 005210 MTPS STATUS
1454 005706 000257 CCC
1455 005710 000003 TRT ;TRAP
1456 005712 026727 172560 000000 RETD4: CMP BUFF-2,#0 ;TEST THAT OLD STATUS WENT TO STACK
1457 005720 001405 BEQ 1$
1458 005722 012737 000137 000402 MOV #137,@#SFATAL ;MOVE TO MAILBOX # ***** 137 *****
1459 005730 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1460 005732 000000 HALT ;INCORRECT STATUS
1461 ; TO SCOPE REPLACE HALT W/ 240
1462 ; AND REPLACE NEXT INST W/ 753
1463 005734 012706 000500 1$: MOV #BUFF,SP ;SET UP
1464 005740 012767 005764 172046 MOV #RETE4,RTRAP4 ;SET UP
1465 005746 012767 000357 005142 MOV #357,STATUS ;SET PRIORITY
1466 005754 106467 005136 MTPS STATUS
1467 005760 000277 SCC ;SET-SET CC
1468 005762 000003 TRT ;TRAP
1469 005764 026727 172506 000357 RETE4: CMP BUFF-2,#357 ;COMPARES STATUS ON STACK
1470 005772 001405 BEQ TST37
1471 005774 012737 000140 000402 MOV #140,@#SFATAL ;MOVE TO MAILBOX # ***** 140 *****
1472 006002 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1473 006004 000000 HALT ;INCORRECT STATUS ON STACK, OR WRONG $TESTN
1474 ; TO SCOPE REPLACE HALT W/ 240
1475 ; AND REPLACE NEXT INST W/ 726
    
```

N03

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TEST THAT "OLD" STATUS AND PRIORITY ARE PLACED ON STACK

SEQ 0041

```

1476
1477 ;*****
1478 ;TEST 37 TEST THAT "NEW" STATUS IS CORRECT
1479 ;*****
1480 006006 005237 000404 TST37: INC @#STESTN ;UPDATE TEST NUMBER
1481 006012 022737 000037 000404 CMP #37,@#STESTN ;SEQUENCE ERROR?
1482 006020 001125 BNE RSTP2 ;BR TO ERROR HALT ON SEQ ERROR
1483 006022 012706 000500 MOV #BUFF,SP
1484 006026 012767 006042 171760 MOV #RETG4,RTRAP4
1485 006034 005067 171756 CLR RTRAP4+2 ;CLEAR FUTURE PRIORITY AND CC
1486 006040 000003 TRT
1487 006042 RETF4:
1488 006042 100005 BPL 1$
1489 006044 012737 000141 000402 MOV #141,@#$FATAL ;MOVE TO MAILBOX # ***** 141 *****
1490 006052 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1491 006054 000000 HALT ;C NOT CLEARED
1492 ; TO SCOPE REPLACE HALT W/ 240
1493 ; AND REPLACE NEXT INST W/ 761
1494 006056 1$:
1495 006056 001005 BNE 2$
1496 006060 012737 000142 000402 MOV #142,@#$FATAL ;MOVE TO MAILBOX # ***** 142 *****
1497 006066 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1498 006070 000000 HALT ;Z NOT CLEARED
1499 ; TO SCOPE REPLACE HALT W/ 240
1500 ; AND REPLACE NEXT INST W/ 753
1501 006072 2$:
1502 006072 102005 BVC 3$
1503 006074 012737 000143 000402 MOV #143,@#$FATAL ;MOVE TO MAILBOX # ***** 143 *****
1504 006102 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1505 006104 000000 HALT ;V NOT CLEARED
1506 ; TO SCOPE REPLACE HALT W/ 240
1507 ; AND REPLACE NEXT INST W/ 745
1508 006106 3$:
1509 006106 103005 BCC 4$
1510 006110 012737 000144 000402 MOV #144,@#$FATAL ;MOVE TO MAILBOX # ***** 144 *****
1511 006116 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1512 006120 000000 HALT ;C NOT CLEARED
1513 ; TO SCOPE REPLACE HALT W/ 240
1514 ; AND REPLACE NEXT INST W/ 737
1515 006122 106767 004770 4$: MFPS STATUS
1516 006126 032767 000340 004762 BIT #340,STATUS ;TEST PRIORITY
1517 006134 001405 BEQ 5$
1518 006136 012737 000145 000402 MOV #145,@#$FATAL ;MOVE TO MAILBOX # ***** 145 *****
1519 006144 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1520 006146 000000 HALT ;PRIORITY NOT ZERO
1521 ; TO SCOPE REPLACE HALT W/ 240
1522 ; AND REPLACE NEXT INST W/ 724
1523 006150 012706 000500 5$: MOV #BUFF,SP
1524 006154 012767 006172 171632 MOV #RETG4,RTRAP4
1525 006162 012767 000357 171626 MOV #357,RTRAP4+2 ;SET NEW "CC" AND PRIORITY
1526 006170 000003 TRT ;TRAP HERE
1527 006172 RETG4:
1528 006172 100405 BMI 1$
1529 006174 012737 000146 000402 MOV #146,@#$FATAL ;MOVE TO MAILBOX # ***** 146 *****
1530 006202 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1531 006204 000000 HALT ;N NOT SET
  
```


B04

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TEST THAT "NEW" STATUS IS CORRECT

SEG 0042

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1532 ; TC SCOPE REPLACE HALT W/ 240
1533 ; AND REPLACE NEXT INST W/ 705
1534 006206 15: BEQ 25
1535 006206 001405 MOV #147,2#SFATAL ; MOVE TO MAILBOX # ***** 147 *****
1536 006210 012737 000147 000402 INC (R2) ; SET MSGTYP TO FATAL ERROR
1537 006216 005212 HALT ; Z NOT SET
1538 006220 000000 ; TO SCOPE REPLACE HALT W/ 240
1539 ; AND REPLACE NEXT INST W/ 677
1540
1541 006222 25: BVS 35
1542 006222 102405 MOV #150,2#SFATAL ; MOVE TO MAILBOX # ***** 150 *****
1543 006224 012737 000150 000402 INC (R2) ; SET MSGTYP TO FATAL ERROR
1544 006232 005212 HALT ; V NOT SET
1545 006234 000000 ; TO SCOPE REPLACE HALT W/ 240
1546 ; AND REPLACE NEXT INST W/ 671
1547
1548 006236 35: BCS 45
1549 006236 103405 MOV #151,2#SFATAL ; MOVE TO MAILBOX # ***** 151 *****
1550 006240 012737 000151 000402 INC (R2) ; SET MSGTYP TO FATAL ERROR
1551 006246 005212 HALT ; C NOT SET
1552 006250 000000 ; TO SCOPE REPLACE HALT W/ 240
1553 ; AND REPLACE NEXT INST W/ 663
1554
1555 006252 45: MFPS STATUS
1556 006256 016706 004640 MOV STATUS,SP
1557 006262 042706 000017 BIC #17,SP
1558 006266 022706 000340 CMP #340,SP
1559 006272 001405 BEQ RST2
1560
1561 006274 RSTP2: MOV #152,2#SFATAL ; MOVE TO MAILBOX # ***** 152 *****
1562 006302 012737 000152 000402 INC (R2) ; SET MSGTYP TO FATAL ERROR
1563 006304 000000 HALT ; PRIORITY WAS CHANGED, OR WRONG $TESTN
1564 ; TO SCOPE REPLACE HALT W/ 240
1565 ; AND REPLACE NEXT INST W/ 645
1566 006306 012767 000016 171500 RST2: MOV #16,14
1567 006314 005067 171476 CLR 16
1568

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1579 006320 005237 000404
1580 006324 022737 000040 000404
1581 006332 001006
1582 006334 012706 000500
1583 006340 012767 006362 171436
1584 006346 000100
1585 006350 012737 000153 000402
1586 006356 005212
1587 006360 000000
1588
1589
1590 006362
1591
1592
1593
1594 006362 005237 000404
1595 006366 022737 000041 000404
1596 006374 001011
1597 006376 012706 000500
1598 006402 012767 006412 171374
1599 006410 000100
1600 006412 020627 000474
1601 006416 001405
1602 006420 012737 000154 000402
1603 006426 005212
1604 006430 000000
1605
1606

```

```

;PDP-11 ILLEGAL AND ADDRESS INSTRUCTION TEST
;ALL INSTRUCTIONS THAT ARE RESERVED
;SHOULD TRAP TO LOCATION 4, AND THE
;PC THAT POINTS TO THE TRAPPING INSTRUCTION
;SHOULD BE PLACED ON THE STACK

```

```

;*****
;TEST 40 TEST THAT A TRAP OCCURS ON AN ILLEGAL INSTRUCTION
;*****
TST40: INC @#STESTN ;UPDATE TEST NUMBER
CMP #40,@#STESTN ;SEQUENCE ERROR?
BNE TST41-12 ;BR TO ERROR HALT ON SEQ ERROR
MOV #BUFF,SP ;STACK POINTER SETUP
MOV #RETAS,RTRAPS ;RETURN LOCATION
JMP %0 ;ILLEGAL INSTRUCTION, SHOULD TRAP
MOV #153,@#SFATAL ;MOVE TO MAILBOX # ***** 153 *****
INC (R2) ;SET MSGTYP TO FATAL ERROR
HALT ;DID NOT TRAP OR WRONG $TESTN
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 764

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RETAS:

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;*****
;TEST 41 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
;*****
TST41: INC @#STESTN ;UPDATE TEST NUMBER
CMP #41,@#STESTN ;SEQUENCE ERROR?
BNE TST42-12 ;BR TO ERROR HALT ON SEQ ERROR
MOV #BUFF,SP ;STACK POINTER SETUP
MOV #RETB5,RTRAPS ;RETURN POINTER
JMP %0 ;RESERVED INSTRUCTION
RETB5: CMP SP,#BUFF-4 ;TEST DECREMENT OF SP
BEQ TST42
MOV #154,@#SFATAL ;MOVE TO MAILBOX # ***** 154 *****
INC (R2) ;SET MSGTYP TO FATAL ERROR
HALT ;NOT DECREMENTED TWO WORDS, OR WRONG $TESTN
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 761

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1607
1608
1609
1610
1611 006432 005237 000404
1612 006436 022737 000042 000404
1613 006444 001012
1614 006446 012706 000500
1615 006452 012767 006462 171324
1616 006460 000100
1617 006462 022767 006462 172004 RETC5:
1618 006470 001405
1619 006472 012737 000155 000402
1620 006500 005212
1621 006502 000000
1622
1623
1624
1625
1626
1627 006504 005237 000404
1628 006510 022737 000043 000404
1629 006516 001044
1630 006520 012706 000500
1631 006524 012767 006546 171252
1632 006532 005067 004360
1633 006536 106467 004354
1634 006542 000257
1635 006544 000100
1636 006546 026727 171724 000000 RETD5:
1637 006554 001405
1638 006556 012737 000156 000402
1639 006564 005212
1640 006566 000000
1641
1642
1643 006570 012706 000500 1$:
1644 006574 012767 006620 171202
1645 006602 012767 000357 004306
1646 006610 106467 004302
1647 006614 000277
1648 006616 000100
1649 006620 026727 171652 000357 RETE5:
1650 006626 001405
1651 006630 012737 000157 000402
1652 006636 005212
1653 006640 000000
1654
1655

