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.REPT 0

IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DFKAB-C-D
PRODUCT NAME: 11/34 TRAP TEST
DATE : MAY 1977
MAINTAINER: DIAGNOSTIC GROUP
AUTHOR: GLENN JOHNSON

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1. ABSTRACT
 THIS IS A TEST OF ALL OPERATIONS AND INSTRUCTIONS THAT CAUSE TRAPS. ALSO TESTED ARE TRAP OVERFLOW CONDITIONS, ODDITIES OF REGISTER 6, INTERRUPTS , THE RESET AND WAIT INSTRUCTIONS.
2. REQUIREMENTS
 - 2.1 EQUIPMENT
 11/04 STANDARD COMPUTER
 - 2.2 STORAGE
 - 2.2.1 PROGRAM STOPAGE = THE ROUTINE USES MEMORY FROM 0000 TO 17500.
3. LOADING PROCEDURE
 - 3.1 METHOD
 PROCEDURE FOR NORMAL ABSOLUTE TAPES SHOULD BE FOLLOWED.
4. STARTING PROCEDURE
 THE PROGRAM STARTS AT 200.
 IF IT IS DESIRED TO RESET THE PASS COUNT BACK TO ZERO , THEN START THIS PROGRAM AT LOCATION 210
- 4.2 PROGRAM AND/OR OPERATOR ACTION
 LOAD PROGRAM INTO MEMORY. (BOTTOM 4K)
 LOAD ADDRESS.
 START.
 THE PROGRAM WILL LOOP,
 IT WILL PRINT "END OF DFKAB" AFTER THE FIRST ITERATION AND THEN PRINTS IT EVERY 15 TIMES(APPROXIMATELY A MINUTE)

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5. OPERATION

5.2 SUBROUTINE ABSTRACTS

5.2.1 BEGIN AT 200

5.2.2 SCOPE

IF A SCOPE LOOP IS NEEDED INSERT A BRANCH AS THE
COMMENT TO THE HALT EXPLAINS.

5.2.3 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 CON-
TAIN A HALT (000000) (THIS LOCATION IS ALSO THE STATUS
WORD FOR THAT VECTOR ENTRANCE, BUT THIS WILL HAVE NO EFFECT
ON IT ALSO BEING THE NEXT INSTRUCTION).

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
WHERE THE PROGRAM WAS, WHEN THE INTERRUPT OR
TRAP OCCURRED; MEMORY AS SPECIFIED BY R6 CONTAINS THE
PC OF THE INSTRUCTION FOLLOWING THE INSTRUCTION WHERE THE
TRAP OCCURRED.

THE CONTENTS OF LOCATION 'STSTN'(304) CONTAINS
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.

NOTE: IF A SCOPE LOOP IS NEEDED

THE COMMENT SECTION OF THE HALT EXPLAINS
HOW TO UTILIZE THIS LOOP.

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6. ERRORS

6.1 ALL ERRORS WILL CAUSE A HALT.

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.

EXAMPLE

```
TSTA: INC  @#STSTNM ;INCREMENT THE TEST NUMBER
      CMP  #A,@#STSTNM ;COMPARE FOR THE RIGHT TEST
      BNE  TSTA+1=12 ;IF NOT CORRECT BRANCH TO A HALT
      ----
      CODE
```

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

7. RESTRICTIONS

7.1 STARTING RESTRICTION

NONE

7.2 OPERATIONAL RESTRICTION

NONE

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170
171      8. MISCELLANEOUS
172
173      8.1 EXECUTION TIME
174
175          FOR ONE ITERATION ABOUT 5 SECONDS,
176          IT TYPES "END OF DFKAB" APPROXIMATELY EVERY MINUTE.
177
178      9. PROGRAM DESCRIPTION
179
180          THIS PROGRAM CHECKS THAT ON ALL TRAP OPERATIONS REGISTER
181          6 IS DECREMENTED THE CORRECT AMOUNT, THAT THE CORRECT
182          PC IS SAVED ON THE STACK, THAT THE OLD CONDITION CODES AND
183          PRIORITY ARE PLACED ON THE STACK AND THAT THE NEW STATUS AND
184          CONDITION CODES ARE CORRECT, BOTH THE "TRAP" AND "EMT"
185          TRAP INSTRUCTIONS ARE TESTED TO SEE THAT ALL COMBINATIONS WILL
186          TRAP, CHECKED ALSO IS THAT ALL RESERVED INSTRUCTIONS
187          WILL TRAP, VERIFICATION OF THE "TRT" INSTRUCTION (00003)
188          WHICH IS USED FOR SOFTWARE DEBUG ROUTINES; ODT,DDT, IS DONE.
189          ALSO, THE TRACE BIT IS CHECKED TO SEE IF IT CAUSES A TRAP,
190          THE RTI AND RTT INSTRUCTIONS ARE CHECKED, STACK OVERFLOW IS
191          ALSO CHECKED FOR ALL THE TRAP INSTRUCTIONS.
192          SPECIAL CHECKS ARE MADE TO SEE IF BUS
193          ERROR TRAPS OCCUR ON NON-EXISTENT MEMORY.
194
195          .ENDR
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196          ;ALL INSTRUCTIONS THAT ARE RESERVED
197          ;SHOULD TRAP TO LOCATION 10, AND THE
198          ;PC THAT POINTS TO THE TRAPPING INSTRUCTION
199          ;SHOULD BE PLACED ON THE STACK
200
201
202          ;LISTING
203
204
205
206          .LIST ME
207          .NLIST MC,MD,CND
208          .ABS
209          SP=%6
210          R6=%6
211          TAB=%3
212          LAST=%1
213          FIRST=%5
214          R2=%2
215          HLT=HALT
216          TRT=3
217          ITRAP5=4
218          RTRAP5=4          ;RESERVED INST AND ILLEGAL ADDRESSES
219          RTRAP4=14        ;FOR TRACE TRAP
220          RTRAP3=30        ;FOR EMULATOR TRAP
221          RTRAP2=20        ;FOR IOT TRAP
222          RTRAP1=34        ;FOR TRAP INST
223          TTC5R=177564
224          TRC5R=177560
225          TPS=177564
226          TPB=177566
227          BELL=240
228          NOP=240
229          STATUS=17776
230          TRAPA=7
231          RTRAP=10
232          ILLA=004700
233          ILLB=100
234          CC=17776
```

```
235      000200      000200      .,=200
236 000200 000167 000414      JMP      BEGIN
237      000210      000210      .,=210
238 000210 000377 000306      CLR      @#PASS
239 000214 000167 000400      JMP      BEGIN
240      000300      000300      .,=300
241      .SBTTL ACT11 HOOKS
242
243 ;*****
244 ;HOOKS REQUIRED BY ACT11
245      000300      000300      $SVPC=,      ;SAVE PC
246      00046      00046      .,=46
247 00046 015502      $ENDAD      ;1)SET LOC,46 TO ADDRESS OF $ENDAD IN ,SEOP
248      00052      00052      .,=52
249 00052 000000      .WORD 0      ;2)SET LOC,52 TO ZERO
250      000300      000300      .,$SVPC      ; RESTORE PC
251      .SBTTL APT MAILBOX=ETABLE
252
253 ;*****
254 ;EVEN
255 000300      000300      $MAIL;      ;APT MAILBOX
256 000300      000000      $MSGTY; WORD MSGTY ;MESSAGE TYPE CODE
257 000302      000000      $FATAL; WORD AFATAL ;FATAL ERROR NUMBER
258 000304      000000      $TESTM; WORD ATESTN ;TEST NUMBER
259 000306      000000      $PASS; WORD APASS ;PASS COUNT
260 000310      000000      $DEVCT; WORD ADEVCT ;DEVICE COUNT
261 000312      000000      $UNIT; WORD AUNIT ;I/O UNIT NUMBER
262 000314      000000      $MSGAD; WORD MSGAD ;MESSAGE ADDRESS
263 000316      000000      $MSGL; WORD MSGLG ;MESSAGE LENGTH
264 000320      000000      $ETABLE; ;APT ENVIRONMENT TABLE
265 000320      000      $ENV; .BYTE AENV ;ENVIRONMENT BYTE
266 000321      000      $ENVM; .BYTE AENVM ;ENVIRONMENT MODE BITS
267 000322      000000      $SWREG; WORD ASWREG ;APT SWITCH REGISTER
268 000324      000000      $USWR; WORD AUSWR ;USER SWITCHES
269 000326      000000      $CPUOP; WORD ACPUDP ;CPU TYPE,OPTIONS
270 ;*
271 ;*      11/04=01,11/05=02,11/20=03,11/40=04,11/45=05
272 ;*      11/70=06,PDG=07,Q=10
273 ;*      BIT 10=REAL TIME CLOCK
274 ;*      BIT 9=FLOATING POINT PROCESSOR
275 ;*      BIT 8=MEMORY MANAGEMENT
276 000330      $ETEND;
277      .MEXIT
278      .SBTTL APT PARAMETER BLOCK
279
280 ;*****
281 ;SET LOCATIONS 24 AND 44 AS REQUIRED FOR APT
282 ;*****
283      000330      000330      .,$X=,      ;SAVE CURRENT LOCATION
284      000024      000024      .,=24      ;SET POWER FAIL TO POINT TO START OF PROGRAM
285 000024 000200      200      ;FOR APT START UP
286      000044      000044      .,=44      ;POINT TO APT INDIRECT ADDRESS PNTR,
287 000044 000330      $APTHDR ;POINT TO APT HEADER BLOCK
288      000330      000330      .,.$X      ;RESET LOCATION COUNTER
289 ;*****
290 ;SETUP APT PARAMETER BLOCK AS DEFINED IN THE APT-PDP11 DIAGNOSTIC
```

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291 ;INTERFACE SPEC.
292
293 000330      000330      $APTHD;
294 000330      000000      $HIBTS; WORD 0 ;TWO HIGH BITS OF 18 BIT MAILBOX ADDR.
295 000332      000300      $MBADR; WORD $MAIL ;ADDRESS OF APT MAILBOX (BITS 0-15)
296 000334      000002      $TSTM; WORD 2 ;RUN TIM OF LONGEST TEST
297 000336      000002      $PASTM; WORD 2 ;RUN TIME IN SECS. OF 1ST PASS ON 1 UNIT (QUICK VERIFY)
298 000340      000000      $UNITM; WORD 0 ;ADDITIONAL RUN TIME (SECS) OF A PASS FOR EACH ADDITIONAL UNIT
299 000342      000014      .WORD $ETEND=$MAIL/2 ;LENGTH MAILBOX=ETABLE(WORDS)
300      000304      000304      $TSTM=$TESTN
301      000302      000302      $ERROR=$FATAL
302
303      .,=500
304 000500      000000      $BUFF; 0
305 000502      177572      $RO; 177572
306 000504      177573      $R01; 177573
307 000506      177574      $R1; 177574
308 000510      177576      $R2; 177576
309 000512      000250      $RTVEC; 250
310 000514      000252      $RTSTA; 252
311      .ADRTAB;
312 000516      177600      $UPDR0; 177600 ;USER PAGE DESCRIPTOR REGISTERS
313 000520      177602      $UPDR1; 177602
314 000522      177604      $UPDR2; 177604
315 000524      177606      $UPDR3; 177606
316 000526      177610      $UPDR4; 177610
317 000530      177612      $UPDR5; 177612
318 000532      177614      $UPDR6; 177614
319 000534      177616      $UPDR7; 177616
320 ;
321 000536      177640      $UPAR0; 177640 ;USER PAGE ADDRESS REGISTERS
322 000540      177642      $UPAR1; 177642
323 000542      177644      $UPAR2; 177644
324 000544      177646      $UPAR3; 177646
325 000546      177650      $UPAR4; 177650
326 000550      177652      $UPAR5; 177652
327 000552      177654      $UPAR6; 177654
328 000554      177656      $UPAR7; 177656
329 ;
330 000556      172300      $KPDR0; 172300 ;KERNEL PAGE DESCRIPTOR REGISTERS
331 000560      172302      $KPDR1; 172302
332 000562      172304      $KPDR2; 172304
333 000564      172306      $KPDR3; 172306
334 000566      172310      $KPDR4; 172310
335 000570      172312      $KPDR5; 172312
336 000572      172314      $KPDR6; 172314
337 000574      172316      $KPDR7; 172316
338 ;
339 000576      172340      $KPAR0; 172340 ;KERNEL PAGE ADDRESS REGISTERS
340 000600      172342      $KPAR1; 172342
341 000602      172344      $KPAR2; 172344
342 000604      172346      $KPAR3; 172346
343 000606      172350      $KPAR4; 172350
344 000610      172352      $KPAR5; 172352
345 000612      172354      $KPAR6; 172354
346 000614      172356      $KPAR7; 172356
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347 000616 000614 ADREND: ,-2
348
349
350

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351  
352 000620 012737 177777 015530 BEGIN: MOV #-1,0$PASSPT ;CLEAR THE ITERATION COUNTER  
353 000626 005067 177446 RESTR1: CLR $MSGTY  
354 000632 012767 015706 177164 MOV $PWRDWN,24 ;SET UP THE POWER DOWN VECTOR  
355 000640 012767 000340 177160 MOV $340,26 ;SET UP POWER DOWN PRIORITY  
356 000646 005067 177432 CLR $TSTNM  
357 000652 005067 177424 CLR $ERROR  
358 000656 012702 000300 MOV $MSGTY,R2  
359  
360 ;SPECIAL CASE OF ODD; ,EVEN ,BYTE AND REGISTER 6  
361 000000 HERE#0  
362  
363 000662 000167 000024 JMP TST1  
364 000666 000000 K1: 0  
365 000670 000000 K2: 0  
366 000672 000000 K3: 0  
367 000674 000000 K4: 0  
368 000676 000000 K5: 0  
369 000700 000000 K6: 0  
370 000702 052525 K7: 052525  
371 000704 052400 K10: 052400  
372 000706 000000 K11: 0  
373 000710 000000 K12: 0  
374  
375 ;*****  
376 ;TEST 1 TEST AUTO INCREMENT AND DECREMENT OF R6 FOR WORD AND BYTES  
377 000712 005237 000304 TST1: INC $TSTNM ;UPDATE TEST NUMBER  
378 000716 022737 000001 000304 CMP #1,$TSTNM ;SEQUENCE ERROR?  
379 000724 001137 BNE TST2=12 ;BR TO ERROR HALT ON SEQ ERROR  
380 000726 005006 CLR $6  
381 000730 112667 177044 MOVB (6)+,HERE ;SIX SHOULD INCREMENT BY TWO  
382 000734 020627 000002 CMP $6,#2  
383 000740 001405 BEQ BR1  
384 000742 012737 000001 000302 MOV #1,$FATAL ;MOVE TO MAILBOX # ***** 1 *****  
385 000750 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
386 000752 000000 HALT ;R6 DID NOT AUTO INCREMENT BY TWO  
387 ; TO SCOPE REPLACE HALT W/ 240  
388 ; AND REPLACE NEXT INST W/ 764  
389  
390 000754 012706 001000 BR1: MOV #1000,$6  
391 000760 114627 000000 MOVB -(6),#HERE ;SHOULD DECREMENT BY TWO  
392 000764 020627 000776 CMP $6,#776  
393 000770 001405 BEQ BR2  
394 000772 012737 000002 000302 MOV #2,$FATAL ;MOVE TO MAILBOX # ***** 2 *****  
395 001000 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
396 001002 000000 HALT ;R6 DID NOT AUTO DECREMENT BY 2  
397 ; TO SCOPE REPLACE HALT W/ 240  
398 ; AND REPLACE NEXT INST W/ 750  
399  
400 001004 005006 BR2: CLR $6  
401 001006 112626 MOVB (6)+,(6)+ ;DOUBLES AUTO INCREMENT OF R6  
402 001010 020627 000004 CMP $6,#4  
403 001014 001405 BEQ BR3  
404 001016 012737 000003 000302 MOV #3,$FATAL ;MOVE TO MAILBOX # ***** 3 *****  
405 001024 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
406 001026 000000 HALT ;WRONG AUTO INCREMENT OF R6
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407 ; TO SCOPE REPLACE HALT W/ 240
408 ; AND REPLACE NEXT INST W/ 736
409
410 001030 005006 BR3: CLR %6
411 001032 005004 CLR %4
412 001034 122624 CMPB (6)+,(4)+ ;TEST INCREMENT OF R6
413 001036 020627 000002 CMP %6,#2
414 001042 001405 BEQ BR4
415 001044 012737 000004 000302 MOV #4,##$FATAL ;MOVE TO MAILBOX # ***** 4 *****
416 001052 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
417 001054 000000 HALT ;WRONG INCREMENT OF R6
418 ; TO SCOPE REPLACE HALT W/ 240
419 ; AND REPLACE NEXT INST W/ 723
420
421 001056 005006 BR4: CLR %6
422 001060 005004 CLR %4
423 001062 122426 CMPB (4)+,(6)+ ;TEST INCREMENT OF R6
424 001064 020627 000002 CMP %6,#2
425 001070 001405 BEQ BR5
426 001072 012737 000005 000302 MOV #5,##$FATAL ;MOVE TO MAILBOX # ***** 5 *****
427 001100 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
428 001102 000000 HALT ;WRONG INCREMENT OF R6
429 ; TO SCOPE REPLACE HALT W/ 240
430 ; AND REPLACE NEXT INST W/ 710
431
432 001104 005006 BR5: CLR %6
433 001106 005004 CLR %4
434 001110 122624 CMPB (6)+,(4)+ ;TEST INCREMENT OF R4
435 001112 020427 000001 CMP %4,#1
436 001116 001405 BEQ BR6
437 001120 012737 000006 000302 MOV #6,##$FATAL ;MOVE TO MAILBOX # ***** 6 *****
438 001126 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
439 001130 000000 HALT ;WRONG INCREMENT OF R4
440 ; TO SCOPE REPLACE HALT W/ 240
441 ; AND REPLACE NEXT INST W/ 675
442 001132 005006 BR6: CLR %6
443 001134 005004 CLR %4
444 001136 122426 CMPB (4)+,(6)+ ;TEST INCREMENT OF R6
445 001140 020627 000002 CMP %6,#2
446 001144 001405 BEQ BR7
447 001146 012737 000007 000302 MOV #7,##$FATAL ;MOVE TO MAILBOX # ***** 7 *****
448 001154 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
449 001156 000000 HALT ;WRONG INCREMENT OF R6
450 ; TO SCOPE REPLACE HALT W/ 240
451 ; AND REPLACE NEXT INST W/ 662
452
453 001160 005006 BR7: CLR %6
454 001162 005004 CLR %4
455 001164 122426 CMPB (4)+,(6)+ ;TEST INCREMENT OF R4
456 001166 020427 000001 CMP %4,#1
457 001172 001405 BEQ BR10
458 001174 012737 000010 000302 MOV #10,##$FATAL ;MOVE TO MAILBOX # ***** 10 *****
459 001202 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
460 001204 000000 HALT ;WRONG INCREMENT OF R4
461 ; TO SCOPE REPLACE HALT W/ 240
462 ; AND REPLACE NEXT INST W/ 647
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463
464 001206 012706 001000 BR10: MOV #1000,%6
465 001212 124627 000000 CMPB -(6),#HERE ;TEST DECREMENT OF R6
466 001216 022706 000776 CMP #776,%6
467 001222 001405 REQ TST2
468 001224 012737 000011 000302 MOV #11,##$FATAL ;MOVE TO MAILBOX # ***** 11 *****
469 001232 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
470 001234 000000 HALT ;WRONG DECREMENT OF R6,OR WRONG $TSTNM
471 ; TO SCOPE REPLACE HALT W/ 240
472 ; AND REPLACE NEXT INST W/ 633
473
474 ;*****
475 ;TEST 2 TEST TRANSFER OF .BYTE USING R6
476 001236 005237 000304 TST2: INC ##$TSTN ;UPDATE TEST NUMBER
477 001242 022737 000002 000304 CMP #2,##$TSTN ;SEQUENCE ERROR?
478 001250 001137 BNE TST3-12 ;BR TO ERROR HALT ON SEQ ERROR
479 001252 012767 123456 177416 MOV #123456,K5
480 001260 012767 050505 177400 MOV #050505,K1
481 001266 012705 000666 MOV #K1,%5 ;%5=(050505)K1
482 001272 012706 000676 MOV #K5,%6 ;%6=(123456)K5
483 001276 112625 MOVB (6)+,(5)+ ;LOW .BYTE OF R6 TO R5
484 001300 022767 050456 177360 CMP #050456,K1
485 001306 001405 BEQ BR11
486 001310 012737 000012 000302 MOV #12,##$FATAL ;MOVE TO MAILBOX # ***** 12 *****
487 001316 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
488 001320 000000 HALT ;FALSE TRANSFER OF .BYTE
489 ; TO SCOPE REPLACE HALT W/ 240
490 ; AND REPLACE NEXT INST W/ 753
491
492 001322 012767 123456 177346 BR11: MOV #123456,K5
493 001330 012767 050505 177330 MOV #050505,K1
494 001336 012705 000666 MOV #K1,%5 ;%5(050505)K1
495 001342 012706 000700 MOV #K6,%6 ;%6(123456)K5
496 001346 114625 MOVB -(6),(5)+ ;LOW .BYTE OF R6 TO R5 (DECREMENT)
497 001350 026727 177312 050456 CMP K1,#050456
498 001356 001405 BEQ BR12
499 001360 012737 000013 000302 MOV #13,##$FATAL ;MOVE TO MAILBOX # ***** 13 *****
500 001366 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
501 001370 000000 HALT ;FALSE R6 .BYTE TRANSFER
502 ; TO SCOPE REPLACE HALT W/ 240
503 ; AND REPLACE NEXT INST W/ 727
504
505 001372 012767 123456 177266 BR12: MOV #123456,K1
506 001400 012767 050505 177270 MOV #050505,K5
507 001406 012705 000666 MOV #K1,%5 ;(123456)
508 001412 012706 000676 MOV #K5,%6 ;(050505)
509 001416 112526 MOVB (5)+,(6)+ ;LOW OF R5 TO LOW OF R6
510 001420 022767 050456 177250 CMP #050456,K5
511 001426 001405 BEQ BR13
512 001430 012737 000014 000302 MOV #14,##$FATAL ;MOVE TO MAILBOX # ***** 14 *****
513 001436 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
514 001440 000000 HALT ;FALSE R6 .BYTE TRANSFER
515 ; TO SCOPE REPLACE HALT W/ 240
516 ; AND REPLACE NEXT INST W/ 703
517
518 001442 012767 123456 177216 BR13: MOV #123456,K1
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519 001450 012767 050505 177220 MOV #050505,K5  
520 001456 012705 000667 MOV #K1+1,%5 ;123456  
521 001462 012706 000676 MOV #K5,%6 ;050505  
522 001466 112526 MOV#B (5)+,(6)+ ;HIGH OF R5 TO LOW OF R6  
523 001470 026727 177202 050647 CMP K5,#050647  
524 001476 001405 BEQ BR14  
525 001500 012737 000015 000302 MOV #15,##$FATAL ;MOVE TO MAILBOX # ***** 15 *****  
526 001506 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
527 001510 000000 HALT ;FALSE R6 ,BYTE TRANSFER  
; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 657  
528  
529  
530  
531 001512 012767 123456 177146 BR14: MOV #123456,K1  
532 001520 012767 050505 177150 MOV #050505,K5  
533 001526 012705 000667 MOV #K1+1,%5 ;R5-123456=ODD ADDRESS  
534 001532 012706 000676 MOV #K5,%6 ;R6-050505=,EVEN ADDRESS  
535 001536 112625 MOV#B (6)+,(5)+ ;LOW OF R6 TO HIGH OF R5  
536 001540 022767 042456 177120 CMP #042456,K1  
537 001546 001405 BEQ TST3  
538 001550 012737 000016 000302 MOV #16,##$FATAL ;MOVE TO MAILBOX # ***** 16 *****  
539 001556 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
540 001560 000000 HALT ;FAILED LOW OF 6 TO HIGH OF 5,OR WRONG $TSTNM  
; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 633  
541  
542  
543 ;*****  
544 ;TEST 3 TEST BYTE OPERATION WITH SEQUENTIAL ODD-EVEN ADDRESS  
545 ;*****  
546 001562 005237 000304 TST3: INC ##$TESTN ;UPDATE TEST NUMBER  
547 001566 022737 000003 000304 CMP #3,##$TESTN ;SEQUENCE ERROR?  
548 001574 001103 BNE TST4=12 ;BR TO ERROR HALT ON SEQ ERROR  
549 001576 126767 177100 177077 CMP#B K7,K7+1 ;SAME ,WORD LOW TO HIGH  
550 001604 001405 BEQ BR15  
551 001606 012737 000017 000302 MOV #17,##$FATAL ;MOVE TO MAILBOX # ***** 17 *****  
552 001614 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
553 001616 000000 HALT ;SHOULD COMPARE LOW TO HIGH  
; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 766  
554  
555  
556  
557 001620 126767 177057 177054 BR15: CMP#B K7+1,K7 ;COMPARE ODD TO ,EVEN SAME ,WORD  
558 001626 001405 BEQ BR16  
559 001630 012737 000020 000302 MOV #20,##$FATAL ;MOVE TO MAILBOX # ***** 20 *****  
560 001636 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
561 001640 000000 HALT ;ODD TO ,EVEN BYTE FAILURE  
; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 755  
562  
563  
564  
565 001642 126767 177037 177032 BR16: CMP#B K10+1,K7 ;SEQUENTIAL ,BYTES  
566 001650 001405 BEQ BR17  
567 001652 012737 000021 000302 MOV #21,##$FATAL ;MOVE TO MAILBOX # ***** 21 *****  
568 001660 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
569 001662 000000 HALT ;ODD TO ,EVEN FAILED  
; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 744  
570  
571  
572  
573 001664 126767 177014 177006 BR17: CMP#B K10,K6  
574 001672 001405 BEQ BR20
```

```
575 001674 012737 000022 000302 MOV #22,##$FATAL ;MOVE TO MAILBOX # ***** 22 *****  
576 001702 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
577 001704 000000 HALT ;,EVEN TO EVEN FAILED  
; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 733  
578  
579  
580 001706 126767 176771 176771 BR20: CMP#B K7+1,K10+1  
581 001714 001405 BEQ BR21  
582 001716 012737 000023 000302 MOV #23,##$FATAL ;MOVE TO MAILBOX # ***** 23 *****  
583 001724 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
584 001726 000000 HALT ;ODD TO ODD FAILED  
; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 722  
585  
586  
587  
588 001730 126767 176750 176747 BR21: CMP#B K10,K10+1  
589 001736 001005 BNE BR22  
590 001740 012737 000024 000302 MOV #24,##$FATAL ;MOVE TO MAILBOX # ***** 24 *****  
591 001746 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
592 001750 000000 HALT ;LOW TO HIGH IN SAME ,WORD FAILED  
; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 711  
593  
594  
595  
596 001752 126767 176727 176725 BR22: CMP#B K10+1,K10+1  
597 001760 001405 BEQ BR23  
598 001762 012737 000025 000302 MOV #25,##$FATAL ;MOVE TO MAILBOX # ***** 25 *****  
599 001770 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
600 001772 000000 HALT ;HIGH TO LOW IN SAME ,WORD FAILED  
; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 700  
601  
602  
603  
604 001774 126767 176704 176701 BR23: CMP#B K10,K7+1  
605 002002 001005 BNE TST4  
606 002004 012737 000026 000302 MOV #26,##$FATAL ;MOVE TO MAILBOX # ***** 26 *****  
607 002012 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
608 002014 000000 HALT ;,EVEN TO ODD FAILED,OR WRONG $TSTNM  
; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 667  
609  
610  
611  
612  
613 ;*****  
614 ;TEST 4 TEST THE CC BITS  
615 ;*****  
616 002016 005237 000304 TST4: INC ##$TESTN ;UPDATE TEST NUMBER  
617 002022 022737 000004 000304 CMP #4,##$TESTN ;SEQUENCE ERROR?  
618 002030 001062 BNE TST5=12 ;BR TO ERROR HALT ON SEQ ERROR  
619 002032 000277 SCC ;SET STATUS  
620 002034 005067 175736 CLR STATUS ;CLEAR STATUS  
621 002040 103005 BCC BR33  
622 002042 012737 000027 000302 MOV #27,##$FATAL ;MOVE TO MAILBOX # ***** 27 *****  
623 002050 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
624 002052 000000 HALT ;C NOT CLEAR  
; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 766  
625  
626  
627 002054 BR33: BVC BR34  
628 002054 102005 BVC BR34  
629 002056 012737 000030 000302 MOV #30,##$FATAL ;MOVE TO MAILBOX # ***** 30 *****  
630 002064 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
```

