

PDP11/34

11/34 TRAPS TST
CFKABD0

AH-8047D-MC

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IDENTIFICATION

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1110	TEST THAT RESET HAS NO EFFECT ON THE TRACE TRAP
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1112	TEST THE 'WAIT' INSTRUCTION
1113	TEST THAT ALL RESERVED INSTRUCTIONS TRAP

:ALL INSTRUCTIONS THAT ARE RESERVED
:SHOULD TRAP TO LOCATION 10, AND THE
:PC THAT POINTS TO THE TRAPPING INSTRUCTION
:SHOULD BE PLACED ON THE STACK

:LISTING

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000006
000006
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000001
000005
000002
000000
000003
000004
000004
000014
000030
000020
000034
177564
177560
177564
177566
000240
000240
177776
000077
000010
004700
000100
177776

.LIST ME
.NLIST MC,MD,CND
.ABS
SP=%6
R6=%6
TAB=%3
LAST=%1
FIRST=%5
R2=%2
HLT=HALT
TRT=3
ITRAP5=4
RTRAP5=4
RTRAP4=14
RTRAP3=30
RTRAP2=20
RTRAP1=34
ITCSR=177564
TRCSR=177560
TPS=177564
TPB=177566
BELL=240
NOP=240
STATUS=177776
TRAPA=7
RTRAP=10
ILLA=004700
ILLB=100
CC=177776

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

```

40          000200          . =200
41 000200 000167 000414    JMP     BEGIN
42          000210          . =210
43 000210 005037 000306    CLR     @SPASS
44 000214 000167 000400    JMP     BEGIN
45          000300          . 300
46          .....
47
48          .SBTTL ACT11 HOOKS
49          :HOOKS REQUIRED BY ACT11
50          $SVPC-          ;SAVE PC
51          . =46
52 000046 015530          $ENDAD          ;;1)SET LOC.46 TO ADDRESS OF $ENDAD IN .SEOP
53          . 52
54 000052 000000          .WORD 0          ;;2)SET LOC.52 TO ZERO
55          -$SVPC          ;; RESTORE PC
56          .....
57
58          .SBTTL APT MAILBOX-ETABLE
59
60
61
62          .EVEN
63 000300 $MAIL:          ;; APT MAILBOX
64 000300 $MSGTY: .WORD  AMSGTY  ;; MESSAGE TYPE CODE
65 000302 $FATAL: .WORD  AFATAL  ;; FATAL ERROR NUMBER
66 000304 $TESTN: .WORD  ATESTN  ;; TEST NUMBER
67 000306 $PASS:  .WORD  APASS   ;; PASS COUNT
68 000310 $DEVCT: .WORD  ADEVCT  ;; DEVICE COUNT
69 000312 $UNIT:  .WORD  AUNIT   ;; I/O UNIT NUMBER
70 000314 $MSGAD: .WORD  AMSGAD  ;; MESSAGE ADDRESS
71 000316 $MSGLG: .WORD  AMSGLG  ;; MESSAGE LENGTH
72 000320 $ETABLE:          ;; APT ENVIRONMENT TABLE
73 000320 $ENV:   .BYTE  AENV     ;; ENVIRONMENT BYTE
74 000321 $ENVM: .BYTE  AENVM   ;; ENVIRONMENT MODE BITS
75 000322 $SWREG: .WORD  ASWREG  ;; APT SWITCH REGISTER
76 000324 $USWR:  .WORD  AUSWR   ;; USER SWITCHES
77 000326 $CPUOP: .WORD  ACPUOP  ;; CPU TYPE, OPTIONS
78          *          BITS 15-11=CPU TYPE
79          *          11/04=01,11/05=02,11/20 03,11/40-04,11/45 05
80          *          11/70=06,PDQ=07,0-10
81          *          BIT 10=REAL TIME CLOCK
82          *          BIT 9=FLOATING POINT PROCESSOR
83          *          BIT 8=MEMORY MANAGEMENT
84 000330 $E^END:
85          .MEXIT
86          .....
87
88          .SBTTL APT PARAMETER BLOCK
89          :SET LOCATIONS 24 AND 44 AS REQUIRED FOR APT
90          .....
91          . $X          ;; SAVE CURRENT LOCATION
92          . =24          ;; SET POWER FAIL TO POINT TO START OF PROGRAM
93 000024 000200          200          ;; FOR APT START UP
94          . -44          ;; POINT TO APT INDIRECT ADDRESS PNTR.
95 000044 000330          $APTHDR ;; POINT TO APT HEADER BLOCK
  
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96          000330          .-.SX  ;;RESET LOCATION COUNTER
97          .....
98          ;;SETUP APT PARAMETER BLOCK AS DEFINED IN THE APT-PDP11 DIAGNOSTIC
99          ;;INTERFACE SPEC.
100
101 000330  $APTHD:
102 000330 000000  $HIBTS: .WORD 0 ;;TWO HIGH BITS OF 18 BIT MAILBOX ADDR.
103 000332 000300  $MBADR: .WORD $MAIL ;;ADDRESS OF APT MAILBOX (BITS 0-15)
104 000334 000002  $STSM: .WORD 2 ;;RUN TIM OF LONGEST TEST
105 000336 000002  $PASTM: .WORD 2 ;;RUN TIME IN SECS. OF 1ST PASS ON 1 UNIT (QUICK VERIFY)
106 000340 000000  $UNITM: .WORD 0 ;;ADDITIONAL RUN TIME (SECS) OF A PASS FOR EACH ADDITIONAL UNIT
107 000342 000014  $ETEND-$MAIL/2 ;;LENGTH MAILBOX-ETABLE(WORDS)
108          $STSTM=$TESTN
109          $ERROR-$FATAL
110
111          . =500
112 000500 000000  BUFF: 0
113 000502 177572  SR0: 177572
114 000504 177573  SR0H: 177573
115 000506 177574  SR1: 177574
116 000510 177576  SR2: 177576
117 000512 000250  KTVEC: 250
118 000514 000252  KTSTA: 252
119 000516
120 000516 177600  UPDR0: 177600 ;;USER PAGE DESCRIPTOR REGISTERS
121 000520 177602  UPDR1: 177602
122 000522 177604  UPDR2: 177604
123 000524 177606  UPDR3: 177606
124 000526 177610  UPDR4: 177610
125 000530 177612  UPDR5: 177612
126 000532 177614  UPDR6: 177614
127 000534 177616  UPDR7: 177616
128
129 000536 177640  UPAR0: 177640 ;;USER PAGE ADDRESS REGISTERS
130 000540 177642  UPAR1: 177642
131 000542 177644  UPAR2: 177644
132 000544 177646  UPAR3: 177646
133 000546 177650  UPAR4: 177650
134 000550 177652  UPAR5: 177652
135 000552 177654  UPAR6: 177654
136 000554 177656  UPAR7: 177656
137
138 000556 172300  KPDR0: 172300 ;;KERNEL PAGE DESCRIPTOR REGISTERS
139 000560 172302  KPDR1: 172302
140 000562 172304  KPDR2: 172304
141 000564 172306  KPDR3: 172306
142 000566 172310  KPDR4: 172310
143 000570 172312  KPDR5: 172312
144 000572 172314  KPDR6: 172314
145 000574 172316  KPDR7: 172316
146
147 000576 172340  KPAR0: 172340 ;;KERNEL PAGE ADDRESS REGISTERS
148 000600 172342  KPAR1: 172342
149 000602 172344  KPAR2: 172344
150 000604 172346  KPAR3: 172346
151 000606 172350  KPAR4: 172350
    
```