```

```

;*****
;TEST 42 TEST THAT PROPER P.C. IS SAVED
;*****
TST42: INC @STESTN ;UPDATE TEST NUMBER
CMP #42,@STESTN ;SEQUENCE ERROR?
BNE TST43-12 ;BR TO ERROR HALT ON SEQ ERROR
MOV #BUFF,SP ;STACK POINTER SETUP
MOV #RETC5,RTRAP5 ;RETURN FROM TRAP POINTER
JMP %0 ;TRAP ON THIS INSTRUCTION
RETC5: CMP #, BUFF-4 ;CHECK FOR INCREMENTED P.C.
BEQ TST43
MOV #155,@SFATAL ;MOVE TO MAILBOX # ***** 155 *****
INC (R2) ;SET MSGTYP TO FATAL ERROR
HALT ;INCORRECT P.C. OR WRONG $TESTN
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 760
;*****
;TEST 43 TEST THAT "OLD" STATUS AND PRIORITY ARE PLACED ON STACK
;*****
TST43: INC @STESTN ;UPDATE TEST NUMBER
CMP #43,@STESTN ;SEQUENCE ERROR?
BNE TST44-12 ;BR TO ERROR HALT ON SEQ ERROR
MOV #BUFF,SP ;SET UP
MOV #RETD5,RTRAP5 ;SET UP
CLR STATUS ;CLEAR STATUS AND PRIORITY
MTPS STATUS
JMP %0 ;TRAP
RETD5: CMP BUFF-2,#0 ;TEST THAT OLD STATUS WENT TO STACK
BEQ 1$
MOV #156,@SFATAL ;MOVE TO MAILBOX # ***** 156 *****
INC (R2) ;SET MSGTYP TO FATAL ERROR
HALT ;INCORRECT STATUS
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 753
1$: MOV #BUFF,SP ;SET UP
MOV #RETE5,RTRAP5 ;SET UP
MOV #357,STATUS ;SET PRIORITY
MTPS STATUS
SCC ;SET CC
JMP %0 ;TRAP
RETE5: CMP BUFF-2,#357 ;COMPARES STATUS ON STACK
BEQ TST44
MOV #157,@SFATAL ;MOVE TO MAILBOX # ***** 157 *****
INC (R2) ;SET MSGTYP TO FATAL ERROR
HALT ;INCORRECT STATUS ON STACK, OR WRONG $TESTN
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 726

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E04

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1656
1657
1658 ;*****
1659 ;TEST 44 TEST THAT "NEW" STATUS IS CORRECT
1660 ;*****
1660 006642 005237 000404
1661 006646 022737 000044 000404
1662 006654 001123
1663 006656 012706 000500
1664 006662 012767 006676 171114
1665 006670 005067 171112
1666 006674 000100
1667 006676
1668 006676 100005
1669 006700 012737 000160 000402
1670 006706 005212
1671 006710 000000
1672
1673
1674 006712
1675 006712 001005
1676 006714 012737 000161 000402
1677 006722 005212
1678 006724 000000
1679
1680
1681 006726
1682 006726 102005
1683 006730 012737 000162 000402
1684 006736 005212
1685 006740 000000
1686
1687
1688 006742
1689 006742 103005
1690 006744 012737 000163 000402
1691 006752 005212
1692 006754 000000
1693
1694
1695 006756 106767 004134
1696 006762 032767 000357 004126
1697 006770 001405
1698 006772 012737 000164 000402
1699 007000 005212
1700 007002 000000
1701
1702
1703 007004 012706 000500
1704 007010 012767 007026 170766
1705 007016 012767 000357 170762
1706 007024 000100
1707 007026
1708 007026 100405
1709 007030 012737 000165 000402
1710 007036 005212
1711 007040 000000
    
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;*****
;TEST 44 TEST THAT "NEW" STATUS IS CORRECT
;*****
TST44: INC @#STESTN ;UPDATE TEST NUMBER
        CMP #44,@#STESTN ;SEQUENCE ERROR?
        BNE TST45-12 ;BR TO ERROR HALT ON SEQ ERROR
        MOV #BUFF,SP
        MOV #RETFS,RTRAPS
        CLR RTRAPS+2 ;CLEAR FUTURE PRIORITY AND CC
        JMP %0

RETFS: BPL 1$
        MOV #160,@#SFATAL ;MOVE TO MAILBOX # ***** 160 *****
        INC (R2) ;SET MSGTYP TO FATAL ERROR
        HALT ; C NOT CLEARED
        ; TO SCOPE REPLACE HALT W/ 240
        ; AND REPLACE NEXT INST W/ 761

1$: BNE 2$
        MOV #161,@#SFATAL ;MOVE TO MAILBOX # ***** 161 *****
        INC (R2) ;SET MSGTYP TO FATAL ERROR
        HALT ; Z NOT CLEARED
        ; TO SCOPE REPLACE HALT W/ 240
        ; AND REPLACE NEXT INST W/ 753

2$: BVC 3$
        MOV #162,@#SFATAL ;MOVE TO MAILBOX # ***** 162 *****
        INC (R2) ;SET MSGTYP TO FATAL ERROR
        HALT ; V NOT CLEARED
        ; TO SCOPE REPLACE HALT W/ 240
        ; AND REPLACE NEXT INST W/ 745

3$: BCC 4$
        MOV #163,@#SFATAL ;MOVE TO MAILBOX # ***** 163 *****
        INC (R2) ;SET MSGTYP TO FATAL ERROR
        HALT ; C NOT CLEARED
        ; TO SCOPE REPLACE HALT W/ 240
        ; AND REPLACE NEXT INST W/ 737

4$: MFPS STATUS
        BIT #357,STATUS ;TEST PRIORITY
        BEQ 5$
        MOV #164,@#SFATAL ;MOVE TO MAILBOX # ***** 164 *****
        INC (R2) ;SET MSGTYP TO FATAL ERROR
        HALT ;PRIORITY NOT ZERO
        ; TO SCOPE REPLACE HALT W/ 240
        ; AND REPLACE NEXT INST W/ 724

5$: MOV #BUFF,SP
        MOV #RETGS,RTRAPS
        MOV #357,RTRAPS+2 ;SET NEW "CC" AND PRIORITY
        JMP %0 ;TRAP HERE

RETGS: BMI 1$
        MOV #165,@#SFATAL ;MOVE TO MAILBOX # ***** 165 *****
        INC (R2) ;SET MSGTYP TO FATAL ERROR
        HALT ;N NOT SET
    
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1744
1745
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1748 007136 005237 000404
1749 007142 022737 000045 000404
1750 007150 001006
1751 007152 012706 000500
1752 007156 012767 007200 170620
1753 007164 004000
1754 007166 012737 000172 000402
1755 007174 005212
1756 007176 000000
1757
1758
1759 007200
1760
1761
1762
1763 007200 005237 000404
1764 007204 022737 000046 000404
1765 007212 001011
1766 007214 012706 000500
1767 007220 012767 007230 170556
1768 007226 004000
1769 007230 020627 000474
1770 007234 001405
1771 007236 012737 000173 000402
1772 007244 005212
1773 007246 000000
1774
1775

;*****
;TEST 45 TEST THAT A TRAP OCCURES ON ALL ILLEGAL INSTRUCTION
;*****
†ST45: INC @#STESTN ;UPDATE TEST NUMBER
      CMP #45,@#STESTN ;SEQUENCE ERROR?
      BNE TST46-12 ;BR TO ERROR HALT ON SEQ ERROR
      MOV #BUFF,SP ;STACK POINTER SETUP
      MOV #RETH5,RTRAPS ;RETURN LOCATION
      JSR %0,%0 ;RESERVED INSTRUCTION, SHOULD TRAP
      MOV #172,@#SFATAL ;MOVE TO MAILBOX # ***** 172 *****
      INC (R2) ;SET MSGTYP TO FATAL ERROR
      HALT ;DID NOT TRAP,OR WRONG $TESTN
           ; TO SCOPE REPLACE HALT W/ 240
           ; AND REPLACE NEXT INST W/ 764

RETH5:
;*****
;TEST 46 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
;*****
†ST46: INC @#STESTN ;UPDATE TEST NUMBER
      CMP #46,@#STESTN ;SEQUENCE ERROR?
      BNE TST47-12 ;BR TO ERROR HALT ON SEQ ERROR
      MOV #BUFF,SP ;STACK POINTER SETUP
      MOV #RETJ,RTRAPS ;RETURN POINTER
      JSR %0,%0 ;RESERVED INSTRUCTION
      RETJ: CMP SP,#BUFF-4 ;TEST DECREMENT OF SP
           BEQ TST47
           MOV #173,@#SFATAL ;MOVE TO MAILBOX # ***** 173 *****
           INC (R2) ;SET MSGTYP TO FATAL ERROR
           HALT ;NOT DECREMENTED TWO WORDS,OR WRONG $TESTN
                ; TO SCOPE REPLACE HALT W/ 240
                ; AND REPLACE NEXT INST W/ 761

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1776
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1780 007250 005237 000404
1781 007254 022737 000047 000404
1782 007262 001012
1783 007264 012706 000500
1784 007270 012767 007300 170506
1785 007276 004000
1786 007300 022767 007300 171166
1787 007306 001405
1788 007310 012737 000174 000402
1789 007316 005212
1790 007320 000000
1791
1792
1793
1794
1795
1796
1797 007322 005237 000404
1798 007326 022737 000050 000404
1799 007334 001044
1800 007336 012706 000500
1801 007342 012767 007364 170434
1802 007350 005067 003542
1803 007354 106467 003536
1804 007360 000257
1805 007362 004000
1806 007364 026727 171106 000000
1807 007372 001405
1808 007374 012737 000175 000402
1809 007402 005212
1810 007404 000000
1811
1812
1813 007406 012706 000500
1814 007412 012767 007436 170364
1815 007420 012767 000357 003470
1816 007426 106467 003464
1817 007432 000277
1818 007434 004000
1819 007436 026727 171034 000357
1820 007444 001405
1821 007446 012737 000176 000402
1822 007454 005212
1823 007456 000000
1824
1825
1826
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1829
1830 007460 005237 000404
1831 007464 022737 000051 000404

;*****
;TEST 47 TEST THAT PROPER P.C. IS SAVED
;*****
TST47: INC @STESTN ;UPDATE TEST NUMBER
        CMP #47,@STESTN ;SEQUENCE ERROR?
        BNE TST50-12 ;BR TO ERROR HALT ON SEQ ERROR
        MOV #BUFF,SP ;STACK POINTER SETUP
        MOV #RETK,RTRAPS ;RETURN FROM TRAP POINTER
INSTK: JSR %0,%0 ;TRAP ON THIS INSTRUCTION
RETK: CMP #INSTK+2,BUFF-4 ;CHECK FOR INCREMENTED P.C.
        BEQ TST50
        MOV #174,@SFATAL ;MOVE TO MAILBOX # ***** 174 *****
        INC (R2) ;SET MSGTYP TO FATAL ERROR
        HALT ;INCORRECT P.C. OR WRONG $TESTN
        ; TO SCOPE REPLACE HALT W/ 240
        ; AND REPLACE NEXT INST W/ 760

;*****
;TEST 50 TEST THAT "OLD" STATUS AND PRIORITY ARE PLACED ON STACK
;*****
TST50: INC @STESTN ;UPDATE TEST NUMBER
        CMP #50,@STESTN ;SEQUENCE ERROR?
        BNE TST51-12 ;BR TO ERROR HALT ON SEQ ERROR
        MOV #BUFF,SP ;SET UP
        MOV #RETL,RTRAPS ;SET UP
        CLR STATUS ;CLEAR STATUS AND PRIORITY
        MTPS STATUS
        JSR %0,%0 ;TRAP
        RETL: CMP BUFF-2,#0 ;TEST THAT OLD STATUS WENT TO STACK
        BEQ 1$
        MOV #175,@SFATAL ;MOVE TO MAILBOX # ***** 175 *****
        INC (R2) ;SET MSGTYP TO FATAL ERROR
        HALT ;INCORRECT STATUS
        ; TO SCOPE REPLACE HALT W/ 240
        ; AND REPLACE NEXT INST W/ 753

1$: MOV #BUFF,SP ;SET UP
   MOV #RETM,RTRAPS ;SET UP
   MOV #357,STATUS ;SET PRIORITY
   MTPS STATUS
   JSR %0,%0 ;SET CC
   RETM: CMP BUFF-2,#357 ;TRAP
        BEQ TST51 ;COMPARES STATUS ON STACK
        MOV #176,@SFATAL ;MOVE TO MAILBOX # ***** 176 *****
        INC (R2) ;SET MSGTYP TO FATAL ERROR
        HALT ;INCORRECT STATUS ON STACK, OR WRONG $TESTN
        ; TO SCOPE REPLACE HALT W/ 240
        ; AND REPLACE NEXT INST W/ 726

;*****
;TEST 51 TEST THAT "NEW" STATUS IS CORRECT
;*****
TST51: INC @STESTN ;UPDATE TEST NUMBER
        CMP #51,@STESTN ;SEQUENCE ERROR?

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K04

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007764 005237 000404
007770 022737 000052 000404
007776 001013
010000 012706 000500
010004 012767 010040 170002
010012 012746 000020
010016 012746 010024
010022 000002
010024 000240
010026 012737 000211 000402
010034 005212
010036 000000

010040

010040 005237 000404
010044 022737 000053 000404
010052 001023
010054 012706 000500
010060 012767 010114 167726
010066 012746 000020
010072 012746 010100
010076 000002
010100 000240
010102 012737 000212 000402
010110 005212
010112 000000

010114 020627 000474
010120 001405
010122 012737 000213 000402
010130 005212
010132 000000

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*****  
:TEST 52 TEST THAT THE TRACE TRAP; (BIT 20(B)) WILL CAUSE A TRAP TO 14  
*****  
TST52: INC 2#STESTN ;UPDATE TEST NUMBER  
CMP #52,2#STESTN ;SEQUENCE ERROR?  
BNE TST53-12 ;BR TO ERROR HALT ON SEQ ERROR  
MOV #BUFF,SP  
MOV #RETAT,RTRAP4 ;SET UP TO TRAP TO 14  
MOV #20,-(SP) ;PUSH T BIT  
MOV #.+6,-(SP) ;PUSH PC  
RTI ;SET T BIT  
NOP ;TRAP HERE  
MOV #211,2#SFATAL ;MOVE TO MAILBOX # ***** 211 *****  
INC (R2) ;SET MSGTYP TO FATAL ERROR  
HALT ;TRACE BIT DID NOT TRAP!,OR WRONG STESN  
; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 757  
  
RETAT:  
*****  
:TEST 53 TEST STACK POINTER DECREMENTS  
*****  
TST53: INC 2#STESTN ;UPDATE TEST NUMBER  
CMP #53,2#STESTN ;SEQUENCE ERROR?  
BNE TST54-12 ;BR TO ERROR HALT ON SEQ ERROR  
MOV #BUFF,SP  
MOV #RETBT,RTRAP4  
MOV #20,-(SP) ;PUSH T BIT  
MOV #.+6,-(SP) ;PUSH PC  
RTI ;SET T BIT  
NOP ;TRAP HERE  
MOV #212,2#SFATAL ;MOVE TO MAILBOX # ***** 212 *****  
INC (R2) ;SET MSGTYP TO FATAL ERROR  
HALT ;TRACE BIT DID NOT TRAP!  
; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 757  
  
RETBT: CMP SP,#BUFF-4  
BEQ TST54  
MOV #213,2#SFATAL ;MOVE TO MAILBOX # ***** 213 *****  
INC (R2) ;SET MSGTYP TO FATAL ERROR  
HALT ;STACK POINTER WAS NOT PUSHED BY TRAP,OR WRONG STESN  
; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 747
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1960
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1962
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1964 010134 005237 000404
1965 010140 022737 000054 000404
1966 010146 001016
1967 010150 012706 000500
1968 010154 012767 010174 167632
1969 010162 012746 000020
1970 010166 012746 010174
1971 010172 000002
1972
1973 010174 022767 010174 170272 RETCT: CMP #. BUFF-4
1974 010202 001405 BEQ TST55
1975 010204 012737 000214 000402 MOV #214, #SFATAL ; MOVE TO MAILBOX # ***** 214 *****
1976 010212 005212 INC (R2) ; SET MSGTYP TO FATAL ERROR
1977 010214 000000 HALT ; CORRECT PC WAS NOT SAVED ON STACK, OR WRONG $TESTN
1978 ; TO SCOPE REPLACE HALT W/ 240
1979 ; AND REPLACE NEXT INST W/ 754
1980
1981
1982
1983
1984
1985 010216 005237 000404
1986 010222 022737 000055 000404
1987 010230 001015