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631 002066 000000 HALT ;V NOT CLEAR
632 ; TO SCOPE REPLACE HALT W/ 240
633 ; AND REPLACE NEXT INST W/ 760
634 002070 BR34:
635 002070 001005 BNE BR35
636 002072 012737 000031 000302 MOV #31,0##FATAL ;MOVE TO MAILBOX # ***** 31 *****
637 002100 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
638 002102 000000 HALT ;Z NOT CLEAR
639 ; TO SCOPE REPLACE HALT W/ 240
640 ; AND REPLACE NEXT INST W/ 752
641 002104 BR35:
642 002104 100005 BPL BR36
643 002106 012737 000032 000302 MOV #32,0##FATAL ;MOVE TO MAILBOX # ***** 32 *****
644 002114 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
645 002116 000000 HALT ;N NOT CLEAR
646 ; TO SCOPE REPLACE HALT W/ 240
647 ; AND REPLACE NEXT INST W/ 744
648 002120 000257 000017 175646 BR36: CCC ;CLEAR CONDITION CODES
649 002122 052767 BIS #17,STATUS ;SET STATUS TO ONES
650
651 002130 103405 BCS BR37
652 002132 012737 000033 000302 MOV #33,0##FATAL ;MOVE TO MAILBOX # ***** 33 *****
653 002140 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
654 002142 000000 HALT ;C NOT SET
655 ; TO SCOPE REPLACE HALT W/ 240
656 ; AND REPLACE NEXT INST W/ 732
657 002144 BR37:
658 002144 102405 BVS BR40
659 002146 012737 000034 000302 MOV #34,0##FATAL ;MOVE TO MAILBOX # ***** 34 *****
660 002154 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
661 002156 000000 HALT ;V NOT SET
662 ; TO SCOPE REPLACE HALT W/ 240
663 ; AND REPLACE NEXT INST W/ 724
664 002160 BR40:
665 002160 001405 BEQ BR41
666 002162 012737 000035 000302 MOV #35,0##FATAL ;MOVE TO MAILBOX # ***** 35 *****
667 002170 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
668 002172 000000 HALT ;Z NOT SET
669 ; TO SCOPE REPLACE HALT W/ 240
670 ; AND REPLACE NEXT INST W/ 716
671 002174 BR41:
672 002174 100405 BMI TST5
673 002176 012737 000036 000302 MOV #36,0##FATAL ;MOVE TO MAILBOX # ***** 36 *****
674 002204 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
675 002206 000000 HALT ;N NOT SET,OR WRONG $STNM
676 ; TO SCOPE REPLACE HALT W/ 240
677 ; AND REPLACE NEXT INST W/ 710
678 ;*****
679 ;TEST 5 TEST THAT A TRAP OCCURS ON A RESERVED INSTRUCTION
680 ;*****
681 002210 005237 000304 TSTS: INC @##TESTN ;UPDATE TEST NUMBER
682 002214 022737 000005 000304 CMP #5,@##TESTN ;SEQUENCE ERROR?
683 002222 001006 BNE RETA ;BR TO ERROR HALT ON SEQ ERROR
684 002224 012706 000500 MOV #RUFF,SP ;STACK POINTER SETUP
685 002230 012767 002252 175552 MOV #RETAH,RTRAP ;RETURN LOCATION
686 002236 000007 TRAPA ;RESERVED INSTRUCTION, SHOULD TRAP
```

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687 002240 RETA:
688 002240 012737 000037 000302 MOV #37,0##FATAL ;MOVE TO MAILBOX # ***** 37 *****
689 002246 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
690 002250 000000 HALT ;RESERVE INSTRUCTION DIDN'T TRAP,OR WRONG $STNM
691 ; TO SCOPE REPLACE HALT W/ 240
692 ; AND REPLACE NEXT INST W/ 764
693 002252 RETAH:
694 ;*****
695 ;TEST 6 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
696 ;*****
697 002252 005237 000304 TST6: INC @##TESTN ;UPDATE TEST NUMBER
698 002256 022737 000006 000304 CMP #6,@##TESTN ;SEQUENCE ERROR?
699 002264 001011 BNE TST7-12 ;BR TO ERROR HALT ON SEQ ERROR
700 002266 012706 000500 MOV #RUFF,SP ;STACK POINTER SETUP
701 002272 012767 002302 175510 MOV #RETB,RTRAP ;RETURN POINTER
702 002300 000007 TRAPA ;RESERVED INSTRUCTION
703 002302 020627 000474 RETB: CMP SP,#BUFF-4 ;TEST DECREMENT OF SP
704 002306 001405 BEQ TST7
705 002310 012737 000040 000302 MOV #40,0##FATAL ;MOVE TO MAILBOX # ***** 40 *****
706 002316 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
707 002320 000000 HALT ;NOT DECREMENTED TWO WORDS,OR WRONG $STNM
708 ; TO SCOPE REPLACE HALT W/ 240
709 ; AND REPLACE NEXT INST W/ 761
710 ;*****
711 ;TEST 7 TEST THAT PROPER P.C. IS SAVED
712 ;*****
713 002322 005237 000304 TST7: INC @##TESTN ;UPDATE TEST NUMBER
714 002326 022737 000007 000304 CMP #7,@##TESTN ;SEQUENCE ERROR?
715 002334 001012 BNE TST10-12 ;BR TO ERROR HALT ON SEQ ERROR
716 002336 012706 000500 MOV #RUFF,SP ;STACK POINTER SETUP
717 002342 012767 002352 175440 MOV #RETC,RTRAP ;RETURN FROM TRAP POINTER
718 002350 000007 TRAPA ;TRAP ON THIS INSTRUCTION
719 002352 022767 002352 176114 RETC: CMP #,,BUFF-4 ;CHECK FOR INCREMENTED P.C.
720 002360 001405 BEQ TST10
721 002362 012737 000041 000302 MOV #41,0##FATAL ;MOVE TO MAILBOX # ***** 41 *****
722 002370 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
723 002372 000000 HALT ;INCORRECT P.C.,OR WRONG $STNM
724 ; TO SCOPE REPLACE HALT W/ 240
725 ; AND REPLACE NEXT INST W/ 760
726 ;*****
727 ;TEST 10 TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
728 ;*****
729 002374 005237 000304 TST10: INC @##TESTN ;UPDATE TEST NUMBER
730 002400 022737 000010 000304 CMP #10,@##TESTN ;SEQUENCE ERROR?
731 002406 001040 BNE TST11-12 ;BR TO ERROR HALT ON SEQ ERROR
732 002410 012706 000500 MOV #RUFF,SP ;SET UP
733 002414 012767 002432 175366 MOV #RETD,RTRAP ;SET UP
734 002422 005067 175350 CLR CC ;CLEAR CC AND PRIORITY
735 002426 000257 CCC
736 002430 000007 TRAPA ;TRAP
737 002432 026727 176040 000000 RETD: CMP BUFF-2,#0 ;TEST THAT OLD STATUS WENT TO STACK
738 002440 001405 BEQ 18
739 002442 012737 000042 000302 MOV #42,0##FATAL ;MOVE TO MAILBOX # ***** 42 *****
740 002450 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
741 002452 000000 HALT ;INCORRECT STATUS
742 ; TO SCOPE REPLACE HALT W/ 240
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743                                     ; AND REPLACE NEXT INST W/ 755
744 002454 012706 000500 18: MOV #BUFF,SP ;SET UP
745 002460 012767 002500 175322 MOV #RETE,RTRAP ;SET UP
746 002466 012767 000357 175302 MOV #357,CC ;SET PRIORITY
747 002474 000277 SCC ;SET CC
748 002476 000007 TRAPA ;TRAP
749 002500 026727 175772 000357 RETE: CMP BUFF-2,#357 ;COMPARES STATUS ON STACK
750 002506 001405 BEQ TS11 ;
751 002510 012737 000043 000302 MOV #43,##FATAL ;MOVE TO MAILBOX # ***** 43 *****
752 002516 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
753 002520 000000 HALT ;INCORRECT STATUS ON STACK,OR WRONG #TSTNM
754 ; TO SCOPE REPLACE HALT W/ 240
755 ; AND REPLACE NEXT INST W/ 732
756 ;*****
757 ;TEST 11 TEST THAT "NEW" STATUS IS CORRECT
758 ;*****
759 002522 005237 000304 TST11: INC ##TESTN ;UPDATE TEST NUMBER
760 002526 022737 000011 000304 CMP #11,##TESTN ;SEQUENCE ERROR?
761 002534 001121 BNE STPP ;BR TO ERROR HALT ON SEQ ERROR
762 002536 012706 000500 MOV #BUFF,SP ;
763 002542 012767 002556 175240 MOV #RETE,RTRAP ;
764 002550 005067 175236 CLR RTRAP+2 ;CLEAR FUTURE PRIORITY AND CC
765 002554 000007 TRAPA ;
766 002556 RETF: ;TEST FOR "C" CLEARED
767 002556 100005 BPL 18 ;
768 002560 012737 000044 000302 MOV #44,##FATAL ;MOVE TO MAILBOX # ***** 44 *****
769 002566 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
770 002570 000000 HALT ;N NOT CLEARED
771 ; TO SCOPE REPLACE HALT W/ 240
772 ; AND REPLACE NEXT INST W/ 761
773 002572 18: BNE 28 ;
774 002572 001005 MOV #45,##FATAL ;MOVE TO MAILBOX # ***** 45 *****
775 002574 012737 000045 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
776 002602 005212 HALT ;Z NOT CLEARED
777 002604 000000 ; TO SCOPE REPLACE HALT W/ 240
778 ; AND REPLACE NEXT INST W/ 753
779 002606 28: BVC 38 ;
780 002606 102005 MOV #46,##FATAL ;MOVE TO MAILBOX # ***** 46 *****
781 002610 012737 000046 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
782 002616 005212 HALT ;V NOT CLEARED
783 002620 000000 ; TO SCOPE REPLACE HALT W/ 240
784 ; AND REPLACE NEXT INST W/ 745
785 002622 38: BCC 48 ;
786 002622 103005 MOV #47,##FATAL ;MOVE TO MAILBOX # ***** 47 *****
787 002624 012737 000047 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
788 002632 005212 HALT ;C NOT CLEARED
789 002634 000000 ; TO SCOPE REPLACE HALT W/ 240
790 ; AND REPLACE NEXT INST W/ 737
791 ;TEST PRIORITY
792 002636 032767 000340 175132 48: BIT #340,CC ;
793 002644 001405 BEQ 58 ;
794 002646 012737 000050 000302 MOV #50,##FATAL ;MOVE TO MAILBOX # ***** 50 *****
795 002654 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
796 002656 000000 HALT ;PRIORITY NOT ZERO

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799                                     ; TO SCOPE REPLACE HALT W/ 240
800                                     ; AND REPLACE NEXT INST W/ 726
801 002660 012706 000500 58: MOV #BUFF,SP ;
802 002664 012767 002702 175116 MOV #RETE,RTRAP ;
803 002672 012767 000357 175112 MOV #357,RTRAP+2 ;SET NEW "CC" AND PRIORITY
804 002700 000007 TRAPA ;TRAP HERE
805 002702 RETG: ;
806 002702 100405 BMI 18 ;
807 002704 012737 000051 000302 MOV #51,##FATAL ;MOVE TO MAILBOX # ***** 51 *****
808 002712 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
809 002714 000000 HALT ;N NOT SET
810 ; TO SCOPE REPLACE HALT W/ 240
811 ; AND REPLACE NEXT INST W/ 707
812 002716 18: BEQ 28 ;
813 002716 001405 MOV #52,##FATAL ;MOVE TO MAILBOX # ***** 52 *****
814 002720 012737 000052 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
815 002726 005212 HALT ;Z NOT SET
816 002730 000000 ; TO SCOPE REPLACE HALT W/ 240
817 ; AND REPLACE NEXT INST W/ 701
818 002732 28: BVS 38 ;
819 002732 102405 MOV #53,##FATAL ;MOVE TO MAILBOX # ***** 53 *****
820 002734 012737 000053 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
821 002742 005212 HALT ;V NOT SET
822 002744 000000 ; TO SCOPE REPLACE HALT W/ 240
823 ; AND REPLACE NEXT INST W/ 673
824 002746 38: BCS 48 ;
825 002746 103405 MOV #54,##FATAL ;MOVE TO MAILBOX # ***** 54 *****
826 002750 012737 000054 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
827 002756 005212 HALT ;C NOT SET
828 002760 000000 ; TO SCOPE REPLACE HALT W/ 240
829 ; AND REPLACE NEXT INST W/ 665
830 002762 016706 175010 48: MOV CC,SP ;
831 002766 042706 000017 BIC #17,SP ;
832 002772 022706 000340 CMP #340,SP ;
833 002776 001405 BEQ STPPA ;
834 003000 STPR: ;
835 003000 012737 000055 000302 MOV #55,##FATAL ;MOVE TO MAILBOX # ***** 55 *****
836 003006 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
837 003010 000000 HALT ;PRIORITY WAS CHANGED,OR WRONG #TSTNM
838 ; TO SCOPE REPLACE HALT W/ 240
839 ; AND REPLACE NEXT INST W/ 651
840 003012 012767 000012 174770 STPPA: MOV #12,10 ;
841 003020 005067 174766 CLR 12 ;
842 ;*****
843 ;TEST 12 TEST THAT A TRAP OCCURS FOR A "TRAP" INSTRUCTION
844 ;*****
845 003024 005237 000304 TST12: INC ##TESTN ;UPDATE TEST NUMBER
846 003030 022737 000012 000304 CMP #12,##TESTN ;SEQUENCE ERROR?
847 003036 001013 BNE TS13-12 ;BR TO ERROR HALT ON SEQ ERROR
848 003040 012767 000012 174742 MOV #12,10 ;
849 003046 005067 174740 CLR 12 ;
850 003052 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
851 003056 012767 003100 174750 MOV #RETA1,RTRAP1 ;RETURN LOCATION

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855 003064 104400 TRAP ;RESERVED INSTRUCTION, SHOULD TRAP
856 003066 012737 MOV #56,@@$FATAL ;MOVE TO MAILBOX # ***** 56 *****
857 003074 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
858 003076 000000 HALT ;TRAP DIDN'T TRAP,OR WRONG $TSTNM
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 757
860
861 003100 RETA1;
;*****
;TEST 13 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
;*****
864
865 003100 005237 000304 TST13: INC @@$TESTN ;UPDATE TEST NUMBER
866 003104 022737 000013 000304 CMP #13,@@$TESTN ;SEQUENCE ERROR?
867 003112 001011 BNE TST14-12 ;BR TO ERROR HALT ON SEQ ERROR
868 003114 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
869 003120 012767 003130 174706 MOV #RETB1,RTRAP1 ;RETURN POINTER
870 003126 104400 TRAP ;RESERVED INSTRUCTION
871 003130 020627 000474 RETB1: CMP SP,#BUFF-4 ;TEST DECREMENT OF SP
872 003134 001405 BEQ TST14
873 003136 012737 000057 000302 MOV #57,@@$FATAL ;MOVE TO MAILBOX # ***** 57 *****
874 003144 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
875 003146 000000 HALT ;NOT DECREMENTED TWO WORDS,OR WRONG $TSTNM
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 761
877
;*****
;TEST 14 TEST THAT PROPER P.C. IS SAVED
;*****
880
881 003150 005237 000304 TST14: INC @@$TESTN ;UPDATE TEST NUMBER
882 003154 022737 000014 000304 CMP #14,@@$TESTN ;SEQUENCE ERROR?
883 003162 001012 BNE TST15-12 ;BR TO ERROR HALT ON SEQ ERROR
884 003164 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
885 003170 012767 003200 174636 MOV #RETC1,RTRAP1 ;RETURN FROM TRAP POINTER
886 003176 104400 TRAP ;TRAP ON THIS INSTRUCTION
887 003200 022767 003200 175266 RETC1: CMP #,BUFF-4 ;CHECK INCREMENTED P.C.
888 003206 001405 BEQ TST15
889 003210 012737 000060 000302 MOV #60,@@$FATAL ;MOVE TO MAILBOX # ***** 60 *****
890 003216 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
891 003220 000000 HALT ;INCORRECT P.C.,OR WRONG $TSTNM
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 760
893
;*****
;TEST 15 TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
;*****
897 003222 005237 000304 TST15: INC @@$TESTN ;UPDATE TEST NUMBER
898 003226 022737 000015 000304 CMP #15,@@$TESTN ;SEQUENCE ERROR?
899 003234 001037 BNE TST16-12 ;BR TO ERROR HALT ON SEQ ERROR
900 003236 012706 000500 MOV #BUFF,SP ;SET UP
901 003242 012767 003260 174564 MOV #RETD1,RTRAP1 ;SET UP
902 003250 005067 174522 CLR CC ;CLEAR CC AND PRIORITY
903 003254 000257 CCC
904 003256 104400 TRAP ;TRAP
905 003260 026727 175212 000000 RETD1: CMP BUFF=2,#0 ;TEST THAT OLD STATUS WFNT TO STACK
906 003266 001405 BEQ 1$
907 003270 012737 000061 000302 MOV #61,@@$FATAL ;MOVE TO MAILBOX # ***** 61 *****
908 003276 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
909 003300 000000 HALT ;INCORRECT STATUS
; TO SCOPE REPLACE HALT W/ 240
910
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911
912 003302 012706 000500 1$ MOV #BUFF,SP ; AND REPLACE NEXT INST W/ 755
913 003306 012767 003324 174520 MOV #RETE1,RTRAP1 ;SET UP
914 003314 012767 000357 174454 MOV #357,CC ;SET PRIORITY
915 003322 104400 TRAP ;SET CC
916 003324 026727 175146 000357 RETE1: CMP BUFF=2,#357 ;COMPARES STATUS ON STACK
917 003332 001405 BEQ TST16
918 003334 012737 000062 000302 MOV #62,@@$FATAL ;MOVE TO MAILBOX # ***** 62 *****
919 003342 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
920 003344 000000 HALT ;INCORRECT STATUS ON STACK,OR WRONG $TSTNM
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 733
922
;*****
;TEST 16 TEST THAT "NEW" STATUS IS CORRECT
;*****
925
926 003346 005237 000304 TST16: INC @@$TESTN ;UPDATE TEST NUMBER
927 003352 022737 000016 000304 CMP #16,@@$TESTN ;SEQUENCE ERROR?
928 003360 001121 BNE TST17-12 ;BR TO ERROR HALT ON SEQ ERROR
929 003362 012706 000500 MOV #BUFF,SP ;SET UP
930 003366 012767 003402 174440 MOV #RETF1,RTRAP1 ;SET UP
931 003374 005067 174436 CLR RTRAP1+2 ;CLEAR FUTURE PRIORITY AND CC
932 003400 104400 TRAP
933 003402 RETF1: ;TEST FOR "C" CLEARED
934 003402 100005 BPL 1$
935 003404 012737 000063 000302 MOV #63,@@$FATAL ;MOVE TO MAILBOX # ***** 63 *****
936 003412 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
937 003414 000000 HALT ;C NOT CLEARED
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 761
939
940 003416 1$
941 003416 001005 BNE 2$
942 003420 012737 000064 000302 MOV #64,@@$FATAL ;MOVE TO MAILBOX # ***** 64 *****
943 003426 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
944 003430 000000 HALT ;Z NOT CLEARED
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 753
946
947 003432 2$
948 003432 102005 BVC 3$
949 003434 012737 000065 000302 MOV #65,@@$FATAL ;MOVE TO MAILBOX # ***** 65 *****
950 003442 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
951 003444 000000 HALT ;V NOT CLEARED
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 745
953
954 003446 3$
955 003446 103005 BCC 4$
956 003450 012737 000066 000302 MOV #66,@@$FATAL ;MOVE TO MAILBOX # ***** 66 *****
957 003456 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
958 003460 000000 HALT ;C NOT CLEARED
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 737
960
961 003462 032767 000340 174306 4$ BIT #340,CC ;TEST PRIORITY
962 003470 001405 BEQ 5$
963 003472 012737 000067 000302 MOV #67,@@$FATAL ;MOVE TO MAILBOX # ***** 67 *****
964 003500 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
965 003502 000000 HALT ;PRIORITY NOT ZERO
; TO SCOPE REPLACE HALT W/ 240
966
```