*52	000610	172352	KPAR5:	172352
*53	000612	172354	KPAR6:	172354
*54	000614	172356	KPAR7:	172356
*55	000616	000614	ADREND:	.-?
*56				
*57				
*58				


```

159
160 000620 012737 177777 015556 BEGIN: MOV #1, @WPASSPT ;CLEAR THE ITERATION COUNTER
161 000626 012700 016061 MOV #MSG1, R0 ;GET TITLE ADRS
162 000632 105767 176726 1$: TSTB TPS ;TTY READY
163 000636 100375 BPL 1$ ;NO WAIT
164 000640 112067 176722 MOVB (R0)+, TPB ;PRINT CHARACTER
165 000644 001372 BNE 1$ ;NEXT IF NOT DONE
166 000646 105767 176712 2$: TSTB TPS ;
167 000652 100375 BPL 2$ ;
168 000654 005067 177420 RESTRT: CLR $MSGTY
169 000660 012767 015714 177136 MOV #PWRDWN, 24 ;SET UP THE POWER DOWN VECTOR
170 000666 012767 000340 177132 MOV #340, 26 ;SET UP POWER DOWN PRIORITY
171 000674 005067 177404 CLR $STINM
172 000700 005067 177376 CLR $ERROR
173 000704 012702 000300 MOV #MSGTY, R2
174
175 ;SPECIAL CASE OF ODD; .EVEN .BYTE AND REGISTER 6
176 000000 HERE 0
177
178 000710 000167 000024 JMP TST1
179 000714 000000 K1: 0
180 000716 000000 K2: 0
181 000720 000000 K3: 0
182 000722 000000 K4: 0
183 000724 000000 K5: 0
184 000726 000000 K6: 0
185 000730 052525 K7: 052525
186 000732 052400 K10: 052400
187 000734 000000 K11: 0
188 000736 000000 K12: 0
189
190 ;*****
191 ;TEST 1 TEST AUTO INCRFMET AND DECREMENT OF R6 FOR WORD AND BYTES
192 ;*****
192 000740 005237 000304 TST1: INC @TESTN ;UPDATE TEST NUMBER
193 000744 022737 000001 000304 CMP #1, @TESTN ;SEQUENCE ERROR?
194 000752 001137 BNE TST2-12 ;BR TO ERROR HALT ON SEQ ERROR
195 000754 005006 CLR %6
196 000756 112667 177016 MOVB (6)+, HERE ;SIX SHOULD INCREMENT BY TWO
197 000762 020627 000002 CMP %6, #2
198 000766 001405 BEQ BR1
199 000770 012737 000001 000302 MOV #1, @SFATAL ;MOVE TO MAILBOX # ***** 1 *****
200 000776 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
201 001030 000000 HALT ;R6 DID NOT AUTO INCREMENT BY TWO
202 ; TO SCOPE REPLACE HALT W/ 240
203 ; AND REPLACE NEXT INST W/ 764
204
205 001002 012706 001000 BR1: MOV #1000, %6
206 001006 114627 000000 MOVB -(6), #HERE ;SHOULD DECREMENT BY TWO
207 001012 020627 000776 CMP %6, #776
208 001016 001405 BEQ BR2
209 001020 012737 000002 000302 MOV #2, @SFATAL ;MOVE TO MAILBOX # ***** 2 *****
210 001026 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
211 001030 000000 HALT ;R6 DID NOT AUTO DECREMENT BY 2
212 ; TO SCOPE REPLACE HALT W/ 240
213 ; AND REPLACE NEXT INST W/ 750
214

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215 001032 005006          BR2:  CLR      %6
216 001034 112626          MOVB   (6)+,(6)+      ;DOUBLES AUTO INCREMENT OF R6
217 001036 020627 000004   CMP    %6,#4
218 001042 001405          BEQ    BR3
219 001044 012737 000003 000302  MOV    #3,@#SFATAL    ;MOVE TO MAILBOX # ***** 3 *****
220 001052 005212          INC    (R2)           ;SET MSGTYP TO FATAL ERROR
221 001054 000000          HALT                    ;WRONG AUTO INCREMENT OF R6
222                                     ; TO SCOPE REPLACE HALT W/ 240
223                                     ; AND REPLACE NEXT INST W/ 736
224
225 001056 005006          BR3:  CLR      %6
226 001060 005004          CLR    %4
227 001062 122624          CMPB   (6)+,(4)+      ;TEST INCREMENT OF R6
228 001064 020627 000002   CMP    %6,#2
229 001070 001405          BEQ    BR4
230 001072 012737 000004 000302  MOV    #4,@#SFATAL    ;MOVE TO MAILBOX # ***** 4 *****
231 001100 005212          INC    (R2)           ;SET MSGTYP TO FATAL ERROR
232 001102 000000          HALT                    ;WRONG INCREMENT OF R6
233                                     ; TO SCOPE REPLACE HALT W/ 240
234                                     ; AND REPLACE NEXT INST W/ 723
235
236 001104 005006          BR4:  CLR      %6
237 001106 005004          CLR    %4
238 001110 122426          CMPB   (4)+,(6)+      ;TEST INCREMENT OF R6
239 001112 020627 000002   CMP    %6,#2
240 001116 001405          BEQ    BR5
241 001120 012737 000005 000302  MOV    #5,@#SFATAL    ;MOVE TO MAILBOX # ***** 5 *****
242 001126 005212          INC    (R2)           ;SET MSGTYP TO FATAL ERROR
243 001130 000000          HALT                    ;WRONG INCREMENT OF R6
244                                     ; TO SCOPE REPLACE HALT W/ 240
245                                     ; AND REPLACE NEXT INST W/ 710
246
247 001132 005006          BR5:  CLR      %6
248 001134 005004          CLR    %4
249 001136 122624          CMPB   (6)+,(4)+      ;TEST INCREMENT OF R4
250 001140 020427 000001   CMP    %4,#1
251 001144 001405          BEQ    BR6
252 001146 012737 000006 000302  MOV    #6,@#SFATAL    ;MOVE TO MAILBOX # ***** 6 *****
253 001154 005212          INC    (R2)           ;SET MSGTYP TO FATAL ERROR
254 001156 000000          HALT                    ;WRONG INCREMENT OF R4
255                                     ; TO SCOPE REPLACE HALT W/ 240
256                                     ; AND REPLACE NEXT INST W/ 675
257
257 001160 005006          BR6:  CLR      %6
258 001162 005004          CLR    %4
259 001164 122426          CMPB   (4)+,(6)+      ;TEST INCREMENT OF R6
260 001166 020627 000002   CMP    %6,#2
261 001172 001405          BEQ    BR7
262 001174 012737 000007 000302  MOV    #7,@#SFATAL    ;MOVE TO MAILBOX # ***** 7 *****
263 001202 005212          INC    (R2)           ;SET MSGTYP TO FATAL ERROR
264 001204 000000          HALT                    ;WRONG INCREMENT OF R6
265                                     ; TO SCOPE REPLACE HALT W/ 240
266                                     ; AND REPLACE NEXT INST W/ 662
267
268 001206 005006          BR7:  CLR      %6
269 001210 005004          CLR    %4
270 001212 122426          CMPB   (4)+,(6)+      ;TEST INCREMENT OF R4
    
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271 001214 020427 000001      CMP      %4,%1
272 001220 001405              BEQ      BR10
273 001222 012737 000010 000302  MCV     #10,@#SFATAL ;MOVE TO MAILBOX # ***** 10 *****
274 001230 005212              INC     (R2) ;SET MSGTYP TO FATAL ERROR
275 001232 000000              HALT    ;WRONG INCREMENT OF R4
                ; TO SCOPE REPLACE HALT W/ 240
                ; AND REPLACE NEXT INST W/ 647
276
277
278
279 001234 012706 001000      BR10:   MOV     #1000,%6
280 001240 124627 000000      CMPB   -(6),#HERE ;TEST DECREMENT OF R6
281 001244 022706 000776      CMP     #776,%6
282 001250 001405              BEQ     TST2
283 001252 012737 000011 000302  MOV     #11,@#SFATAL ;MOVE TO MAILBOX # ***** 11 *****
284 001260 005212              INC     (R2) ;SET MSGTYP TO FATAL ERROR
285 001262 000000              HALT    ;WRONG DECREMENT OF R6,OR WRONG $TSTNM
                ; TO SCOPE REPLACE HALT W/ 240
                ; AND REPLACE NEXT INST W/ 633
286
287
288
289
290
291 001264 005237 000304      TST2:   INC     @#STESTN ;UPDATE TEST NUMBER
292 001270 022737 000002 000304  CMP     #2,@#STESTN ;SEQUENCE ERROR?
293 001276 001137              BNE    TST3-12 ;BR TO ERROR HALT ON SEQ ERROR
294 001300 012767 123456 177416  MOV     #123456,K5
295 001306 012767 050505 177400  MOV     #050505,K1
296 001314 012705 000714              MOV     #K1,%5 ;%5=(050505)K1
297 001320 012706 000724              MOV     #K5,%6 ;%6=(123456)K5
298 001324 112625              MOVB   (6)+,(5)+ ;LOW .BYTE OF R6 TO R5
299 001326 022767 050456 177360  CMP     #050456,K1
300 001334 001405              BEQ     BR11
301 001336 012737 000012 000302  MOV     #12,@#SFATAL ;MOVE TO MAILBOX # ***** 12 *****
302 001344 005212              INC     (R2) ;SET MSGTYP TO FATAL ERROR
303 001346 000000              HALT    ;FALSE TRANSFER OF .BYTE
                ; TO SCOPE REPLACE HALT W/ 240
                ; AND REPLACE NEXT INST W/ 753
304
305
306
307 001350 012767 123456 177346  BR11:   MOV     #123456,K5
308 001356 012767 050505 177330  MOV     #050505,K1
309 001364 012705 000714              MOV     #K1,%5 ;%5(050505)K1
310 001370 012706 000726              MOV     #K6,%6 ;%6(123456)K5
311 001374 114625              MOVB   -(6),(5)+ ;LOW .BYTE OF R6 TO R5 (DECREMENT)
312 001376 026727 177312 050456  CMP     K1,#050456
313 001404 001405              BEQ     BR12
314 001406 012737 000013 000302  MOV     #13,@#SFATAL ;MOVE TO MAILBOX # ***** 13 *****
315 001414 005212              INC     (R2) ;SET MSGTYP TO FATAL ERROR
316 001416 000000              HALT    ;FALSE R6 .BYTE TRANSFER
                ; TO SCOPE REPLACE HALT W/ 240
                ; AND REPLACE NEXT INST W/ 727
317
318
319
320 001420 012767 123456 177266  BR12:   MOV     #123456,K1
321 001426 012767 050505 177270  MOV     #050505,K5
322 001434 012705 000714              MOV     #K1,%5 ;(123456)
323 001440 012706 000724              MOV     #K5,%6 ;(050505)
324 001444 112526              MOVB   (5)+,(6)+ ;LOW OF R5 TO LOW OF R6
325 001446 022767 050456 177250  CMP     #050456,K5
326 001454 001405              BEQ     BR13
    
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327 001456 012737 000014 000302      MOV    #14,@#SFATAL      ;MOVE TO MAILBOX # ***** 14 *****
328 001464 005212                    INC    (R2)              ;SET MSGTYP TO FATAL ERROR
329 001466 000000                    HALT                    ;FALSE R6 .BYTE TRANSFER
                               ; TO SCOPE REPLACE HALT W/ 240
                               ; AND REPLACE NEXT INST W/ 703
330
331
332
333 001470 012767 123456 177216 BR13:  MOV    #123456,K1
334 001476 012767 050505 177220      MOV    #050505,K5
335 001504 012705 000715                    MOV    #K1+1,%5         ;123456
336 001510 012706 000724                    MOV    #K5,%6           ;050505
337 001514 112526                    MOV    (5)+(6)+         ;HIGH OF R5 TO LOW OF R6
338 001516 026727 177202 050647      CMP    K5,#050647
339 001524 001405                    BEQ    BR14
340 001526 012737 000015 000302      MOV    #15,@#SFATAL      ;MOVE TO MAILBOX # ***** 15 *****
341 001534 005212                    INC    (R2)              ;SET MSGTYP TO FATAL ERROR
342 001536 000000                    HALT                    ;FALSE R6 .BYTE TRANSFER
                               ; TO SCOPE REPLACE HALT W/ 240
                               ; AND REPLACE NEXT INST W/ 657
343
344
345
346 001540 012767 123456 177146 BR14:  MOV    #123456,K1
347 001546 012767 050505 177150      MOV    #050505,K5
348 001554 012705 000715                    MOV    #K1+1,%5         ;R5-123456-ODD ADDRESS
349 001560 012706 000724                    MOV    #K5,%6           ;R6-050505--.EVEN ADDRESS
350 001564 112625                    MOV    (6)+(5)+         ;LOW OF R6 TO HIGH OF R5
351 001566 022767 042456 177120      CMP    #042456,K1
352 001574 001405                    BEQ    TST3
353 001576 012737 000016 000302      MOV    #16,@#SFATAL      ;MOVE TO MAILBOX # ***** 16 *****
354 001604 005212                    INC    (R2)              ;SET MSGTYP TO FATAL ERROR
355 001606 000000                    HALT                    ;FAILED LOW OF 6 TO HIGH OF 5,OR WRONG $TSTM
                               ; TO SCOPE REPLACE HALT W/ 240
                               ; AND REPLACE NEXT INST W/ 633
356
357
358
359
360
361 001610 005237 000304                    TST3: INC    @#STESTN      ;UPDATE TEST NUMBER
362 001614 022737 000003 000304      CMP    #3,@#STESTN      ;SEQUENCE ERROR?
363 001622 001103                    BNE    TST4-12 ;BR TO ERROR HALT ON SEQ ERROR
364 001624 126767 177100 177077      CMPB   K7,K7+1          ;SAME .WORD LOW TO HIGH
365 001632 001405                    BEQ    BR15
366 001634 012737 000017 000302      MOV    #17,@#SFATAL      ;MOVE TO MAILBOX # ***** 17 *****
367 001642 005212                    INC    (R2)              ;SET MSGTYP TO FATAL ERROR
368 001644 000000                    HALT                    ;SHOULD COMPARE LOW TO HIGH
                               ; TO SCOPE REPLACE HALT W/ 240
                               ; AND REPLACE NEXT INST W/ 766
369
370
371
372 001646 126767 177057 177054 BR15:  CMPB   K7+1,K7          ;COMPARE ODD TO .EVEN SAME .WORD
373 001654 001405                    BEQ    BR16
374 001656 012737 000020 000302      MOV    #20,@#SFATAL      ;MOVE TO MAILBOX # ***** 20 *****
375 001664 005212                    INC    (R2)              ;SET MSGTYP TO FATAL ERROR
376 001666 000000                    HALT                    ;ODD TO .EVEN .BYTE FAILURE
                               ; TO SCOPE REPLACE HALT W/ 240
                               ; AND REPLACE NEXT INST W/ 755
377
378
379
380 001670 126767 177037 177032 BR16:  CMPB   K10+1,K7
381 001676 001405                    BEQ    BR17
382 001700 012737 000021 000302      MOV    #21,@#SFATAL      ;MOVE TO MAILBOX # ***** 21 *****