1988
1989 010232 012706 000500
1990 010236 005001
1991 010240 012746 000020
1992 010244 012746 010260
1993 010250 012767 010276 167536
1994 010256 000006
1995 010260 000240 RTT1: NOP
1996 010262 001405 BEQ TST56
1997 010264 012737 000215 000402 MOV #215, #SFATAL ; MOVE TO MAILBOX # ***** 215 *****
1998 010272 005212 INC (R2) ; SET MSGTYP TO FATAL ERROR
1999 010274 000000 HALT ; T-BIT DID NOT TRAP, OR WRONG $TESTN
2000 ; TO SCOPE REPLACE HALT W/ 240
2001 ; AND REPLACE NEXT INST W/ 755
2002
2003 010276 RTT2:

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M04

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2004
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2006 ;*****
2007 ;TEST 56 TEST THAT RTT ALLOWS ONE INST. BEFORE TRAP
2008 ;*****
2008 010276 005237 000404 †ST56: INC #STESTN ;UPDATE TEST NUMBER
2009 010302 022737 000056 000404 CMP #56,#STESTN ;SEQUENCE ERROR?
2010 010310 001031 BNE TST57-12 ;BR TO ERROR HALT ON SEQ ERROR
2011 010312 012705 177777 MOV #177777,%5
2012 010316 012706 000500 RTT5: MOV #BUFF,SP
2013 010322 012746 000020 MOV #20,-(SP)
2014 010326 012746 010344 MOV #RTT3,-(SP)
2015 010332 012767 010364 167454 MOV #RTT4,14
2016 010340 005001 CLR R1 ;CLEAR R0
2017 010342 000006 RTT ;SET T-BIT
2018 010344 005201 RTT3: INC R1
2019 010346 005205 INC %5
2020 010350 001762 BEQ RTT5 ;DO THIS TEST NO MORE THAN 2 TIMES
2021 010352 012737 000216 000402 MOV #216,#SFATAL ;MOVE TO MAILBOX # ***** 216 *****
2022 010360 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2023 010362 000000 HALT ;DID NOT TRAP
2024 ; TO SCOPE REPLACE HALT W/ 240
2025 ; AND REPLACE NEXT INST W/ 752
2026 010364 005301 RTT4: DEC R1 ;SEE IF RTT ALLOWS 1 INST.
2027 010366 001407 BEQ RTT6
2028 010370 005205 INC %5 ;DO THIS TEST NO MORE THAN TWO TIMES
2029 010372 001751 BEQ RTT5
2030 010374 012737 000217 000402 MOV #217,#SFATAL ;MOVE TO MAILBOX # ***** 217 *****
2031 010402 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2032 010404 000000 HALT ;RTT DID NOT ALLOW 1 INST.,OR WRONG STESTN
2033 ; TO SCOPE REPLACE HALT W/ 240
2034 ; AND REPLACE NEXT INST W/ 741
2035 010406 RTT6:

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2036
2037
2038 ;*****
;TEST 57 TEST THAT RTI DOES NOT ALLOW 1 INST.
2039 ;*****
2040 010406 005237 000404 TST57: INC 2#STESTN ;UPDATE TEST NUMBER
2041 010412 022737 000057 000404 CMP #57,2#STESTN ;SEQUENCE ERROR?
2042 010420 001023 BNE TST60-12 ;BR TO ERROR HALT ON SEQ ERROR
2043 010422 012706 000500 MOV #BUFF,SP
2044 010426 012746 000020 MOV #20,-(SP)
2045 010432 012746 010450 MOV #RTI1,-(SP)
2046 010436 012767 010464 167350 MOV #RTI2,14
2047 010444 005001 CLR R1
2048 010446 000002 RTI ;SET T-BIT
2049 010450 005201 RTI1: INC R1 ;RTI SHOULD NOT ALLOW THIS
2050 010452 012737 000220 000402 MOV #220,2#SFATAL ;MOVE TO MAILBOX # ***** 220 *****
2051 010460 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2052 010462 000000 HALT ;T- BIT DID NOT CAUSE TRAP
2053 ; TO SCOPE REPLACE HALT W/ 240
2054 ; AND REPLACE NEXT INST W/ 756
2055 010464 005701 RTI2: TST R1
2056 ;RTI SHOULD NOT ALLOW 1 INST. BEFORE TRAP
2057 010466 001405 BEQ TST60
2058 010470 012737 000221 000402 MOV #221,2#SFATAL ;MOVE TO MAILBOX # ***** 221 *****
2059 010476 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2060 010500 000000 HALT ;RTI DID ALLOW 1 INST. BEFORE TRAP,OR WRONG $TESTN
2061 ; TO SCOPE REPLACE HALT W/ 240
2062 ; AND REPLACE NEXT INST W/ 747

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B05

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CVKADB.P11 17-FEB-77 15:34 T57 TEST THAT RTI DOES NOT ALLOW 1 INST.

SEG 0055

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2063
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2065 :*****
:TEST 60 TEST TRAP ON TRAP
2066 :*****
2067 010502 005237 000404 000404 †ST60: INC 2*STESTN ;UPDATE TEST NUMBER
2068 010506 022737 000060 000404 CMP #60,2*STESTN ;SEQUENCE ERROR?
2069 010514 001033 BNE TRACE ;BR TO ERROR HALT ON SEQ ERROR
2070 :TEST THAT TRACE BIT TRAPS ARE INHIBITED ON TRAP INST
2071
2072 010516 012705 177777 TRPTRP: MOV #177777,%5
2073 010522 012706 000500 MOV #BUFF,%6
2074 010526 012767 010600 167260 MOV #TRACE1,14 ;TRACE TRAP
2075 010534 005027 000016 CLR #16 ;
2076 010540 005027 000022 CLR #22 ;
2077 010544 012767 010616 167246 MOV #TONT1,20 ;IOT TRAP
2078 010552 012746 000020 MOV #20,-(SP) ;PUSH T BIT
2079 010556 012746 010564 MOV #.+6,-(SP) ;PUSH PC
2080 010562 000006 RTT ;SET T BIT
2081 010564 000004 IOT ;TRAP, NEW STATUS HAVE TRACE RESET
2082 010566 012737 000222 000402 MOV #222,2*SFATAL ;MOVE TO MAILBOX # ***** 222 *****
2083 010574 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2084 010576 000000 HALT ;NO TRAP OCCURRED
2085 ; TO SCOPE REPLACE HALT W/ 240
2086 ; AND REPLACE NEXT INST W/ 746
2087 010600 005205 TRACE1: INC %5 ;IF FAILED TRY THIS TEST TWICE BUT NO MORE
2088 010602 001747 BEQ TRPTRP
2089 010604 TRACE:
2090 010604 012737 000223 000402 MOV #223,2*SFATAL ;MOVE TO MAILBOX # ***** 223 *****
2091 010612 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2092 010614 000000 HALT ;IOT SHOULD HAVE CLEARED THE T BIT,OR WRONG STESTN
2093 ; TO SCOPE REPLACE HALT W/ 240
2094 ; AND REPLACE NEXT INST W/ 737
2095 C10616 012767 000016 167170 TONT1: MOV #16,14
2096 010624 C12767 000022 167166 MOV #22,20

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2101 010632 005237 000404
2102 010636 022737 000061 000404
2103 010644 001026
2104 010646 012706 000500
2105 010652 012767 010712 167134
2106 010660 005067 167132
2107 010664 012746 000020
2108 010670 012746 010676
2109 010674 000002
2110 010676 000240
2111 010700 012737 000224 000402
2112 010706 005212
2113 010710 000000
2114
2115
2116 010712 036727 167560 000020 TRC1: BIT BUFF-2, #20
2117 010720 001005 BNE TST62
2118 010722 012737 000225 000402 MOV #225, @#SFATAL
2119 010730 005212 INC (R2)
2120 010732 000000 HALT
2121
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2123
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2126 010734 005237 000404
2127 010740 022737 000062 000404
2128 010746 001020
2129 010750 012706 000500
2130 010754 012746 000020
2131 010760 012746 010774
2132 010764 012767 011010 167022
2133 010772 000002
2134
2135 010774 000240 TRC2: NOP
2136 010776 012737 000226 000402 MOV #226, @#SFATAL
2137 011004 005212 INC (R2)
2138 011006 000000 HALT
2139
2140
2141
2142 011010 012767 000016 166776 TRC3: MOV #16.14
2143 011016 005067 166774 CLR 16

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;*****
;TEST 61 TEST THAT THE TRACE BIT WILL CAUSE A TRAP
;*****
TST61: INC @#STESTN ;UPDATE TEST NUMBER
CMP #61, @#STESTN ;SEQUENCE ERROR?
BNE TST62-12 ;BR TO ERROR HALT ON SEQ ERROR
MOV #BUFF, %6 ;SET UP STACK POINTER
MOV #TRC1, 14 ;TRACE TRAP RETURN
CLR 16
MOV #20, -(SP) ;PUSH T BIT
MOV #.+6, -(SP) ;PUSH PC
RTI ;SET T BIT
NOP
MOV #224, @#SFATAL ;MOVE TO MAILBOX # ***** 224 *****
INC (R2) ;SET MSGTYP TO FATAL ERROR
HALT ;DO NOT TRAP
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 755
;CHECK FOR T BIT ON STACK
TRC1: BIT BUFF-2, #20
BNE TST62
MOV #225, @#SFATAL ;MOVE TO MAILBOX # ***** 225 *****
INC (R2) ;SET MSGTYP TO FATAL ERROR
HALT ;T BIT NOT SAVED ON STACKED, OR WRONG $TESTN
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 744
;*****
;TEST 62 TEST THAT AN RTI POPS THE T BIT
;*****
TST62: INC @#STESTN ;UPDATE TEST NUMBER
CMP #62, @#STESTN ;SEQUENCE ERROR?
BNE TST63-12 ;BR TO ERROR HALT ON SEQ ERROR
MOV #BUFF, %6 ;SET UP THE STACK
MOV #20, -(6) ;FUTURE T BIT ON STACK
MOV #TRC2, -(6) ;RTI RETURN
MOV #TRC3, 14 ;TRACE TRAP INTERRUPT POINTER
RTI
NOP ;TRACE IS SET SHOULD TRAP TO 14
MOV #226, @#SFATAL ;MOVE TO MAILBOX # ***** 226 *****
INC (R2) ;SET MSGTYP TO FATAL ERROR
HALT ;DID NOT TRACE TRAP, OR WRONG $TESTN
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 757

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2144
2145
2146 :*****
2147 :TEST 63 TEST THAT A PENDING INTERRUPT OCCURS BEFORE TRAP
2148 :*****
2148 011022 005237 000404 TST63: INC 2#STESTN ;UPDATE TEST NUMBER
2149 011026 022737 000063 000404 CMP #63,2#STESTN ;SEQUENCE ERROR?
2150 011034 001052 BNE TRI ;BR TO ERROR HALT ON SEQ ERROR
2151 011036 032767 000001 167354 BIT #1,SENV ;CHECK IF ON APT
2152 011044 001403 BEQ NOAPT ;IF NOT ON APT
2153 011046 005767 167334 TST $PASS ;CHECK IF ON FIRST PASS
2154 011052 001052 BNE TST64 ;IF NOT FIRST PASS
2155 011054 NOAPT:
2156 011054 105737 177564 TSTB 2#TPS
2157 011060 100375 BPL .-4
2158 011062 012706 000500 MOV #BUFF,%6
2159 011066 012767 000340 002022 MOV #340,STATUS ;HIGHEST PRIORITY LEVEL
2160 011074 106467 002016 MTPS STATUS
2161 011100 012767 011150 166756 MOV #TR0,64
2162 011106 012767 000100 166450 MOV #100,TTCSR ;INTERRUPT FOR TTY PUNCH/PRINTER
2163 011114 012767 011162 166712 MOV #TR1,34 ;TRAP VECTOR
2164 011122 012767 011174 166734 MOV #TR2,64 ;TTY VECTOR
2165 011130 012767 000340 166700 MOV #340,36 ;IF TRAP TRAPS, MOVE 340 TO PRIORITY
2166 011136 005067 001754 CLR STATUS ;SHOULD TRAP AT END OF CLR INST
2167 011142 106467 001750 MTPS STATUS
2168 011146 104400 TRAP ;TTY INTERRUPT SHOULD OVERRIDE TRAP
2169 011150
2170 011150 012737 000227 000402 TR0: MOV #227,2#SFATAL ;MOVE TO MAILBOX # ***** 227 *****
2171 011156 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2172 011160 000000 HALT ;TTY SHOULDN'T HAVE INTERRUPTED
2173 ; TO SCOPE REPLACE HALT W/ 240
2174 ; AND REPLACE NEXT INST W/ 725
2175 011162
2176 011162 012737 000230 000402 TR1: MOV #230,2#SFATAL ;MOVE TO MAILBOX # ***** 230 *****
2177 011170 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2178 011172 000000 HALT ;INTERRUPT DID NOT OCCUR FIRST,OR WRONG $TESTN
2179 ; TO SCOPE REPLACE HALT W/ 240
2180 ; AND REPLACE NEXT INST W/ 720
2181 011174 005067 166636 TR2: CLR 36

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E05

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 CVKADB.P11 17-FEB-77 15:34 T63

TEST THAT A PENDING INTERRUPT OCCURS BEFORE TRAP

SEG 0058

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2182
2183
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2185
2186 011200 005237 000404
2187 011204 022737 000064 000404
2188 011212 001042
2189 011214 032767 000001 167176
2190 011222 001403
2191 011224 005767 167156
2192 011230 001055
2193 011232
2194 011232 042767 000100 166324
2195 011240 012706 000500
2196 011244 012767 000340 001644
2197 011252 106467 001640
2198 011256 012767 000100 166300
2199 011264 012767 011316 166542
2200 011272 012767 011332 166564
2201 011300 012767 011320 166512
2202 011306 012767 000340 166506
2203 011314 104400
2204 011316 000004
2205 011320
2206 011320 012737 000231 000402
2207 011326 005212
2208 011330 000000
2209
2210
2211 011332 005067 166464
2212 011336 005067 166524
2213 011342 012767 000066 166514
2214 011350 012767 000036 166456
2215 011356 012767 000022 166434
2216

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:*****
:TEST 64 TEST THAT A PENDING INTERRUPT; INTERRUPTS BETWEEN TRAPS
:*****
↑ST64: INC 2*STESTN ;UPDATE TEST NUMBER
      CMP #64,2*STESTN ;SEQUENCE ERROR?
      BNE TR5 ;BR TO ERROR HALT ON SEQ ERROR
      BIT #1,$ENV ;CHECK IF ON APT
      BEQ NOAPT1 ; IF NOT
      TST $PASS ; CHECK IF ON FIRST PASS
      BNE TST65 ; IF NOT

NOAPT1: BIC #100,TTCSR
      MOV #BUFF,%6
      MOV #340,$STATUS
      MTPS STATUS
      MOV #100,TTCSR
      MOV #TR3,34 ;TRAP
      MOV #TR4,64 ;TTY OUTPUT
      MOV #TR5,20 ;IOT
      MOV #340,22 ;IOT PRIORITY
      TRAP ;THE ACT OF TRAPPING LOWER PRIORITY
      IOT ;INTERRUPT SHOULD OCCUR IN PLACE OF IOT TRAP

TR3:
TR5: MOV #231,2*$FATAL ;MOVE TO MAILBOX # ***** 231 *****
      INC (R2) ;SET MSGTYP TO FATAL ERROR
      HALT ;NO INTERRUPT BETWEEN TRAPS, OR WRONG $TESTN
      ; TO SCOPE REPLACE HALT W/ 240
      ; AND REPLACE NEXT INST W/ 730

TR4: CLR 22 ;CLR IOT PRIORITY
      CLR 66
      MOV #66,64
      MOV #36,34
      MOV #22,20

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2222
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2237
2238
2239
2240
2241

011364 005237 000404
011370 022737 000065 000404
011376 001026
011400 106427 000340
011404 012767 000100 166152
011412 012767 000100 166140
011420 000005
011422 032767 000100 166134
011430 001405
011432 012737 000232 000402
011440 005212
011442 000000

011444 032767 000100 166106 15:
011452 001405
011454 012737 000233 000402
011462 005212
011464 000000