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967  
968 003504 012706 000500 58i MOV #BUFF,SP ; AND REPLACE NEXT INST W/ 726  
969 003510 012767 003526 174316 MOV #RETG1,RTRAP1  
970 003516 012767 000357 174312 MOV #357,RTRAP1+2 ;SET NEW "CC" AND PRIORITY  
971 003524 104400 TRAP ;TRAP HERE  
972 003526  
973 003526 100405 RETG1: BMI 18  
974 003530 012737 000070 000302 MOV #70,##$FATAL ;MOVE TO MAILBOX # ***** 70 *****  
975 003536 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
976 003540 000000 HALT ;N NOT SET  
977 ; TO SCOPE REPLACE HALT W/ 240  
978 ; AND REPLACE NEXT INST W/ 707  
979 003542 18i  
980 003542 001405 BEQ 28  
981 003544 012737 000071 000302 MOV #71,##$FATAL ;MOVE TO MAILBOX # ***** 71 *****  
982 003552 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
983 003554 000000 HALT ;Z NOT SET  
984 ; TO SCOPE REPLACE HALT W/ 240  
985 ; AND REPLACE NEXT INST W/ 701  
986 003556 28i  
987 003556 102405 BVS 38  
988 003560 012737 000072 000302 MOV #72,##$FATAL ;MOVE TO MAILBOX # ***** 72 *****  
989 003566 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
990 003570 000000 HALT ;V NOT SET  
991 ; TO SCOPE REPLACE HALT W/ 240  
992 ; AND REPLACE NEXT INST W/ 673  
993 003572 38i  
994 003572 103405 BCS 48  
995 003574 012737 000073 000302 MOV #73,##$FATAL ;MOVE TO MAILBOX # ***** 73 *****  
996 003602 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
997 003604 000000 HALT ;C NOT SET  
998 ; TO SCOPE REPLACE HALT W/ 240  
999 ; AND REPLACE NEXT INST W/ 665  
1000 003606 016706 174164 48i MOV CC,SP  
1001 003612 042706 000017 BIC #17,SP  
1002 003616 022706 000340 CMP #340,SP  
1003 003622 001405 BEQ TST17  
1004 003624 012737 000074 000302 MOV #74,##$FATAL ;MOVE TO MAILBOX # ***** 74 *****  
1005 003632 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
1006 003634 000000 HALT ;PRIORITY WAS CHANGED,OR WRONG $TSTNM  
1007 ; TO SCOPE REPLACE HALT W/ 240  
1008 ; AND REPLACE NEXT INST W/ 651  
1009  
1010 ; *****  
1011 ;TEST 17 TEST THAT ALL COMBINATION OF "TRAP" WILL CAUSE A TRAP  
1012 003636 005237 000304 TST17: INC ##$TESTN ;UPDATE TEST NUMBER  
1013 003642 022737 000017 000304 CMP #17,##$TESTN ;SEQUENCE ERROR?  
1014 003650 001011 BNE BR45 ;BR TO ERROR HALT ON SEQ ERROR  
1015 003652 012767 104400 000012 MOV #TRAP,RB1 ;INITIALIZE BASE TRAP INSTRUCTION  
1016 003660 012767 003706 174146 MOV #RA1,34 ;RETURN FROM TRAP TO RA1  
1017 003666 012706 000500 RC1: MOV #BUFF,SP ;SET UP STACK POINTER  
1018 003672 104400 RB1: TRAP ;TRAP INST WILL BE MODIFIED TO TRAP+377  
1019 003674 BR45:  
1020 003674 012737 000075 000302 MOV #75,##$FATAL ;MOVE TO MAILBOX # ***** 75 *****  
1021 003702 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
1022 003704 000000 HALT ;PREVIOUS INST FAILED TO TRAP,OR WRONG $TSTNM
```

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1023 ; TO SCOPE REPLACE HALT W/ 240  
1024 ; AND REPLACE NEXT INST W/ 761  
1025 003706 005267 177760 RA1: INC RB1 ;INCREMENT TRAP INSTRUCTION  
1026 003712 022767 104777 177752 CMP #104777,RB1 ;TRAP+377 TO UPPER LIMIT  
1027 003720 103362 BHIS RC1 ;HAVE WE TESTED ALL  
1028 003722 012767 000036 174104 MOV #36,34  
1029 003730 005067 174102 CLR 36  
1030 ; *****  
1031 ;TEST 20 TEST THAT A TRAP OCCURES ON AN "IOT" INSTRUCTION  
1032 ; *****  
1033 003734 005237 000304 TST20: INC ##$TESTN ;UPDATE TEST NUMBER  
1034 003740 022737 000020 000304 CMP #20,##$TESTN ;SEQUENCE ERROR?  
1035 003746 001006 BNE TST21=12 ;BR TO ERROR HALT ON SEQ ERROR  
1036 003750 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP  
1037 003754 012767 003776 174036 MOV #RETA2,RTRAP2 ;RETURN LOCATION  
1038 003762 000004 IOT ;RESERVE INSTRUCTION, SHOULD TRAP  
1039 003764 012737 000076 000302 MOV #76,##$FATAL ;MOVE TO MAILBOX # ***** 76 *****  
1040 003772 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
1041 003774 000000 HALT ;IOT DIDN'T TRAP,OR WRONG $TSTNM  
1042 ; TO SCOPE REPLACE HALT W/ 240  
1043 ; AND REPLACE NEXT INST W/ 764  
1044 003776 RETA2:  
1045 ; *****  
1046 ;TEST 21 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION  
1047 ; *****  
1048 003776 005237 000304 TST21: INC ##$TESTN ;UPDATE TEST NUMBER  
1049 004002 022737 000021 000304 CMP #21,##$TESTN ;SEQUENCE ERROR?  
1050 004010 001011 BNE TST22=12 ;BR TO ERROR HALT ON SEQ ERROR  
1051 004012 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP  
1052 004016 012767 004026 173774 MOV #RETB2,RTRAP2 ;RETURN POINTER  
1053 004024 000004 IOT ;RESERVED INSTRUCTION  
1054 004026 020627 000474 RETB2: CMP SP,#BUFF-4 ;TEST DECREMENT OF SP  
1055 004032 001405 BEQ TST22  
1056 004034 012737 000077 000302 MOV #77,##$FATAL ;MOVE TO MAILBOX # ***** 77 *****  
1057 004042 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
1058 004044 000000 HALT ;NOT DECREMENTED TWO WORDS,OR WRONG $TSTNM  
1059 ; TO SCOPE REPLACE HALT W/ 240  
1060 ; AND REPLACE NEXT INST W/ 761  
1061 ; *****  
1062 ;TEST 22 TEST THAT PROPER P.C. IS SAVED  
1063 ; *****  
1064 004046 005237 000304 TST22: INC ##$TESTN ;UPDATE TEST NUMBER  
1065 004052 022737 000022 000304 CMP #22,##$TESTN ;SEQUENCE ERROR?  
1066 004060 001012 BNE TST23=12 ;BR TO ERROR HALT ON SEQ ERROR  
1067 004062 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP  
1068 004066 012767 004076 173724 MOV #RETC2,RTRAP2 ;RETURN FROM TRAP POINTER  
1069 004074 000004 IOT ;TRAP ON THIS INSTRUCTION  
1070 004076 022767 004076 174370 RETC2: CMP #,,BUFF-4 ;CHECK FOR INCREMENTED P.C.  
1071 004104 001405 BEQ TST23  
1072 004106 012737 000100 000302 MOV #100,##$FATAL ;MOVE TO MAILBOX # ***** 100 *****  
1073 004114 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
1074 004116 000000 HALT ;INCORRECT P.C.,OR WRONG $TSTNM  
1075 ; TO SCOPE REPLACE HALT W/ 240  
1076 ; AND REPLACE NEXT INST W/ 760  
1077 ; *****  
1078 ;TEST 23 TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
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1079 ;*****
1080 004120 005237 000304 TST23: INC @:TESTN ;UPDATE TEST NUMBER
1081 004124 022737 000023 000304 CMP #23,@:TESTN ;SEQUENCE ERROR?
1082 004132 001040 BNE TST24-12 ;BR TO ERROR HALT ON SEQ ERROR
1083 004134 012706 000500 MOV #BUFF,SP ;SET UP
1084 004140 012767 004156 173652 MOV #RETD2,RTRAP2 ;SET UP
1085 004146 005067 173624 CLR CC ;CLEAR CC AND PRIORITY
1086 004152 000257 CCC
1087 004154 000004 IOT ;TRAP
1088 004156 026727 174314 000000 RETD2: CMP BUFF-2,#0 ;TEST THAT OLD STATUS WENT TO STACK
1089 004164 001405 REQ 1#
1090 004166 012737 000101 000302 MOV #101,@:SFATAL ;MOVE TO MAILBOX # ***** 101 *****
1091 004174 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1092 004176 000000 HALT ;INCORRECT STATUS
1093 ; TO SCOPE REPLACE HALT W/ 240
1094 ; AND REPLACE NEXT INST W/ 755
1095 004200 012706 000500 1# MOV #BUFF,SP ;SET UP
1096 004204 012767 004224 173606 MOV #RETE2,RTRAP2 ;SET UP
1097 004212 012767 000357 173556 MOV #357,CC ;SET PRIORITY
1098 004220 000277 SCC ;SET CC
1099 004222 000004 IOT ;TRAP
1100 004224 026727 174246 000357 RETE2: CMP BUFF-2,#357 ;COMPARES STATUS ON STACK
1101 004232 001405 BEQ TST24
1102 004234 012737 000102 000302 MOV #102,@:SFATAL ;MOVE TO MAILBOX # ***** 102 *****
1103 004242 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1104 004244 000000 HALT ;INCORRECT STATUS ON STACK,OR WRONG $TSTNM
1105 ; TO SCOPE REPLACE HALT W/ 240
1106 ; AND REPLACE NEXT INST W/ 732
1107 ;*****
1108 ;TEST 24 TEST THAT "NEW" STATUS IS CORRECT
1109 ;*****
1110 004246 005237 000304 TST24: INC @:TESTN ;UPDATE TEST NUMBER
1111 004252 022737 000024 000304 CMP #24,@:TESTN ;SEQUENCE ERROR?
1112 004260 001121 BNE BR46 ;BR TO ERROR HALT ON SEQ ERROR
1113 004262 012706 000500 MOV #BUFF,SP
1114 004266 012767 004302 173524 MOV #RETF2,RTRAP2
1115 004274 005067 173522 CLR RTRAP2+2 ;CLEAR FUTURE PRIORITY AND CC
1116 004300 000004 IOT
1117 004302 RETF2: ;TEST FOR "C" CLEARED
1118 004302 100005 BPL 1#
1119 004304 012737 000103 000302 MOV #103,@:SFATAL ;MOVE TO MAILBOX # ***** 103 *****
1120 004312 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1121 004314 000000 HALT ;N NOT CLEARED
1122 ; TO SCOPE REPLACE HALT W/ 240
1123 ; AND REPLACE NEXT INST W/ 761
1124 004316 1# BNE 2#
1125 004316 001005 MOV #104,@:SFATAL ;MOVE TO MAILBOX # ***** 104 *****
1126 004320 012737 000104 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
1127 004326 005212 HALT ;Z NOT CLEARED
1128 004330 000000 ; TO SCOPE REPLACE HALT W/ 240
1129 ; AND REPLACE NEXT INST W/ 753
1130
1131 004332 2# BYC 3#
1132 004332 102005 MOV #105,@:SFATAL ;MOVE TO MAILBOX # ***** 105 *****
1133 004334 012737 000105 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
1134 004342 005212
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1135 004344 000000 HALT ;V NOT CLEARED
1136 ; TO SCOPE REPLACE HALT W/ 240
1137 ; AND REPLACE NEXT INST W/ 745
1138 004346 3# BCC 4#
1139 004346 103005 MOV #106,@:SFATAL ;MOVE TO MAILBOX # ***** 106 *****
1140 004350 012737 000106 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
1141 004356 005212 HALT ;C NOT CLEARED
1142 004360 000000 ; TO SCOPE REPLACE HALT W/ 240
1143 ; AND REPLACE NEXT INST W/ 737
1144
1145 004362 032767 000340 173406 4# BIT #340,CC ;TEST PRIORITY
1146 004370 001405 BEQ 5#
1147 004372 012737 000107 000302 MOV #107,@:SFATAL ;MOVE TO MAILBOX # ***** 107 *****
1148 004400 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1149 004402 000000 HALT ;PRIORITY NOT ZERO
1150 ; TO SCOPE REPLACE HALT W/ 240
1151 ; AND REPLACE NEXT INST W/ 726
1152 004404 012706 000500 5# MOV #BUFF,SP
1153 004410 012767 004426 173402 MOV #RETG2,RTRAP2
1154 004416 012767 000357 173376 MOV #357,RTRAP2+2 ;SET NEW "CC" AND PRIORITY
1155 004424 000004 IOT ;TRAP HERE
1156 004426 RETG2:
1157 004426 100405 BMI 1#
1158 004430 012737 000110 000302 MOV #110,@:SFATAL ;MOVE TO MAILBOX # ***** 110 *****
1159 004436 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1160 004440 000000 HALT ;N NOT SET
1161 ; TO SCOPE REPLACE HALT W/ 240
1162 ; AND REPLACE NEXT INST W/ 707
1163 004442 1# BEQ 2#
1164 004442 001405 MOV #111,@:SFATAL ;MOVE TO MAILBOX # ***** 111 *****
1165 004444 012737 000111 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
1166 004452 005212 HALT ;Z NOT SET
1167 004454 000000 ; TO SCOPE REPLACE HALT W/ 240
1168 ; AND REPLACE NEXT INST W/ 701
1169
1170 004456 2# BVS 3#
1171 004456 102405 MOV #112,@:SFATAL ;MOVE TO MAILBOX # ***** 112 *****
1172 004460 012737 000112 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
1173 004466 005212 HALT ;V NOT SET
1174 004470 000000 ; TO SCOPE REPLACE HALT W/ 240
1175 ; AND REPLACE NEXT INST W/ 673
1176
1177 004472 3# BCS 4#
1178 004472 103405 MOV #113,@:SFATAL ;MOVE TO MAILBOX # ***** 113 *****
1179 004474 012737 000113 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
1180 004502 005212 HALT ;C NOT SET
1181 004504 000000 ; TO SCOPE REPLACE HALT W/ 240
1182 ; AND REPLACE NEXT INST W/ 665
1183
1184 004506 016706 173264 4# MOV CC,SP
1185 004512 042706 000017 BIC #17,SP
1186 004516 022706 000340 CMP #340,SP
1187 004522 001405 BEQ BR46A
1188 004524 BR46:
1189 004524 012737 000114 000302 MOV #114,@:SFATAL ;MOVE TO MAILBOX # ***** 114 *****
1190 004532 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
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1191 004534 000000 HALT ;PRIORITY WAS CHANGED,OR WRONG $TSTNM
1192 ; TO SCOPE REPLACE HALT W/ 240
1193 ; AND REPLACE NEXT INST W/ 651
1194 004536 012767 000022 173254 BR46A1 MOV #22,20 ;,+2
1195 004544 005067 173252 CLR 22 ;HALT
1196 ;*****
1197 ;TEST 25 TEST THAT A TRAP OCCURS ON AN EMT INSTRUCTION
1198 ;*****
1199 004550 005237 000304 TST25: INC ##$TESTN ;UPDATE TEST NUMBER
1200 004554 022737 000025 000304 CMP #25,##$TESTN ;SEQUENCE ERROR?
1201 004562 001006 BNE TST26-12 ;BR TO ERROR HALT ON SEQ ERROR
1202 004564 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1203 004570 012767 004612 173232 MOV #RETA3,RTRAP3 ;RETURN LOCATION
1204 004576 104000 EMT ;RESERVE INSTRUCTION, SHOULD TRAP
1205 004600 012737 000115 000302 MOV #115,##$FATAL ;MOVE TO MAILBOX # ***** 115 *****
1206 004606 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1207 004610 000000 HALT ;EMT DIDN'T TRAP,OR WRONG $TSTNM
1208 ; TO SCOPE REPLACE HALT W/ 240
1209 ; AND REPLACE NEXT INST W/ 764
1210 004612 RETA3:
1211 ;*****
1212 ;TEST 26 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
1213 ;*****
1214 004612 005237 000304 TST26: INC ##$TESTN ;UPDATE TEST NUMBER
1215 004616 022737 000025 000304 CMP #26,##$TESTN ;SEQUENCE ERROR?
1216 004624 001011 BNE TST27-12 ;BR TO ERROR HALT ON SEQ ERROR
1217 004626 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1218 004632 012767 004642 173170 MOV #RETB3,RTRAP3 ;RETURN POINTER
1219 004640 104000 EMT ;RESERVED INSTRUCTION
1220 004642 020627 000474 RETB3: CMP SP,#BUFF-4 ;TEST DECREMENT OF SP
1221 004646 001405 BEQ TST27
1222 004650 012737 000116 000302 MOV #116,##$FATAL ;MOVE TO MAILBOX # ***** 116 *****
1223 004656 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1224 004660 000000 HALT ;NOT DECREMENTED TWO WORDS,OR WRONG $TSTNM
1225 ; TO SCOPE REPLACE HALT W/ 240
1226 ; AND REPLACE NEXT INST W/ 761
1227 ;*****
1228 ;TEST 27 TEST THAT PROPER P.C. IS SAVED
1229 ;*****
1230 004662 005237 000304 TST27: INC ##$TESTN ;UPDATE TEST NUMBER
1231 004666 022737 000027 000304 CMP #27,##$TESTN ;SEQUENCE ERROR?
1232 004674 001012 BNE TST30-12 ;BR TO ERROR HALT ON SEQ ERROR
1233 004676 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1234 004702 012767 004712 173120 MOV #RETC3,RTRAP3 ;RTURN FROM TRAP POINTER
1235 004710 104000 EMT ;TRAP ON THIS INSTRUCTION
1236 004712 022767 004712 173554 RETC3: CMP #,BUFF-4 ;CHECK FOR INCREMENTED P.C.
1237 004720 001405 BEQ TST30
1238 004722 012737 000117 000302 MOV #117,##$FATAL ;MOVE TO MAILBOX # ***** 117 *****
1239 004730 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1240 004732 000000 HALT ;INCORRECT P.C.,OR WRONG $TSTNM
1241 ; TO SCOPE REPLACE HALT W/ 240
1242 ; AND REPLACE NEXT INST W/ 760
1243 ;*****
1244 ;TEST 30 TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
1245 ;*****
1246 004734 005237 000304 TST30: INC ##$TESTN ;UPDATE TEST NUMBER
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1247 004740 022737 000030 000304 CMP #30,##$TESTN ;SEQUENCE ERROR?
1248 004746 001040 BNE TST31-12 ;BR TO ERROR HALT ON SEQ ERROR
1249 004750 012706 000500 MOV #BUFF,SP ;SET UP
1250 004754 012767 004772 173046 MOV #RETD3,RTRAP3 ;SET UP
1251 004762 005067 173010 CLR CC ;CLEAR CC AND PRIORITY
1252 004766 000257 CCC
1253 004770 104000 EMT ;TRAP
1254 004772 026727 173500 000000 RETD3: CMP BUFF-2,#0 ;TEST THAT OLD STATUS WENT TO STACK
1255 005000 001405 BEQ 18
1256 005002 012737 000120 000302 MOV #120,##$FATAL ;MOVE TO MAILBOX # ***** 120 *****
1257 005010 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1258 005012 000000 HALT ;INCORRECT STATUS
1259 ; TO SCOPE REPLACE HALT W/ 240
1260 ; AND REPLACE NEXT INST W/ 755
1261 005014 012706 000500 18: MOV #BUFF,SP ;SET UP
1262 005020 012767 005040 173002 MOV #RETE3,RTRAP3 ;SET UP
1263 005026 012767 000357 172742 MOV #357,CC ;SET PRIORITY
1264 005034 000277 SCC ;SET CC
1265 005036 104000 EMT ;TRAP
1266 005040 026727 173432 000357 RETE3: CMP BUFF-2,#357 ;COMPARES STATUS ON STACK
1267 005046 001405 BEQ TST31
1268 005050 012737 000121 000302 MOV #121,##$FATAL ;MOVE TO MAILBOX # ***** 121 *****
1269 005056 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1270 005060 000000 HALT ;INCORRECT STATUS ON STACK,OR WRONG $TSTNM
1271 ; TO SCOPE REPLACE HALT W/ 240
1272 ; AND REPLACE NEXT INST W/ 732
1273 ;*****
1274 ;TEST 31 TEST THAT "NEW" STATUS IS CORRECT
1275 ;*****
1276 005062 005237 000304 TST31: INC ##$TESTN ;UPDATE TEST NUMBER
1277 005066 022737 000031 000304 CMP #31,##$TESTN ;SEQUENCE ERROR?
1278 005074 001117 BNE TST32-12 ;BR TO ERROR HALT ON SEQ ERROR
1279 005076 012706 000500 MOV #BUFF,SP ;SET UP
1280 005102 012767 005116 172720 MOV #RETF3,RTRAP3 ;SET UP
1281 005110 005067 172716 CLR RTRAP3+2 ;CLEAR FUTURE PRIORITY AND CC
1282 005114 104000 EMT ;TEST FOR "C" CLEARED
1283 005116 000000 RETF3:
1284 005120 100005 BPL 18
1285 005120 012737 000122 000302 MOV #122,##$FATAL ;MOVE TO MAILBOX # ***** 122 *****
1286 005126 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1287 005130 000000 HALT ;C NOT CLEARED
1288 ; TO SCOPE REPLACE HALT W/ 240
1289 ; AND REPLACE NEXT INST W/ 761
1290 005132 18:
1291 005132 001005 BNE 28
1292 005134 012737 000123 000302 MOV #123,##$FATAL ;MOVE TO MAILBOX # ***** 123 *****
1293 005142 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1294 005144 000000 HALT ;Z NOT CLEARED
1295 ; TO SCOPE REPLACE HALT W/ 240
1296 ; AND REPLACE NEXT INST W/ 753
1297 005146 28:
1298 005146 102005 BVC 38
1299 005150 012737 000124 000302 MOV #124,##$FATAL ;MOVE TO MAILBOX # ***** 124 *****
1300 005156 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1301 005160 000000 HALT ;V NOT CLEARED
1302 ; TO SCOPE REPLACE HALT W/ 240
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1303 ; AND REPLACE NEXT INST W/ 745
1304 005162 38;
1305 005162 103005
1306 005164 012737 000125 000302 MOV #125,##$FATAL ;MOVE TO MAILBOX # ***** 125 *****
1307 005172 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1308 005174 000000 HALT ;C NOT CLEARED
1309 ; TO SCOPE REPLACE HALT W/ 240
1310 ; AND REPLACE NEXT INST W/ 737
1311 005176 032767 000340 172572 48; BIT #340,CC ;TEST PRIORITY
1312 005204 001405 BEQ 58
1313 005206 012737 000126 000302 MOV #126,##$FATAL ;MOVE TO MAILBOX # ***** 126 *****
1314 005214 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1315 005216 000000 HALT ;PRIORITY NOT ZERO
1316 ; TO SCOPE REPLACE HALT W/ 240
1317 ; AND REPLACE NEXT INST W/ 726
1318 005220 012706 000500 58; MOV #BUFF,SP
1319 005224 012767 005242 172576 MOV #RETG3,RTRAP3
1320 005232 012767 000357 172572 MOV #357,RTRAP3+2 ;SET NEW "CC" AND PRIORITY
1321 005240 104000 EMT ;TRAP HERE
1322 005242 RETG3;
1323 005242 100405 BMI 18
1324 005244 012737 000127 000302 MOV #127,##$FATAL ;MOVE TO MAILBOX # ***** 127 *****
1325 005252 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1326 005254 000000 HALT ;N NOT SET
1327 ; TO SCOPE REPLACE HALT W/ 240
1328 ; AND REPLACE NEXT INST W/ 707
1329 005256 18;
1330 005256 001405 BEQ 28
1331 005260 012737 000130 000302 MOV #130,##$FATAL ;MOVE TO MAILBOX # ***** 130 *****
1332 005266 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1333 005270 000000 HALT ;Z NOT SET
1334 ; TO SCOPE REPLACE HALT W/ 240
1335 ; AND REPLACE NEXT INST W/ 701
1336 005272 28;
1337 005272 102405 BVS 38
1338 005274 012737 000131 000302 MOV #131,##$FATAL ;MOVE TO MAILBOX # ***** 131 *****
1339 005302 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1340 005304 000000 HALT ;V NOT SET
1341 ; TO SCOPE REPLACE HALT W/ 240
1342 ; AND REPLACE NEXT INST W/ 673
1343 005306 38;
1344 005306 103405 BCS 48
1345 005310 012737 000132 000302 MOV #132,##$FATAL ;MOVE TO MAILBOX # ***** 132 *****
1346 005316 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1347 005320 000000 HALT ;C NOT SET
1348 ; TO SCOPE REPLACE HALT W/ 240
1349 ; AND REPLACE NEXT INST W/ 665
1350 005322 000257 48; CCC
1351 005324 022767 000340 172444 CMP #340,CC
1352 005332 001405 BEQ TST32
1353 005334 012737 000133 000302 MOV #133,##$FATAL ;MOVE TO MAILBOX # ***** 133 *****
1354 005342 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1355 005344 000000 HALT ;PRIORITY WAS CHANGED,OR WRONG $TSTNM
1356 ; TO SCOPE REPLACE HALT W/ 240
1357 ; AND REPLACE NEXT INST W/ 653
1358 ;*****
```