```

 ;TEST 3 TEST BYTE OPERATION WITH SEQUENTIAL ODD-EVEN ADDRESS

```

383 001706 005212          INC      (R2)          ;SET MSGTYP TO FATAL ERROR
384 001710 000000          HALT                    ;ODD TO .EVEN FAILED
385                                     ; TO SCOPE REPLACE HALT W/ 240
386                                     ; AND REPLACE NEXT INST W/ 744
387
388 001712 126767 177014 177006 BR17:  CMPB     K10,K6
389 001720 001405          BEQ      BR20
390 001722 012737 000022 000302  MOV      #22,@#SFATAL ;MOVE TO MAILBOX # ***** 22 *****
391 001730 005212          INC      (R2)          ;SET MSGTYP TO FATAL ERROR
392 001732 000000          HALT                    ;.EVEN TO EVEN FAILED
393                                     ; TO SCOPE REPLACE HALT W/ 240
394                                     ; AND REPLACE NEXT INST W/ 733
395 001734 126767 176771 176771 BR20:  CMPB     K7+1,K10+1
396 001742 001405          BEQ      BR21
397 001744 012737 000023 000302  MOV      #23,@#SFATAL ;MOVE TO MAILBOX " ***** 23 *****
398 001752 005212          INC      (R2)          ;SET MSGTYP TO FATAL ERROR
399 001754 000000          HALT                    ;ODD TO ODD FAILED
400                                     ; TO SCOPE REPLACE HALT W/ 240
401                                     ; AND REPLACE NEXT INST W/ 722
402
403 001756 126767 176750 176747 BR21:  CMPB     K10,K10+1
404 001764 001005          BNE      BR22
405 001766 012737 000024 000302  MOV      #24,@#SFATAL ;MOVE TO MAILBOX # ***** 24 *****
406 001774 005212          INC      (R2)          ;SET MSGTYP TO FATAL ERROR
407 001776 000000          HALT                    ;LOW TO HIGH IN SAME .WORD FAILED
408                                     ; TO SCOPE REPLACE HALT W/ 240
409                                     ; AND REPLACE NEXT INST W/ 711
410
411 002000 126767 176727 176725 BR22:  CMPB     K10+1,K10+1
412 002006 001405          BEQ      BR23
413 002010 012737 000025 000302  MOV      #25,@#SFATAL ;MOVE TO MAILBOX # ***** 25 *****
414 002016 005212          INC      (R2)          ;SET MSGTYP TO FATAL ERROR
415 002020 000000          HALT                    ;HIGH TO LOW IN SAME .WORD FAILED
416                                     ; TO SCOPE REPLACE HALT W/ 240
417                                     ; AND REPLACE NEXT INST W/ 700
418
419 002022 126767 176704 176701 BR23:  CMPB     K10,K7+1
420 002030 001005          BNE      TST4
421 002032 012737 000026 000302  MOV      #26,@#SFATAL ;MOVE TO MAILBOX # ***** 26 *****
422 002040 005212          INC      (R2)          ;SET MSGTYP TO FATAL ERROR
423 002042 000000          HALT                    ;.EVEN TO ODD FAILED,OR WRONG $TSTNM
424                                     ; TO SCOPE REPLACE HALT W/ 240
425                                     ; AND REPLACE NEXT INST W/ 667
426
427
428
429
430
431 002044 005237 000304          TST4:  INC      @#STESTN ;UPDATE TEST NUMBER
432 002050 022737 000004 000304  CMP      #4,@#STESTN ;SEQUENCE ERPR?
433 002056 001062          BNE      TST5-12 ;BR TO ERROR HALT ON SEQ ERROR
434 002060 000277          SCC
435 002062 005067 175710          CLR      STATUS ;SET STATUS
436 002066 103005          BCC      BR33 ;CLEAR STATUS
437 002070 012737 000027 000302  MOV      #27,@#SFATAL ;MOVE TO MAILBOX # ***** 27 *****
438 002076 005212          INC      (R2)          ;SET MSGTYP TO FATAL ERROR
  
```

 ;TEST 4 TEST THE CC BITS

```

439 002100 000000          HALT          ;C NOT CLEAR
440                                     ; TO SCOPE REPLACE HALT W/ 240
441                                     ; AND REPLACE NEXT INST W/ 766
442 002102          BR33:          BVC          BR34
443 002102 102005          MOV          #30,@#SFATAL ;MOVE TO MAILBOX # ***** 30 *****
444 002104 012737 000030 000302      INC          (R2)      ;SET MSGTYP TO FATAL ERROR
445 002112 005212          HALT          ;V NOT CLEAR
446 002114 000000          ; TO SCOPE REPLACE HALT W/ 240
447                                     ; AND REPLACE NEXT INST W/ 760
448
449 002116          BR34:          BNE          BR35
450 002116 001005          MOV          #31,@#SFATAL ;MOVE TO MAILBOX # ***** 31 *****
451 002120 012737 000031 000302      INC          (R2)      ;SET MSGTYP TO FATAL ERROR
452 002126 005212          HALT          ;Z NOT CLEAR
453 002130 000000          ; TO SCOPE REPLACE HALT W/ 240
454                                     ; AND REPLACE NEXT INST W/ 752
455
456 002132          BR35:          BPL          BR36
457 002132 100005          MOV          #32,@#SFATAL ;MOVE TO MAILBOX # ***** 32 *****
458 002134 012737 000032 000302      INC          (R2)      ;SET MSGTYP TO FATAL ERROR
459 002142 005212          HALT          ;N NOT CLEAR
460 002144 000000          ; TO SCOPE REPLACE HALT W/ 240
461                                     ; AND REPLACE NEXT INST W/ 744
462                                     ;CLEAR CONDITION CODES
463 002146 000257          BR36:          CCC          #17,STATUS ;SET STATUS TO ONES
464 002150 052767 000017 175620      BIS
465
466 002156 103405          BCS          BR37
467 002160 012737 000033 000302      MOV          #33,@#SFATAL ;MOVE TO MAILBOX # ***** 33 *****
468 002166 005212          INC          (R2)      ;SET MSGTYP TO FATAL ERROR
469 002170 000000          HALT          ;C NOT SET
470                                     ; TO SCOPE REPLACE HALT W/ 240
471                                     ; AND REPLACE NEXT INST W/ 732
472
473 002172          BR37:          BVS          BR40
474 002172 102405          MOV          #34,@#SFATAL ;MOVE TO MAILBOX # ***** 34 *****
475 002174 012737 000034 000302      INC          (R2)      ;SET MSGTYP TO FATAL ERROR
476 002202 005212          HALT          ;V NOT SET
477                                     ; TO SCOPE REPLACE HALT W/ 240
478                                     ; AND REPLACE NEXT INST W/ 724
479
480 002206          BR40:          BEQ          BR41
481 002206 001405          MOV          #35,@#SFATAL ;MOVE TO MAILBOX # ***** 35 *****
482 002210 012737 000035 000302      INC          (R2)      ;SET MSGTYP TO FATAL ERROR
483 002216 005212          HALT          ;Z NOT SET
484                                     ; TO SCOPE REPLACE HALT W/ 240
485                                     ; AND REPLACE NEXT INST W/ 716
486
487 002222          BR41:          BMI          TST5
488 002222 100405          MOV          #36,@#SFATAL ;MOVE TO MAILBOX # ***** 36 *****
489 002224 012737 000036 000302      INC          (R2)      ;SET MSGTYP TO FATAL ERROR
490 002232 005212          HALT          ;N NOT SET,OR WRONG $STNM
491                                     ; TO SCOPE REPLACE HALT W/ 240
492                                     ; AND REPLACE NEXT INST W/ 710
493
494

```

 ;TEST 5 TEST THAT A TRAP OCCURS ON A RESERVED INSTPUCTION

```

495
496 002236 005237 000304
497 002242 022737 000005 000304
498 002250 001006
499 002252 012706 000500
500 002256 012767 002300 175524
501 002264 000007
502 002266
503 002266 012737 000037 000302
504 002274 005212
505 002276 000000
506
507
508 002300
509
510
511
512 002300 005237 000304
513 002304 022737 000006 000304
514 002312 001011
515 002314 012706 000500
516 002320 012767 002330 175462
517 002326 000007
518 002330 020627 000474
519 002334 001405
520 002336 012737 000040 000302
521 002344 005212
522 002346 000000
523
524
525
526
527
528 002350 005237 000304
529 002354 022737 000007 000304
530 002362 001012
531 002364 012706 000500
532 002370 012767 002400 175412
533 002376 000007
534 002400 022767 002400 176066
535 002406 001405
536 002410 012737 000041 000302
537 002416 005212
538 002420 000000
539
540
541
542
543
544 002422 005237 000304
545 002426 022737 000010 000304
546 002434 001040
547 002436 012706 000500
548 002442 012767 002460 175340
549 002450 005067 175322
550 002454 000257

```

```

*****
TST5:  INC  @%STESTN      ;UPDATE TEST NUMBER
        CMP  #5,@%STESTN  ;SEQUENCE ERROR?
        BNE  RETA         ;BR TO ERROR HALT ON SEQ ERROR
        MOV  #BUFF,SP     ;STACK POINTER SETUP
        MOV  #RETAH,RTRAP ;RETURN LOCATION
        TRAPA              ;RESERVED INSTRUCTION, SHOULD TRAP

RETA:   MOV  #37,@%SFATAL  ;MOVE TO MAILBOX # ***** 37 *****
        INC  (R2)         ;SET MSGTYP TO FATAL ERROR
        HALT              ;RESERVE INSTRUCTION DIDN'T TRAP,OR WRONG $TSTNM
                          ; TO SCOPE REPLACE HALT W/ 240
                          ; AND REPLACE NEXT INST W/ 764

RETAH:
*****
:TEST 6 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
*****
TST6:   INC  @%STESTN      ;UPDATE TEST NUMBER
        CMP  #6,@%STESTN  ;SEQUENCE ERROR?
        BNE  TST7-12 ;BR TO ERROR HALT ON SEQ ERROR
        MOV  #BUFF,SP     ;STACK POINTER SETUP
        MOV  #RETB,RTRAP  ;RETURN POINTER
        TRAPA              ;RESERVED INSTRUCTION
        CMP  SP,#BUFF-4   ;TEST DECREMENT OF SP
        BEQ  TST7
        MOV  #40,@%SFATAL ;MOVE TO MAILBOX # ***** 40 *****
        INC  (R2)         ;SET MSGTYP TO FATAL ERROR
        HALT              ;NOT DECREMENTED TWO WORDS,OR WRONG $TSTNM
                          ; TO SCOPE REPLACE HALT W/ 240
                          ; AND REPLACE NEXT INST W/ 761

*****
:TEST 7 TEST THAT PROPER P.C. IS SAVED
*****
TST7:   INC  @%STESTN      ;UPDATE TEST NUMBER
        CMP  #7,@%STESTN  ;SEQUENCE ERROR?
        BNE  TST10-12    ;BR TO ERROR HALT ON SEQ ERROR
        MOV  #BUFF,SP     ;STACK POINTER SETUP
        MOV  #RETC,RTRAP  ;RETURN FROM TRAP POINTER
        TRAPA              ;TRAP ON THIS INSTRUCTION
        CMP  #,BUFF-4     ;CHECK FOR INCREMENTED P.C.
        BEQ  TST10
        MOV  #41,@%SFATAL ;MOVE TO MAILBOX # ***** 41 *****
        INC  (R2)         ;SET MSGTYP TO FATAL ERROR
        HALT              ;INCORRECT P.C.,OR WRONG $TSTNM
                          ; TO SCOPE REPLACE HALT W/ 240
                          ; AND REPLACE NEXT INST W/ 760

*****
:TEST 10 TEST THAT 'OLD' CC AND PRIORITY ARE PLACED ON STACK
*****
TST10:  INC  @%STESTN      ;UPDATE TEST NUMBER
        CMP  #10,@%STESTN ;SEQUENCE ERROR?
        BNE  TST11-12    ;BR TO ERROR HALT ON SEQ ERROR
        MOV  #BUFF,SP     ;SET UP
        MOV  #RETD,RTRAP  ;SET UP
        CLR  CC           ;CLEAR CC AND PRIORITY
        CCC