```
*****  
;TEST 65 TEST THAT "RESET" GOES TO OUTSIDE WORLD  
*****  
TST65: INC @#STESTN ;UPDATE TEST NUMBER  
CMP #65,@#STESTN ;SEQUENCE ERROR?  
BNE TST66-12 ;BR TO ERROR HALT ON SEQ ERROR  
MTPS #340  
MOV #100,TTCSR ;SET INTERRUPT ENABLE  
MOV #100,TRCSR ;SET INTERRUPT ENABLE  
RESET ;SHOULD CLEAR INTERRUPT ENABLE  
BIT #100,TTCSR ;TEST FOR CLEAR  
BEQ 1$  
MOV #232,@#SFATAL ;MOVE TO MAILBOX # ***** 232 *****  
INC (R2) ;SET MSGTYP TO FATAL ERROR  
HALT ;RESET FAILED TO CLEAR TTCSR  
; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 755  
;TEST FOR CLEAR  
  
BIT #100,TRCSR  
BEQ TST66  
MOV #233,@#SFATAL ;MOVE TO MAILBOX # ***** 233 *****  
INC (R2) ;SET MSGTYP TO FATAL ERROR  
HALT ;RESET FAILED TO CLEAR TRCSR,OR WRONG STESTN  
; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 744
```

G05

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TEST THAT "RESET" GOES TO OUTSIDE WORLD

SEG 0060

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2242
2243
2244
2245
2246 011466 005237 000404
2247 011472 022737 000066 000404
2248 011500 001014
2249 011502 012706 000500
2250 011506 012767 011544 166300
2251 011514 012746 000020
2252 011520 012746 011526
2253 011524 000006
2254 011526 000005
2255 011530 000005
2256 011532
2257 011532 012737 000234 000402
2258 011540 005212
2259 011542 000000
2260
2261
2262 011544 005067 001346
2263 011550 106467 001342
2264 011554 012767 000016 166232
2265 011562 005067 166230

:*****
:TEST 66 TEST THAT RESET HAS NO EFFECT ON THE TRACE TRAP
:*****
TST66: INC @#TESTN ;UPDATE TEST NUMBER
      CMP #66,@#TESTN ;SEQUENCE ERROR?
      BNE RSTP3 ;BR TO ERROR HALT ON SEQ ERROR
      MOV #BUFF,%6 ;SET STACK
      MOV #RESET2,14 ;SET UP TRACE VECTOR
      MOV #20,-(SP) ;PUSH T BIT
      MOV #.+6,-(SP) ;PUSH PC
      RTT ;SET T BIT
      RESET ;SHOULD HAVE NO EFFECT
      RESET ;NO EFFECT

RSTP3: MOV #234,@#FATAL ;MOVE TO MAILBOX # ***** 234 *****
      INC (R2) ;SET MSGTYP TO FATAL ERROR
      HALT ;TRACE TRAP FAILED,OR WRONG $TESTN
      ; TO SCOPE REPLACE HALT W/ 240
      ; AND REPLACE NEXT INST W/ 756

RESET2: CLR STATUS ;CLEAR TRACK
        MTPS STATUS
        MOV #16,14
        CLR 16 ;TRACE STATUS
  
```

H05

```

2266
2267
2268 :*****
2269 :TEST 67 TEST THAT WHEN TTY INTERRUPTS IT POPS NEW STATUS
2270 :*****
2270 011566 005237 000404 TST67: INC @STESTN ;UPDATE TEST NUMBER
2271 011572 022737 000067 000404 CMP #67,@STESTN ;SEQUENCE ERROR?
2272 011600 001070 BNE RSTP4 ;BR TO ERROR HALT ON SEQ ERROR
2273 011602 032767 000001 166610 BIT #1,$ENV ;CHECK IF ON APT
2274 011610 001403 BEQ NOAPT2 ;IF NOT ON APT
2275 011612 005767 166570 TST $PASS ;CHECK IF FIRST PASS
2276 011616 001073 BNE TST70 ;IF NOT
2277 011620 NOAPT2:
2278 011620 000005 RESET
2279 011622 012706 000500 MOV #BUFF,%6 ;SET UP STACK
2280 011626 012767 011670 166230 MOV #TTY3,64 ;INTERRUPT VECTOR
2281 011634 106427 000000 MTPS #0
2282 011640 012767 000357 166220 MOV #357,66 ;HIGH PRIORITY ON INTERRUPT
2283 011646 052767 000100 165710 BIS #100,TTCSR ;SHOULD SET INTERRUPT ENABLE & INTERRUPT
2284 011654 000240 NOP
2285 011656 012737 000235 000402 MOV #235,@$FATAL ;MOVE TO MAILBOX # ***** 235 *****
2286 011664 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2287 011666 000000 HALT ;NO INTERRUPT
2288 ; TO SCOPE REPLACE HALT W/ 240
2289 ; AND REPLACE NEXT INST W/ 744
2290 011670 106767 001222 TTY3: MFPS STATUS
2291 011674 022767 000357 001214 CMP #357,STATUS
2292 011702 001405 BEQ 1$
2293 011704 012737 000236 000402 MOV #236,@$FATAL ;MOVE TO MAILBOX # ***** 236 *****
2294 011712 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2295 011714 000000 HALT ;INTERRUPT DID NOT POP CORRECT STATUS
2296 ; TO SCOPE REPLACE HALT W/ 240
2297 ; AND REPLACE NEXT INST W/ 731
2298 011716 000005 1$: RESET ;CLR INTERRUPT ENABLE
2299 011720 012706 000500 MOV #BUFF,%6 ;STACK SET UP
2300 011724 012767 011750 166132 MOV #TTY4,64 ;INTERRUPT VECTOR
2301 011732 005067 166130 CLR 66 ;CLR NEW STATUS
2302 011736 106427 000000 MTPS #0
2303 011742 052767 000100 165614 BIS #100,TTCSR ;SET INTERRUPT ENABLE
2304 011750 106767 001142 TTY4: MFPS STATUS
2305 011754 005767 001136 TST STATUS
2306 011760 001405 BEQ RSTP4
2307 011762 RSTP4:
2308 011762 012737 000237 000402 MOV #237,@$FATAL ;MOVE TO MAILBOX # ***** 237 *****
2309 011770 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2310 011772 000000 HALT ;INTERRUPT DID NOT POP CORRECT STATUS,OR WRONG $TESTN
2311 ; TO SCOPE REPLACE HALT W/ 240
2312 ; AND REPLACE NEXT INST W/ 702
2313 011774 005067 165564 RST4: CLR TTCSR
2314 012000 012767 000066 166056 MOV #66,64