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1359 ;TEST 32 TEST THAT ALL COMBINATION OF EMT WILL CAUSE A TRAP
1360 ;*****
1361 005346 005237 000304 TST32: INC ##$TESTN ;UPDATE TEST NUMBER
1362 005352 022737 000032 000304 CMP #32,##$TESTN ;SEQUENCE ERROR?
1363 005360 001011 BNE BR47 ;BR TO ERROR HALT ON SEQ ERROR
1364 005362 012767 104000 000012 MOV #EMT,RB ;INITIALIZE BASE EMT INSTRUCTION
1365 005370 012767 005416 172432 MOV #RA,30 ;RETURN FROM TRAP TO RA
1366 005376 012706 000500 RC; MOV #BUFF,SP ;SET UP STACK POINTER
1367 005402 104000 RB; EMT ;TRAP INST. WILL BE MODIFIED TO EMT+377
1368 005404 BR47;
1369 005404 012737 000134 000302 MOV #134,##$FATAL ;MOVE TO MAILBOX # ***** 134 *****
1370 005412 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1371 005414 000000 HALT ;PREVIOUS INST FAILED TO TRAP,OR WRONG $TSTNM
1372 ; TO SCOPE REPLACE HALT W/ 240
1373 ; AND REPLACE NEXT INST W/ 761
1374 005416 005267 177760 RA; INC RB ;INCREMENT TRAP INSTRUCTION
1375 005422 022767 104377 177752 CMP #104377,RB ;EMT+377 TO EMT?
1376 005430 103362 BHS RC ;HAVE WE TESTED ALL
1377 ; YES
1378 005432 012767 000032 172370 MOV #32,30 ;/
1379 005440 005067 172366 CLR 32 ;HALT
1380 ;*****
1381 ;TEST 33 TEST THAT A TRAP OCCURES ON AN "TRACE-TRT" INSTRUCTION
1382 ;*****
1383 005444 005237 000304 TST33: INC ##$TESTN ;UPDATE TEST NUMBER
1384 005450 022737 000033 000304 CMP #33,##$TESTN ;SEQUENCE ERROR?
1385 005456 001006 BNE TST34-12 ;BR TO ERROR HALT ON SEQ ERROR
1386 005460 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1387 005464 012767 005506 172322 MOV #RETA4,RTRAP4 ;RETURN LOCATION
1388 005472 000003 TRT ;RESERVED INSTRUCTION, SHOULD TRAP
1389 005474 012737 000135 000302 MOV #135,##$FATAL ;MOVE TO MAILBOX # ***** 135 *****
1390 005502 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1391 005504 000000 HALT ;TRT DIDN'T TRAP,OR WRONG $TSTNM
1392 ; TO SCOPE REPLACE HALT W/ 240
1393 ; AND REPLACE NEXT INST W/ 764
1394 005506 RETA4;
1395 ;*****
1396 ;TEST 34 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
1397 ;*****
1398 005506 005237 000304 TST34: INC ##$TESTN ;UPDATE TEST NUMBER
1399 005512 022737 000034 000304 CMP #34,##$TESTN ;SEQUENCE ERROR?
1400 005520 001011 BNE TST35-12 ;BR TO ERROR HALT ON SEQ ERROR
1401 005522 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1402 005526 012767 005536 172260 MOV #RETB4,RTRAP4 ;RETURN POINTER
1403 005534 000003 TRT ;RESERVED INSTRUCTION
1404 005536 020627 000474 RETB4: CMP SP,#BUFF-4 ;TEST DECREMENT OF SP
1405 005542 001405 BEQ TST35
1406 005544 012737 000136 000302 MOV #136,##$FATAL ;MOVE TO MAILBOX # ***** 136 *****
1407 005552 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1408 005554 000000 HALT ;NOT DECREMENTED TWO WORDS,OR WRONG $TSTNM
1409 ; TO SCOPE REPLACE HALT W/ 240
1410 ; AND REPLACE NEXT INST W/ 761
1411 ;*****
1412 ;TEST 35 TEST THAT PROPER P.C. IS SAVED
1413 ;*****
1414 005556 005237 000304 TST35: INC ##$TESTN ;UPDATE TEST NUMBER
```

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1415 005562 022737 000035 000304 CMP #35,##$TESTN ;SEQUENCE ERROR?  
1416 005570 001012 BNE TST36=12 ;BR TO ERROR HALT ON SEQ ERROR  
1417 005572 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP  
1418 005576 012767 005606 172210 MOV #RETC4,RTRAP4 ;RETURN FROM TRAP POINTER  
1419 005604 000003 TRT ;TRAP ON THIS INSTRUCTION  
1420 005606 022767 005606 172660 RETC4: CMP #, ,BUFF=4 ;CHECK FOR INCREMENTED P.C.  
1421 005614 001405 BEQ TST36  
1422 005616 012737 000137 000302 MOV #137,##$FATAL ;MOVE TO MAILBOX # ***** 137 *****  
1423 005624 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
1424 005626 000000 HALT ;INCORRECT P.C.,OR WRONG $STNM  
; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 760  
1426  
1427  
1428 ;*****  
;TEST 36 TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK  
;*****  
1429  
1430 005630 005237 000304 TST36: INC ##$TESTN ;UPDATE TEST NUMBER  
1431 005634 022737 000036 000304 CMP #36,##$TESTN ;SEQUENCE ERROR?  
1432 005642 001040 BNE TST37=12 ;BR TO ERROR HALT ON SEQ ERROR  
1433 005644 012706 000500 MOV #BUFF,SP ;SET UP  
1434 005650 012767 005666 172136 MOV #RETD4,RTRAP4 ;SET UP  
1435 005656 005067 172114 CLR CC ;CLEAR CC AND PRIORITY  
1436 005662 000257 CCC  
1437 005664 000003 TRT ;TRAP  
1438 005666 026727 172604 000000 RETD4: CMP BUFF=2,#0 ;TEST THAT OLD STATUS WENT TO STACK  
;TEST FOR ALL ZEROS  
1439  
1440 005674 001405 BEQ 18  
1441 005676 012737 000140 000302 MOV #140,##$FATAL ;MOVE TO MAILBOX # ***** 140 *****  
1442 005704 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
1443 005706 000000 HALT ;INCORRECT STATUS  
; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 755  
1444  
1445  
1446 005710 012706 000500 18: MOV #BUFF,SP ;SET UP  
1447 005714 012767 005734 172072 MOV #RETE4,RTRAP4 ;SET UP  
1448 005722 012767 000357 172046 MOV #357,CC ;SET PRIORITY  
1449 005730 000277 SCC ;SET-SET CC  
1450 005732 000003 TRT ;TRAP  
1451 005734 026727 172536 000357 RETE4: CMP BUFF=2,#357 ;COMPARES STATUS ON STACK  
1452 005742 001405 BEQ TST37  
1453 005744 012737 000141 000302 MOV #141,##$FATAL ;MOVE TO MAILBOX # ***** 141 *****  
1454 005752 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR,OR WRONG $STNM  
1455 005754 000000 HALT ;INCORRECT STATUS ON STACK,OR WRONG $STNM  
; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 732  
1456  
1457 ;*****  
;TEST 37 TEST THAT "NEW" STATUS IS CORRECT  
;*****  
1458  
1459  
1460  
1461 005756 005237 000304 TST37: INC ##$TESTN ;UPDATE TEST NUMBER  
1462 005762 022737 000037 000304 CMP #37,##$TESTN ;SEQUENCE ERROR?  
1463 005770 001121 BNE BR51 ;BR TO ERROR HALT ON SEQ ERROR  
1464 005772 012706 000500 MOV #BUFF,SP  
1465 005776 012767 006012 172010 MOV #RETF4,RTRAP4  
1466 006004 005067 172006 CLR RTRAP4+2 ;CLEAR FUTURE PRIORITY AND CC  
1467 006010 000003 TRT  
1468 006012 RETF4: ;TEST FOR "C" CLEARED  
1469 006012 100005 BPL 18  
1470 006014 012737 000142 000302 MOV #142,##$FATAL ;MOVE TO MAILBOX # ***** 142 *****
```