```

```

551 002456 000007 TRAPA ;TRAP
552 002460 026727 176012 000000 RETD: CMP BUFF-2,#0 ;TEST THAT OLD STATUS WENT TO STACK
553 002466 001405 BEQ 1$
554 002470 012737 000042 000302 MOV #42,@#FATAL ;MOVE TO MAILBOX # ***** 42 *****
555 002476 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
556 002500 000000 HALT ;INCORRECT STATUS
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 755
557
558
559 002502 012706 000500 'S: MOV #BUFF,SP ;SET UP
560 002506 012767 002526 175274 MOV #RETE,RTRAP ;SET UP
561 002514 012767 000357 175254 MOV #357,CC ;SET PRIORITY
562 002522 000277 SCC ;SET CC
563 002524 000007 TRAPA ;TRAP
564 002526 026727 175744 000357 RETE: CMP BUFF-2,#357 ;COMPARES STATUS ON STACK
565 002534 001405 BEQ TST11
566 002536 012737 000043 000302 MOV #43,@#FATAL ;MOVE TO MAILBOX # ***** 43 *****
567 002544 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
568 002546 000000 HALT ;INCORRECT STATUS ON STACK,OR WRONG $STNM
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 732
569
570
571
572
573
574 002550 005237 000304 TST11: INC @#STESTN ;UPDATE TEST NUMBER
575 002554 022737 000011 000304 CMP #11,@#STESTN ;SEQUENCE ERROR?
576 002562 001121 BNE STPP ;BR TO ERROR HALT ON SEQ ERROR
577 002564 012706 000500 MOV #BUFF,SP
578 002570 012767 002604 175212 MOV #RETF,RTRAP
579 002576 005067 175210 CLR RTRAP+2 ;CLEAR FUTURE PRIORITY AND CC
580 002602 000007 TRAPA
581 002604 RETF: ;TEST FOR 'C' CLEARED
582 002604 100005 BPL 1$
583 002606 012737 000044 000302 MOV #44,@#FATAL ;MOVE TO MAILBOX # ***** 44 *****
584 002614 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
585 002616 000000 HALT ;N NOT CLEARED
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 761
586
587
588 002620 'S:
589 002620 001005 BNE 2$
590 002622 012737 000045 000302 MOV #45,@#FATAL ;MOVE TO MAILBOX # ***** 45 *****
591 002630 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
592 002632 000000 HALT ;Z NOT CLEARED
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 753
593
594
595 002634 2$:
596 002634 102005 BVC 3$
597 002636 012737 000046 000302 MOV #46,@#FATAL ;MOVE TO MAILBOX # ***** 46 *****
598 002644 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
599 002646 000000 HALT ;V NOT CLEARED
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 745
600
601
602 002650 3$:
603 002650 103005 BCC 4$
604 002652 012737 000047 000302 MOV #47,@#FATAL ;MOVE TO MAILBOX # ***** 47 *****
605 002660 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
606 002662 000000 HALT ;C NOT CLEARED

```



```

607                                     ; TO SCOPE REPLACE HALT W/ 240
608                                     ; AND REPLACE NEXT INST W/ 737
609 002664 032767 000340 175104 4$: BIT #340,CC ;TEST PRIORITY
610 002672 001405 5$: BEQ 5$
611 002674 012737 000050 000302 MOV #50,@#FATAL ;MOVE TO MAILBOX # ***** 50 *****
612 002702 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
613 002704 000000 HALT ;PRIORITY NOT ZERO
614                                     ; TO SCOPE REPLACE HALT W/ 240
615                                     ; AND REPLACE NEXT INST W/ 726
616 002706 012706 000500 5$: MOV #BUFF,SP
617 002712 012767 002730 175070 MOV #RETG,RTRAP
618 002720 012767 000357 175064 MOV #357,RTRAP+2 ;SET NEW 'CC' AND PRIORITY
619 002726 000007 TRAPA ;TRAP HERE
620 002730 RETG:
621 002730 100405 BMI 1$
622 002732 012737 000051 000302 MOV #51,@#FATAL ;MOVE TO MAILBOX # ***** 51 *****
623 002740 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
624 002742 000000 HALT ;N NOT SET
625                                     ; TO SCOPE REPLACE HALT W/ 240
626                                     ; AND REPLACE NEXT INST W/ 707
627 002744 1$:
628 002744 001405 BEQ 2$
629 002746 012737 000052 000302 MOV #52,@#FATAL ;MOVE TO MAILBOX # ***** 52 *****
630 002754 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
631 002756 000000 HALT ;Z NOT SET
632                                     ; TO SCOPE REPLACE HALT W/ 240
633                                     ; AND REPLACE NEXT INST W/ 701
634 002760 2$:
635 002760 102405 BVS 3$
636 002762 012737 000053 000302 MOV #53,@#FATAL ;MOVE TO MAILBOX # ***** 53 *****
637 002770 005212 INC (R2) ;SET MSGTYP TO FATAL ERRGR
638 002772 000000 HALT ;V NOT SET
639                                     ; TO SCOPE REPLACE HALT W/ 240
640                                     ; AND REPLACE NEXT INST W/ 673
641 002774 3$:
642 002774 103405 BCS 4$
643 002776 012737 000054 000302 MOV #54,@#FATAL ;MOVE TO MAILBOX # ***** 54 *****
644 003004 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
645 003006 000000 HALT ;C NOT SET
646                                     ; TO SCOPE REPLACE HALT W/ 240
647                                     ; AND REPLACE NEXT INST W/ 665
648 003010 4$: MOV CC,SP
649 003014 042706 BIC #17,SP
650 003020 022706 000340 CMP #340,SP
651 003024 001405 BEQ STPPA
652 003026 STPP:
653 003026 012737 000055 000302 MOV #55,@#FATAL ;MOVE TO MAILBOX # ***** 55 *****
654 003034 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
655 003036 000000 HALT ;PRIORITY WAS CHANGED,OR WRONG $TSINM
656                                     ; TO SCOPE REPLACE HALT W/ 240
657                                     ; AND REPLACE NEXT INST W/ 651
658 003040 STPPA: MOV #12,10
659 003046 005067 174740 CLR 12
660 ;*****
661 ;TEST 12 TEST THAT A TRAP OCCURS FOR A 'TRAP' INSTRUCTION
662 ;*****
    
```

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TEST THAT A TRAP OCCURS FOR A 'TRAP' INSTRUCTION

SEG 0017

663 003052 005237 000304
664 003056 022737 000612 000304
665 003064 001013
666 003066 012767 000012 174714
667 003074 005067 174712
668 003100 012706 000500
669 003104 012767 003126 174722
670 003112 104400
671 003114 012737 000056 000302
672 003122 005212
673 003124 000000
674
675
676 003126
677
678
679
680 003126 005237 000304
681 003132 022737 000013 000304
682 003140 001011
683 003142 012706 000500
684 003146 012767 003156 174660
685 003154 104400
686 003156 020627 000474
687 003162 001405
688 003164 012737 000057 000302
689 003172 005212
690 003174 000000
691
692
693
694
695
696 003176 005237 000304
697 003202 022737 000014 000304
698 003210 001012
699 003212 012706 000500
700 003216 012767 003226 174610
701 003224 104400
702 003226 022767 003226 175240
703 003234 001405
704 003236 012737 000060 000302
705 003244 005212
706 003246 000000
707
708
709
710
711
712 003250 005237 000304
713 003254 022737 000015 000304
714 003262 001037
715 003264 012706 000500
716 003270 012767 003306 174536
717 003276 005067 174474
718 003302 000257

TST12: INC @%STESTN ;UPDATE TEST NUMBER
CMP #12,@%STESTN ;SEQUENCE ERROR?
BNE TST13-12 ;BR TO ERROR HALT ON SEQ ERROR
MOV #12,10
CLR 12
MOV #BUFF,SP ;STACK POINTER SETUP
MOV #RETA1,RTRAP1 ;RETURN LOCATION
TRAP ;RESERVED INSTRUCTION, SHOULD TRAP
MOV #56,@%SFATAL ;MOVE TO MAILBOX # ***** 56 *****
INC (R2) ;SET MSGTYP TO FATAL ERROR
HALT ;TRAP DIDN'T TRAP,OR WRONG \$STSTM
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 757

RETA1:
:*****
:TEST 13 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
:*****

TST13: INC @%STESTN ;UPDATE TEST NUMBER
CMP #13,@%STESTN ;SEQUENCE ERROR?
BNE TST14-12 ;BR TO ERROR HALT ON SEQ ERROR
MOV #BUFF,SP ;STACK POINTER SETUP
MOV #RETB1,RTRAP1 ;RETURN POINTER
TRAP ;RESERVED INSTRUCTION
RET B1: CMP SP,#BUFF-4 ;TEST DECREMENT OF SP
BEQ TST14
MOV #57,@%SFATAL ;MOVE TO MAILBOX # ***** 57 *****
INC (R2) ;SET MSGTYP TO FATAL ERROR
HALT ;NOT DECREMENTED TWO WORDS,OR WRONG \$STSTM
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 761

:*****
:TEST 14 TEST THAT PROPER P.C. IS SAVED
:*****

TST14: INC @%STESTN ;UPDATE TEST NUMBER
CMP #14,@%STESTN ;SEQUENCE ERROR?
BNE TST15-12 ;BR TO ERROR HALT ON SEQ ERROR
MOV #BUFF,SP ;STACK POINTER SETUP
MOV #RETC1,RTRAP1 ;RETURN FROM TRAP POINTER
TRAP ;TRAP ON THIS INSTRUCTION
RET C1: CMP #,BUFF-4 ;CHECK INCREMENTED P.C.
BEQ TST15
MOV #60,@%SFATAL ;MOVE TO MAILBOX # ***** 60 *****
INC (R2) ;SET MSGTYP TO FATAL ERROR
HALT ;INCORRECT P.C.,OR WRONG \$STSTM
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 760