```

```

2315
2316
2317 ;THIS ROUTINE TESTS THAT NO LEGAL ADDRESS TRAPS.
2318 ;AND THAT AN ILLEGAL ADDRESS TRAPS TO LOCATION 4
2319 ;*****
2320 ;TEST 70 TEST NON-EXISTENT ADDRESS TRAPS
2321 ;*****
2322 012006 005237 000404 000404 ST70: INC @#STESTN ;UPDATE TEST NUMBER
2323 012012 022737 000070 000404 CMP #70,@#STESTN ;SEQUENCE ERROR?
2324 012020 001066 BNE AUTO1 ;BR TO ERROR HALT ON SEQ ERROR
2325
2326 ;THIS ROUTINE TESTS MEMORY UNTIL IT DOES A NXM STOP
2327 012022 000402 BR ADALL
2328 012024 000000 TSL: 0
2329 012026 000000 CORH: 0
2330 012030 005000 ADALL: CLR %0
2331 012032 005067 165750 CLR 6
2332 012036 012767 012072 165740 MOV #ATRAP,4 ;SET UP ADDRESS TRAP ENTRANCE
2333 012044 012706 000500 NOR: MOV #BUFF,SP
2334 012050 105720 TSTB (0)+ ;IF OUTSIDE OF CORE. TRAP TO 4
2335 012052 020027 160000 CMP %0,#160000 ;IS POINTER IN SIDE CORE
2336 012056 101772 BLOS NOR ;TEST THE REST OF CORE
2337 012060
2338 012060 012737 000240 000402 AUTO: MOV #240,@#SFATAL ;MOVE TO MAILBOX # ***** 240 *****
2339 012066 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2340 012070 000000 HALT ;SHOULD HAVE TRAPED
2341 ; TO SCOPE REPLACE HALT W/ 240
2342 ; AND REPLACE NEXT INST W/ 753
2343
2344 012072 005300 ;RETURN HERE ON AN ADDRESS TRAP
2345 012074 010067 177726 ATRAP: DEC RO
2346 ;THIS ROUTINE DOES NXM TRAPS UNTIL IT FINDS AN EXISTANT MEMORY LOCATION
2347 012100 012700 160001 MOV #160001,RO ;MOVE THE FIRST NXM LOCATION IN CORH
2348 012104 012767 012142 165672 CTRAP: MOV #BTRAP,4 ;SET UP THE HIGHEST MEM LOCATION
2349 012112 012706 000500 MOV #BUFF,SP ;SET UP THE VECTOR
2350 012116 105740 TSTB -(RO) ;DOES IT EXIST?
2351 012120 005200 DTRAP: INC RO ;IF YES INCREMENT IT
2352 012122 020067 177700 CMP RO,CORH ;IS IT THE SAME LOCATION?
2353 012126 001430 BEQ TRAPB
2354 012130 012737 000241 000402 MOV #241,@#SFATAL ;MOVE TO MAILBOX # ***** 241 *****
2355 012136 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2356 012140 000000 HALT ;CONTENTS OF RO AND CORH SHOULD HAVE BEEN EQUAL
2357 ; TO SCOPE REPLACE HALT W/ 240
2358 ; AND REPLACE NEXT INST W/ 727
2359 ; IF THIS COMPARISON FAILS IT MEANS
2360 ; THAT SOME LEGAL ADDRESS TRAPPECOR
2361 ; THAT AN ILLEGAL ADDRESS DID NOT TRAP
2362 012142 106767 000750 BTRAP: MFPS STATUS
2363 012146 005767 000744 TST STATUS
2364 012152 001405 BEQ 1$
2365 012154 012737 000242 000402 MOV #242,@#SFATAL ;MOVE TO MAILBOX # ***** 242 *****
2366 012162 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2367 012164 000000 HALT ;NEW PSW SHOULD HAVE BEEN ZERO
2368 ; TO SCOPE REPLACE HALT W/ 240
2369 ; AND REPLACE NEXT INST W/ 715
2370 012166 026727 166302 012120 1$: CMP BUFF-4,#DTRAP

```

J05

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CVKACB.P11 17-FEB-77 15:34 170 TEST

NON-EXISTENT ADDRESS TRAPS

SEG 0063

2371	012174	001743				BEQ	CTRAP		
2372	012176								
2373	012176	012737	000243	000402	AUTO1:	MOV	#243,0#SFATAL	: MOVE TO MAILBOX # ***** 243 *****	
2374	012204	005212				INC	(R2)	: SET MSGTYP TO FATAL ERROR	
2375	012206	000000				HALT		: OLD PC WAS NOT SAVED OR WRONG STESTN	
2376								: TO SCOPE REPLACE HALT W/ 240	
2377								: AND REPLACE NEXT INST W/ 704	
2378	012210	012767	000006	165566	TRAPB:	MOV	#6,4		
2379	01221E	005067	165564			CLR	6		

K05

```

2380
2381
2382
2383
2384 012222 005237 000404
2385 012226 022737 000071 000404
2386 012234 001070
2387 012236 032767 000001 166154
2388 012244 001403
2389 012246 005767 166134
2390 012252 001066
2391 012254 042767 000100 165302 NOAPT3:
2392 012262 012706 000500
2393 012266 012767 012362 165570
2394 012274 005067 165566
2395 012300 105767 165260 WATE1:
2396 012304 100375
2397 012306 012767 000015 165252
2398 012314 105767 165244 WATE2:
2399 012320 100375
2400 012322 012767 000015 165236
2401 012330 052767 000100 165226
2402 012336 005067 000554
2403 012342 106467 000550
2404 012346 000001 WATE3:
2405 012350 012737 000244 000402
2406 012356 005212
2407 012360 000000
2408
2409
2410 012362 106767 000530 WATE:
2411 012366 005767 000524
2412 012372 001405
2413 012374 012737 000245 000402
2414 012402 005212
2415 012404 000000
2416
2417
2418 012406 026727 166062 012350 1$:
2419 012414 001405
2420 012416
2421 012416 012737 000246 000402 REES1:
2422 012424 005212
2423 012426 000000
2424
2425
2426 012430 042767 000100 165126 REES:
2427 012436 012767 000066 165420

```

```

:*****
;TEST 71 TEST THE 'WAIT' INSTRUCTION
:*****
†ST71: INC @#STESTN ;UPDATE TEST NUMBER
CMP #71,@#STESTN ;SEQUENCE ERROR?
BNE REES1 ;BR TO ERROR HALT ON SEQ ERROR
BIT #1,SENV ;CHECK IF ON APT
BEQ NOAPT3 ;BR IF NOT ON APT
TST $PASS ;CHECK IF FIRST PASS
BNE REES ;BR IF NOT
BIC #100,TPS ;CLEAR INTERRUPT ENABLE
MOV #BUFF,SP ;SET UP THE STACK
MOV #WATE,64 ;SET UP THE INTERRUPT VECTOR
CLR 66
WATE1: TSTB TPS ;WAIT FOR READY
BPL WATE1 ;TO BE UP
MOV #15,TPB ;DO A CARRIAGE RETURN
WATE2: TSTB TPS ;WAIT FOR READY TO COME UP
BPL WATE2
MOV #15,TPB ;DO ANOTHER CARRIAGE RETURN
BIS #100,TPS ;SET THE INTERRUPT ENABLE
CLR STATUS ;CLEAR THE PSW
MTPS STATUS
WATE3: WAIT ;WAIT FOR THE INTERRUPT
MOV #244,@#SFATAL ;MOVE TO MAILBOX # ***** 244 *****
INC (R2) ;SET MSGTYP TO FATAL ERROR
HALT ;WAIT INSTRUCTION DID NOT LOOP
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 725
WATE: MFPS STATUS
TST STATUS ;IS THE PSW CORRECT?
BEQ 1$
MOV #245,@#SFATAL ;MOVE TO MAILBOX # ***** 245 *****
INC (R2) ;SET MSGTYP TO FATAL ERROR
HALT ;NEW PSW SHOULD HAVE BEEN ZERO
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 713
1$: CMP BUFF-4,#WATE3+2 ;IS THE OLD PC SAVED
BEQ REES
REES1: MOV #246,@#SFATAL ;MOVE TO MAILBOX # ***** 246 *****
INC (R2) ;SET MSGTYP TO FATAL ERROR
HALT ;OLD PC WAS NOT SAVED OR WRONG $TESTN
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 702
REES: BIC #100,TPS ;CLEAR THE INTERRUPT ENABLE
MOV #66,64

```

2428
2429
2430
2431
2432
2433
2434
2435
2436
2437
2438
2439
2440
2441
2442

012444 005237 000404
012450 022737 000072 000404
012456 001002
012460 000167 000013
012464
012464 012737 000247 000402
012472 005212
012474 000000

012476 005307

```
*****  
;TEST 72      TEST      ,THAT ODD ADDRESSING WILL IGNORE BIT 0  
*****  
↑ST72:  INC      @#STESTN      ;UPDATE TEST NUMBER  
        CMP      #72,@#STESTN  ;SEQUENCE ERROR?  
        BNE     RSTP5          ;BR TO ERROR HALT ON SEQ ERROR  
        JMP     ODD+1  
  
RSTP5:  MOV      #247,@#SFATAL  ;MOVE TO MAILBOX # ***** 247 *****  
        INC     (R2)           ;SET MSGTYP TO FATAL ERROR  
        HALT    ;SHOULD HAVE JUMPED,OR WRONG $TESTN  
        ; TO SCOPE REPLACE HALT W/ 240  
        ; AND REPLACE NEXT INST W/ 770  
  
ODD:   DEC     PC
```


MOS

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SEG 0066

```

2443
2444
2445
2446
2447 012500 005237 000404
2448 012504 022737 000073 000404
2449 012512 001136
2450 012514 010267 000534
2451 012520 010700
2452 012522 010704
2453 012524 010705
2454 012526 012703 013042
2455 012532 012302
2456 012534 012301
2457 012536 020267 000310
2458 012542 001014
2459 012544 032767 000300 165654
2460 012552 001403
2461 012554 062703 000004
2462 012560 000764
2463 012562 032767 000004 165632 1$:
2464 012570 001401
2465 012572 000757
2466 012574 020267 000262 2$:
2467 012600 001007
2468 012602 032767 000020 165612
2469 012610 001403
2470 012612 062703 000010
2471 012616 000745
2472 012620 020267 000242 3$:
2473 012624 001005
2474 012626 032767 000004 165566
2475 012634 001401
2476 012636 000735
2477 012640 020267 000232 4$:
2478 012644 001005
2479 012646 032767 000010 165546
2480 012654 001401
2481 012656 000725
2482 012660 020267 000216 5$:
2483 012664 001002
2484 012666 000167 000244
2485 012672 010267 000206
2486 012676 005267 000202 6$:
2487 012702 012767 012730 165100 GIN2:
2488 012710 012706 000500
2489 012714 005067 000176
2490 012720 106467 000172
2491 012724 000167 000154
2492
2493
2494 012730 010267 000104
2495 012734 016702 000314
2496 012740 020627 000474
2497 012744 001405
2498 012746 012737 000250 000402

```

```

;*****
;TEST 73 TEST THAT ALL RESERVED INSTRUCTIONS TRAP
;*****
1ST73: INC 0#STESTN ;UPDATE TEST NUMBER
CMP 073,0#STESTN ;SEQUENCE ERROR?
BNE RET4 ;BR TO ERROR HALT ON SEQ ERROR
MOV R2,R2STOR ;SAVE REG 2
MOV PC,%0 ;SET THESE
MOV PC,%4 ;REGISTERS
MOV PC,%5 ;TO EXISTENT MEMORY LOCATIONS
MOV #TABLE,TAB ;TABLE POINTER
GIN1: MOV (TAB)+,FIRST ;FIRST OR CURRENT INSTRUCTION
MOV (TAB)+,LAST ;LAST INSTRUCTION OR GROUP
CMP FIRST,EISFIS ;IS IT THE 'EISFIS' GROUP?
BNE 2$ ;NO
BIT #300,$SCPUOP ;DO WE HAVE EISFIS OPTION?
BEQ 1$ ;NO
ADD #4,TAB ;IF YES DO NO DO THE
BR GIN1 ;EIS FIS OP CODES
BIT #4,$SWREG ;DO WE HAVE DIS INSTRUCTION SET
BEQ 2$ ;NO
BR GIN1 ;IF YES, DO NOT DO EIS OP CODES - DC JUST FIS
CMP FIRST,STOP ;IS IT THE STOP GROUP
BNE 3$ ;NO
BIT #20,$SWREG ;DO WE WANT TO DO IT?
BEQ 3$ ;YES
ADD #10,TAB ;SKIP ENTIRE STOP GROUP
BR GIN1 ;NO
CMP FIRST,DIS ;IS THIS THE DIS GROUP?
BNE 4$ ;NO
BIT #4,$SWREG ;DO WE HAVE DIS OPTION?
BEQ 4$ ;NO
BR GIN1 ;IF YES, SKIP THE DIS GROUP
CMP FIRST,STOP1 ;IS IT THE STOP1 GROUP?
BNE 5$ ;NO
BIT #10,$SWREG ;DO WE WANT TO DO IT?
BEQ 5$ ;YES
BR GIN1 ;NO
CMP FIRST,FINISH ;YES, ALL
BNE 6$ ;NO, 2-CH
JMP GIN3 ;YES, GO TO END OF PASS ROUTINE
6$: MOV FIRST,INST ;SET UP INST
GIN2: INC INST
MOV #RET,IO ;SET UP RETURN FROM TRAP
MOV #BUFF,SP ;SET UP STACK POINTER
CLR STATUS ;CLEAR PRIORITY
MTPS STATUS
JMP INST ;EXECUTE RESERVED INSTRUCTION

;TRAPPING SHOULD SEND YOU HERE
RET: MOV R2,R2SAVE ;SAVE REG 2
MOV R2STOR,R2 ;RESTORE MAILBOX POINTER
CMP SP,#BUFF-4 ;TEST DECREMENT OF SP
BEQ RET1
MOV #250,0#SFATAL ;MOVE TO MAILBOX # ***** 250 *****