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1471 006022 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
1472 006024 000000 HALT ;C NOT CLEARED  
1473 ; TO SCOPE REPLACE HALT W/ 240  
1474 ; AND REPLACE NEXT INST W/ 761  
1475 006026 18: BNE 28  
1476 006026 001005 MOV #143,##$FATAL ;MOVE TO MAILBOX # ***** 143 *****  
1477 006030 012737 000143 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR  
1478 006036 005212 HALT ;Z NOT CLEARED  
1479 006040 000000 ; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 753  
1480  
1481  
1482 006042 28: BVC 38  
1483 006042 102005 MOV #144,##$FATAL ;MOVE TO MAILBOX # ***** 144 *****  
1484 006044 012737 000144 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR  
1485 006052 005212 HALT ;V NOT CLEARED  
1486 006054 000000 ; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 745  
1487  
1488  
1489 006056 38: BCC 48  
1490 006056 103005 MOV #145,##$FATAL ;MOVE TO MAILBOX # ***** 145 *****  
1491 006060 012737 000145 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR  
1492 006066 005212 HALT ;C NOT CLEARED  
1493 006070 000000 ; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 737  
1494  
1495  
1496 006072 032767 000340 171676 48: BIT #340,CC ;TEST PRIORITY  
1497 006100 001405 BEQ 58  
1498 006102 012737 000146 000302 MOV #146,##$FATAL ;MOVE TO MAILBOX # ***** 146 *****  
1499 006110 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
1500 006112 000000 HALT ;PRIORITY NOT ZERO  
; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 726  
1501  
1502  
1503 006114 012706 000500 58: MOV #BUFF,SP  
1504 006120 012767 006136 171666 MOV #RETG4,RTRAP4  
1505 006126 012767 000357 171662 MOV #357,RTRAP4+2 ;SET NEW "CC" AND PRIORITY  
1506 006134 000003 TRT ;TRAP HERE  
1507 006136 RETG4: ;  
1508 006136 100405 BMI 18  
1509 006140 012737 000147 000302 MOV #147,##$FATAL ;MOVE TO MAILBOX # ***** 147 *****  
1510 006146 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
1511 006150 000000 HALT ;N NOT SET  
; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 707  
1512  
1513  
1514 006152 18: BEQ 28  
1515 006152 001405 MOV #150,##$FATAL ;MOVE TO MAILBOX # ***** 150 *****  
1516 006154 012737 000150 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR  
1517 006162 005212 HALT ;Z NOT SET  
1518 006164 000000 ; TO SCOPE REPLACE HALT W/ 240  
; AND REPLACE NEXT INST W/ 701  
1519  
1520  
1521 006166 28: BVS 38  
1522 006166 102405 MOV #151,##$FATAL ;MOVE TO MAILBOX # ***** 151 *****  
1523 006170 012737 000151 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR  
1524 006176 005212 HALT ;V NOT SET  
1525 006200 000000 ; TO SCOPE REPLACE HALT W/ 240  
1526
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1527 ; AND REPLACE NEXT INST W/ 673
1528 006202 38;
1529 006202 103405 BCS 48
1530 006204 012737 000152 000302 MOV #152,0##FATAL ;MOVE TO MAILBOX # ***** 152 *****
1531 006212 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1532 006214 000000 HALT ;C NOT SET
1533 ; TO SCOPE REPLACE HALT W/ 240
1534 ; AND REPLACE NEXT INST W/ 665
1535 006216 016706 171554 48; MOV CC,SP
1536 006222 042706 000017 BIC #17,SP
1537 006226 022706 000340 CMP #340,SP
1538 006232 001405 BEQ BR51A
1539 006234 BR51;
1540 006234 012737 000153 000302 MOV #153,0##FATAL ;MOVE TO MAILBOX # ***** 153 *****
1541 006242 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1542 006244 000000 HALT ;PRIORITY WAS CHANGED,OR WRONG $TSTNM
1543 ; TO SCOPE REPLACE HALT W/ 240
1544 ; AND REPLACE NEXT INST W/ 651
1545 006246 012767 000016 171540 BR51A; MOV #16,14
1546 006254 005067 171536 CLR 16
1547
1548 ;PDP-11 ILLEGAL AND ADDRESS INSTRUCTION TEST
1549 ;ALL INSTRUCTIONS THAT ARE RESERVED
1550 ;SHOULD TRAP TO LOCATION 4, AND THE
1551 ;PC THAT POINTS TO THE TRAPPING INSTRUCTION
1552 ;SHOULD BE PLACED ON THE STACK
1553
1554 ;*****
1555 ;TEST 40 TEST THAT A TRAP OCCURS ON AN ILLEGAL INSTRUCTION
1556 ;*****
1557 006260 005237 000304 TST40; INC 0##TESTN ;UPDATE TEST NUMBER
1558 006264 022737 000040 000304 CMP #40,0##TESTN ;SEQUENCE ERROR?
1559 006272 001006 BNE TST41-12 ;BR TO ERROR HALT ON SEQ ERROR
1560 006274 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1561 006300 012767 006322 171476 MOV #RETAS,RTRAPS ;RETURN LOCATION
1562 006306 000100 JMP %0 ;ILLEGAL INSTRUCTION, SHOULD TRAP
1563 006310 012737 000154 000302 MOV #154,0##FATAL ;MOVE TO MAILBOX # ***** 154 *****
1564 006316 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1565 006320 000000 HALT ;ILLEGAL INSTRUCTION DIDN'T TRAP,OR WRONG $TSTNM
1566 ; TO SCOPE REPLACE HALT W/ 240
1567 ; AND REPLACE NEXT INST W/ 764
1568 006322 RETAS;
1569 ;*****
1570 ;TEST 41 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
1571 ;*****
1572 006322 005237 000304 TST41; INC 0##TESTN ;UPDATE TEST NUMBER
1573 006326 022737 000041 000304 CMP #41,0##TESTN ;SEQUENCE ERROR?
1574 006334 001011 BNE TST42-12 ;BR TO ERROR HALT ON SEQ ERROR
1575 006336 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1576 006342 012767 006352 171434 MOV #RETB5,RTRAPS ;RETURN POINTER
1577 006350 000100 JMP %0 ;RESERVED INSTRUCTION
1578 006352 020627 000474 RETB5; CMP SP,#BUFF-4 ;TEST DECREMENT OF SP
1579 006356 001405 BEQ TST42
1580 006360 012737 000155 000302 MOV #155,0##FATAL ;MOVE TO MAILBOX # ***** 155 *****
1581 006366 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1582 006370 000000 HALT ;NOT DECREMENTED TWO WORDS,OR WRONG $TSTNM
```

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1583 ; TO SCOPE REPLACE HALT W/ 240
1584 ; AND REPLACE NEXT INST W/ 761
1585 ;*****
1586 ;TEST 42 TEST THAT PROPER P.C. IS SAVED
1587 ;*****
1588 006372 005237 000304 TST42; INC 0##TESTN ;UPDATE TEST NUMBER
1589 006376 022737 000042 000304 CMP #42,0##TESTN ;SEQUENCE ERROR?
1590 006404 001012 BNE TST43-12 ;BR TO ERROR HALT ON SEQ ERROR
1591 006406 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1592 006412 012767 006422 171364 MOV #RETCS,RTRAPS ;RETURN FROM TRAP POINTER
1593 006420 000100 JMP %0 ;TRAP ON THIS INSTRUCTION
1594 006422 022767 006422 172044 RETCS; CMP #,BUFF-4 ;CHECK FOR INCREMENTED P.C.
1595 006430 001405 BEQ TST43
1596 006432 012737 000156 000302 MOV #156,0##FATAL ;MOVE TO MAILBOX # ***** 156 *****
1597 006440 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1598 006442 000000 HALT ;INCORRECT P.C.,OR WRONG $TSTNM
1599 ; TO SCOPE REPLACE HALT W/ 240
1600 ; AND REPLACE NEXT INST W/ 760
1601 ;*****
1602 ;TEST 43 TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
1603 ;*****
1604 006444 005237 000304 TST43; INC 0##TESTN ;UPDATE TEST NUMBER
1605 006450 022737 000043 000304 CMP #43,0##TESTN ;SEQUENCE ERROR?
1606 006456 001040 BNE TST44-12 ;BR TO ERROR HALT ON SEQ ERROR
1607 006460 012706 000500 MOV #BUFF,SP ;SET UP
1608 006464 012767 006502 171312 MOV #RETD5,RTRAPS ;SET UP
1609 006472 005067 171300 CLR CC ;CLEAR CC AND PRIORITY
1610 006476 000257 CCC
1611 006500 000100 JMP %0 ;TRAP
1612 006502 026727 171770 000000 RETD5; CMP BUFF-2,%0 ;TEST THAT OLD STATUS WENT TO STACK
1613 006510 001405 BEQ 16
1614 006512 012737 000157 000302 MOV #157,0##FATAL ;MOVE TO MAILBOX # ***** 157 *****
1615 006520 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1616 006522 000000 HALT ;INCORRECT STATUS
1617 ; TO SCOPE REPLACE HALT W/ 240
1618 ; AND REPLACE NEXT INST W/ 755
1619 006524 012706 000500 16; MOV #BUFF,SP ;SET UP
1620 006530 012767 006550 171246 MOV #RETES,RTRAPS ;SET UP
1621 006536 012767 000357 171232 MOV #357,CC ;SET PRIORITY
1622 006544 000277 SCC ;SET CC
1623 006546 000100 JMP %0 ;TRAP
1624 006550 026727 171722 000357 RETES; CMP BUFF-2,#357 ;COMPARES STATUS ON STACK
1625 006556 001405 BEQ TST44
1626 006560 012737 000160 000302 MOV #160,0##FATAL ;MOVE TO MAILBOX # ***** 160 *****
1627 006566 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1628 006570 000000 HALT ;INCORRECT STATUS ON STACK,OR WRONG $TSTNM
1629 ; TO SCOPE REPLACE HALT W/ 240
1630 ; AND REPLACE NEXT INST W/ 732
1631 ;*****
1632 ;TEST 44 TEST THAT "NEW" STATUS IS CORRECT
1633 ;*****
1634 006572 005237 000304 TST44; INC 0##TESTN ;UPDATE TEST NUMBER
1635 006576 022737 000044 000304 CMP #44,0##TESTN ;SEQUENCE ERROR?
1636 006604 001117 BNE TST45-12 ;BR TO ERROR HALT ON SEQ ERROR
1637 006606 012706 000500 MOV #BUFF,SP
1638 006612 012767 006626 171164 MOV #RETF5,RTRAPS
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1639 006620 005067 171162 CLR RTRAP5+2 ;CLEAR FUTURE PRIORITY AND CC
1640 006624 000100 JMP %0
1641 006626 RETFS; ;TEST FOR "C" CLEARED
1642 006626 100005 BPL 18
1643 006630 012737 000161 000302 MOV #161,%%FATAL ;MOVE TO MAILBOX # ***** 161 *****
1644 006636 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1645 006640 000000 HALT ;C NOT CLEARED
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 761
1646
1647
1648 006642 18;
1649 006642 001005 BNE 28
1650 006644 012737 000162 000302 MOV #162,%%FATAL ;MOVE TO MAILBOX # ***** 162 *****
1651 006652 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1652 006654 000000 HALT ;Z NOT CLEARED
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 753
1653
1654
1655 006656 28;
1656 006656 102005 BVC 38
1657 006660 012737 000163 000302 MOV #163,%%FATAL ;MOVE TO MAILBOX # ***** 163 *****
1658 006666 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1659 006670 000000 HALT ;V NOT CLEARED
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 745
1660
1661
1662 006672 38;
1663 006672 103005 BCC 48
1664 006674 012737 000164 000302 MOV #164,%%FATAL ;MOVE TO MAILBOX # ***** 164 *****
1665 006702 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1666 006704 000000 HALT ;C NOT CLEARED
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 737
1667
1668
1669 006706 032767 000357 171062 48; BIT #357,CC
1670 006714 001405 BEQ 58
1671 006716 012737 000165 000302 MOV #165,%%FATAL ;MOVE TO MAILBOX # ***** 165 *****
1672 006724 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1673 006726 000000 HALT ;PRIORITY NOT ZERO
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 726
1674
1675
1676 006730 012706 000500 58; MOV #BUFF,SP
1677 006734 012767 006752 171042 MOV #RTRAP5
1678 006742 012767 000357 171036 MOV #357,RTRAP5+2 ;SET NEW "CC" AND PRIORITY
1679 006750 000100 JMP %0 ;TRAP HERE
1680
1681 006752 100405 RETGS;
1682 006754 012737 000166 000302 BMT 18
1683 006762 005212 MOV #166,%%FATAL ;MOVE TO MAILBOX # ***** 166 *****
1684 006764 000000 HALT (R2) ;SET MSGTYP TO FATAL ERROR
;N NOT SET
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 707
1685
1686
1687 006766 18;
1688 006766 001405 BEQ 28
1689 006770 012737 000167 000302 MOV #167,%%FATAL ;MOVE TO MAILBOX # ***** 167 *****
1690 006776 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1691 007000 000000 HALT ;Z NOT SET
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 701
1692
1693
1694 007002 28;
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1695 007002 102405 BVS 38
1696 007004 012737 000170 000302 MOV #170,%%FATAL ;MOVE TO MAILBOX # ***** 170 *****
1697 007012 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1698 007014 000000 HALT ;V NOT SET
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 673
1699
1700
1701 007016 38;
1702 007016 103405 BCS 48
1703 007020 012737 000171 000302 MOV #171,%%FATAL ;MOVE TO MAILBOX # ***** 171 *****
1704 007026 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1705 007030 000000 HALT ;C NOT SET
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 665
1706
1707
1708 007032 016706 170740 48; MOV CC,SP
1709 007036 022706 000357 CMP #357,SP
1710 007042 001405 BEQ TST45
1711 007044 012737 000172 000302 MOV #172,%%FATAL ;MOVE TO MAILBOX # ***** 172 *****
1712 007052 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1713 007054 000000 HALT ;PRIORITY WAS CHANGED,OR WRONG $STSNM
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 653
1714
1715
1716 ;*****
1717 ;TEST 45 TEST THAT A TRAP OCCURES ON ALL ILLEGAL INSTRUCTION
1718 ;*****
1719 007056 005237 000304 TST45; INC #%%TESTN ;UPDATE TEST NUMBER
1720 007062 022737 000045 000304 CMP #45,%%TESTN ;SEQUENCE ERROR?
1721 007070 001006 BNE TST46-12 ;BR TO ERROR HALT ON SEQ ERROR
1722 007072 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1723 007076 012767 007120 170700 MOV #RTRAP5 ;RETURN LOCATION
1724 007104 004000 JSR %0,%0 ;RESERVED INSTRUCTION, SHOULD TRAP
1725 007106 012737 000173 000302 MOV #173,%%FATAL ;MOVE TO MAILBOX # ***** 173 *****
1726 007114 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1727 007116 000000 HALT ;DIDN'T TRAP,OR WRONG $STSNM
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 764
1728
1729
1730 007120 RETHS;
1731 ;*****
1732 ;TEST 46 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
1733 ;*****
1734 007120 005237 000304 TST46; INC #%%TESTN ;UPDATE TEST NUMBER
1735 007124 022737 000046 000304 CMP #46,%%TESTN ;SEQUENCE ERROR?
1736 007132 001011 BNE TST47-12 ;BR TO ERROR HALT ON SEQ ERROR
1737 007134 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1738 007140 012767 007150 170636 MOV #RTRAP5 ;RETURN POINTER
1739 007146 004000 JSR %0,%0 ;RESERVED INSTRUCTION
1740 007150 020627 000474 RETJ; CMP SP,#BUFF-4 ;TEST DECREMENT OF SP
1741 007154 001405 BEQ TST47
1742 007156 012737 000174 000302 MOV #174,%%FATAL ;MOVE TO MAILBOX # ***** 174 *****
1743 007164 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1744 007166 000000 HALT ;NOT DECREMENTED TWO WORDS,OR WRONG $STSNM
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 761
1745
1746
1747 ;*****
1748 ;TEST 47 TEST THAT PROPER P.C. IS SAVED
1749 ;*****
1750 007170 005237 000304 TST47; INC #%%TESTN ;UPDATE TEST NUMBER
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1751 007174 022737 000047 000304 CMP #47,##$TESTN ;SEQUENCE ERROR?
1752 007202 001012 BNE TST50-12 ;BR TO ERROR HALT ON SEQ ERROR
1753 007204 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1754 007210 012767 007220 170566 MOV #RETK,RTRAPS ;RETURN FROM TRAP POINTER
1755 007216 004000 INSTKi JSR %0,%0 ;TRAP ON THIS INSTRUCTION
1756 007220 022767 007220 171246 RETKi CMP #INSTK+2,BUFF-4 ;CHECK FOR INCREMENTED P,C.
1757 007226 001405 BEQ TST50
1758 007230 012737 000175 000302 MOV #175,##$FATAL ;MOVE TO MAILBOX # ***** 175 *****
1759 007236 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1760 007240 000000 HALT ;INCORRECT P,C.,OR WRONG $TSTNM
1761 ; TO SCOPE REPLACE HALT W/ 240
1762 ; AND REPLACE NEXT INST W/ 760
1763
1764 ;*****
1765 ;TEST 50 TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
1766 ;*****
1767 007242 005237 000304 TST50i INC #,$TESTN ;UPDATE TEST NUMBER
1768 007246 022737 000050 000304 CMP #50,##$TESTN ;SEQUENCE ERROR?
1769 007254 001040 BNE TST51-12 ;BR TO ERROR HALT ON SEQ ERROR
1770 007256 012706 000500 MOV #BUFF,SP ;SET UP
1771 007262 012767 007300 170514 MOV #RETL,RTRAPS ;SET UP
1772 007270 005067 170502 CLR CC ;CLEAR CC AND PRIORITY
1773 007274 000257 CCC
1774 007276 004000 JSR %0,%0 ;TRAP
1775 007300 026727 171172 000000 RETLi CMP BUFF-2,#0 ;TEST THAT OLD STATUS WENT TO STACK
1776 007306 001405 BEQ 18
1777 007310 012737 000176 000302 MOV #176,##$FATAL ;MOVE TO MAILBOX # ***** 176 *****
1778 007316 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1779 007320 000000 HALT ;INCORRECT STATUS
1780 ; TO SCOPE REPLACE HALT W/ 240
1781 ; AND REPLACE NEXT INST W/ 755
1782 007322 012706 000500 18i MOV #BUFF,SP ;SET UP
1783 007326 012767 007346 170450 MOV #RETH,RTRAPS ;SET UP
1784 007334 012767 000357 170434 MOV #357,CC ;SET PRIORITY
1785 007342 000277 SCC ;SET CC
1786 007344 004000 JSR %0,%0 ;TRAP
1787 007346 026727 171124 000357 RETMi CMP BUFF-2,#357 ;COMPARES STATUS ON STACK
1788 007354 001405 BEQ TST51
1789 007356 012737 000177 000302 MOV #177,##$FATAL ;MOVE TO MAILBOX # ***** 177 *****
1790 007364 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1791 007366 000000 HALT ;INCORRECT STATUS ON STACK,OR WRONG $TSTNM
1792 ; TO SCOPE REPLACE HALT W/ 240
1793 ; AND REPLACE NEXT INST W/ 732
1794 ;*****
1795 ;TEST 51 TEST THAT "NEW" STATUS IS CORRECT
1796 ;*****
1797 007370 005237 000304 TST51i INC #,$TESTN ;UPDATE TEST NUMBER
1798 007374 022737 000051 000304 CMP #51,##$TESTN ;SEQUENCE ERROR?
1799 007402 001116 BNE TST52-12 ;BR TO ERROR HALT ON SEQ ERROR
1800 007404 012706 000500 MOV #BUFF,SP ;SET UP
1801 007410 012767 007424 170366 MOV #RETN,RTRAPS ;CLEAR FUTURE PRIORITY AND CC
1802 007416 005067 170364 CLR RTRAPS+2
1803 007422 004000 JSR %0,%0 ;TEST FOR "C" CLEARED
1804 007424 RETMi
1805 007424 100005 BPL 18
1806 007426 012737 000200 000302 MOV #200,##$FATAL ;MOVE TO MAILBOX # ***** 200 *****
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1807 007434 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1808 007436 000000 HALT ;C NOT CLEARED
1809 ; TO SCOPE REPLACE HALT W/ 240
1810 ; AND REPLACE NEXT INST W/ 761
1811 007440 18i
1812 007440 001005 18i BNE 28
1813 007442 012737 000201 000302 MOV #201,##$FATAL ;MOVE TO MAILBOX # ***** 201 *****
1814 007450 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1815 007452 000000 HALT ;Z NOT CLEARED
1816 ; TO SCOPE REPLACE HALT W/ 240
1817 ; AND REPLACE NEXT INST W/ 753
1818 007454 28i
1819 007454 102005 BVC 38
1820 007456 012737 000202 000302 MOV #202,##$FATAL ;MOVE TO MAILBOX # ***** 202 *****
1821 007464 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1822 007466 000000 HALT ;V NOT CLEARED
1823 ; TO SCOPE REPLACE HALT W/ 240
1824 ; AND REPLACE NEXT INST W/ 745
1825 007470 38i
1826 007470 103005 BCC 48
1827 007472 012737 000203 000302 MOV #203,##$FATAL ;MOVE TO MAILBOX # ***** 203 *****
1828 007500 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1829 007502 000000 HALT ;C NOT CLEARED
1830 ; TO SCOPE REPLACE HALT W/ 240
1831 ; AND REPLACE NEXT INST W/ 737
1832 007504 016700 170266 48i MOV CC,%0 ;TEMP STORAGE
1833 007510 001405 BEQ 58
1834 007512 012737 000204 000302 MOV #204,##$FATAL ;MOVE TO MAILBOX # ***** 204 *****
1835 007520 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1836 007522 000000 HALT ;PRIORITY NOT ZERO
1837 ; TO SCOPE REPLACE HALT W/ 240
1838 ; AND REPLACE NEXT INST W/ 727
1839 007524 012706 000500 58i MOV #BUFF,SP
1840 007530 012767 007546 170246 MOV #RETO,RTRAPS
1841 007536 012767 000357 170242 MOV #357,RTRAPS+2
1842 007544 004000 JSR %0,%0 ;TRAP HERE
1843 007546 RETOi
1844 007546 100405 BMI 18
1845 007550 012737 000205 000302 MOV #205,##$FATAL ;MOVE TO MAILBOX # ***** 205 *****
1846 007556 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1847 007560 000000 HALT ;N NOT SET
1848 ; TO SCOPE REPLACE HALT W/ 240
1849 ; AND REPLACE NEXT INST W/ 710
1850 007562 18i
1851 007562 001405 BEQ 28
1852 007564 012737 000206 000302 MOV #206,##$FATAL ;MOVE TO MAILBOX # ***** 206 *****
1853 007572 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1854 007574 000000 HALT ;Z NOT SET
1855 ; TO SCOPE REPLACE HALT W/ 240
1856 ; AND REPLACE NEXT INST W/ 702
1857 007576 28i
1858 007576 102405 BVS 38
1859 007600 012737 000207 000302 MOV #207,##$FATAL ;MOVE TO MAILBOX # ***** 207 *****
1860 007606 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1861 007610 000000 HALT ;V NOT SET
1862 ; TO SCOPE REPLACE HALT W/ 240
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1863 ; AND REPLACE NEXT INST W/ 674
1864 007612 38;
1865 007612 103405 BCS 48
1866 007614 012737 000210 000302 MOV #210,##$FATAL ;MOVE TO MAILBOX # ***** 210 *****
1867 007622 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1868 007624 000000 HALT ;C NOT SET
1869 ; TO SCOPE REPLACE HALT W/ 240
1870 ; AND REPLACE NEXT INST W/ 666
1871 007626 016700 170144 48; MOV CC,#0
1872 007632 022700 000357 CMP #357,#0
1873 007636 001405 BEQ TST52
1874 007640 012737 000211 000302 MOV #211,##$FATAL ;MOVE TO MAILBOX # ***** 211 *****
1875 007646 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1876 007650 000000 HALT ;PRIORITY WAS CHANGED,OR WRONG $TSTNM
1877 ; TO SCOPE REPLACE HALT W/ 240
1878 ; AND REPLACE NEXT INST W/ 654
1879
1880 ;*****
1881 ;TEST 52 TEST THAT A TRAP OCCURES ON AN ILLEGAL ADDRESS
1882 ;*****
1883 007652 005237 000304 TST52: INC ##$TESTN ;UPDATE TEST NUMBER
1884 007656 022737 000052 000304 CMP #52,##$TESTN ;SEQUENCE ERROR?
1885 007664 001007 BNE TST53-12 ;BR TO ERROR HALT ON SEQ ERROR
1886 007666 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1887 007672 012767 007716 170104 MOV #RETP,RTRAPS ;RETURN LOCATION
1888 007700 005767 170075 TST 1 ;ILLEGAL ADDRESS INSTRUCTION, SHOULD TRAP
1889 007704 012737 000212 000302 MOV #212,##$FATAL ;MOVE TO MAILBOX # ***** 212 *****
1890 007712 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1891 007714 000000 HALT ;ILLEGAL ADDRESS DID NOT TRAP,OR WRONG $TSTNM
1892 ; TO SCOPE REPLACE HALT W/ 240
1893 ; AND REPLACE NEXT INST W/ 763
1894 007716 RETP;
1895 ;*****
1896 ;TEST 53 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
1897 ;*****
1898 007716 005237 000304 TST53: INC ##$TESTN ;UPDATE TEST NUMBER
1899 007722 022737 000053 000304 CMP #53,##$TESTN ;SEQUENCE ERROR?
1900 007730 001012 BNE TST54-12 ;BR TO ERROR HALT ON SEQ ERROR
1901 007732 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1902 007736 012767 007750 170040 MOV #RETP,RTRAPS ;RETURN POINTER
1903 007744 005767 170031 TST 1 ;RESERVED INSTRUCTION
1904 007750 020627 000474 RETQ; CMP SP,#BUFF-4 ;TEST DECREMENT OF SP
1905 007754 001405 BEQ TST54
1906 007756 012737 000213 000302 MOV #213,##$FATAL ;MOVE TO MAILBOX # ***** 213 *****
1907 007764 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1908 007766 000000 HALT ;NOT DECREMENTED TWO WORDS,OR WRONG $TSTNM
1909 ; TO SCOPE REPLACE HALT W/ 240
1910 ; AND REPLACE NEXT INST W/ 760
1911 ;*****
1912 ;TEST 54 TEST THAT PROPER P.C. IS SAVED
1913 ;*****
1914 007770 005237 000304 TST54: INC ##$TESTN ;UPDATE TEST NUMBER
1915 007774 022737 000054 000304 CMP #54,##$TESTN ;SEQUENCE ERROR?
1916 010002 001013 BNE TST55-12 ;BR TO ERROR HALT ON SEQ ERROR
1917 010004 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1918 010010 012767 010022 167766 MOV #RETR,RTRAPS ;RETURN FROM TRAP POINTER
```

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1919 010016 005767 167757 TST 1 ;TRAP ON THIS INSTRUCTION
1920 010022 022767 010022 170444 RETR: CMP #,BUFF-4 ;CHECK FOR INCREMENTED P.C.
1921 010030 001405 BEQ TST55
1922 010032 012737 000214 000302 MOV #214,##$FATAL ;MOVE TO MAILBOX # ***** 214 *****
1923 010040 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1924 010042 000000 HALT ;INCORRECT P.C.,OR WRONG $TSTNM
1925 ; TO SCOPE REPLACE HALT W/ 240
1926 ; AND REPLACE NEXT INST W/ 757
1927 ;*****
1928 ;TEST 55 TEST THAT "OLD" CC AND PRIORITY ARE PLACED ON STACK
1929 ;*****
1930 010044 005237 000304 TST55: INC ##$TESTN ;UPDATE TEST NUMBER
1931 010050 022737 000055 000304 CMP #55,##$TESTN ;SEQUENCE ERROR?
1932 010056 001042 BNE TST56-12 ;BR TO ERROR HALT ON SEQ ERROR
1933 010060 012706 000500 MOV #BUFF,SP ;SET UP
1934 010064 012767 010104 167712 MOV #RETS,RTRAPS ;SET UP
1935 010072 005067 167700 CLR CC ;CLEAR CC AND PRIORITY
1936 010076 000257 CCC
1937 010100 005767 167675 TST 1 ;TRAP
1938 010104 026727 170366 000000 RETS: CMP BUFF-2,#0 ;TEST THAT OLD STATUS WENT TO STACK
1939 010112 001405 BEQ 18
1940 010114 012737 000215 000302 MOV #215,##$FATAL ;MOVE TO MAILBOX # ***** 215 *****
1941 010122 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1942 010124 000000 HALT ;INCORRECT STATUS
1943 ; TO SCOPE REPLACE HALT W/ 240
1944 ; AND REPLACE NEXT INST W/ 754
1945 010126 012706 000500 18; MOV #BUFF,SP ;SET UP
1946 010132 012767 010154 167644 MOV #RETT,RTRAPS ;SET UP
1947 010140 012767 000357 167630 MOV #357,CC ;SET PRIORITY
1948 010146 000277 SCC ;SET CC
1949 010150 005767 167625 TST 1 ;TRAP
1950 010154 026727 170316 000357 RETT: CMP BUFF-2,#357 ;COMPARES STATUS ON STACK
1951 010162 001405 BEQ TST56
1952 010164 012737 000216 000302 MOV #216,##$FATAL ;MOVE TO MAILBOX # ***** 216 *****
1953 010172 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1954 010174 000000 HALT ;INCORRECT STATUS ON STACK,OR WRONG $TSTNM
1955 ; TO SCOPE REPLACE HALT W/ 240
1956 ; AND REPLACE NEXT INST W/ 730
1957 ;*****
1958 ;TEST 56 TEST THAT "NEW" STATUS IS CORRECT
1959 ;*****
1960 010176 005237 000304 TST56: INC ##$TESTN ;UPDATE TEST NUMBER
1961 010202 022737 000056 000304 CMP #56,##$TESTN ;SEQUENCE ERROR?
1962 010210 001121 BNE TST57-12 ;BR TO ERROR HALT ON SEQ ERROR
1963 010212 012706 000500 MOV #BUFF,SP
1964 010216 012767 010234 167560 MOV #RETT,RTRAPS ;CLEAR FUTURE PRIORITY AND CC
1965 010224 005067 167556 CLR RTRAPS+2 ;TRAP HERE
1966 010230 005767 167545 TST 1 ;TEST FOR "C" CLEARED
1967 010234 RETU;
1968 010234 100005 BPL 18
1969 010236 012737 000217 000302 MOV #217,##$FATAL ;MOVE TO MAILBOX # ***** 217 *****
1970 010244 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1971 010246 000000 HALT ;C NOT CLEARED
1972 ; TO SCOPE REPLACE HALT W/ 240
1973 ; AND REPLACE NEXT INST W/ 760
1974 010250 18;
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2075 ;*****  
2076 ;TEST 61 TEST DIFFERENT TYPES OF OVERFLOW  
2077 ;*****  
2078 010600 005237 000304 TST61: INC @%$TESTN ;UPDATE TEST NUMBER  
2079 010604 022737 000061 000304 CMP #61,@%$TESTN ;SEQUENCE ERROR?  
2080 010612 001043 BNE TST62-12 ;BR TO ERROR HALT ON SEQ ERROR  
2081 010614 012706 000150 MOV #150,%6 ;SET UP STACK TO OVERFLOW  
2082 010620 005067 167322 CLR 146 ;STATUS WORD OF LOC 10  
2083 010624 012767 010634 167152 MOV #TDEC3,4 ;RETURN TO LOC 4  
2084 010632 005246 INC -(6)  
2085 010634 005767 167306 TDEC3: TST 146  
2086 010640 001005 BNE 18  
2087 010642 012737 000233 000302 MOV #233,@%$FATAL ;MOVE TO MAILBOX # ***** 233 *****  
2088 010650 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
2089 010652 000000 HALT ;INCREMENT OPERATION NOT INHIBITED  
2090 ; TO SCOPE REPLACE HALT W/ 240  
2091 ; AND REPLACE NEXT INST W/ 757  
2092 010654 012705 001000 18: MOV #1000,%5  
2093 010660 012706 000400 MOV #400,%6  
2094 010664 012767 010706 167112 MOV #TDEC4,4  
2095 010672 124645 CMPB -(6),-(5)  
2096 010674 012737 000234 000302 MOV #234,@%$FATAL ;MOVE TO MAILBOX # ***** 234 *****  
2097 010702 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
2098 010704 000000 HALT ;STACK = 400 AND DECREMENTED, SHOULD TRAP  
2099 ; TO SCOPE REPLACE HALT W/ 240  
2100 ; AND REPLACE NEXT INST W/ 742  
2101 010706 012706 000400 TDEC4: MOV #400,%6  
2102 010712 012767 010734 167064 MOV #TDEC7,4  
2103 010720 134546 BITB -(5),-(6)  
2104 010722 TDEC6: MOV #235,@%$FATAL ;MOVE TO MAILBOX # ***** 235 *****  
2105 010722 012737 000235 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR  
2106 010730 005212 HALT ;NO STACK OVERFLOW,OR WRONG $STNM  
2107 010732 000000 ; TO SCOPE REPLACE HALT W/ 240  
2108 ; AND REPLACE NEXT INST W/ 727  
2109 TDEC7:  
2110 010734  
2111 ;*****  
2112 ;TEST 62 TEST THAT AN 7 CAUSES AN OVERFLOW TRAP  
2113 ;*****  
2114 TST62: INC @%$TESTN ;UPDATE TEST NUMBER  
2115 010734 005237 000304 CMP #62,@%$TESTN ;SEQUENCE ERROR?  
2116 010740 022737 000062 000304 BNE VDEC2 ;BR TO ERROR HALT ON SEQ ERROR  
2117 010746 001011 MOV #400,%6 ;SET UP STACK TO OVERFLOW  
2118 010750 012706 000400 MOV #VDEC2,10 ;SET UP 7 VECTOR  
2119 010754 012767 010772 167026 MOV #VDEC1,4 ;SET UP OVERFLOW VECTOR  
2120 010762 012767 011004 167014 IOT 7 ;THIS TRAP SHOULD CAUSE OVERFLOW  
2121 010770 000007  
2122 010772 VDEC2: MOV #236,@%$FATAL ;MOVE TO MAILBOX # ***** 236 *****  
2123 010772 012737 000236 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR  
2124 011000 005212 HALT ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $STNM  
2125 011002 000000 ; TO SCOPE REPLACE HALT W/ 240  
2126 ; AND REPLACE NEXT INST W/ 761  
2127  
2128 011004 012767 000012 166776 VDEC1: MOV #10+2,10  
2129 ;*****  
2130 ;TEST 63 TEST THAT AN IOT CAUSES AN OVERFLOW TRAP
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2131 ;*****  
2132 011012 005237 000304 TST63: INC @%$TESTN ;UPDATE TEST NUMBER  
2133 011016 022737 000063 000304 CMP #63,@%$TESTN ;SEQUENCE ERROR?  
2134 011024 001011 BNE VDEC4 ;BR TO ERROR HALT ON SEQ ERROR  
2135 011026 012706 000400 MOV #400,%6 ;SET UP STACK TO OVERFLOW  
2136 011032 012767 011050 166760 MOV #VDEC4,20 ;SET UP IOT VECTOR  
2137 011040 012767 011062 166736 MOV #VDEC3,4 ;SET UP OVERFLOW VECTOR  
2138 011046 000004 IOT ;THIS TRAP SHOULD CAUSE OVERFLOW  
2139 011050 VDEC4: MOV #237,@%$FATAL ;MOVE TO MAILBOX # ***** 237 *****  
2140 011050 012737 000237 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR  
2141 011056 005212 HALT ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $STNM  
2142 011060 000000 ; TO SCOPE REPLACE HALT W/ 240  
2143 ; AND REPLACE NEXT INST W/ 761  
2144  
2145 011062 012767 000022 166730 VDEC3: MOV #20+2,20  
2146 ;*****  
2147 ;TEST 64 TEST THAT AN EMT CAUSES AN OVERFLOW TRAP  
2148 ;*****  
2149 011070 005237 000304 TST64: INC @%$TESTN ;UPDATE TEST NUMBER  
2150 011074 022737 000064 000304 CMP #64,@%$TESTN ;SEQUENCE ERROR?  
2151 011102 001011 BNE VDEC6 ;BR TO ERROR HALT ON SEQ ERROR  
2152 011104 012706 000400 MOV #400,%6 ;SET UP STACK TO OVERFLOW  
2153 011110 012767 011126 166712 MOV #VDEC6,30 ;SET UP EMT VECTOR  
2154 011116 012767 011140 166660 MOV #VDEC5,4 ;SET UP OVERFLOW VECTOR  
2155 011124 104000 EMT ;THIS TRAP SHOULD CAUSE OVERFLOW  
2156 011126 VDEC6: MOV #240,@%$FATAL ;MOVE TO MAILBOX # ***** 240 *****  
2157 011126 012737 000240 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR  
2158 011134 005212 HALT ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $STNM  
2159 011136 000000 ; TO SCOPE REPLACE HALT W/ 240  
2160 ; AND REPLACE NEXT INST W/ 761  
2161  
2162 011140 012767 000032 166662 VDEC5: MOV #30+2,30  
2163 ;*****  
2164 ;TEST 65 TEST THAT AN TRAP CAUSES AN OVERFLOW TRAP  
2165 ;*****  
2166 011146 005237 000304 TST65: INC @%$TESTN ;UPDATE TEST NUMBER  
2167 011152 022737 000065 000304 CMP #65,@%$TESTN ;SEQUENCE ERROR?  
2168 011160 001011 BNE VDEC8 ;BR TO ERROR HALT ON SEQ ERROR  
2169 011162 012706 000400 MOV #400,%6 ;SET UP STACK TO OVERFLOW  
2170 011166 012767 011204 166640 MOV #VDEC8,34 ;SET UP TRAP VECTOR  
2171 011174 012767 011216 166602 MOV #VDEC7,4 ;SET UP OVERFLOW VECTOR  
2172 011202 104400 TRAP ;THIS TRAP SHOULD CAUSE OVERFLOW  
2173 011204 VDEC8: MOV #241,@%$FATAL ;MOVE TO MAILBOX # ***** 241 *****  
2174 011204 012737 000241 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR  
2175 011212 005212 HALT ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $STNM  
2176 011214 000000 ; TO SCOPE REPLACE HALT W/ 240  
2177 ; AND REPLACE NEXT INST W/ 761  
2178  
2179 011216 012767 000036 166610 VDEC7: MOV #34+2,34  
2180 ;*****  
2181 ;TEST 66 TEST THAT AN TRT CAUSES AN OVERFLOW TRAP  
2182 ;*****  
2183 011224 005237 000304 TST66: INC @%$TESTN ;UPDATE TEST NUMBER  
2184 011230 022737 000066 000304 CMP #66,@%$TESTN ;SEQUENCE ERROR?  
2185 011236 001011 BNE VDEC10 ;BR TO ERROR HALT ON SEQ ERROR  
2186 011240 012706 000400 MOV #400,%6 ;SET UP STACK TO OVERFLOW
```