:*****
:TEST 15 TEST THAT 'OLD' CC AND PRIORITY ARE PLACED ON STACK
:*****

TST15: INC @%STESTN ;UPDATE TEST NUMBER
CMP #15,@%STESTN ;SEQUENCE ERROR?
BNE TST16-12 ;BR TO ERROR HALT ON SEQ ERROR
MOV #BUFF,SP ;SET UP
MOV #RETD1,RTRAP1 ;SET UP
CLR CC ;CLEAR CC AND PRIORITY
CCC


```

775                                     ; AND REPLACE NEXT INST W/ 737
776 003510 032767 000340 174260 4$: BIT #340,CC ;TEST PRIORITY
777 003516 001405 BEQ 5$
778 003520 012737 000067 000302 MOV #67,@$FATAL ;MOVE TO MAILBOX # ***** 67 *****
779 003526 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
780 003530 000000 HALT ;PRIORITY NOT ZERO
781                                     ; TO SCOPE REPLACE HALT W/ 240
782                                     ; AND REPLACE NEXT INST W/ 726
783 003532 012706 000500 5$: MOV #BUFF,SP
784 003536 012767 003554 174270 MOV #RETG1,RTRAP
785 003544 012767 000357 174264 MOV #357,RTRAP1+2 ;SET NEW 'CC' AND PRIORITY
786 003552 104400 TRAP ;TRAP HERE
787 003554 RETG1:
788 003554 100405 BMI 1$
789 003556 012737 000070 000302 MOV #70,@$FATAL ;MOVE TO MAILBOX # ***** 70 *****
790 003564 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
791 003566 000000 HALT ;N NOT SET
792                                     ; TO SCOPE REPLACE HALT W/ 240
793                                     ; AND REPLACE NEXT INST W/ 707
794 003570 1$:
795 003570 001405 BEQ 2$
796 003572 012737 000071 000302 MOV #71,@$FATAL ;MOVE TO MAILBOX # ***** 71 *****
797 003600 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
798 003602 000000 HALT ;Z NOT SET
799                                     ; TO SCOPE REPLACE HALT W/ 240
800                                     ; AND REPLACE NEXT INST W/ 701
801 003604 2$:
802 003604 102405 BVS 3$
803 003606 012737 000072 000302 MOV #72,@$FATAL ;MOVE TO MAILBOX # ***** 72 *****
804 003614 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
805 003616 000000 HALT ;V NOT SET
806                                     ; TO SCOPE REPLACE HALT W/ 240
807                                     ; AND REPLACE NEXT INST W/ 673
808 003620 3$:
809 003620 103405 BCS 4$
810 003622 012737 000073 000302 MOV #73,@$FATAL ;MOVE TO MAILBOX # ***** 73 *****
811 003630 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
812 003632 000000 HALT ;C NOT SET
813                                     ; TO SCOPE REPLACE HALT W/ 240
814                                     ; AND REPLACE NEXT INST W/ 665
815 003634 016706 174136 4$: MOV CC,SP
816 003640 042706 000017 BIC #17,SP
817 003644 022706 000340 CMP #340,SP
818 003650 001405 BEQ TST17
819 003652 012737 000074 000302 MOV #74,@$FATAL ;MOVE TO MAILBOX # ***** 74 *****
820 003660 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
821 003662 000000 HALT ;PRIORITY WAS CHANGED,OR WRONG $STNM
822                                     ; TO SCOPE REPLACE HALT W/ 240
823                                     ; AND REPLACE NEXT INST W/ 651
824 .....
825 ;TEST 17 TEST THAT ALL COMBINATION OF 'TRAP' WILL CAUSE A TRAP
826 .....
827 TST17: INC @$TESTN ;UPDATE TEST NUMBER
828 003670 022737 000017 000304 CMP #17,@$TESTN ;SEQUENCE ERROR?
829 003676 001011 BNE BR45 ;BR TO ERROR HALT ON SEQ ERROR
830 003700 012767 104400 000012 MOV #TRAP,RB1 ;INITIALIZE BASE TRAP INSTRUCTION
    
```

```

831 003706 012767 003734 174120      MOV    #RA1,34      ;RETURN FROM TRAP TO RA1
832 003714 012706 000500              MOV    #BUFF,SP    ;SET UP STACK POINTER
833 003720 104400              TRAP                    ;TRAP INST WILL BE MODIFIED TO TRAP+377
834 003722              BR45:
835 003722 012737 000075 000302      MOV    #75,@#SFATAL ;MOVE TO MAILBOX # ***** 75 *****
836 003730 005212              INC    (R2)          ;SET MSGTYP TO FATAL ERROR
837 003732 000000              HALT                 ;PREVIOUS INST FAILED TO TRAP,OR WRONG $STNM
838                                ; TO SCOPE REPLACE HALT W/ 240
839                                ; AND REPLACE NEXT INST W/ 761
840 003734 005267 177760      RA1:  INC    RB1      ;INCREMENT TRAP INSTRUCTION
841 003740 022767 104777 177752      CMP    #104777,RB1  ;TRAP+377 TO UPPER LIMIT
842 003746 103362              BHS   RC1           ;HAVE WE TESTED ALL
843 003750 012767 000036 174056      MOV    #36,34
844 003756 005067 174054      CLR    36

```

:TEST 20 TEST THAT A TRAP OCCURES ON AN 'IOT' INSTRUCTION

```

848 003762 005237 000304      TST20: INC    @#STESTN ;UPDATE TEST NUMBER
849 003766 022737 000020 000304    CMP    #20,@#STESTN ;SEQUENCE ERROR?
850 003774 001006              BNE   TST21-12     ;BR TO ERROR HALT ON SEQ ERROR
851 003776 012706 000500              MOV    #BUFF,SP    ;STACK POINTER SETUP
852 004002 012767 004024 174010      MOV    #RETA2,RTRAP2 ;RETURN LOCATION
853 004010 000004              IOT                 ;RESERVE INSTRUCTION, SHOULD TRAP
854 004012 012737 000076 000302      MOV    #76,@#SFATAL ;MOVE TO MAILBOX # ***** 76 *****
855 004020 005212              INC    (R2)          ;SET MSGTYP TO FATAL ERROR
856 004022 000000              HALT                 ;IOT DIDN'T TRAP,OR WRONG $STNM
857                                ; TO SCOPE REPLACE HALT W/ 240
858                                ; AND REPLACE NEXT INST W/ 764

```

RETA2:

:TEST 21 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION

```

863 004024 005237 000304      TST21: INC    @#STESTN ;UPDATE TEST NUMBER
864 004030 022737 000021 000304    CMP    #21,@#STESTN ;SEQUENCE ERROR?
865 004036 001011              BNE   TST22-12     ;BR TO ERROR HALT ON SEQ ERROR
866 004040 012706 000500              MOV    #BUFF,SP    ;STACK POINTER SETUP
867 004044 012767 004054 173746      MOV    #RETB2,RTRAP2 ;RETURN POINTER
868 004052 000004              IOT                 ;RESERVED INSTRUCTION
869 004054 020627 000474      RETB2: CMP    SP,#BUFF-4 ;TEST DECREMENT OF SP
870 004060 001405              BEQ   TST22
871 004062 012737 000077 000302      MOV    #77,@#SFATAL ;MOVE TO MAILBOX # ***** 77 *****
872 004070 005212              INC    (R2)          ;SET MSGTYP TO FATAL ERROR
873 004072 000000              HALT                 ;NOT DECREMENTED TWO WORDS,OR WRONG $STNM
874                                ; TO SCOPE REPLACE HALT W/ 240
875                                ; AND REPLACE NEXT INST W/ 761

```

:TEST 22 TEST THAT PROPER P.C. IS SAVED

```

879 004074 005237 000304      TST22: INC    @#STESTN ;UPDATE TEST NUMBER
880 004100 022737 000022 000304    CMP    #22,@#STESTN ;SEQUENCE ERROR?
881 004106 001012              BNE   TST23-12     ;BR TO ERROR HALT ON SEQ ERROR
882 004110 012706 000500              MOV    #BUFF,SP    ;STACK POINTER SETUP
883 004114 012767 004124 173676      MOV    #RETC2,RTRAP2 ;RETURN FROM TRAP POINTER
884 004122 000004              IOT                 ;TRAP ON THIS INSTRUCTION
885 004124 022767 004124 174342      RETC2: CMP    #,BUFF-4 ;CHECK FOR INCREMENTED P.C.
886 004132 001405              BEQ   TST23