```

NOS

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 DVKADB.P11 17-FEB-77 15:34 T73 TEST

THAT ALL RESERVED INSTRUCTIONS TRAP

SEG 0067

```

2499 012754 005212      INC      (R2)      ;SET MSGTYP TO FATAL ERROR
2500 012756 000000      HALT      ;WRONG DECREMENT
2501                                     ; TO SCOPE REPLACE HALT W/ 240
2502                                     ; AND REPLACE NEXT INST W/ 655
2503 012760 026727 165510 013106 RET1:  CMP      BUFF-4, #INST+2 ;LOC OF INST UNINCREMATED
2504 012766 001405      BEQ      RET2
2505 012770 012737 000251 000402  MOV      #251, @#SFATAL ;MOVE TO MAILBOX # ***** 251 *****
2506 012776 005212      INC      (R2)      ;SET MSGTYP TO FATAL ERROR
2507 013000 000000      HALT      ;INST INC ON TRAP
2508                                     ; TO SCOPE REPLACE HALT W/ 240
2509                                     ; AND REPLACE NEXT INST W/ 644
2510 013002 005767 165470      RET2:  TST      BUFF-2
2511 013006 001405      BEQ      RET3
2512 013010      RET4:
2513 013010 012737 000252 000402  MOV      #252, @#SFATAL ;MOVE TO MAILBOX # ***** 252 *****
2514 013016 005212      INC      (R2)      ;SET MSGTYP TO FATAL ERROR
2515 013020 000000      HALT      ;CONDITION CODES SET ON TRAP, OR WRONG $TESTN
2516                                     ; TO SCOPE REPLACE HALT W/ 240
2517                                     ; AND REPLACE NEXT INST W/ 634
2518 013022 016702 000012      RET3:  MOV      R2SAVE, R2 ;RESTORE REG 2
2519 013026 026701 000052      CMP      INST, LAST
2520 013032 001637      BEQ      GIN1
2521 013034 000167 177636      JMP      GIN2
2522 013040 000000      R2SAVE: .WORD 0
2523                                     ;END OF INSTRUCTION GROUP
2524 013042 006777      TABLE: 6777
2525 013044 007777          7777
2526 013046 106777          106777
2527 013050 107777          107777
2528 013052 067777      EISFIS: 67777 ;IF WE HAVE THE EIS FIS OPTION
2529 013054 073777          73777 ;THEN THE EISFIS GROUP
2530 013056 074777      FIS: 74777 ;WILL BE SKIPEO
2531 013060 075037          75037
2532 013062 075377      STOP: 75377
2533 013064 076026          76026
2534 013066 076027      DIS: 76027
2535 013070 076057          76057
2536 013072 076057          76057
2537 013074 076777          76777
2538 013076 167777      STOP1: 167777
2539 013100 177777          177777
2540 013102 013102      FINISH: .
2541 013104 000000      INST: HALT ;END FLAG
2542 013106 000404          BR      TERR ;WILL CONTINUE RESERVED INST
2543 013110 000403          BR      TERR
2544 013112 000402          BR      TERR
2545 013114 000401          BR      TERR
2546 013116 000000      STATUS: 0
2547 013120 016702 000130      TERR: MOV      R2STOP, R2 ;RESTORE R2
2548 013124 012737 000255 000402  MOV      #255, @#SFATAL ;INDICATE ERROR
2549 013132 005212      INC      (R2)
2550 013134 000000      HALT
2551
2552
2553 013136 005237 000406      G:V3: INC      @#SPASS
2554 013142 105267 000110      INC     PASSPT ;SMALL PRINT THIS PASS?
  
```

B06

MAIN. MACY11 27(1006) 17-FEB-77 15:39 PAGE 66
 CVKADB.P11 17-FEB-77 15:34 T73 TEST

THAT ALL RESERVED INSTRUCTIONS TRAP

SEG 0068

2555	013146	001023				BNE	ACT		; NO
2556	013150	132767	000040	165243		BITB	#40,SEVM		; WILL APT ALLOW PRINTING?
2557	013156	001017				BNE	ACT		; NO
2558	013160	012700	013260			MOV	#MSG,RO		; GET MSG ADDR.
2559	013164	105737	177564		WAIT:	TSTB	@TPS		; TTY READY
2560	013170	100375				BPL	WAIT		; NO WAIT
2561	013172	112037	177566			MOVB	(RO)+,@TPB		; PRINT CHARACTER
2562	013176	001372				BNE	WAIT		; NEXT IF NOT DONE.
2563	013200	105737	177564		WAIT1:	TSTB	@TPS		
2564	013204	100375				BPL	WAIT1		
2565	013206	000005				RESET			
2566	013210	012767	177761	000040		MOV	#177761,PASSPT		; DO IT 15 DECIMAL TIMES
2567	013216	013700	000042		ACT:	MOV	@42,RO		; CHECK ACT
2568	013222	001405				BEQ	GOAGIN		; KEEP GOING
2569	013224	000005				RESET			
2570	013226	004710			SENDAD:	JSR	PC,(RO)		; ACT HOOKS
2571	013230	000240				NOP			
2572	013232	000240				NOP			
2573	013234	000240				NOP			
2574	013236	012767	000012	164544	GOAGIN:	MOV	#12.10		
2575	013244	005067	164542			CLR	12		
2576	013250	000167	165324			JMP	RESTR		; DO NEXT PASS
2577	013254	000000			R2STOR:	.WORD	0		
2578	013256	177777			PASSPT:	-1			
2579	013260	005015	047105	020104	MSG:	.ASCIZ	<15><12>.END OF PASS.		
2580	013266	043117	050040	051501					
2581	013274	000123							

```

2582
2583
2584 ;*****
2585 ;POWER FAIL ROUTINE
2586 ;*****
2587
2588 013276 012767 013306 164520 PWRDWN: MOV #PWRUP,24
2589 013304 000000 HALT
2590
2591 013306 012767 013276 164510 PWRUP: MOV #PWRDWN,24
2592 013314 012706 000500 MOV #BUFF,SP
2593 013320 132767 000040 165073 BITB #40,$ENVM ;WILL APT ALLOW PRINTING?
2594 013326 001013 BNE PFRES ;NO
2595 013330 012700 013362 MOV #MSGPWF,RO ;GET MSG ADDR.
2596 013334 105737 177564 PWAIT: TSTB @#TPS ;TTY READY
2597 013340 100375 BPL PWAIT ;NO WAIT
2598 013342 112037 177566 MOVB (RO)+,@#TPB ;PRINT CHARACTER
2599 013346 001372 BNE PWAIT ;NEXT IF NOT DONE.
2600 013350 105737 177564 PWAIT1: TSTB @#TPS
2601 013354 100375 BPL PWAIT1
2602 013356 000167 165120 PFRES: JMP START
2603 013362 005015 047520 042527 MSGPWF: .ASCIZ <15><12>.POWER FAILED!.
2604 013370 020122 040506 046111
2505 013376 042105 000041
2606 000001 .END

```

ABASE =	000000	260		
ACDW1 =	000000	260		
ACDW2 =	000000	260		
ACPUOP =	000000	260	275	
ACT	013216	2555	2557	2567*
ADALL	012030	2327	2330*	
ADCW0 =	000000	260		
ADDW1 =	000000	260		
ADDW10 =	000000	260		
ADDW11 =	000000	260		
ADDW12 =	000000	260		
ADDW13 =	000000	260		
ADDW14 =	000000	260		
ADDW15 =	000000	260		
ADDW2 =	000000	260		
ADDW3 =	000000	260		
ADDW4 =	000000	260		
ADDW5 =	000000	260		
ADDW6 =	000000	260		
ADDW7 =	000000	260		
ADDW8 =	000000	260		
ADDW9 =	000000	260		
ADEVCT =	000000	260	266	
ADEVM =	000000	260		
RENV =	000000	260	271	
RENVM =	000000	260	272	
AFATAL =	000000	260	263	
AMADR1 =	000000	260	288	
AMADR2 =	000000	260	292	
AMADR3 =	000000	260	295	
AMADR4 =	000000	260	298	
AMAMS1 =	000000	260	282	
AMAMS2 =	000000	260	230	
AMAMS3 =	000000	260	293	
AMAMS4 =	000000	260	296	
AMSGAD =	000000	260	268	
AMSGLG =	000000	260	269	
AMSGTY =	000000	260	262	
AMTYP1 =	000000	260	283	
AMTYP2 =	000000	260	291	
AMTYP3 =	000000	260	294	
AMTYP4 =	000000	260	297	
APASS =	000000	260	265	
APRIOR =	000000	260		
ASWREG =	000000	260	273	
ATESTN =	000000	260	264	
ATRAP	012072	2332	2344*	
AUNIT =	000000	260	267	
AUSWR =	000000	260	274	
AUTO	012060	2337*		
AUTO1	012176	2324	2372*	
AVECT1 =	000000	260		
AVECT2 =	000000	260		
BEGIN	000572	335	344	349*
BELL =	000240	235*		
BTRAP	012142	2348	2362*	

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEG 0072

RA	005436	1381	1390*		
RA1	003662	1017	1026*		
RB	005422	1380*	1383*	1390*	1391
RBBB	005424	1379	1384*		
RB1	003646	1016*	1019*	1026*	1027
RB1AA	003650	1015	1020*		
RC	005416	1382*	1392		
RC1	003642	1018*	1028		
REES	012430	2390	2419	2426*	
REES1	012416	2386	2420*		
RESET2	011544	2250	2262*		
RESTR1	000600	350*	2576		
RET	012730	2487	2494*		
RETA	002200	675	682*		
RETAT	010040	1925	1935*		
RETA1	003034	848	855*		
RETA2	003752	1038	1045*		
RETA3	004606	1211	1218*		
RETA4	005526	1402	1409*		
RETA5	006362	1583	1590*		
RETB	002230	690	692*		
RETB1	010114	1943	1953*		
RETB2	003064	863	865*		
RETB3	004002	1053	1055*		
RETB4	004636	1226	1228*		
RETB5	005556	1418	1420*		
RETB6	006412	1598	1600*		
RETC	002300	707	709*		
RETC1	010174	1968	1973*		
RETC2	003134	879	881*		
RETC3	004052	1070	1072*		
RETC4	004706	1242	1244*		
RETC5	005626	1434	1436*		
RETC6	006462	1615	1617*		
RETD	002364	723	728*		
RETD1	003220	896	901*		
RETD2	004136	1086	1091*		
RETD3	004772	1259	1264*		
RETD4	005712	1451	1456*		
RETD5	006546	1631	1636*		
RETE	002436	736	741*		
RETE1	003270	909	913*		
RETE2	004210	1099	1104*		
RETE3	005044	1272	1277*		
RETE4	005764	1464	1469*		
RETE5	006620	1644	1649*		
RETF	002514	756	759*		
RETF1	003346	928	931*		
RETF2	004266	1119	1122*		
RETF3	005122	1292	1295*		
RETF4	006042	1484	1487*		
RETF5	006676	1664	1667*		
RETG	002644	796	799*		
RETG1	003476	968	971*		
RETG2	004416	1159	1162*		
RETG3	005252	1332	1335*		