```
2187 011244 012767 011262 166542 MOV #VDEC10,14 ;SET UP TRT VECTOR
2188 011252 012767 011274 166524 MOV #VDEC9,4 ;SET UP OVERFLOW VECTOR
2189 011260 000003 TRT ;THIS TRAP SHOULD CAUSE OVERFLOW
2190 011262 VDEC10;
2191 011262 012737 000242 000302 MOV #242,0##FATAL ;MOVE TO MAILBOX # ***** 242 *****
2192 011270 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2193 011272 000000 HALT ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $STNM
2194 ; TO SCOPE REPLACE HALT W/ 240
2195 ; AND REPLACE NEXT INST W/ 761
2196 011274 012767 000016 166512 VDEC9; MOV #14+2,14
2197 ;*****
2198 ;TEST 67 TEST THAT AN ILLA CAUSES AN OVERFLOW TRAP
2199 ;*****
2200 011302 005237 000304 TST67; INC 0##TESTN ;UPDATE TEST NUMBER
2201 011306 022737 000067 000304 CMP #67,0##TESTN ;SEQUENCE ERROR?
2202 011314 001011 BNE VDEC11 ;BR TO ERROR HALT ON SEQ ERROR
2203 011316 012706 000400 MOV #400,36 ;SET UP STACK TO OVERFLOW
2204 011322 012767 011340 166454 MOV #VDEC11,4 ;SET UP ILLA VECTOR
2205 011330 012767 011352 166446 MOV #VDEC12,4 ;SET UP OVERFLOW VECTOR
2206 011336 004700 ILLA ;THIS TRAP SHOULD CAUSE OVERFLOW
2207 011340 VDEC11;
2208 011340 012737 000243 000302 MOV #243,0##FATAL ;MOVE TO MAILBOX # ***** 243 *****
2209 011346 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2210 011350 000000 HALT ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $STNM
2211 ; TO SCOPE REPLACE HALT W/ 240
2212 ; AND REPLACE NEXT INST W/ 761
2213 011352 012767 000006 166424 VDEC12; MOV #4+2,4
2214 011360 020627 000370 CMP #6,370 ;STACK PUSHED FOUR WORDS?
2215 011364 001405 BEQ TST70
2216 011366 012737 000244 000302 MOV #244,0##FATAL ;MOVE TO MAILBOX # ***** 244 *****
2217 011374 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2218 011376 000000 HALT ;TRAP OVERFLOW DID NOT OCCUR
2219 ; TO SCOPE REPLACE HALT W/ 240
2220 ; AND REPLACE NEXT INST W/ 746
2221 ;*****
2222 ;TEST 70 TEST THAT AN ILLB CAUSES AN OVERFLOW TRAP
2223 ;*****
2224 011400 005237 000304 TST70; INC 0##TESTN ;UPDATE TEST NUMBER
2225 011404 022737 000070 000304 CMP #70,0##TESTN ;SEQUENCE ERROR?
2226 011412 001011 BNE VDEC13 ;BR TO ERROR HALT ON SEQ ERROR
2227 011414 012706 000400 MOV #400,36 ;SET UP STACK TO OVERFLOW
2228 011420 012767 011436 166356 MOV #VDEC13,4 ;SET UP ILLB VECTOR
2229 011426 012767 011450 166350 MOV #VDEC14,4 ;SET UP OVERFLOW VECTOR
2230 011434 000100 ILLB ;THIS TRAP SHOULD CAUSE OVERFLOW
2231 011436 VDEC13;
2232 011436 012737 000245 000302 MOV #245,0##FATAL ;MOVE TO MAILBOX # ***** 245 *****
2233 011444 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2234 011446 000000 HALT ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $STNM
2235 ; TO SCOPE REPLACE HALT W/ 240
2236 ; AND REPLACE NEXT INST W/ 761
2237 011450 012767 000006 166326 VDEC14; MOV #4+2,4
2238 ;*****
2239 ;TEST 71 TEST FOR FALSE OVERFLOW TRAP
2240 ;*****
2241 ;*****
2242 011456 005237 000304 TST71; INC 0##TESTN ;UPDATE TEST NUMBER
```

```
2243 011462 022737 000071 000304 CMP #71,0##TESTN ;SEQUENCE ERROR?
2244 011470 001023 BNE FOVER ;BR TO ERROR HALT ON SEQ ERROR
2245
2246 011472 012767 011540 166304 MOV #FOVER,4 ;SET UP OVERFLOW POINTER
2247 011500 012706 001002 MOV #1002,36
2248 011504 005746 TST -(6) ;SHOULD NOT OVERFLOW
2249 011506 012706 002002 MOV #2002,36
2250 011512 005746 TST -(6) ;SHOULD NOT OVERFLOW
2251 011514 012706 004002 MOV #4002,36
2252 011520 005746 TST -(6) ;SHOULD NOT OVERFLOW
2253 011522 012706 010002 MOV #10002,36
2254 011526 005746 TST -(6) ;SHOULD NOT OVERFLOW
2255 011530 012706 020000 MOV #20000,36 ;SHOULD NOT OVERFLOW
2256 011534 005746 TST -(6)
2257 011536 000405 BR STP
2258 011540 FOVER;
2259 011540 012737 000246 000302 MOV #246,0##FATAL ;MOVE TO MAILBOX # ***** 246 *****
2260 011546 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2261 011550 000000 HALT ;IT OVERFLOWED,OR WRONG $STNM
2262 ; TO SCOPE REPLACE HALT W/ 240
2263 ; AND REPLACE NEXT INST W/ 747
2264 011552 012767 000006 166224 STP; MOV #6,4
2265 011560 005067 166222 CLR 6
2266 ;*****
2267 ;TEST 72 TEST THAT BIT 4 PSW WILL CAUSE A TRAP TO 14
2268 ;*****
2269 011564 005237 000304 TST72; INC 0##TESTN ;UPDATE TEST NUMBER
2270 011570 022737 000072 000304 CMP #72,0##TESTN ;SEQUENCE ERROR?
2271 011576 001013 BNE TST73-12 ;BR TO ERROR HALT ON SEQ ERROR
2272 011600 012706 000500 MOV #BUFF,SP
2273 011604 012767 011640 166202 MOV #RETAT,RTRAP4 ;SET UP TO TRAP TO 14
2274 011612 012746 000020 MOV #20,-(SP) ;PUSH T BIT
2275 011616 012746 011624 MOV #,+6,-(SP) ;PUSH PC
2276 011622 000002 RTI ;SET T BIT
2277 011624 000240 NOP ;TRAP HERE
2278 011626 012737 000247 000302 MOV #247,0##FATAL ;MOVE TO MAILBOX # ***** 247 *****
2279 011634 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2280 011636 000000 HALT ;TRACE BIT DID NOT TRAP,OR WRONG $STNM
2281 ; TO SCOPE REPLACE HALT W/ 240
2282 ; AND REPLACE NEXT INST W/ 757
2283 011640 RETAT;
2284 ;*****
2285 ;TEST 73 TEST STACK POINTER DECREMENTS
2286 ;*****
2287 011640 005237 000304 TST73; INC 0##TESTN ;UPDATE TEST NUMBER
2288 011644 022737 000073 000304 CMP #73,0##TESTN ;SEQUENCE ERROR?
2289 011652 001023 BNE TST74-12 ;BR TO ERROR HALT ON SEQ ERROR
2290 011654 012706 000500 MOV #BUFF,SP
2291 011660 012767 011714 166126 MOV #RETBT,RTRAP4
2292 011666 012746 000020 MOV #20,-(SP) ;PUSH T BIT
2293 011672 012746 011700 MOV #,+6,-(SP) ;PUSH PC
2294 011676 000002 RTI ;SET T BIT
2295 011700 000240 NOP ;TRAP HERE
2296 011702 012737 000250 000302 MOV #250,0##FATAL ;MOVE TO MAILBOX # ***** 250 *****
2297 011710 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2298 011712 000000 HALT ;TRACE BIT DID NOT TRAP;
```

```
2299 ; TO SCOPE REPLACE HALT W/ 240
2300 ; AND REPLACE NEXT INST W/ 757
2301 011714 020627 000474 RETBT: CMP SP,#BUFF-4
2302 011720 001405 BEQ TST74
2303 011722 012737 000251 000302 MOV #251,##$FATAL ;MOVE TO MAILBOX # ***** 251 *****
2304 011730 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2305 011732 000000 HALT ;STACK POINTER WAS NOT PUSHED BY TRAP,OR WRONG $TESTN
2306 ; TO SCOPE REPLACE HALT W/ 240
2307 ; AND REPLACE NEXT INST W/ 747
2308 ;*****
2309 ;TEST 74 TEST FOR PROPER PC ON STACK
2310 ;*****
2311 011734 005237 000304 TST74: INC ##$TESTN ;UPDATE TEST NUMBER
2312 011740 022737 000074 000304 CMP #74,##$TESTN ;SEQUENCE ERROR?
2313 011746 001016 BNE TST75-12 ;BR TO ERROR HALT ON SEQ ERROR
2314 011750 012706 000500 MOV #BUFF,SP
2315 011754 012767 011774 166032 MOV #RECT,RTRAP4
2316 011762 012746 000020 MOV #20,-(SP) ;PUSH T BIT
2317 011766 012746 011774 MOV #.+6,-(SP) ;PUSH PC
2318 011772 000002 RTI ;SET T BIT
2319 ;TRAP HERE
2320 011774 022767 011774 166472 RETCT: CMP #.,BUFF-4
2321 012002 001405 BEQ TST75
2322 012004 012737 000252 000302 MOV #252,##$FATAL ;MOVE TO MAILBOX # ***** 252 *****
2323 012012 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2324 012014 000000 HALT ;CORRECT PC WAS NOT SAVED ON STACK,OR WRONG $TESTN
2325 ; TO SCOPE REPLACE HALT W/ 240
2326 ; AND REPLACE NEXT INST W/ 754
2327
2328 ;*****
2329 ;TEST 75 TEST THAT RTT POPS T- BIT
2330 ;*****
2331 012016 005237 000304 TST75: INC ##$TESTN ;UPDATE TEST NUMBER
2332 012022 022737 000075 000304 CMP #75,##$TESTN ;SEQUENCE ERROR?
2333 012030 001015 BNE TST76-12 ;BR TO ERROR HALT ON SEQ ERROR
2334
2335 MOV #BUFF,SP
2336 012032 012706 000500 CLR R1 ;CLEAR R1
2337 012036 005001 MOV #20,-(SP)
2338 012040 012746 000020 MOV #RTT1,-(SP)
2339 012044 012746 012060 MOV #RTT2,14
2340 012050 012767 012076 165736 RTT RTT
2341 012056 000006 RTT1: NOP
2342 012060 000240 BEQ TST76
2343 012062 001405 MOV #253,##$FATAL ;MOVE TO MAILBOX # ***** 253 *****
2344 012064 012737 000253 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
2345 012072 005212 HALT ;T-BIT DID NOT TRAP,OR WRONG $TESTN
2346 012074 000000 ; TO SCOPE REPLACE HALT W/ 240
2347 ; AND REPLACE NEXT INST W/ 755
2348
2349 RTT2:
2350 012076 ;*****
2351 ;TEST 76 TEST THAT RTT ALLOWS ONE INST. BEFORE TRAP
2352 ;*****
2353 012076 005237 000304 TST76: INC ##$TESTN ;UPDATE TEST NUMBER
2354
```

```
2355 012102 022737 000076 000304 CMP #76,##$TESTN ;SEQUENCE ERROR?
2356 012110 001031 BNE TST77-12 ;BR TO ERROR HALT ON SEQ ERROR
2357 012112 012705 177777 MOV #177777,%5
2358 012116 012706 000500 RTT5: #BUFF,SP
2359 012122 012746 000020 MOV #20,-(SP)
2360 012126 012746 012144 MOV #RTT3,-(SP)
2361 012132 012767 012164 165654 MOV #RTT4,14
2362 012140 005001 CLR R1 ;CLEAR R0
2363 012142 000006 RTT ;SET T-BIT
2364 012144 005201 RTT3: INC R1
2365 012146 005205 INC %5
2366 012150 001762 RTT5 ;DO THIS TEST NO MORE THAN 2 TIMES
2367 012152 012737 000254 000302 MOV #254,##$FATAL ;MOVE TO MAILBOX # ***** 254 *****
2368 012160 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2369 012162 000000 HALT ;DID NOT TRAP
2370 ; TO SCOPE REPLACE HALT W/ 240
2371 ; AND REPLACE NEXT INST W/ 752
2372 012164 005301 RTT4: DEC R1 ;SEE IF RTT ALLOWS 1 INST.
2373 012166 001407 BEQ RTT6
2374 012170 005205 INC %5 ;DO THIS TEST NO MORE THAN TWO TIMES
2375 012172 001751 BEQ RTT5
2376 012174 012737 000255 000302 MOV #255,##$FATAL ;MOVE TO MAILBOX # ***** 255 *****
2377 012202 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2378 012204 000000 HALT ;RTT DID NOT ALLOW 1 INST.,OR WRONG $TESTN
2379 ; TO SCOPE REPLACE HALT W/ 240
2380 ; AND REPLACE NEXT INST W/ 741
2381 012206 RTT6:
2382 ;*****
2383 ;TEST 77 TEST THAT RTI DOES NOT ALLOW 1 INST.
2384 ;*****
2385 012206 005237 000304 TST77: INC ##$TESTN ;UPDATE TEST NUMBER
2386 012212 022737 000077 000304 CMP #77,##$TESTN ;SEQUENCE ERROR?
2387 012220 001023 BNE TST100-12 ;BR TO ERROR HALT ON SEQ ERROR
2388 012222 012706 000500 MOV #BUFF,SP
2389 012226 012746 000020 MOV #20,-(SP)
2390 012232 012746 012250 MOV #RTI1,-(SP)
2391 012236 012767 012264 165550 MOV #RTI2,14
2392 012244 005001 CLR R1
2393 012246 000002 RTI ;SET T-BIT
2394 012250 005201 RTI1: R1 ;RTI SHOULD NOT ALLOW THIS
2395 012252 012737 000256 000302 MOV #256,##$FATAL ;MOVE TO MAILBOX # ***** 256 *****
2396 012260 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2397 012262 000000 HALT ;T- BIT DID NOT CAUSE TRAP
2398 ; TO SCOPE REPLACE HALT W/ 240
2399 ; AND REPLACE NEXT INST W/ 756
2400 012264 005701 RTI2: TST R1 ;RTI SHOULD NOT ALLOW 1 INST. BEFORE TRAP
2401
2402 012266 001405 BEQ TST100
2403 012270 012737 000257 000302 MOV #257,##$FATAL ;MOVE TO MAILBOX # ***** 257 *****
2404 012276 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2405 012300 000000 HALT ;RTI DID ALLOW 1 INST. BEFORE TRAP,OR WRONG $TESTN
2406 ; TO SCOPE REPLACE HALT W/ 240
2407 ; AND REPLACE NEXT INST W/ 747
2408
2409 ;*****
2410 ;TEST 100 DOES THE PROCESSOR TRAP WHEN %7 IS ODD?
```

```
2411 ;*****  
2412 012302 005237 000304 TST100: INC ##TESTN ;UPDATE TEST NUMBER  
2413 012306 022737 000100 000304 CMP #100,##TESTN ;SEQUENCE ERROR?  
2414 012314 001120 BNE TST101-12 ;BR TO ERROR HALT ON SEQ ERROR  
2415 012316 012708 000500 MOV #BUFF,%6 ;SET UP STACK POINTER  
2416 012322 012767 012346 165454 MOV #R7R1,4 ;RETURN FROM TRAP  
2417 012330 012707 000001 MOV #1,%7 ;PC EQUALS ONE  
2418 012334 012737 000260 000302 MOV #260,##FATAL ;MOVE TO MAILBOX # ***** 260 *****  
2419 012342 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
2420 012344 000000 HALT ;ODD ADDRESS SHOULD HAVE TRAPPED  
2421 ; TO SCOPE REPLACE HALT W/ 240  
2422 ; AND REPLACE NEXT INST W/ 763  
2423 012346 022767 000001 166120 R7TR1: CMP #1,BUFF-4  
2424 012354 001405 BEQ 18  
2425 012356 012737 000261 000302 MOV #261,##FATAL ;MOVE TO MAILBOX # ***** 261 *****  
2426 012364 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
2427 012366 000000 HALT ;CORRECT PC WAS NOT SAVED ON STACK  
2428 ; TO SCOPE REPLACE HALT W/ 240  
2429 ; AND REPLACE NEXT INST W/ 752  
2430  
2431 012370 012706 000500 18: MOV #BUFF,%6 ;STACK POINTER  
2432 012374 012767 012416 165402 MOV #R7TR2,4  
2433 012402 005207 INC %7 ;PC BECOMES ODD  
2434 012404  
2435 012404 012737 000262 000302 R7TR2A: MOV #262,##FATAL ;MOVE TO MAILBOX # ***** 262 *****  
2436 012412 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
2437 012414 000000 HALT ;  
2438 ; TO SCOPE REPLACE HALT W/ 240  
2439 ; AND REPLACE NEXT INST W/ 737  
2440 012416 022767 012405 166050 R7TR2: CMP #R7TR2A+1,BUFF-4  
2441 012424 001405 BEQ 18  
2442 012426 012737 000263 000302 MOV #263,##FATAL ;MOVE TO MAILBOX # ***** 263 *****  
2443 012434 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
2444 012436 000000 HALT ;CORRECT PC NOT ON STACK  
2445 ; TO SCOPE REPLACE HALT W/ 240  
2446 ; AND REPLACE NEXT INST W/ 726  
2447 012440 012706 000500 18: MOV #BUFF,%6  
2448 012444 012767 012466 165332 MOV #R7TR3,4  
2449 012452 005307 BR60: DEC %7 ;MAKE PC ODD  
2450 012454 012737 000264 000302 MOV #264,##FATAL ;MOVE TO MAILBOX # ***** 264 *****  
2451 012462 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
2452 012464 000000 HALT ;SHOULD TRAP  
2453 ; TO SCOPE REPLACE HALT W/ 240  
2454 ; AND REPLACE NEXT INST W/ 713  
2455 012466 022767 012453 166000 R7TR3: CMP #BR60+1,BUFF-4  
2456 012474 001405 BEQ 18 ;CHECK VALUE OF PC ON STACK  
2457 012476 012737 000265 000302 MOV #265,##FATAL ;MOVE TO MAILBOX # ***** 265 *****  
2458 012504 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
2459 012506 000000 HALT ;WRONG VALUE ON STACK  
2460 ; TO SCOPE REPLACE HALT W/ 240  
2461 ; AND REPLACE NEXT INST W/ 702  
2462  
2463 012510 012706 000500 18: MOV #BUFF,%6  
2464 012514 012767 012540 165262 MOV #R7TR4,4  
2465 012522 000261 SEC ;CARRY EQUALS A 1  
2466 012524 006107 ROL %7 ;PC BECOMES ODD
```