```

```

887 004134 012737 000100 000302      MOV    #100,@#SFATAL      ;MOVE TO MAILBOX # ***** 100 *****
888 004142 005212                    INC    (R2)                ;SET MSGTYP TO FATAL ERROR
889 004144 000000                    HALT                       ;INCORRECT P.C.,OR WRONG $STNM
890                                     ; TO SCOPE REPLACE HALT W/ 240
891                                     ; AND REPLACE NEXT INST W/ 760
892                                     ;*****
893                                     ;TEST 23      TEST THAT 'OLD' CC AND PRIORITY ARE PLACED ON STACK
894                                     ;*****
895 004146 005237 000304                    TST23: INC    @#STESTN      ;UPDATE TEST NUMBER
896 004152 022737 000023 000304          CMP    #23,@#STESTN      ;SEQUENCE ERROR?
897 004160 001040                    BNE    TST24-12          ;BR TO ERROR HALT ON SEQ ERROR
898 004162 012706 000500                    MOV    #BUFF,SP          ;SET UP
899 004166 012767 004204 173624          MOV    #RETD2,RTRAP2    ;SET UP
900 004174 005067 173576                    CLR    CC                ;CLEAR CC AND PRIORITY
901 004200 000257                    CCC
902 004202 000004                    IOT                       ;TRAP
903 004204 026727 174266 000000          RETD2: CMP    BUFF-2,#0    ;TEST THAT OLD STATUS WENT TO STACK
904 004212 001405                    BEQ    1$
905 004214 012737 000101 000302          MOV    #101,@#SFATAL    ;MOVE TO MAILBOX # ***** 101 *****
906 004222 005212                    INC    (R2)                ;SET MSGTYP TO FATAL ERROR
907 004224 000000                    HALT                       ;INCORRECT STATUS
908                                     ; TO SCOPE REPLACE HALT W/ 240
909                                     ; AND REPLACE NEXT INST W/ 755
910 004226 012706 000500                    1$:  MOV    #BUFF,SP      ;SET UP
911 004232 012767 004252 173560          MOV    #RETE2,RTRAP2    ;SET UP
912 004240 012767 000357 173530          MOV    #357,CC          ;SET PRIORITY
913 004246 000277                    SCC                       ;SET CC
914 004250 000004                    IOT                       ;TRAP
915 004252 026727 174220 000357          RETE2: CMP    BUFF-2,#357 ;COMPARES STATUS ON STACK
916 004260 001405                    BEQ    TST24
917 004262 012737 000102 000302          MOV    #102,@#SFATAL    ;MOVE TO MAILBOX # ***** 102 *****
918 004270 005212                    INC    (R2)                ;SET MSGTYP TO FATAL ERROR
919 004272 000000                    HALT                       ;INCORRECT STATUS ON STACK,OR WRONG $STNM
920                                     ; TO SCOPE REPLACE HALT W/ 240
921                                     ; AND REPLACE NEXT INST W/ 732
922                                     ;*****
923                                     ;TEST 24      TEST THAT 'NEW' STATUS IS CORRECT
924                                     ;*****
925 004274 005237 000304                    TST24: INC    @#STESTN      ;UPDATE TEST NUMBER
926 004300 022737 000024 000304          CMP    #24,@#STESTN      ;SEQUENCE ERROR?
927 004306 001121                    BNE    BR46              ;BR TO ERROR HALT ON SEQ ERROR
928 004310 012706 000500                    MOV    #BUFF,SP          ;SET UP
929 004314 012767 004330 173476          MOV    #RETF2,RTRAP2    ;SET UP
930 004322 005067 173474                    CLR    RTRAP2+2          ;CLEAR FUTURE PRIORITY AND CC
931 004326 000004                    IOT                       ;TRAP
932 004330                    RETF2:                    ;TEST FOR 'C' CLEARED
933 004330 100005                    BPL    1$
934 004332 012737 000103 000302          MOV    #103,@#SFATAL    ;MOVE TO MAILBOX # ***** 103 *****
935 004340 005212                    INC    (R2)                ;SET MSGTYP TO FATAL ERROR
936 004342 000000                    HALT                       ;N NOT CLEARED
937                                     ; TO SCOPE REPLACE HALT W/ 240
938                                     ; AND REPLACE NEXT INST W/ 761
939 004344                    1$:  BNE    2$
940 004344 001005                    MOV    #104,@#SFATAL    ;MOVE TO MAILBOX # ***** 104 *****
941 004346 012737 000104 000302          INC    (R2)                ;SET MSGTYP TO FATAL ERROR
942 004354 005212
    
```



```

999 004534 016706 173236 48. MOV CL,SP
1000 004540 042706 000017 BIC #17,SP
1001 004544 022706 000340 CMP #340,SP
1002 004550 001405 BEQ BR46A
1003 004552 BR46: MOV #114,@#SFATAL ;MOVE TO MAILBOX # ***** 114 *****
1004 004552 012737 000114 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
1005 004560 005212 ;PRIORITY WAS CHANGED,OR WRONG $STS^NM
1006 004562 000000 HALT ; TO SCOPE REPLACE HALT W/ 240
1007 ; AND REPLACE NEXT INST W/ 651
1008 ; +2
1009 004564 012767 000022 173226 BR46A: MOV #22,20 ;HALT
1010 004572 005067 173224 CLR 22
1011 ;*****
1012 ;TEST 25 TEST THAT A TRAP OCCURS ON AN EMT INSTRUCTION
1013 ;*****
1014 004576 005237 000304 TST25: INC @#STESTN ;UPDATE TEST NUMBER
1015 004602 022737 000025 000304 CMP #25,@#STESTN ;SEQUENCE ERROR?
1016 004610 001006 BNE TST26-12 ;BR TO ERROR HALT ON SEQ ERROR
1017 004612 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1018 004616 012767 004640 173204 MOV #RETA3,RTRAP3 ;RETURN LOCATION
1019 004624 104000 EMT ;RESERVE INSTRUCTION, SHOULD TRAP
1020 004626 012737 000115 000302 MOV #115,@#SFATAL ;MOVE TO MAILBOX # ***** 115 *****
1021 004634 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1022 004636 000000 HALT ;EMT DIDN'T TRAP,OR WRONG $STSNM
1023 ; TO SCOPE REPLACE HALT W/ 240
1024 ; AND REPLACE NEXT INST W/ 764
1025 004640 RETA3:
1026 ;*****
1027 ;TEST 26 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
1028 ;*****
1029 004640 005237 000304 TST26: INC @#STESTN ;UPDATE TEST NUMBER
1030 004644 022737 000026 000304 CMP #26,@#STESTN ;SEQUENCE ERROR?
1031 004652 001011 BNE TST27-12 ;BR TO ERROR HALT ON SEQ ERROR
1032 004654 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1033 004660 012767 004670 173142 MOV #RETB3,RTRAP3 ;RETURN POINTER
1034 004666 104000 EMT ;RESERVED INSTRUCTION
1035 004670 020627 000474 RETB3: CMP SP,#BUFF-4 ;TEST DECREMENT OF SP
1036 004674 001405 BEQ TST27
1037 004676 012737 000115 000302 MOV #116,@#SFATAL ;MOVE TO MAILBOX # ***** 116 *****
1038 004704 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1039 004706 000000 HALT ;NOT DECREMENTED TWO WORDS,OR WRONG $STSNM
1040 ; TO SCOPE REPLACE HALT W/ 240
1041 ; AND REPLACE NEXT INST W/ 761
1042 ;*****
1043 ;TEST 27 TEST THAT PROPER P.C. IS SAVED
1044 ;*****
1045 004710 005237 000304 TST27: INC @#STESTN ;UPDATE TEST NUMBER
1046 004714 022737 000027 000304 CMP #27,@#STESTN ;SEQUENCE ERROR?
1047 004722 001012 BNE TST30-12 ;BR TO ERROR HALT ON SEQ ERROR
1048 004724 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1049 004730 012767 004740 173072 MOV #RETC3,RTRAP3 ;RETURN FROM TRAP POINTER
1050 004736 104000 EMT ;TRAP ON THIS INSTRUCTION
1051 004740 022767 004740 173526 RETC3: CMP #,BUFF-4 ;CHECK FOR INCREMENTED P.C.
1052 004746 001405 BEQ TST30
1053 004750 012737 000117 000302 MOV #117,@#SFATAL ;MOVE TO MAILBOX # ***** 117 *****
1054 004756 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
    
```



```

1111                                     ; AND REPLACE NEXT INST W/ 753
1112 005174 2$: BVC 3$
1113 005174 102005 000124 000302 MOV #124,@#FATAL ;MOVE TO MAILBOX # ***** 124 *****
1114 005176 012737 000124 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
1115 005204 005212 HALT ;V NOT CLEARED
1116 005206 000000 ; TO SCOPE REPLACE HALT W/ 240
1117 ; AND REPLACE NEXT INST W/ 745
1118
1119 005210 3$: BCC 4$
1120 005210 103005 000125 000302 MOV #125,@#FATAL ;MOVE TO MAILBOX # ***** 125 *****
1121 005212 012737 000125 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
1122 005220 005212 HALT ;C NOT CLEARED
1123 005222 000000 ; TO SCOPE REPLACE HALT W/ 240
1124 ; AND REPLACE NEXT INST W/ 737
1125 ;TEST PRIORITY
1126 005224 032767 000340 172544 4$: BIT #340,CC
1127 005232 001405 5$
1128 005234 012737 000126 000302 MOV #126,@#FATAL ;MOVE TO MAILBOX # ***** 126 *****
1129 005242 005212 000126 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
1130 005244 000000 HALT ;PRIORITY NOT ZERO
1131 ; TO SCOPE REPLACE HALT W/ 240
1132 ; AND REPLACE NEXT INST W/ 726
1133 005246 012706 000500 5$: MOV #BUFF,SP
1134 005252 012767 005270 172550 MOV #RETG3,RTRAP3
1135 005260 012767 000357 172544 MOV #357,RTRAP3+2 ;SET NEW 'CC' AND PRIORITY
1136 005266 104000 EMT ;TRAP HERE
1137 005270 RETG3:
1138 005270 100405 1$
1139 005272 012737 000127 000302 BMI #127,@#FATAL ;MOVE TO MAILBOX # ***** 127 *****
1140 005300 005212 000127 000302 MOV (R2) ;SET MSGTYP TO FATAL ERROR
1141 005302 000000 HALT ;N NOT SET
1142 ; TO SCOPE REPLACE HALT W/ 240
1143 ; AND REPLACE NEXT INST W/ 707
1144 005304 1$: BEQ 2$
1145 005304 001405 2$
1146 005306 012737 000130 000302 MOV #130,@#FATAL ;MOVE TO MAILBOX # ***** 130 *****
1147 005314 005212 000130 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
1148 005316 000000 HALT ;Z NOT SET
1149 ; TO SCOPE REPLACE HALT W/ 240
1150 ; AND REPLACE NEXT INST W/ 701
1151 005320 2$: BVS 3$
1152 005320 102405 3$
1153 005322 012737 000131 000302 MOV #131,@#FATAL ;MOVE TO MAILBOX # ***** 131 *****
1154 005330 005212 000131 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
1155 005332 000000 HALT ;V NOT SET
1156 ; TO SCOPE REPLACE HALT W/ 240
1157 ; AND REPLACE NEXT INST W/ 673
1158 005334 3$: BCS 4$
1159 005334 103405 4$
1160 005336 012737 000132 000302 MOV #132,@#FATAL ;MOVE TO MAILBOX # ***** 132 *****
1161 005344 005212 000132 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
1162 005346 000000 HALT ;C NOT SET
1163 ; TO SCOPE REPLACE HALT W/ 240
1164 ; AND REPLACE NEXT INST W/ 665
1165 005350 000257 4$: CCC
1166 005352 022767 000340 172416 CMP #340,CC
    
```

```

1167 005360 001405          BEQ      TST32
1168 005362 012737 000133 000302  MOV     #133,@#SFATAL ;MOVE TO MAILBOX # ***** 133 *****
1169 005370 005212          INC     (R2)           ;SET MSGTYP TO FATAL ERROR
1170 005372 000000          HALT                    ;PRIORITY WAS CHANGED,OR WRONG $STNM
                                ; TO SCOPE REPLACE HALT W/ 240
                                ; AND REPLACE NEXT INST W/ 653
1171
1172
1173 :*****
1174 :TEST 32      TEST THAT ALL COMBINATION OF EMT WILL CAUSE A TRAP
1175 :*****
1176 005374 005237 000304  TST32: INC     @#$TESTN      ;UPDATE TEST NUMBER
1177 005400 022737 000032 000304  CMP     #32,@#$TESTN    ;SEQUENCE ERROR?
1178 005406 001011          BNE    BR47             ;BR TO ERROR HALT ON SEQ ERROR
1179 005410 012767 104000 000012  MOV     #EMT,RB         ;INITIALIZE BASE EMT INSTRUCTION
1180 005416 012767 005444 172404  MOV     #RA,30          ;RETURN FROM TRAP TO RA
1181 005424 012706 000500          RC:    MOV     #BUFF,SP  ;SET UP STACK POINTER
1182 005430 104000          RB:    EMT             ;TRAP INST. WILL BE MODIFIED TO EMT+377
1183 005432
1184 005432 012737 000134 000302  BR47:  MOV     #134,@#SFATAL ;MOVE TO MAILBOX # ***** 134 *****
1185 005440 005212          INC     (R2)           ;SET MSGTYP TO FATAL ERROR
1186 005442 000000          HALT                    ;PREVIOUS INST FAILED TO TRAP,OR WRONG $STNM
                                ; TO SCOPE REPLACE HALT W/ 240
                                ; AND REPLACE NEXT INST W/ 761
1187
1188
1189 005444 005267 177760          RA:    INC     RB         ;INCREMENT TRAP INSTRUCTION
1190 005450 022767 104377 177752  CMP     #104377,RB      ;EMT+377 TO EMT?
1191 005456 103362          BHS    RC              ;HAVE WE TESTED ALL
1192
1193
1194 005460 012767 000032 172342  MOV     #32,30         ;/ .+
1195 005466 005067 172340          CLR    32             ;HALT
1196
1197 :*****
1198 :TEST 33      TEST THAT A TRAP OCCURES ON AN 'TRACE-TRT' INSTRUCTION
1199 :*****
1200 005472 005237 000304  TST33: INC     @#$TESTN      ;UPDATE TEST NUMBER
1201 005476 022737 000033 000304  CMP     #33,@#$TESTN    ;SEQUENCE ERROR?
1202 005504 001006          BNE    TST34-12        ;BR TO ERROR HALT ON SEQ ERROR
1203 005506 012706 000500          MOV     #BUFF,SP       ;STACK POINTER SETUP
1204 005512 012767 005534 172274  MOV     #RETA4,RTRAP4   ;RETURN LOCATION
1205 005520 000003          TRT                    ;RESERVED INSTRUCTION, SHOULD TRAP
1206 005522 012737 000135 000302  MOV     #135,@#SFATAL   ;MOVE TO MAILBOX # ***** 135 *****
1207 005530 005212          INC     (R2)           ;SET MSGTYP TO FATAL ERROR
1208 005532 000000          HALT                    ;TRT DIDN'T TRAP,OR WRONG $STNM
                                ; TO SCOPE REPLACE HALT W/ 240
                                ; AND REPLACE NEXT INST W/ 764
1209
1210
1211 :*****
1212 :TEST 34      TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
1213 :*****
1214 005534 005237 000304  TST34: INC     @#$TESTN      ;UPDATE TEST NUMBER
1215 005540 022737 000034 000304  CMP     #34,@#$TESTN    ;SEQUENCE ERROR?
1216 005546 001011          BNE    TST35-12        ;BR TO ERROR HALT ON SEQ ERROR
1217 005550 012706 000500          MOV     #BUFF,SP       ;STACK POINTER SETUP
1218 005554 012767 005564 172232  MOV     #RETB4,RTRAP4   ;RETURN POINTER
1219 005562 000003          TRT                    ;RESERVED INSTRUCTION
1220 005564 020627 000474          RETB4: CMP     SP,#BUFF-4 ;TEST DECREMENT OF SP
1221 005570 001405          BEQ    TST35
1222 005572 012737 000136 000302  MOV     #136,@#SFATAL   ;MOVE TO MAILBOX # ***** 136 *****
                                ;SET MSGTYP TO FATAL ERROR
1223 005600 005212          INC     (R2)
    
```