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEG 0073

RETG4	006172	1524	1527*												
RETG5	007026	1704	1707*												
RETH5	007200	1752	1759*												
RETJ	007230	1767	1769*												
RETK	007300	1784	1786*												
RETL	007364	1801	1806*												
RETM	007436	1814	1819*												
RETN	007514	1834	1837*												
RETO	007642	1874	1877*												
RET1	012760	2497	2503*												
RET2	013002	2504	2510*												
RET3	013022	2511	2518*												
RET4	013010	2449	2512*												
RSTP1	002746	754	832*												
RSTP2	006274	1482	1560*												
RSTP3	011532	2248	2256*												
RSTP4	011762	2272	2307*												
RSTP5	012464	2434	2436*												
RST1	002760	831	838*												
RST2	006306	1559	1566*												
RST4	011774	2306	2313*												
RTI1	010450	2045	2049*												
RTI2	010464	2046	2055*												
RTRAP =	000010	238*	675*	690*	707*	723*	736*	756*	757*	796*	797*				
RTRAP1 =	000034	230*	848*	863*	879*	896*	909*	928*	929*	968*	969*				
RTRAP2 =	000020	229*	1038*	1053*	1070*	1086*	1099*	1119*	1120*	1159*	1160*				
RTRAP3 =	000030	228*	1211*	1226*	1242*	1259*	1272*	1292*	1293*	1332*	1333*				
RTRAP4 =	000014	227*	1402*	1418*	1434*	1451*	1464*	1484*	1485*	1524*	1525*	1925*	1943*	1968*	
RTRAP5 =	000004	226*	1583*	1598*	1615*	1631*	1644*	1664*	1665*	1704*	1705*	1752*	1767*	1784*	
RTT1	010260	1801*	1814*	1834*	1835*	1874*	1875*								
RTT2	010276	1992	1995*												
RTT3	010344	1993	2003*												
RTT4	010364	2014	2018*												
RTT5	010316	2015	2026*												
RTT6	010406	2012*	2020	2029											
R2SAVE	013040	2027	2035*												
R2STOR	013254	2494*	2518	2522*											
R6TST	000666	2450*	2495	2547	2577*										
START	000502	373*													
STATUS	013116	326	329	332*	2602	638*	724*	725*	737*	738*	787*	788	827*	828	
		605*	606*	636*	637*	959*	960	999*	1000	1087*	1088*	1100*	1101*	1150*	
		897*	898*	910*	911*	1261*	1273*	1274*	1323*	1324	1363*	1364	1452*	1453*	
		1151	1190*	1191	1260*	1516	1555*	1556	1632*	1633*	1645*	1646*	1695*	1696	1735*
		1465*	1466*	1515*	1516	1816*	1865*	1866	1905*	1906	2159*	2160*	2166*	2167*	
		1736	1802*	1803*	1815*	2290*	2291	2304*	2305	2362*	2363	2402*	2403*	2410*	
		2196*	2197*	2262*	2263*	2490*	2491	2546*							
		2411	2489*	2490*	2546*										
STOP	013062	2466	2532*												
STOP1	013076	2477	2538*												
STP	004520	1117	1195*												
STPA	004532	1194	1201*												
STPBB	007752	1908	1915*												
STP1	007740	1832	1909*												
TABLE	013042	2454	2524*												
TERR	013120	2542	2543	2544	2545	2547*									
TONT1	010616	2077	2095*												

CROSS REFERENCE TABLE -- USER SYMBOLS

TST5	002136	603	661	671*
TST50	007322	1792	1797	1797*
TST51	007460	1799	1820	1830*
TST52	007764	1921*		
TST53	010040	1923	1939*	
TST54	010134	1941	1954	1964*
TST55	010216	1966	1974	1985*
TST56	010276	1987	1996	2008*
TST57	010406	2010	2040*	
TST6	002200	673	696*	
TST60	010502	2042	2057	2067*
TST61	010632	2101*		
TST62	010734	2103	2117	2126*
TST63	011022	2128	2148*	
TST64	011200	2154	2186*	
TST65	011364	2192	2221*	
TST66	011466	2223	2236	2246*
TST67	011566	2270*		
TST7	002250	688	693	703*
TST70	012006	2276	2322*	
TST71	012222	2384*		
TST72	012444	2432*		
TST73	012500	2447*		
TTCSR =	177564	231*	2162*	2194* 2198* 2225* 2228 2283* 2303* 2313*
TTY3	011670	2280	2290*	
TTY4	011750	2300	2304*	
WAIT	013164	2559*	2560	2562
WAIT1	013200	2563*	2564	
WATE	012362	2393	2410*	
WATE1	012300	2395*	2396	
WATE2	012314	2398*	2399	
WATE3	012346	2404*	2418	
\$APTHD	000450	310	316*	
\$CPUOP	000426	275*	337*	345* 2459
\$DEVCT	000410	266*		
\$ENDAD	013226	253	2570*	
\$ENV	000420	271*	334	2151 2189 2273 2387
\$ENVM	000421	272*	336*	340* 2556 2593
\$ERN =	000253	208*	377	378* 397 388* 397 398* 408 409* 419 420* 430 431*
		441	442*	451 452* 470 471* 483 484* 496 497* 509 510* 522
		523*	536	537* 544 545* 553 554* 561 562* 568 569* 576 577*
		584	585*	592 593* 608 609* 615 616* 622 623* 629 630* 641
		642*	648	649* 655 656* 662 663* 677 678* 694 695* 711 712*
		730	731*	743 744* 761 762* 768 769* 775 776* 782 783* 790
		791*	801	802* 808 809* 815 816* 822 823* 833 834* 850 851*
		867	868*	883 884* 903 904* 915 916* 933 934* 940 941* 947
		948*	954	955* 962 963* 973 974* 980 981* 987 988* 994 995*
		1004	1005*	1021 1022* 1040 1041* 1057 1058* 1074 1075* 1093 1094* 1106
		1107*	1124	1125* 1131 1132* 1138 1139* 1145 1146* 1153 1154* 1164 1165*
		1171	1172*	1178 1179* 1185 1186* 1196 1197* 1213 1214* 1230 1231* 1246
		1247*	1266	1267* 1279 1280* 1297 1298* 1304 1305* 1311 1312* 1318 1319*
		1326	1327*	1337 1338* 1344 1345* 1351 1352* 1358 1359* 1368 1369* 1385
		1386*	1404	1405* 1422 1423* 1438 1439* 1458 1459* 1471 1472* 1489 1490*
		1496	1497*	1503 1504* 1510 1511* 1518 1519* 1529 1530* 1536 1537* 1543
		1544*	1550	1551* 1561 1562* 1585 1586* 1602 1603* 1619 1620* 1638 1639*
		1651	1652*	1669 1670* 1676 1677* 1683 1684* 1690 1691* 1698 1699* 1709

	1710*	1716	1717*	1723	1724*	1730	1731*	1739	1740*	1754	1755*	1771	1772*
	1798	1789*	1808	1809*	1821	1822*	1839	1840*	1846	1847*	1853	1854*	1860
	1861*	1868	1869*	1879	1880*	1886	1887*	1893	1894*	1900	1901*	1910	1911*
	1930	1931*	1948	1949*	1955	1956*	1975	1976*	1997	1998*	2021	2022*	2030
	2031*	2050	2051*	2058	2059*	2082	2083*	2090	2091*	2111	2112*	2118	2119*
	2136	2137*	2170	2171*	2176	2177*	2206	2207*	2230	2231*	2237	2238*	2257
	2258*	2285	2286*	2293	2294*	2308	2309*	2338	2339*	2354	2355*	2365	2366*
	2373	2374*	2405	2406*	2413	2414*	2421	2422*	2437	2438*	2498	2499*	2505
	2506*	2513	2514*										
	242*	353*											
	270*												
	299*	322											
	242	263*	377*	387*	397*	408*	419*	430*	441*	451*	470*	483*	496*
	509*	522*	536*	544*	553*	561*	568*	576*	584*	592*	608*	615*	622*
	629*	641*	648*	655*	662*	677*	694*	711*	730*	743*	761*	768*	775*
	782*	790*	801*	808*	815*	822*	833*	850*	867*	883*	903*	915*	933*
	940*	947*	954*	962*	973*	980*	987*	994*	1004*	1021*	1040*	1057*	1074*
	1093*	1106*	1124*	1131*	1138*	1145*	1153*	1164*	1171*	1178*	1195*	1196*	1213*
	1230*	1246*	1266*	1279*	1297*	1304*	1311*	1318*	1326*	1337*	1344*	1351*	1358*
	1368*	1385*	1404*	1422*	1438*	1458*	1471*	1489*	1496*	1503*	1510*	1518*	1529*
	1536*	1543*	1550*	1561*	1585*	1602*	1619*	1638*	1651*	1669*	1676*	1683*	1690*
	1698*	1709*	1716*	1723*	1730*	1739*	1754*	1771*	1788*	1808*	1821*	1839*	1846*
	1953*	1860*	1868*	1879*	1886*	1893*	1900*	1910*	1930*	1948*	1955*	1975*	1997*
	2021*	2030*	2050*	2058*	2082*	2090*	2111*	2118*	2136*	2170*	2176*	2206*	2230*
	2237*	2257*	2285*	2293*	2308*	2338*	2354*	2365*	2373*	2405*	2413*	2421*	2437*
	2498*	2505*	2513*	2548*									
	317*												
	288*												
	292*												
	295*												
	298*												
	261*	318	322										
	282*												
	290*												
	293*												
	296*												
	318*												
	268*												
	269*												
	262*	350	351*										
	283*												
	291*												
	294*												
	297*												
	265*	328*	2153	2191	2275	2389	2553*						
	320*												
	251*	256											
	208*												
	273*	338	342	2463	2468	2474	2479						
	241	264*	370*	371	460*	461	531*	532	601*	602	671*	672	686*
	687	703*	704	719*	720	752*	753	844*	845	859*	860	875*	876
	892*	893	924*	925	1013*	1014	1034*	1035	1049*	1050	1066*	1067	1082*
	1083	1115*	1116	1207*	1208	1222*	1223	1238*	1239	1255*	1256	1288*	1289
	1377*	1378	1398*	1399	1414*	1415	1430*	1431	1447*	1448	1480*	1481	1579*
	1580	1594*	1595	1611*	1612	1627*	1628	1660*	1661	1748*	1749	1763*	1764
	1780*	1781	1797*	1798	1830*	1831	1921*	1922	1939*	1940	1964*	1965	1985*

\$ERROR= 000402
 \$ETABL 000420
 \$ETEND 000450
 \$FATAL 000402

\$HIBTS 000450
 \$MADR1 000432
 \$MADR2 000436
 \$MADR3 000442
 \$MADR4 000446
 \$MAIL 000400
 \$MAMS1 000430
 \$MAMS2 000434
 \$MAMS3 000440
 \$MAMS4 000444
 \$MBADR 000452
 \$MSGAD 000414
 \$MSGLG 000416
 \$MSGTY 000400
 \$MTYP1 000431
 \$MTYP2 000435
 \$MTYP3 000441
 \$MTYP4 000445
 \$PASS 000406
 \$PASTM 000456
 \$SVPC = 000400
 \$SWR = 000000
 \$SWREG 000422
 \$TESTN 000404

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEG 0077

	1986	2008*	2009	2040*	2041	2067*	2068	2101*	2102	2126*	2127	2148*	2149
	2186*	2187	2221*	2222	2246*	2247	2270*	2271	2322*	2323	2384*	2385	2432*
\$TN = 000074	2433	2447*	2448										
	208#	367	373#	450	457	463#	521	528	534#	552	591	598	604#
	661	668	674#	683	689#	693	700	706#	710	716	722#	742	749
	755#	841	847*	856	862#	866	872	878#	882	889	895#	914	921
	927#	1003	1010	1016#	1031	1037#	1046	1052#	1056	1063	1069#	1073	1079
	1085#	1105	1112	1118#	1204	1210#	1219	1225#	1229	1235	1241#	1245	1252
	1258#	1278	1285	1291#	1367	1374	1380#	1395	1401#	1411	1417#	1421	1427
	1433#	1437	1444	1450#	1470	1477	1483#	1576	1582#	1591	1597#	1601	1608
	1614#	1618	1624	1630#	1650	1657	1663#	1738	1745	1751#	1760	1766#	1770
	1777	1783#	1787	1794	1800#	1820	1827	1833#	1918	1924#	1936	1942#	1954
	1961	1967#	1974	1982	1988#	1996	2005	2011#	2037	2043#	2057	2064	2070#
	2098	2104#	2117	2123	2129#	2145	2151#	2183	2189#	2218	2224#	2236	2243
	2249#	2267	2273#	2319	2325#	2381	2387#	2429	2435#	2444	2450#		
\$TSTM = 000454	319#												
\$TSTM= 000404	241#	352*											
\$UNIT = 000412	267#												
\$UNITM = 000460	321#												
\$USWR = 000424	274#												
\$X = 012514	373#	380	390	400	411	422	433	444	454	463#	473	486	499
	512	525	534#	539	547	556	564	571	579	587	595	604#	611
	618	625	632	644	651	658	665	674#	680	689#	697	706#	714
	722#	733	746	755#	764	771	778	785	793	804	811	818	825
	836	847#	853	862#	870	878#	886	895#	906	918	927#	936	943
	950	957	965	976	983	990	997	1007	1016#	1024	1037#	1043	1052#
	1060	1069#	1077	1085#	1096	1109	1118#	1127	1134	1141	1148	1156	1167
	1174	1181	1188	1199	1210#	1216	1225#	1233	1241#	1249	1258#	1269	1282
	1291#	1300	1307	1314	1321	1329	1340	1347	1354	1361	1371	1380#	1388
	1401#	1407	1417#	1425	1433#	1441	1450#	1461	1474	1483#	1492	1499	1506
	1513	1521	1532	1539	1546	1553	1564	1582#	1588	1597#	1605	1614#	1622
	1630#	1641	1654	1663#	1672	1679	1686	1693	1701	1712	1719	1726	1733
	1742	1751#	1757	1766#	1774	1783#	1791	1800#	1811	1824	1833#	1842	1849
	1856	1863	1871	1882	1889	1896	1903	1913	1924#	1933	1942#	1951	1958
	1967#	1978	1988#	2000	2011#	2024	2033	2043#	2053	2061	2070#	2085	2093
	2104#	2114	2121	2129#	2139	2151#	2173	2179	2189#	2209	2224#	2233	2240
	2249#	2260	2273#	2288	2296	2311	2325#	2341	2357	2368	2376	2387#	2408
	2416	2424	2435#	2440	2450#	2501	2508	2516					
\$XX = 177635	380#	390#	400#	411#	422#	433#	444#	454#	473#	486#	499#	512#	525#
	539#	547#	556#	564#	571#	579#	587#	595#	611#	618#	625#	632#	644#
	651#	658#	665#	680#	697#	714#	733#	746#	764#	771#	778#	785#	793#
	804#	811#	818#	825#	836#	853#	870#	886#	906#	918#	936#	943#	950#
	957#	965#	976#	983#	990#	997#	1007#	1024#	1043#	1060#	1077#	1096#	1109#
	1127#	1134#	1141#	1148#	1156#	1167#	1174#	1181#	1188#	1199#	1216#	1233#	1249#
	1269#	1282#	1300#	1307#	1314#	1321#	1329#	1340#	1347#	1354#	1361#	1371#	1388#
	1407#	1425#	1441#	1461#	1474#	1492#	1499#	1506#	1513#	1521#	1532#	1539#	1546#
	1553#	1564#	1588#	1605#	1622#	1641#	1654#	1672#	1679#	1686#	1693#	1701#	1712#
	1719#	1726#	1733#	1742#	1757#	1774#	1791#	1811#	1824#	1842#	1849#	1856#	1863#
	1871#	1882#	1889#	1896#	1903#	1913#	1933#	1951#	1958#	1978#	2000#	2024#	2033#
	2053#	2061#	2085#	2093#	2114#	2121#	2139#	2173#	2179#	2209#	2233#	2240#	2260#
	2288#	2296#	2311#	2341#	2357#	2368#	2376#	2408#	2416#	2424#	2440#	2501#	2508#
	2516#												
\$XXX = 000634	380#	390#	400#	411#	422#	433#	444#	454#	473#	486#	499#	512#	525#
	539#	547#	556#	564#	571#	579#	587#	595#	611#	618#	625#	632#	644#
	651#	658#	665#	680#	697#	714#	733#	746#	764#	771#	778#	785#	793#
	804#	811#	818#	825#	836#	853#	870#	886#	906#	918#	936#	943#	950#