```
2467 012526 TR4A: MOV #266,##FATAL ;MOVE TO MAILBOX # ***** 266 *****  
2468 012526 012737 000266 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR  
2469 012534 005212 HALT ;ODD ADDRESS DIDNT TRAP  
2470 012536 000000 ; TO SCOPE REPLACE HALT W/ 240  
2471 ; AND REPLACE NEXT INST W/ 666  
2472 ; RESET UP A HALT FOR TRAP  
2473 012540 012767 000006 165236 R7TR4: MOV #6,4  
2474 012546 022767 025255 165720 CMP #<2*TR4A+1>,BUFF-4 ;CHECK FOR VALUE ON STACK  
2475 012554 001405 BEQ TST101  
2476 012556 012737 000267 000302 MOV #267,##FATAL ;MOVE TO MAILBOX # ***** 267 *****  
2477 012564 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
2478 012566 000000 HALT ;WRONG VALUE ON STACK,OR WRONG $TSTNM  
2479 ; TO SCOPE REPLACE HALT W/ 240  
2480 ; AND REPLACE NEXT INST W/ 652  
2481 ;*****  
2482 ;TEST 101 TEST TRAP ON TRAP THAT TRACE BIT TRAPS ARE INHIBITED ON TRAP INST  
2483 ;*****  
2484 012570 005237 000304 TST101: INC ##TESTN ;UPDATE TEST NUMBER  
2485 012574 022737 000101 000304 CMP #101,##TESTN ;SEQUENCE ERROR?  
2486 012602 001027 BNE BR70 ;BR TO ERROR HALT ON SEQ ERROR  
2487  
2488 012604 012706 000500 MOV #BUFF,%6  
2489 012610 012767 012650 165176 MOV #TRACE,14 ;TRACE TRAP  
2490 012616 005027 000016 CLR #16  
2491 012622 005027 000022 CLR #22  
2492 012626 012767 012674 165164 MOV #TONT1,20 ;IOT TRAP  
2493 012634 012746 000020 MOV #20,-(SP) ;PUSH T BIT  
2494 012640 012746 012646 MOV #,+6,-(SP) ;PUSH PC  
2495 012644 000006 RTT  
2496 012646 000004 IOT ;TRAP, NEW CC HAVE TRACE RESET  
2497 012650  
2498 012650 012737 000270 000302 TRACE: MOV #270,##FATAL ;MOVE TO MAILBOX # ***** 270 *****  
2499 012656 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR  
2500 012660 000000 HALT ;TRACE TRAP WAS NOT INHIBITED  
2501 ; TO SCOPE REPLACE HALT W/ 240  
2502 ; AND REPLACE NEXT INST W/ 750  
2503 012662 BR70: MOV #271,##FATAL ;MOVE TO MAILBOX # ***** 271 *****  
2504 012662 012737 000271 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR  
2505 012670 005212 HALT ;WRONG TSTNM,OR WRONG $TSTNM  
2506 012672 000000 ; TO SCOPE REPLACE HALT W/ 240  
2507 ; AND REPLACE NEXT INST W/ 743  
2508  
2509 012674 012767 000016 165112 TONT1: MOV #16,14  
2510 012702 012767 000022 165110 MOV #22,20  
2511 ;*****  
2512 ;TEST 102 TEST THAT THE TRACE BIT IS SAVED IN THE STACK  
2513 ;*****  
2514 012710 005237 000304 TST102: INC ##TESTN ;UPDATE TEST NUMBER  
2515 012714 022737 000102 000304 CMP #102,##TESTN ;SEQUENCE ERROR?  
2516 012722 001020 BNE STP3 ;BR TO ERROR HALT ON SEQ ERROR  
2517 012724 012706 000500 MOV #BUFF,%6 ;SET UP STACK POINTER  
2518 012730 012767 012754 165056 MOV #TRC1,14 ;TRACE TRAP RETURN  
2519 012736 005067 165054 CLR 16  
2520 012742 012746 000020 MOV #20,-(SP) ;SET THE T BIT  
2521 012746 012746 012754 MOV #TRC1,-(SP)  
2522 012752 000002 RTI
```



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.MAIN. MACY11 27(1006) 04-MAY-77 08113 PAGE 49
DFKABC.P11 03-MAY-77 08142 T102 TEST THAT THE TRACE BIT IS SAVED IN THE STACK SEQ 0049

2523 012754 036727 165516 000020 TRCI: BIT BUFF=2,#20 ;CHECK FOR T BIT ON STACK
2524 012762 001005 ; BNE STP3D
2525 012764 STP3: ;
2526 012764 012737 000272 000302 MOV #272,##FATAL ;MOVE TO MAILBOX # ***** 272 *****
2527 012772 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2528 012774 000000 HALT ;T BIT NOT SAVED ON THE STACK,OR WRONG STSTNM
2529 ; ; TO SCOPE REPLACE HALT W/ 240
2530 ; ; AND REPLACE NEXT INST W/ 752
2531 012776 012767 000016 165010 STP3D: MOV #16,14
2532
2533
2534 ;THIS ROUTINE TEST THAT NO LEGAL ADDRESS TRAPS.
2535 ;AND THAT AN ILLEGAL ADDRESS TRAPS TO LOCATION 4
2536 ;*****
2537 ;TEST 103 TEST NON-EXISTENT ADDRESS TRAPS
2538 ;*****
2539 013004 005237 000304 TST103: INC ##TESTN ;UPDATE TEST NUMBER
2540 013010 022737 000103 000304 CMP #103,##TESTN ;SEQUENCE ERROR?
2541 013016 001063 BNE AUTO1 ;BR TO ERROR HALT ON SEQ ERROR
2542
2543 ;THIS ROUTINE TESTS MEMORY UNTIL IT DOES A NXM TRAP
2544 013020 000402 BR ADALL
2545 013022 000000 TSL: 0
2546 013024 000000 CORH: 0
2547 013026 005000 ADALL: CLR #0
2548 013030 005067 164752 CLR 6
2549 013034 012767 013070 164742 MOV #ATRAP,4 ;SET UP ADDRESS TRAP ENTRANCE
2550 013042 012706 000500 NOR: MOV #BUFF,SP
2551 013046 105720 TSTB (0)+ ;IF OUTSIDE OF CORE, TRAP TO 4
2552 013050 020027 160000 CMP #0,#160000 ;IS POINTER IN SIDE CORE
2553 013054 101772 BLOS NOR ;TEST THE REST OF CORE
2554
2555 013056 012737 000273 000302 AUTO: MOV #273,##FATAL ;MOVE TO MAILBOX # ***** 273 *****
2556 013064 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2557 013066 000000 HALT ;SHOULD HAVE TRAPED
2558 ; ; TO SCOPE REPLACE HALT W/ 240
2559 ; ; AND REPLACE NEXT INST W/ 753
2560
2561 013070 010067 177730 ;RETURN HERE ON AN ADDRESS TRAP
2562 ATRAP: MOV RO,CORH ;MOVE THE FIRST NXM LOCATION IN CORH
2563 013074 012700 160001 ;THIS ROUTINE DOES NXM TRAPS UNTIL IT FINDS AN EXISTANT MEMORY LOCATION
2564 013100 012767 013136 164676 MOV #160001,RO ;SET UP THE HIGHEST MEM LOCATION
2565 013106 012706 000500 CTRAP: MOV #BTRAP,4 ;SET UP THE VECTOR
2566 013112 105740 MOV #BUFF,SP
2567 013114 005200 TSTB =(RO) ;DOES IT EXIST?
2568 013116 020067 177702 DTRAP: INC RO ;IF YES INCREMENT IT
2569 013122 001426 CMP RO,CORH ;IS IT THE SAME LOCATION?
2570 013124 012737 000274 000302 BEQ TRAPB
2571 013132 005212 MOV #274,##FATAL ;MOVE TO MAILBOX # ***** 274 *****
2572 013134 000000 INC (R2) ;SET MSGTYP TO FATAL ERROR
2573 ; ; CONTENTS OF RO AND CORH SHOULD HAVE BEEN EQUAL
2574 ; ; TO SCOPE REPLACE HALT W/ 240
2575 ; ; AND REPLACE NEXT INST W/ 730
2576 ; ; IF THIS COMPARISON FAILS IT MEANS
2577 ; ; THAT SOME LEGAL ADDRESS TRAPPED OR
2578 ; ; THAT AN ILLEGAL ADDRESS DID NOT TRAP
2578 013136 005767 164634 BTRAP: TST STATUS

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.MAIN. MACY11 27(1006) 04-MAY-77 08113 PAGE 50
DFKABC.P11 03-MAY-77 08142 T103 TEST NON-EXISTENT ADDRESS TRAPS SEQ 0050

2579 013142 001405 BEQ 16
2580 013144 012737 000275 000302 MOV #275,##FATAL ;MOVE TO MAILBOX # ***** 275 *****
2581 013152 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2582 013154 000000 HALT ;NEW PSW SHOULD HAVE BEEN ZERO
2583 ; ; TO SCOPE REPLACE HALT W/ 240
2584 ; ; AND REPLACE NEXT INST W/ 720
2585 013156 026727 169312 013114 16: CMP BUFF=4,#DTRAP
2586 013164 001745 BEQ CTRAP
2587 013166 AUTO:
2588 013166 012737 000276 000302 MOV #276,##FATAL ;MOVE TO MAILBOX # ***** 276 *****
2589 013174 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2590 013176 000000 HALT ;OLD PC WAS NOT SAVED OR WRONG STSTNM
2591 ; ; TO SCOPE REPLACE HALT W/ 240
2592 ; ; AND REPLACE NEXT INST W/ 707
2593 013200 012767 000006 164576 TRAPB: MOV #6,4
2594 013206 005067 164574 CLR 6
2595 ;THIS ROUTINE WILL FIGURE OUT IF YOU HAVE A DL11W
2596
2597 013212 005067 000020 CLR PROFTE
2598 013216 012706 000500 MOV #BUFF,SP ;SET UP THE STACK POINTER
2599 013222 012767 013240 164554 MOV #DL11W,4 ;SET UP THE TRAP VECTOR
2600 013230 005767 164330 TST TS ;TEST THE PUNCH STATUS REGISTER
2601 013234 000403 BR DL11W1 ;BRANCH IF IT EXISTS
2602 013236 000000 PROFTE: 000000
2603 013240 005267 177772 DL11W: INC PROFTE ;INCREMENT IF NO DL11W
2604 013244 012767 000006 164532 DL11W1: MOV #6,4
2605
2606 ;*****
2607 ;TEST 104 TEST THAT A TTY INTERRUPT CAUSES AN OVERFLOW TRAP
2608 ;*****
2609 013252 005237 000304 TST104: INC ##TESTN ;UPDATE TEST NUMBER
2610 013256 022737 000104 000304 CMP #104,##TESTN ;SEQUENCE ERROR?
2611 013264 001031 BNE TDEC0 ;BR TO ERROR HALT ON SEQ ERROR
2612 013266 005767 177744 TST PROFTE
2613 013272 001042 BNE R7TRX
2614 013274 000005 RESET
2615 013276 012767 000340 164472 MOV #340,STATUS ;LOCK OUT INTERRUPT
2616 013304 012706 000400 MOV #400,#6 ;SET UP STACK TO OVERFLOW
2617 013310 012767 013362 164466 MOV #TDEC77,4 ;SET UP OVERFLOW TRAP
2618 013316 012767 013350 164540 MOV #TDEC8,64 ;SET UP INTERRUPT VECTOR
2619 013324 012767 000100 164232 MOV #100,TTCSR ;SET INTERRUPT ENABLE
2620 013332 005067 164440 CLR STATUS ;ALLOW INTERRUPT TO OCCUR
2621 013336 012737 000277 000302 MOV #277,##FATAL ;MOVE TO MAILBOX # ***** 277 *****
2622 013344 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2623 013346 000000 HALT ;NO INTERRUPT OCCURRED
2624 ; ; TO SCOPE REPLACE HALT W/ 240
2625 ; ; AND REPLACE NEXT INST W/ 746
2626 013350 TDEC8:
2627 013350 012737 000300 000302 MOV #300,##FATAL ;MOVE TO MAILBOX # ***** 300 *****
2628 013356 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2629 013360 000000 HALT ;OVERFLOW TRAP DID NOT OCCUR OR WRONG STSTNM
2630 ; ; TO SCOPE REPLACE HALT W/ 240
2631 ; ; AND REPLACE NEXT INST W/ 741
2632 013362 005067 164176 TDEC77: CLR TTCSR ;CLEAR INTERRUPT ENABLE
2633 013366 012767 000006 164410 MOV #6,4
2634 013374 005067 164406 CLR 6

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2635 013400 R7TPX:
2636 ;*****
2637 ;TEST 105 TEST THAT A PENDING INTERRUPT OCCURS BEFORE TRAP
2638 ;*****
2639 013400 005237 000304 TST105: INC @*STESTN ;UPDATE TEST NUMBER
2640 013404 022737 000105 000304 CMP #105,@*STESTN ;SEQUENCE ERROR?
2641 013412 001037 BNE BR71 ;BR TO ERROR HALT ON SEQ ERROR
2642 013414 005767 177616 TST PROFTE
2643 013420 001046 BNE NODL
2644 013422 012706 000500 MOV #BUFF,%6
2645 013426 012767 000340 164342 MOV #340,STATUS ;SET TO A HIGH PRIORITY LEVEL
2646 013434 012767 013500 164422 MOV #TR0,64
2647 013442 012767 000100 164114 MOV #100,TTCSF ;INTERRUPT FOR TTY PUNCH/PRINTER
2648 013450 012767 013512 164356 MOV #BR71,34 ;TRAP VECTOR
2649 013456 012767 013524 164400 MOV #TR2,64 ;TTY VECTOR
2650 013464 012767 000340 164344 MOV #340,36 ;IF TRAP TRAPS, MOVE 340 TO PRIORITY
2651 013472 005067 164300 CLR STATUS ;SHOULD INTERRUPT AT END OF CLR INST
2652 013476 104400 TRAP ;TTY INTERRUPT SHOULD OVERRIDE TRAP
2653 013500
2654 013500 012737 000301 000302 TR0: MOV #301,@*SFATAL ;MOVE TO MAILBOX # ***** 301 *****
2655 013506 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2656 013510 000000 HALT ;TTY SHOULDN'T HAVE INTERRUPTED
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 740
2657
2658
2659 013512
2660 013512 012737 000302 000302 BR71: MOV #302,@*SFATAL ;MOVE TO MAILBOX # ***** 302 *****
2661 013520 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2662 013522 000000 HALT ;TRAP OCCURRED FIRST,OR WRONG STSTNM
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 733
2663
2664
2665 013524 005067 164306 TR2: CLR 36
2666 013530 042767 000100 164026 BIC #100,TTCSF
2667 013536
2668 NODL:
2669 ;*****
2670 ;TEST 106 TEST THAT A PENDING INTERRUPT, INTERRUPTS BETWEEN TRAPS
2671 ;*****
2672 013536 005237 000304 TST106: INC @*STESTN ;UPDATE TEST NUMBER
2673 013550 001031 CMP #106,@*STESTN ;SEQUENCE ERROR?
2674 013552 005767 177460 BNE TR5 ;BR TO ERPOP HALT ON SEQ ERROR
2675 013556 001046 TST PROFTE
2676 013560 012706 000500 BNE NODL1
2677 013564 012767 000340 164204 MOV #340,STATUS
2678 013572 012767 000100 163764 MOV #100,TTCSF
2679 013600 012767 013632 164226 MOV #TR3,34 ;TRAP
2680 013606 012767 013646 164250 MOV #TR4,64 ;TTY OUTPUT
2681 013614 012767 013634 164176 MOV #TP5,20 ;IOT
2682 013622 012767 000340 164172 MOV #340,22 ;IOT PRIORITY
2683 013630 104400 TRAP ;THE ACT OF TRAPPING LOWER PRIORITY
2684 013632 000004 TR3: IOT ;INTERRUPT SHOULD OCCUR IN PLACE OF IOT TRAP
2685 013634
2686 013634 012737 000303 000302 TR5: MOV #303,@*SFATAL ;MOVE TO MAILBOX # ***** 303 *****
2687 013642 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2688 013644 000000 HALT ;NO INTERRUPT BETWEEN TRAPS,OR WRONG STSTNM
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 741
2689
2690
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2691 013646 005067 164150 TR4: CLR 22 ;CLR IOT PRIORITY
2692 013652 012767 000036 164154 MOV #36,34
2693 013660 012767 000066 164176 MOV #66,64
2694 013666 012767 000022 164124 MOV #22,20
2695 013674
2696 NODL1:
2697 ;*****
2698 ;TEST 107 TEST THAT "RESET" GOES TO OUTSIDE WORLD
2699 ;*****
2700 013674 005237 000304 TST107: INC @*STESTN ;UPDATE TEST NUMBER
2701 013700 022737 000107 000304 CMP #107,@*STESTN ;SEQUENCE ERROR?
2702 013706 001027 BNE TST110-12 ;BR TO ERROR HALT ON SEQ ERROR
2703 013710 005767 177322 TST PROFTE
2704 013714 001031 RNE NODL2
2705 013716 012767 000100 163640 MOV #100,TTCSF ;SET INTERRUPT ENABLE
2706 013724 012767 000100 163626 MOV #100,TRCSR ;SET INTERRUPT ENABLE
2707 013732 000005 RESET ;SHOULD CLEAR INTERRUPT ENABLER
2708 013734 032767 000100 163622 BIT #100,TTCSF ;TEST FOR CLEAR
2709 013742 001405 BEQ 16
2710 013744 012737 000304 000302 MOV #304,@*SFATAL ;MOVE TO MAILBOX # ***** 304 *****
2711 013752 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2712 013754 000000 HALT ;RESET FAILED TO CLEAR TTCSR
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 754
2713
2714
2715 013756 032767 000100 163574 18: BIT #100,TRCSR ;TEST FOR CLEAR
2716 013764 001405 BEQ TST110
2717 013766 012737 000305 000302 MOV #305,@*SFATAL ;MOVE TO MAILBOX # ***** 305 *****
2718 013774 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2719 013776 000000 HALT ;RESET FAILED TO CLEAR TRCSR,OR WRONG STSTNM
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 743
2720
2721
2722 014000 NODL2:
2723 ;*****
2724 ;TEST 110 TEST THAT RESET HAS NO EFFECT ON THE TRACE TRAP
2725 ;*****
2726 014000 005237 000304 TST110: INC @*STESTN ;UPDATE TEST NUMBER
2727 014004 022737 000110 000304 CMP #110,@*STESTN ;SEQUENCE ERROR?
2728 014012 001014 BNE RESET3 ;BR TO ERROR HALT ON SEQ ERROR
2729 014014 012706 000500 MOV #BUFF,%6 ;SET STACK
2730 014020 012767 014056 163766 MOV #RESET2,14 ;SET UP TRACE VECTOR
2731 014026 012746 000020 MOV #20,=(R6) ;SET THE T-BIT ON STACK
2732 014032 012746 014040 MOV #18,=(R6) ;MOVE NEW PC ON STACK
2733 014036 000006 RTT
2734 014040 000005 18: RESET ;SHOULD HAVE NO EFFECT
2735 014042 000005 RESET ;NO EFFECT
2736 014044
2737 014044 012737 000306 000302 RESET3: MOV #306,@*SFATAL ;MOVE TO MAILBOX # ***** 306 *****
2738 014052 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2739 014054 000000 HALT ;TRACE TRAP FAILED,OR WRONG STSTNM
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 756
2740
2741
2742 014056 005067 163714 RESET2: CLR STATUS ;CLEAR TRACE
2743 014062 005067 163730 CLR 16 ;TRACE STATUS
2744 014066 012767 000016 163720 MOV #16,14
2745
2746 ;*****
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2747 ;TEST 111 TEST THAT WHEN TTY INTERRUPTS IT POPS NEW STATUS
2748 ;*****
2749 014074 005237 000304 TST111: INC @#STESTN ;UPDATE TEST NUMBER
2750 014100 022737 000111 000304 CMP #111,@#STESTN ;SEQUENCE ERROR?
2751 014106 001051 BNE TTY11 ;BR TO ERROR HALT ON SEQ ERROR
2752 014110 005767 177122 TST PROFIE
2753 014114 001055 BNE NODL3
2754 014116 000005 RESET
2755 014120 012706 MOV #BUFF,%6 ;SET UP STACK
2756 014124 012787 163732 MOV #TTY3,%6 ;INTERRUPT VECTOR
2757 014132 005067 163640 CLR STATUS ;DROP PROCESSOR PRIORITY
2758 014136 012767 000357 163722 MOV #357,%6 ;HIGH PRIORITY ON INTERRUPT
2759 014144 005167 163414 COM TTCSR ;SHOULD SET INTERRUPT ENABLE & INTERRUPT
2760 014150 026727 163622 000357 TTY3: CMP STATUS,%357
2761 014156 001405 BEQ 18
2762 014160 012737 000302 000302 MOV #307,@#FATAL ;MOVE TO MAILBOX # ***** 307 *****
2763 014166 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2764 014170 000000 HALT ;INTERRUPT DID NOT POP CORRECT STATUS
2765 ; TO SCOPE REPLACE HALT W/ 240
2766 ; AND REPLACE NEXT INST W/ 746
2767 014172 000005 18: RESET ;CLR NTERUPT ENABLE
2768 014174 012706 MOV #BUFF,%6 ;STACK SET UP
2769 014200 012767 014224 163656 MOV #TTY4,%6 ;INTERRUPT VECTOR
2770 014206 005067 163654 CLR 66 ;CLR NEW STATUS
2771 014212 012767 000157 163556 MOV #157,STATUS ;PROCESSOR STATUS
2772 014220 005167 163340 COM TTCSR ;SET INTERRUPT ENABLE
2773 014224 005767 163546 TTY4: TST STATUS
2774 014230 001405 BEQ TTT37
2775 014232 TTY11:
2776 014232 012737 000310 000302 MOV #310,@#FATAL ;MOVE TO MAILBOX # ***** 310 *****
2777 014240 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2778 014242 000000 HALT ;INCORRECT STATUS,OR WRONG STSTNM
2779 ; TO SCOPE REPLACE HALT W/ 240
2780 ; AND REPLACE NEXT INST W/ 721
2781 014244 005067 163314 TTT37: CLR TTCSR
2782 014250 NODL3:
2783 ;*****
2784 ;TEST 112 TEST THE 'WAIT' INSTRUCTION
2785 ;*****
2786 014250 005237 000304 TST112: INC @#STESTN ;UPDATE TEST NUMBER
2787 014254 022737 000112 000304 CMP #112,@#STESTN ;SEQUENCE ERROR?
2788 014262 001055 BNE STP4 ;BR TO ERROR HALT ON SEQ ERROR
2789 014264 042767 000100 163272 BIC #100,TPS ;CLEAR INTERRUPT ENABLE
2790 014272 012706 000500 MOV #BUFF,SP ;SET UP THE STACK
2791 014276 012767 014366 163560 MOV #WATE,%6 ;SET UP THE INTERRUPT VECTOR
2792 014304 005067 163536 CLR 66
2793 014310 105767 163230 WATE1: TSTB TPS ;WAIT FOR READY
2794 014314 100375 BPL WATE1 ;TO BE UP
2795 014316 012767 000015 163242 MOV #15,TPB ;DO A CARRIAGE RETURN
2796 014324 105767 163234 WATE2: TSTB TPS ;WAIT FOR READY TO COME UP
2797 014330 100375 BPL WATE2
2798 014332 012767 000015 163226 MOV #15,TPB ;DO ANOTHER CARRIAGE RETURN
2799 014340 052767 000100 163216 BIS #100,TPS ;SET THE INTERRUPT ENABLE
2800 014346 005067 163424 CLR STATUS ;CLEAR THE PSW
2801 014352 000001 WATE3: WAIT ;WAIT FOR THE INTERRUPT
    
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2803 014354 012737 000311 000302 MOV #311,@#FATAL ;MOVE TO MAILBOX # ***** 311 *****
2804 014362 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2805 014364 000000 HALT ;WAIT INSTRUCTION DID NOT LOOP