1223 005602 000000 HALT ;NOT DECREMENTED TWO WORDS,OR WRONG \$STNM
 1224 ; TO SCOPE REPLACE HALT W/ 240
 1225 ; AND REPLACE NEXT INST W/ 761

1226 *****
 1227 :TEST 35 TEST THAT PROPER P.C. IS SAVED
 1228 *****

1229 005604 005237 000304 TST35: INC @#\$TESTN ;UPDATE TEST NUMBER
 1230 005610 022737 000035 000304 CMP #35,@#\$TESTN ;SEQUENCE ERROR?
 1231 005616 001012 BNE TST36-12 ;BR TO ERROR HALT ON SEQ ERROR
 1232 005620 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
 1233 005624 012767 005634 172162 MOV #RETC4,RTRAP4 ;RETURN FROM TRAP PUNTER
 1234 005632 000003 TRT ;TRAP ON THIS INSTRUCTION
 1235 005634 022767 005634 172632 RETC4: CMP #,BUFF-4 ;CHECK FOR INCREMENTED P.C.
 1236 005642 001405 BEQ TST36
 1237 005644 012737 000137 000302 MOV #137,@#\$FATAL ;MOVE TO MAILBOX # ***** 137 *****
 1238 005652 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
 1239 005654 000000 HALT ;INCORRECT P.C.,OR WRONG \$STNM
 1240 ; TO SCOPE REPLACE HALT W/ 240
 1241 ; AND REPLACE NEXT INST W/ 760

1242 *****
 1243 :TEST 36 TEST THAT 'OLD' CC AND PRIORITY ARE PLACED ON STACK
 1244 *****

1245 005656 005237 000304 TST36: INC @#\$TESTN ;UPDATE TEST NUMBER
 1246 005662 022737 000036 000304 CMP #36,@#\$TESTN ;SEQUENCE ERROR?
 1247 005670 001040 BNE TST37-12 ;BR TO ERROR HALT ON SEQ ERROR
 1248 005672 012706 000500 MOV #BUFF,SP ;SET UP
 1249 005676 012767 005714 172110 MOV #RETD4,RTRAP4 ;SET UP
 1250 005704 005067 172066 CLR CC ;CLEAR CC AND PRIORITY
 1251 005710 000257 CCC
 1252 005712 000003 TRT ;TRAP
 1253 005714 026727 172556 000000 RETD4: CMP BUFF-2,#0 ;TEST THAT OLD STATUS WENT TO STACK
 1254 ;TEST FOR ALL ZEROS
 1255 005722 001405 BEQ 1\$
 1256 005724 012737 000140 000302 MOV #140,@#\$FATAL ;MOVE TO MAILBOX # ***** 140 *****
 1257 005732 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
 1258 005734 000000 HALT ;INCORRECT STATUS
 1259 ; TO SCOPE REPLACE HALT W/ 240
 1260 ; AND REPLACE NEXT INST W/ 755

1261 005736 012706 000500 1\$: MOV #BUFF,SP ;SET UP
 1262 005742 012767 005762 172044 MOV #RETE4,RTRAP4 ;SET UP
 1263 005750 012767 000357 172020 MOV #357,CC ;SET PRIORITY
 1264 005756 000277 SCC ;SET-SET CC
 1265 005760 000003 TRT ;TRAP
 1266 005762 026727 172510 000357 RETE4: CMP BUFF-2,#357 ;COMPARES STATUS ON STACK
 1267 005770 001405 BEQ TST37
 1268 005772 012737 000141 000302 MOV #141,@#\$FATAL ;MOVE TO MAILBOX # ***** 141 *****
 1269 006000 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
 1270 006002 000000 HALT ;INCORRECT STATUS ON STACK,OR WRONG \$STNM
 1271 ; TO SCOPE REPLACE HALT W/ 240
 1272 ; AND REPLACE NEXT INST W/ 732

1273 *****
 1274 :TEST 37 TEST THAT 'NEW' STATUS IS CORRECT
 1275 *****

1276 006004 005237 000304 TST37: INC @#\$TESTN ;UPDATE TEST NUMBER
 1277 006010 022737 000037 000304 CMP #37,@#\$TESTN ;SEQUENCE ERROR?
 1278 006016 001121 BNE BR51 ;BR TO ERROR HALT ON SEQ ERROR


```

1335
1336 006214 2S:
1337 006214 102405 BVS 3S
1338 006216 012737 000151 000302 MOV #151,@#SFATAL ;MOVE TO MAILBOX # ***** 151 *****
1339 006224 005212 INC ;SET MSGTYP TO FATAL ERROR
1340 006226 000000 HALT ;V NOT SET
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 673
1341
1342
1343 006230 3S:
1344 006230 103405 BCS 4S
1345 006232 012737 000152 000302 MOV #152,@#SFATAL ;MOVE TO MAILBOX # ***** 152 *****
1346 006240 005212 INC ;SET MSGTYP TO FATAL ERROR
1347 006242 000000 HALT ;C NOT SET
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 665
1348
1349
1350 006244 016706 171526 4S: MOV CC,SP
1351 006250 042706 000017 BIC #17,SP
1352 006254 022706 000340 CMP #340,SP
1353 006260 001405 BEQ BR51A
1354 006262 BR51:
1355 006262 012737 000153 000302 MOV #153,@#SFATAL ;MOVE TO MAILBOX # ***** 153 *****
1356 006270 005212 INC ;SET MSGTYP TO FATAL ERROR
1357 006272 000000 HALT ;PRIORITY WAS CHANGED,OR WRONG $STNM
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 651
1358
1359
1360 006274 012767 000016 171512 BR51A: MOV #16,14
1361 006302 005067 171510 CLR 16

```

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

 ;TEST 40 TEST THAT A TRAP OCCURS ON AN ILLEGAL INSTRUCTION
 ;*****

```

1370
1371
1372 006306 005237 000304 TST40: INC @#STESTN ;UPDATE TEST NUMBER
1373 006312 022737 000040 000304 CMP #40,@#STESTN ;SEQUENCE ERROR?
1374 006320 001006 BNE TST41-12 ;BR TO ERROR HALT ON SEQ ERROR
1375 006322 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1376 006326 012767 006350 171450 MOV #RETA5,RTRAP5 ;RETURN LOCATION
1377 006334 000100 JMP %0 ;ILLEGAL INSTRUCTION, SHOULD TRAP
1378 006336 012737 000154 000302 MOV #154,@#SFATAL ;MOVE TO MAILBOX # ***** 154 *****
1379 006344 005212 INC ;SET MSGTYP TO FATAL ERROR
1380 006346 000000 HALT ;ILLEGAL INSTRUCTION DIDN'T TRAP,OR WRONG $STNM
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 764
1381
1382
1383 006350 RETA5:

```

 ;TEST 41 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
 ;*****

```

1384
1385
1386
1387 006350 005237 000304 TST41: INC @#STESTN ;UPDATE TEST NUMBER
1388 006354 022737 000041 000304 CMP #41,@#STESTN ;SEQUENCE ERROR?
1389 006362 001011 BNE TST42-12 ;BR TO ERROR HALT ON SEQ ERROR
1390 006364 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP

```

```

1391 006370 012767 006400 171406      MOV    #RETBS,RTRAP5 ;RETURN POINTER
1392 006376 000100      JMP    %0             ;RESERVED INSTRUCTION
1393 006400 020627 000474      RETBS: CMP    SP,#BUFF-4 ;TEST DECREMENT OF SP
1394 006404 001405      BEQ   TST42
1395 006406 012737 000155 000302      MOV    #155,@#SFATAL ;MOVE TO MAILBOX # ***** 155 *****
1396 006414 005212      INC   (R2)           ;SET MSGTYP TO FATAL ERROR
1397 006416 000000      HALT                ;NOT DECREMENTED TWO WORDS,OR WRONG $STNM
                                ; TO SCOPE REPLACE HALT W/ 240
                                ; AND REPLACE NEXT INST W/ 761

```

 :TEST 42 TEST THAT PROPER P.C. IS SAVED

```

1400
1401
1402
1403 006420 005237 000304      TST42: INC    @#STESTN ;UPDATE TEST NUMBER
1404 006424 022737 000042 000304      CMP    #42,@#STESTN ;SEQUENCE ERROR?
1405 006432 001012      BNE   TST43-12      ;BR TO ERROR HALT ON SEQ ERROR
1406 006434 012706 000500      MOV    #BUFF,SP     ;STACK POINTER SETUP
1407 006440 012767 006450 171336      MOV    #RETCS,RTRAP5 ;RETURN FROM TRAP POINTER
1408 006446 000100      JMP    %0           ;TRAP ON THIS INSTRUCTION
1409 006450 022767 006450 172016      RETCS: CMP    #.BUFF-4 ;CHECK FOR INCREMENTED P.C.
1410 006456 001405      BEQ   TST43
1411 006460 012737 000156 000302      MOV    #156,@#SFATAL ;MOVE TO MAILBOX # ***** 156 *****
1412 006466 005212      INC   (R2)           ;SET MSGTYP TO FATAL ERROR
1413 006470 000000      HALT                ;INCORRECT P.C.,OR WRONG $STNM
                                ; TO SCOPE REPLACE HALT W/ 240
                                ; AND REPLACE NEXT INST W/ 760