CROSS REFERENCE TABLE -- USER SYMBOLS

SEG 0078

957#	965#	976#	983#	990#	997#	1007#	1024#	1043#	1060#	1077#	1096#	1109#
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1269#	1282#	1300#	1307#	1314#	1321#	1329#	1340#	1347#	1354#	1361#	1371#	1398#
1407#	1425#	1441#	1461#	1474#	1492#	1499#	1506#	1513#	1521#	1532#	1539#	1546#
1553#	1564#	1588#	1605#	1622#	1641#	1654#	1672#	1679#	1686#	1693#	1701#	1712#
1719#	1726#	1733#	1742#	1757#	1774#	1791#	1811#	1824#	1842#	1849#	1856#	1863#
1871#	1882#	1889#	1896#	1903#	1913#	1933#	1951#	1958#	1978#	2000#	2024#	2033#
2053#	2061#	2085#	2093#	2114#	2121#	2139#	2173#	2179#	2209#	2233#	2240#	2260#
2288#	2296#	2311#	2341#	2357#	2368#	2376#	2408#	2416#	2424#	2440#	2501#	2508#
2516#												
244#	246#	251	252#	254#	256#	306	307#	309#	311#	325#	327#	330#
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512	525	534	539	547	556	564	571	579	587	595	604	611
618	625	632	644	651	658	665	674	680	689	697	706	709
714	722	733	746	755	764	771	778	785	793	804	811	818
825	836	847	853	862	870	878	881	886	895	906	918	927
936	943	950	957	965	976	983	990	997	1007	1016	1024	1037
1043	1052	1060	1069	1072	1077	1085	1096	1109	1118	1127	1134	1141
1148	1156	1167	1174	1181	1188	1199	1210	1216	1225	1233	1241	1244
1249	1258	1269	1282	1291	1300	1307	1314	1321	1329	1340	1347	1354
1361	1371	1380	1388	1401	1407	1417	1425	1433	1436	1441	1450	1461
1474	1483	1492	1499	1506	1513	1521	1532	1539	1546	1553	1564	1582
1588	1597	1605	1614	1617	1622	1630	1641	1654	1663	1672	1679	1686
1693	1701	1712	1719	1726	1733	1742	1751	1757	1766	1774	1783	1791
1800	1811	1824	1833	1842	1849	1856	1863	1871	1882	1889	1896	1903
1913	1924	1927	1933	1942	1945	1951	1958	1967	1970	1973	1978	1989
2000	2011	2024	2033	2043	2053	2061	2070	2079	2085	2093	2101	2108
2114	2121	2129	2139	2151	2157	2173	2179	2189	2209	2224	2233	2240
2249	2252	2260	2273	2288	2296	2311	2325	2341	2357	2368	2376	2387
2408	2416	2424	2435	2440	2450	2501	2508	2516	2540			
306#	311											

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MO6

MAIN. MACY11 27(1006) 17-FEB-77 15:39 PAGE 79
 DVKACB.P11 17-FEB-77 15:34

CROSS REFERENCE TABLE -- MACRO NAMES

SEQ C079

ERROR	208#	376	386	396	407	418	429	440	450	469	482	495	508	521	535
	543	552	560	567	575	583	591	607	613	620	627	640	646	653	660
	677	692	710	729	742	760	765	773	780	789	800	806	813	820	831
	850	866	882	902	914	932	938	945	952	961	972	978	985	992	1003
	1020	1040	1056	1073	1092	1105	1123	1129	1136	1143	1152	1163	1169	1176	1183
	1194	1213	1229	1245	1265	1278	1256	1302	1309	1316	1325	1336	1342	1349	1356
	1367	1384	1404	1421	1437	1457	1470	1488	1494	1501	1508	1517	1528	1534	1541
	1548	1559	1585	1601	1618	1637	1650	1668	1674	1681	1688	1697	1708	1714	1721
	1728	1738	1754	1770	1787	1807	1820	1838	1844	1851	1858	1867	1878	1884	1891
	1898	1908	1930	1948	1954	1974	1996	2021	2029	2050	2057	2082	2088	2111	2117
	2136	2169	2175	2205	2229	2236	2256	2285	2292	2306	2337	2353	2364	2371	2405
	2412	2419	2436	2497	2504	2511									
LOOP	208#	380	390	400	411	422	433	444	454	473	486	499	512	525	539
	547	556	564	571	579	587	595	611	618	625	632	644	651	658	665
	680	697	714	733	746	764	771	778	785	793	804	811	818	825	836
	853	870	886	906	918	936	943	950	957	965	976	983	990	997	1007
	1024	1043	1060	1077	1096	1109	1127	1134	1141	1148	1156	1167	1174	1181	1188
	1199	1216	1233	1249	1269	1282	1300	1307	1314	1321	1329	1340	1347	1354	1361
	1371	1388	1407	1425	1441	1461	1474	1492	1499	1506	1513	1521	1532	1539	1546
	1553	1564	1588	1605	1622	1641	1654	1672	1679	1686	1693	1701	1712	1719	1726
	1733	1742	1757	1774	1791	1811	1824	1842	1849	1856	1863	1871	1882	1889	1896
	1903	1913	1933	1951	1958	1978	2000	2024	2033	2053	2061	2085	2093	2114	2121
	2139	2173	2179	2209	2233	2240	2260	2288	2296	2311	2341	2357	2368	2376	2408
	2416	2424	2440	2501	2508	2516									
NEWTST	208#	367	457	528	598	668	683	700	716	749	841	856	872	889	921
	1010	1031	1046	1063	1079	1112	1204	1219	1235	1252	1285	1374	1395	1411	1427
	1444	1477	1576	1591	1608	1624	1657	1745	1760	1777	1794	1827	1918	1936	1961
	1982	2005	2037	2064	2098	2123	2145	2183	2218	2243	2267	2319	2381	2429	2444
STARS	208#	249	259	303	305	312	367	369	457	459	528	530	598	600	668
	670	683	685	700	702	716	718	749	751	841	843	856	858	872	874
	889	891	921	923	1010	1012	1031	1033	1046	1048	1063	1065	1079	1081	1112
	1114	1204	1206	1219	1221	1235	1237	1252	1254	1285	1287	1374	1376	1395	1397
	1411	1413	1427	1429	1444	1446	1477	1479	1576	1578	1591	1593	1608	1610	1624
	1626	1657	1659	1745	1747	1760	1762	1777	1779	1794	1796	1827	1829	1918	1920
	1936	1938	1961	1963	1982	1984	2005	2007	2037	2039	2064	2066	2098	2100	2123
	2125	2145	2147	2183	2185	2218	2220	2243	2245	2267	2269	2319	2321	2381	2383
	2429	2431	2444	2446											
SSERCD	208#	377	387	397	408	419	430	441	451	470	483	496	509	522	536
	544	553	561	568	576	584	592	608	615	622	629	641	648	655	662
	677	694	711	730	743	761	768	775	782	790	801	808	815	822	833
	850	867	883	903	915	933	940	947	954	962	973	980	987	994	1004
	1021	1040	1057	1074	1093	1106	1124	1131	1138	1145	1153	1164	1171	1178	1185
	1196	1213	1230	1246	1266	1279	1297	1304	1311	1318	1326	1337	1344	1351	1358
	1368	1385	1404	1422	1438	1458	1471	1489	1496	1503	1510	1518	1529	1536	1543
	1550	1561	1585	1602	1619	1638	1651	1669	1676	1683	1690	1698	1709	1716	1723
	1730	1739	1754	1771	1788	1808	1821	1839	1846	1853	1860	1868	1879	1886	1893
	1900	1910	1930	1948	1955	1975	1997	2021	2030	2050	2058	2082	2090	2111	2118
	2136	2170	2176	2206	2230	2237	2257	2285	2293	2308	2338	2354	2365	2373	2405
	2413	2421	2437	2498	2505	2513									
SSERNU	208#	377	387	397	408	419	430	441	451	470	483	496	509	522	536
	544	553	561	568	576	584	592	608	615	622	629	641	648	655	662
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	850	867	883	903	915	933	940	947	954	962	973	980	987	994	1004
	1021	1040	1057	1074	1093	1106	1124	1131	1138	1145	1153	1164	1171	1178	1185
	1196	1213	1230	1246	1266	1279	1297	1304	1311	1318	1326	1337	1344	1351	1358
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CROSS REFERENCE TABLE -- MACRO NAMES

SEG 0080

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	1900	1910	1930	1948	1955	1975	1997	2021	2030	2050	2058	2082	2090	2111	2118
	2136	2170	2176	2206	2230	2237	2257	2285	2293	2308	2338	2354	2365	2373	2405
SSERRO	2413	2421	2437	2498	2505	2513									
	208#	450	521	552	591	661	693	710	742	866	882	914	1003	1056	1073
	1105	1229	1245	1278	1367	1421	1437	1470	1501	1618	1650	1738	1770	1787	1820
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	208#	380	390	400	411	422	433	444	454	473	486	499	512	525	539
	547	556	564	571	579	587	595	611	618	625	632	644	651	658	665
	680	697	714	733	746	764	771	778	785	793	804	811	818	825	836
	853	870	886	906	918	936	943	950	957	965	976	983	990	997	1007
	1024	1043	1060	1077	1096	1109	1127	1134	1141	1148	1156	1167	1174	1181	1188
	1199	1216	1233	1249	1269	1282	1300	1307	1314	1321	1329	1340	1347	1354	1361
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	1553	1564	1588	1605	1622	1641	1654	1672	1679	1686	1693	1701	1712	1719	1726
	1733	1742	1757	1774	1791	1811	1824	1842	1849	1856	1863	1871	1882	1889	1896
	1903	1913	1933	1951	1958	1978	2000	2024	2033	2053	2061	2085	2093	2114	2121
	2139	2173	2179	2209	2233	2240	2260	2288	2296	2311	2341	2357	2368	2376	2408
SSNEWT	2416	2424	2440	2501	2508	2516									
	208#	367	457	528	598	668	683	700	716	749	841	856	872	889	921
	1010	1031	1046	1063	1079	1112	1204	1219	1235	1252	1285	1374	1395	1411	1427
	1444	1477	1576	1591	1608	1624	1657	1745	1760	1777	1794	1827	1918	1936	1961
	1982	2005	2037	2064	2098	2123	2145	2183	2218	2243	2267	2319	2381	2429	2444
.SACT1	244#	247													
.SAPT8	244#	257													
.SAPTH	244#	301													

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ERRORS DETECTED: 0
 % DEFAULT GLOBALS GENERATED: 1

DVKA0B, DVKA0B/SOL/CRF/DS:ERFLZ=DVKA0B.P11
 RUN-TIME: 15 10 1 SECONDS
 RUN-TIME RATIO: 266/27=9.6
 CORE USED: 9K (18 PAGES)

B07