2806 ; TO SCOPE REPLACE HALT W/ 240
2807 ; AND REPLACE NEXT INST W/ 736
2808 014366 005767 163404 WATE: TST STATUS ;IS THE PSW CORRECT?
2809 014372 001405 BEQ 18
2810 014374 012737 000312 000302 MOV #312,@#FATAL ;MOVE TO MAILBOX # ***** 312 *****
2811 014402 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2812 014404 000000 HALT ;NEW PSW SHOULD HAVE BEEN ZERO
2813 ; TO SCOPE REPLACE HALT W/ 240
2814 ; AND REPLACE NEXT INST W/ 726
2815 014406 026727 164062 014354 18: CMP BUFF-4,%WATE3+2 ;IS THE OLD PC SAVED
2816 014414 001405 BEQ STP4E
2817 014416 STP4:
2818 014416 012737 000313 000302 MOV #313,@#FATAL ;MOVE TO MAILBOX # ***** 313 *****
2819 014424 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2820 014426 000000 HALT ;OLD PC WAS NOT SAVED OR WRONG STSTN
2821 ; TO SCOPE REPLACE HALT W/ 240
2822 ; AND REPLACE NEXT INST W/ 715
2823 014430 012767 000066 163426 STP4E: MOV #66,%6
2824 ;CLEAR ALL KT11-D REGISTERS
2825 014436 004767 001350 JSR %7,CLRALL ;MAP KERNEL 0 TO BANK 0, RW, 4K
2826 014442 012777 077406 164106 MOV #77406,%KPDRO ;MAP KERNEL PAR/PDR 7 TO EXT BANK
2827 014450 004767 001424 JSR PC,KERN7 ;SETUP RETURN VECTOR
2828 014454 012777 014510 164030 MOV #INT25,%KTVEC
2829 014462 005077 164026 CLR %KTSTA
2830 014466 012704 020000 MOV #20000,R4 ;USE R4 TO REFERENCE NR KERNEL 1
2831 014472 005277 164004 INC %SR0 ;TURN ON KT11-D
2832 014476 005724 ADR25: TST (R4)+ ;REFERENCE NR KERNEL 1
2833 014500 000000 ADR25A: HALT ;SHOULD HAVE ABORTED ALREADY
2834 014502 005077 163774 CLR %SR0 ;TURN OFF KT11-D
2835 014506 000442 BR DON25
2836 014510 017701 163766 INT25: MOV %SR0,R1 ;SAVE CONTENTS OF SR0
2837 014514 005377 163762 DEC %SR0 ;TURN OFF KT11-D
2838 014520 022701 100003 CMP #100003,R1 ;CHECK SAVED CONTENTS OF SR0
2839 014524 001401 BEQ .+4
2840 014526 000000 HLT ;SR0 INCORRECT AFTER NR ABORT
2841 ;(SEE SAVED CONTENTS IN R1)
2842 014530 022777 014476 163752 CMP #ADR25,%SR2 ;CK SR2
2843 014536 001401 BEQ .+4
2844 014540 000000 HLT ;SR2 INCORRECT-SHOULD CONTAIN ADDRESS
2845 ;OF LAST FETCH BEFORE THE ABORT
2846 014542 005077 163742 CLR %SR2 ;TRY TO WRITE INTO SR2
2847 014546 022777 014476 163734 CMP #ADR25,%SR2 ;SR2 SHOULD BE READ ONLY
2848 014554 001401 BEQ .+4
2849 014556 000000 HLT ;SR2 NOT READ ONLY
2850 014560 022777 077506 163770 CMP #77506,%KPDRO
2851 014566 001401 BEQ .+4
2852 014570 000000 HLT ;KERNEL PDR 0 INCORRECT
2853 ;W BIT SHOULD HAVE BEEN SET BY THE STACK WRITE
2854 014572 005777 163762 TST %KPDRI
2855 014576 001401 BEQ .+4
2856 014600 000000 HLT ;KERNEL PDR 1 INCORRECT
2857 014602 021627 014500 CMP (R6),#ADR25A ;CHECK VALUE PUSHED ON STACK
2858 014606 001401 BEQ .+4
    
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2859 014610 000000 HLT ;INCORRECT VALUE ON STACK
2860 014612 022626 CMP (R6)+,(R6)+ ;RESTORE STACK
2861 014614 005077 163674 163664 DON25; CLR @KTSTA ;CHANGE TRAP VECTOR TO CAUSE A
2862 014620 016777 163670 163664 MOV KTSTA,@KTVEC ;HALT ON A FALSE TRAP
2863
2864
2865
2866 014626 004767 001204 JSR %7,RWALL ;MAP ALL PAGES RW,4K,BANK 0
2867 014632 012777 000004 163720 MOV #4,@KPDRI ;MAP KERNEL 1 NR, 1 PAGE
2868 014640 004767 001234 JSR PC,KERN7 ;MAP KERNEL PAR/PDR 7 TO EXT BANK
2869 014644 012777 014670 163640 MOV #RET33,@KTVEC ;SETUP ABORT RETURN
2870 014652 005077 163636 CLR @KTSTA
2871 014656 005277 163620 INC @SRO ;TURN ON KT11-D
2872 014662 005737 030000 TST @#30000 ;REFERENCE NR KERNEL 1 - SHOULD ABORT
2873 014666 000000 HLT ;NO NR ABORT
2874 014670 022777 140003 163604 RET33; CMP #140003,@SRO ;CHECK SRO
2875 014676 001401 BEQ .+4
2876 014700 000000 HLT ;SRO INCORRECT - SHOULD SHOW KERNEL
2877 ;PAGE 1, AND BOTH NR + PL ERRORS SET
2878 014702 005077 163574 CLR @SRO
2879 014706 016777 163602 163576 MOV KTSTA,@KTVEC ;RESTORE TRAP CATCHER
2880
2881
2882 014714 004767 001072 JSR %7,CLRALL ;CLEAR ALL KT11-D REGISTERS
2883 014720 004767 001154 JSR PC,KERN7 ;MAP KERNEL PAR/PDR 7 TO EXT BANK
2884 014724 012777 077406 163624 MOV #77406,@KPDRO ;MAP KERNEL 0 RW,RK,BANK0
2885 014732 012777 077402 163620 MOV #77402,@KPDRI ;MAP KERNEL 1 NAM,KSZ K,BANK0
2886 014740 012777 014774 163544 MOV #INT40,@KTVEC ;SETUP RETURN VECTOR
2887 014746 005077 163542 CLR @KTSTA
2888 014752 005277 163524 INC @SRO ;TURN ON KT11-D
2889 014756 013737 037776 037776 ADR40; MOV @#37776,@#37776 ;REFERENCE KERNEL 1 - 1ST ABORT
2890 014764 005077 163512 CLR @SRO ;TURN OFF KT11-D
2891 014770 000000 HLT ;REFERENCE TO KERNEL 1
2892 014772 000510 BR ;DIDN'T ABORT
2893 014774 042777 000001 163500 INT40; BIC #1,@SRO ;TURN OFF KT11-D
2894 015002 022777 020002 163472 CMP #20002,@SRO ;CHECK SRO
2895 015010 001401 BEQ .+4
2896 015012 000000 HLT ;SRO INCORRECT AFTER NAM ABORT
2897 015014 012777 015050 163470 MOV #INT40A,@KTVEC ;SETUP NEW RETURN VECTOR
2898 015022 022626 CMP (R6)+,(R6)+ ;RESTORE STACK POINTER
2899 015024 012702 037776 MOV #37776,R2 ;SETUP R2 TO REFERENCE KERNEL 1
2900 015030 052777 000001 163444 BIS #1,@SRO ;TURN ON KT11-D
2901 015036 012242 MOV (R2)+,(R2) ;REFERENCE KERNEL 1 -2ND ABORT
2902 015040 005077 163436 ADR40A; CLR @SRO ;TURN OFF KT11-D
2903 015044 000000 HLT ;2ND REFERENCE TO KERNEL 1
2904 015046 000462 BR ;DIDN'T ABORT
2905 015050 042777 000001 163424 INT40A; BIC #1,@SRO ;TURN OFF KT11-D
2906 015056 022777 020002 163416 CMP #20002,@SRO ;CHECK SRO
2907 015064 001401 BEQ .+4
2908 015066 000000 HLT ;SRO INCORRECT AFTER 2ND NAM ABORT
2909 015070 022777 014756 163412 CMP #ADR40,@SR2 ;CHECK SR2
2910 015076 001401 BEQ .+4
2911 015100 000000 HLT ;SR2 DOESN'T CONTAIN VALUE FROM 1ST ABORT
2912 015102 021627 015040 CMP (R6),#ADR40A ;CHECK ADDRESS PUSHED ON STACK
2913 015106 001401 BEQ .+4
2914 015110 000000 HLT ;INCORRECT ADDRESS ON STACK

2915 015112 022626 CMP (R6)+,(R6)+ ;RESTORE STACK POINTER
2916 015114 012777 015150 163370 MOV #INT40B,@KTVEC ;CHANGE RETURN ADDRESS
2917 015122 005077 163354 CLR @SRO ;CLEAR NAM ERROR BIT-SHOULD
2918 ;"UNLOCK" ERROR TRACKING
2919 015126 012702 037776 MOV #37776,R2 ;SETUP R2 TO REFERENCE KERNEL 1
2920 015132 005277 163344 INC @SRO ;TURN ON KT11-D
2921 015136 012242 ADR40B; MOV (R2)+,(R2) ;3RD NAM REFERENCE, ERROR BIT WAS CLEARED
2922 015140 005077 163336 ADR40C; CLR @SRO ;TURN OFF KT11-D
2923 015144 000000 HLT ;3RD REFERENCE TO KERNEL 1
2924 015146 000422 BR ;DIDN'T ABORT
2925 015150 042777 000001 163324 INT40B; BIC #1,@SRO ;TURN OFF KT11-D
2926 015156 022777 020002 163316 CMP #20002,@SRO ;CHECK SRO
2927 015164 001401 BEQ .+4
2928 015166 000000 HLT ;SRO INCORRECT
2929 015170 022777 015136 163312 CMP #ADR40B,@SR2 ;CHECK SR2
2930 015176 001401 BEQ .+4
2931 015200 000000 HLT ;SR2 INCORRECT - SHOULD CONTAIN
2932 ;LAST FETCH ADDRESS BEFORE ABORT
2933 015202 022716 015140 CMP #ADR40C,(SP) ;CHECK STACK
2934 015206 001401 BEQ .+4
2935 015210 000000 HLT ;PC ON STACK INCORRECT
2936 015212 022626 CMP (R6)+,(R6)+ ;RESTORE STACK POINTER
2937 015214 005077 163262 DONE40; CLR @SRO ;CLEAR ERROR BIT
2938 015220 005077 163270 CLR @KTSTA ;CHANGE TRAP RETURN TO CAUSE A HALT
2939 015224 016777 163264 163260 MOV KTSTA,@KTVEC ;ON A FALSE INTERRUPT
2940
2941 ;*****
2942 ;TEST 113 TEST THAT ALL RESERVED INSTRUCTIONS TRAP
2943 ;*****
2944 015232 005237 000304 TST113; INC @#TESTN ;UPDATE TEST NUMBER
2945 015236 022737 000113 000304 CMP #113,@#TESTN ;SEQUENCE ERROR?
2946 015244 001166 BNE RET4 ;BR TO ERROR HALT ON SEQ ERROR
2947 015246 042767 000100 162310 BIC #100,TPS
2948 015254 012737 015302 000244 MOV #TRAP244,@#244 ; SET UP TO SEE IF
2949 015262 013767 000010 000024 MOV #810,TENSAVE ; THIS PROCESSOR HAS THE
2950 015270 012737 015312 000010 MOV #TRAP10,@#10 ; FLOATING POINT OPTION
2951 015276 170007 .WORD 170007 ; AN ILLEGAL FPP INSTRUCTION
2952 015300 000406 BR ; THE FOLLOWING
2953 015302 TRAP244; ; IF FPP IN==
2954 015302 013767 015666 000362 MOV @#FPP,FINISH ; RESET END OF TABLE POINTER
2955 015310 000002 RTI ; AND RETURN
2956 015312 TRAP10; ; LEAVE THE TABLE ALONE
2957 015312 000002 RTI ; AND RETURN
2958 015314 000000 TENSAVE;.WORD 0 ; A PLACE TO STORE CONTENTS OF 10
2959
2960 015316 AROUND; ; CONTINUATION POINT
2961 015316 012737 000246 000244 MOV #246,@#244 ; RESTORE THE TRAP VECTOR
2962 015324 016737 177764 000010 MOV TENSAVE,@#10 ; RESTORE THE ILLEGAL INST. VECTOR
2963 015332 012703 015646 MOV #TABLE,TAB ;TABLE POINTER
2964 015336 012305 MOV (TAB)+,FIRST ;FIRST OR CURRENT INSTRUCTION
2965 015340 012301 MOV (TAB)+,LAST ;LAST INSTRUCTION OR GROUP
2966 015342 020567 000324 CMP FIRST,FINISH ;TESTED ALL
2967 015346 001415 BEQ GIN3 ;YES BRANCH
2968 015350 010567 000320 MOV FIRST,INST ;SET UP INST
2969 015354 005267 000314 GIN2; INC INST
2970 015360 012767 015552 162422 MOV #RET,10 ;SET UP RETURN FROM TRAP

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2971 015366 012706 000500      MOV    #BUFF,SP      ;SET UP STACK POINTER
2972 015372 005067 162400      CLR    CC            ;CLEAR PRIORITY
2973 015376 000167 000272      JMP    INST          ;EXECUTE RESERVED INSTRUCTION
2974 015402 005237 000306      GIN3: INC    ##$PASS
2975 015406 105267 000116      INCB  PASSPT        ;SHOULD PRINT THIS PASS?
2976 015412 001027              BNE    ACT           ;NO
2977 015414 132767 000040 162677      BITB  #40,$ENVM     ;WILL APT ALLOW PRINTING?
2978 015422 001023              BNE    ACT           ;NO
2979 015424 023727 000042 015502      CMP    #42,$SENDAD
2980 015432 001417              BEQ    ACT
2981 015434 012700 015532      MOV    #MSG,RO      ;GET MSG ADDR.
2982 015440 105737 177564      WAIT: TSTB  #TPS     ;TTY READY
2983 015444 100375              BPL   WAIT          ;NO WAIT
2984 015446 112037 177566      MOVB  (RO)+,$TPB    ;PRINT CHARACTER
2985 015452 001372              BNE   WAIT          ;NEXT IF NOT DONE.
2986 015454 105737 177564      WAIT1: TSTB  #TPS
2987 015460 100375              BPL   WAIT1
2988 015462 000005              RESET
2989 015464 012767 177761 000036      MOV    #177761,PASSPT ;DO IT ABOUT 15 DECIMAL TIMES
2990 015472 013700 000042      ACT:  MOV    #42,RO  ;CHECK ACT
2991 015476 001405              BEQ   GOAGIN        ;KEEP GOING
2992 015500 000005              RESET
2993 015502 004710      $ENDAD: JSR    PC,(RO) ;ACT HOOKS
2994 015504 000240      NOP
2995 015506 000240      NOP
2996 015510 000240      NOP
2997 015512 012767 000012 162270      GOAGIN: MOV   #12,10
2998 015520 005067 162266      CLR    12
2999 015524 000167 163076      JMP    RESTRT       ;DO NEXT PASS
3000 015530 177777      PASSPT: -1
3001 015532 005013 047105 020104      MSG:  .ASCIZ <15><12>,.END OF DFKAB .
3002 015540 043117 042040 045506
3003 015546 041101 000040
3004
3005 ;TRAPPING SHOULD SEND YOU HERE
3006 RET:  CMP    SP,#BUFF-4 ;TEST DECREMENT OF SP
3007 015556 001405      BEQ   RET1
3008 015560 012737 000314 000302      MOV    #314,##$FATAL ;MOVE TO MAILBOX # ***** 314 *****
3009 015566 005212      INC   (R2)          ;SET MSGTYP TO FATAL ERROR
3010 015570 000000      HALT ;WRONG DECREMENT
3011 ; TO SCOPE REPLACE HALT W/ 240
3012 ; AND REPLACE NEXT INST W/ 625
3013 015572 026727 162676 015676      RET1:  CMP    BUFF-4,$INST+2 ;LOC OF INST UNINCREMENTED
3014 015600 001405      BEQ   RET2
3015 015602 012737 000315 000302      MOV    #315,##$FATAL ;MOVE TO MAILBOX # ***** 315 *****
3016 015610 005212      INC   (R2)          ;SET MSGTYP TO FATAL ERROR
3017 015612 000000      HALT ;INST INC ON TRAP
3018 ; TO SCOPE REPLACE HALT W/ 240
3019 ; AND REPLACE NEXT INST W/ 614
3020 015614 005767 162656      RET2:  TST   BUFF-2
3021 015620 001405      BEQ   RET3
3022 015622      RET4:
3023 015622 012737 000316 000302      MOV    #316,##$FATAL ;MOVE TO MAILBOX # ***** 316 *****
3024 015630 005212      INC   (R2)          ;SET MSGTYP TO FATAL ERROR
3025 015632 000000      HALT ;CONDITION CODES SET ON TRAP OR WRONG $TSTM
3026 ; TO SCOPE REPLACE HALT W/ 240
    
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3027 ; AND REPLACE NEXT INST W/ 604
3028 015634 026701 000034      RET3:  CMP    INST,LAST
3029 015640 001636      BEQ   GIN1
3030 015642 000167 177506      JMP    GIN2
3031 ;FINISH OLD GROUP
3032 015646 000006      TABLE: 6 ;END OF INSTRUCTION GROUP
3033 015650 000077              77 ;END OF OPERATE
3034 015652 000207              207 ;RTS,RT1,JMP
3035 015654 000227              227
3036 015656 006777              6777
3037 015660 007777              7777
3038 015662 075037              075037
3039 015664 076777              76777
3040 015666 167777      FPP:  167777 ; START OF THE FPP INSTRUCTIONS
3041 015670 177777              177777
3042 015672 015672      FINISH: . ;END FLAG
3043 015674 000000      INST:  HALT ;WILL CONTINUE RESERVED INST
3044 015676 000000      HALT ;SHOULD TRAP TO LOC 10
3045 015700 000000      HALT ;LOC 10 SHOULD SEND YOU TO
3046 015702 000000      HALT ;RET
3047 015704 000000      HALT
3048 015706 012767 015716 162110      PWRDWN: MOV   #PWRUP,24
3049 015714 000000      HALT
3050
3051 015716 012767 015706 162100      PWRUP: MOV   #PWRDWN,24
3052 015724 012706 000500      MOV   #BUFF,SP
3053 015730 132767 000040 162363      BITB  #40,$ENVM     ;WILL APT ALLOW PRINTING?
3054 015736 001013      BNE  PFRES          ;NO
3055 015740 012700 015772      MOV   #MSGPWF,RO    ;GET MSG ADDR.
3056 015744 105737 177564      PHWAIT: TSTB #TPS   ;TTY READY
3057 015750 100375      BPL  PHWAIT        ;NO WAIT
3058 015752 112037 177566      MOVB  (RO)+,$TPB    ;PRINT CHARACTER
3059 015756 001372      BNE  PHWAIT        ;NEXT IF NOT DONE.
3060 015760 105737 177564      PHWAIT1: TSTB #TPS
3061 015764 100375      BPL  PHWAIT1
3062 015766 000167 162634      PFRES: JMP    RESTRT
3063 015772 005015 047520 042527      MSGPWF: .ASCIZ <15><12>,.POWER FAILED1.
3064 016000 020122 040506 046111
3065 016006 042105 000041
3066 016012 005077 162464      CLRALL: CLR   #SRO
3067 016016 005000      CLR   RO
3068 016020 012701 000040      MOV   #32,R1 ;COUNT OF REGISTERS TO BE CLEARED
3069 016024 005070 000516      CLR   @ADRTAB(RO) ;CLEAR REGISTERS THRU ADDRESS TABLE
3070 016030 005720      TST  (RO)+ ;MOVE POINTER
3071 016032 077104      SOB  R1,CLRRLP ;LOOP TILL DONE
3072 016034 000207      RTS
3073
3074 ;SUBROUTINE TO MAKE ALL PAGES RW, BANK 0, 4K, UP
3075 016036 005077 162440      RWALL: CLR   #SRO
3076 016042 012701 000516      MOV   #ADRTAB,R1 ;R1 POINTS TO ADDRESS TABLE
3077 016046 012700 000010      RWL1: MOV   #10,RO ;RO IS COUNTER
3078 016052 005071 000020      RWL2: CLR   @20(R1) ;CLEAR PAR
3079 016056 012731 077406      MOV   #77406,@(R1)+ ;SET PDR RW, 4K
3080 016062 077005      SOB  RO,RWL2
3081 016064 062701 000020      ADD  #20,R1
3082 016070 020127 000616      CMP   R1,$ADREND ;POINTER TO NEXT GROUP
    
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3083	016074	002764							BLT	RWL1
3084	016076	000207							RTS	37
3085									;MAP KERNEL PAR/PDR 7 TO EXTERNAL BANK	
3086	016100	012777	007600	162506	KERN71	MOV	#7600,#KPAR7			
3087	016106	012777	077406	162460		MOV	#77406,#KPDR7			
3088	016114	000207				RTS	PC			
3089		000001								.END

ABASE	=	000000		254						
ACDW1	=	000000		254						
ACDW2	=	000000		254						
ACPUOP	=	000000		254	269					
ACT		015472	2976	2978	2980	2990*				
ADALL		013026	2544	2547*						
ADDW0	=	000000		254						
ADDW1	=	000000		254						
ADDW10	=	000000		254						
ADDW11	=	000000		254						
ADDW12	=	000000		254						
ADDW13	=	000000		254						
ADDW14	=	000000		254						
ADDW15	=	000000		254						
ADDW2	=	000000		254						
ADDW3	=	000000		254						
ADDW4	=	000000		254						
ADDW5	=	000000		254						
ADDW6	=	000000		254						
ADDW7	=	000000		254						
ADDW8	=	000000		254						
ADDW9	=	000000		254						
ADEVC	=	000000		254	260					
ADEVM	=	000000		254						
ADREND		000616		347*	3082					
ADRTAB		000516		311*	3069*	3076				
ADR25		014476		2832*	2842	2847				
ADR25A		014500		2833*	2857					
ADR40		014756		2889*	2909					
ADR40A		015040		2902*	2912					
ADR40B		015136		2921*	2929					
ADR40C		015140		2922*	2933					
AENV	=	000000		254	265					
AENVM	=	000000		254	266					
AFATAL	=	000000		254	257					
AMADR1	=	000000		254						
AMADR2	=	000000		254						
AMADR3	=	000000		254						
AMADR4	=	000000		254						
AMANS1	=	000000		254						
AMANS2	=	000000		254						
AMANS3	=	000000		254						
AMANS4	=	000000		254						
AMSCAD	=	000000		254	262					
AMSCLG	=	000000		254	263					
AMSCTY	=	000000		254	256					
ANTYP1	=	000000		254						
ANTYP2	=	000000		254						
ANTYP3	=	000000		254						
ANTYP4	=	000000		254						
APASS	=	000000		254	259					
APRIOR	=	000000		254						
AROUND		015316		2952	2960*					
ASWREG	=	000000		254	267					
ATESTN	=	000000		254	258					
ATRAP		013070		2549	2561*					

2072	2081	2090	2099	2108	2118	2126	2135	2143	2152	2160	2169	2177
2186	2194	2203	2211	2219	2227	2235	2245	2262	2272	2275	2281	2290
2293	2299	2306	2314	2317	2320	2325	2335	2347	2357	2370	2379	2388
2398	2406	2415	2421	2428	2438	2445	2453	2460	2471	2479	2487	2494
2501	2507	2517	2529	2542	2558	2573	2583	2591	2612	2624	2630	2642
2657	2663	2674	2689	2703	2713	2720	2729	2740	2752	2765	2779	2790
2806	2813	2821	2839	2843	2848	2851	2855	2858	2875	2895	2907	2910
2913	2927	2930	2934	2947	3011	3018	3026	3042				

.SX = 000330

283# 288

.ABS. 016116 000

ERRORS DETECTED: 0
DEFAULT GLOBALS GENERATED: 0

DFKABC,DFKABC/NL;TOC/SOL/CRF/DS;ERFZ,DFKABC.P11
RUN-TIME: 17 13 1 SECONDS
RUN-TIME RATIO: 93/31=2.9
CORE USED: 10K (20 PAGES)