```

 :TEST 43 TEST THAT 'OLD' CC AND PRIORITY ARE PLACED ON STACK

```

1414
1415
1416
1417
1418
1419 006472 005237 000304      TST43: INC    @#STESTN ;UPDATE TEST NUMBER
1420 006476 022737 000043 000304      CMP    #43,@#STESTN ;SEQUENCE ERROR?
1421 006504 001040      BNE   TST44-12      ;BR TO ERROR HALT ON SEQ ERROR
1422 006506 012706 000500      MOV    #BUFF,SP     ;SET UP
1423 006512 012767 006530 171267      MOV    #RETD5,RTRAP5 ;SET UP
1424 006520 005067 171252      CLR   CC            ;CLEAR CC AND PRIORITY
1425 006524 000257      CCC
1426 006526 000100      JMP    %0           ;TRAP
1427 006530 026727 171742 000000      RETD5: CMP    BUFF-2,%0 ;TEST THAT OLD STATUS WENT TO STACK
1428 006536 001405      BEQ   1$
1429 006540 012737 000157 000302      MOV    #157,@#SFATAL ;MOVE TO MAILBOX # ***** 157 *****
1430 006546 005212      INC   (R2)           ;SET MSGTYP TO FATAL ERROR
1431 006550 000000      HALT                ;INCORRECT STATUS
                                ; TO SCOPE REPLACE HALT W/ 240
                                ; AND REPLACE NEXT INST W/ 755

```

```

1432
1433
1434 006552 012706 000500      1$:  MOV    #BUFF,SP     ;SET UP
1435 006556 012767 006576 171220      MOV    #RETE5,RTRAP5 ;SET UP
1436 006564 012767 000357 171204      MOV    #357,CC       ;SET PRIORITY
1437 006572 000277      SCC
1438 006574 000100      JMP    %0           ;SET CC
                                ;TRAP
1439 006576 026727 171674 000357      RETE5: CMP    BUFF-2,#357 ;COMPARES STATUS ON STACK
1440 006604 001405      BEQ   TST44
1441 006606 012737 000160 000302      MOV    #160,@#SFATAL ;MOVE TO MAILBOX # ***** 160 *****
1442 006614 005212      INC   (R2)           ;SET MSGTYP TO FATAL ERROR
1443 006616 000000      HALT                ;INCORRECT STATUS ON STACK,OR WRONG $STNM
                                ; TO SCOPE REPLACE HALT W/ 240
                                ; AND REPLACE NEXT INST W/ 732

```

1444
 1445
 1446

```

1447          :TEST 44          TEST THAT 'NEW' STATUS IS CORRECT
1448          :*****
1449 006620    005237    000304          TST44: INC      @#STESTN          :UPDATE TEST NUMBER
1450 006624    022737    000044    000304          CMP      #44,@#STESTN        :SEQUENCE ERROR?
1451 006632    001117          BNE     TST45-12          :BR TO ERROR HALT ON SEQ ERROR
1452 006634    012706    000500          MOV     #BUFF,SP
1453 006640    012767    006654    171136          MOV     #RETFS,RTRAPS
1454 006646    005067    171134          CLR     RTRAP5+2          :CLEAR FUTURE PRIORITY AND CC
1455 006652    000100          JMP     %0
1456 006654          RETFS:          :TEST FOR 'C' CLEARED
1457 006654    100005          BPL     1$
1458 006656    012737    000161    000302          MOV     #161,@#SFATAL        :MOVE TO MAILBOX # ***** 161 *****
1459 006664    005212          INC     (R2)                :SET MSGTYP TO FATAL ERROR
1460 006666    000000          HALT                          :C NOT CLEARED
1461          : TO SCOPE REPLACE HALT W/ 240
1462          : AND REPLACE NEXT INST W/ 761
1463 006670          1$:
1464 006670    001005          BNE     2$
1465 006672    012737    000162    000302          MOV     #162,@#SFATAL        :MOVE TO MAILBOX # ***** 162 *****
1466 006700    005212          INC     (R2)                :SET MSGTYP TO FATAL ERROR
1467 006702    000000          HALT                          :Z NOT CLEARED
1468          : TO SCOPE REPLACE HALT W/ 240
1469          : AND REPLACE NEXT INST W/ 753
1470 006704          2$:
1471 006704    102005          BVC     3$
1472 006706    012737    000163    000302          MOV     #163,@#SFATAL        :MOVE TO MAILBOX # ***** 163 *****
1473 006714    005212          INC     (R2)                :SET MSGTYP TO FATAL ERROR
1474 006716    000000          HALT                          :V NOT CLEARED
1475          : TO SCOPE REPLACE HALT W/ 240
1476          : AND REPLACE NEXT INST W/ 745
1477 006720          3$:
1478 006720    103005          BCC     4$
1479 006722    012737    000164    000302          MOV     #164,@#SFATAL        :MOVE TO MAILBOX # ***** 164 *****
1480 006730    005212          INC     (R2)                :SET MSGTYP TO FATAL ERROR
1481 006732    000000          HALT                          :C NOT CLEARED
1482          : TO SCOPE REPLACE HALT W/ 240
1483          : AND REPLACE NEXT INST W/ 737
1484 006734    032767    000357    171034          4$: BIT      #357,CC          :TEST PRIORITY
1485 006742    001405          BEQ     5$
1486 006744    012737    000165    000302          MOV     #165,@#SFATAL        :MOVE TO MAILBOX # ***** 165 *****
1487 006752    005212          INC     (R2)                :SET MSGTYP TO FATAL ERROR
1488 006754    000000          HALT                          :PRIORITY NOT ZERO
1489          : TO SCOPE REPLACE HALT W/ 240
1490          : AND REPLACE NEXT INST W/ 726
1491 006756    012706    000500          5$: MOV     #BUFF,SP
1492 006762    012767    007000    171014          MOV     #RETGS,RTRAPS
1493 006770    012767    000357    171010          MOV     #357,RTRAP5+2
1494 006776    000100          JMP     %0          :SET NEW 'CC' AND PRIORITY
1495          :TRAP HERE
1496 007000          RETGS:          :
1497 007002    100405          BMI     1$
1498 007002    012737    000166    000302          MOV     #166,@#SFATAL        :MOVE TO MAILBOX # ***** 166 *****
1499 007010    005212          INC     (R2)                :SET MSGTYP TO FATAL ERROR
1500          :N NOT SET
1501          : TO SCOPE REPLACE HALT W/ 240
1502          : AND REPLACE NEXT INST W/ 707
    
```



```

1503 007014 001405          BEQ      2$
1504 007016 012737 000167 000302  MOV     #167,@#SFATAL ;MOVE TO MAILBOX # ***** 167 *****
1505 007024 005212          INC     (R2)           ;SET MSGTYP TO FATAL ERROR
1506 007026 000000          HALT                    ;Z NOT SET
1507                                     ; TO SCOPE REPLACE HALT W/ 240
1508                                     ; AND REPLACE NEXT INST W/ 701
1509 007030          2$:
1510 007030 102405          BVS     3$
1511 007032 012737 000170 000302  MOV     #170,@#SFATAL ;MOVE TO MAILBOX # ***** 170 *****
1512 007040 005212          INC     (R2)           ;SET MSGTYP TO FATAL ERROR
1513 007042 000000          HALT                    ;V NOT SET
1514                                     ; TO SCOPE REPLACE HALT W/ 240
1515                                     ; AND REPLACE NEXT INST W/ 673
1516 007044          3$:
1517 007044 103405          BCS     4$
1518 007046 012737 000171 000302  MOV     #171,@#SFATAL ;MOVE TO MAILBOX # ***** 171 *****
1519 007054 005212          INC     (R2)           ;SET MSGTYP TO FATAL ERROR
1520 007056 000000          HALT                    ;C NOT SET
1521                                     ; TO SCOPE REPLACE HALT W/ 240
1522                                     ; AND REPLACE NEXT INST W/ 665
1523 007060 016706 170712          MOV     CC,SP          4$:
1524 007064 022706 000357          CMP     #357,SP
1525 007070 001405          BEQ     TST45
1526 007072 012737 000172 000302  MOV     #172,@#SFATAL ;MOVE TO MAILBOX # ***** 172 *****
1527 007100 005212          INC     (R2)           ;SET MSGTYP TO FATAL ERROR
1528 007102 000000          HALT                    ;PRIORITY WAS CHANGED,OR WRONG $TSTM
1529                                     ; TO SCOPE REPLACE HALT W/ 240
1530                                     ; AND REPLACE NEXT INST W/ 653

```

:TEST 45 TEST THAT A TRAP OCCURES ON ALL ILLEGAL INSTRUCTION

```

1531
1532 :TEST 45 TEST THAT A TRAP OCCURES ON ALL ILLEGAL INSTRUCTION
1533 :*****
1534 007104 005237 000304          TST45: INC     @#STESTN ;UPDATE TEST NUMBER
1535 007110 022737 000045 000304  CMP     #45,@#STESTN ;SEQUENCE ERROR?
1536 007116 001006          BNE     TST46-12      ;BR TO ERROR HALT ON SEQ ERROR
1537 007120 012706 000500          MOV     #BUFF,SP      ;STACK POINTER SETUP
1538 007124 012767 007146 170652  MOV     #RETH5,RTRAPS ;RETURN LOCATION
1539 007132 004000          JSR     %0,%0         ;RESERVED INSTRUCTION, SHOULD TRAP
1540 007134 012737 000173 000302  MOV     #173,@#SFATAL ;MOVE TO MAILBOX # ***** 173 *****
1541 007142 005212          INC     (R2)           ;SET MSGTYP TO FATAL ERROR
1542 007144 000000          HALT                    ;DIDN'T TRAP,OR WRONG $TSTM
1543                                     ; TO SCOPE REPLACE HALT W/ 240
1544                                     ; AND REPLACE NEXT INST W/ 764

```

RETH5:

```

1545 007146          :TEST 46 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
1546 :*****
1547 :*****
1548 :*****
1549 007146 005237 000304          TST46: INC     @#STESTN ;UPDATE TEST NUMBER
1550 007152 022737 000046 000304  CMP     #46,@#STESTN ;SEQUENCE ERROR?
1551 007160 001011          BNE     TST47-12      ;BR TO ERROR HALT ON SEQ ERROR
1552 007162 012706 000500          MOV     #BUFF,SP      ;STACK POINTER SETUP
1553 007166 012767 007176 170610  MOV     #RETJ,RTRAPS  ;RETURN POINTER
1554 007174 004000          JSR     %0,%0         ;RESERVED INSTRUCTION
1555 007176 020627 000474          RETJ:  CMP     SP,#BUFF-4 ;TEST DECREMENT OF SP
1556 007202 001405          BEQ     TST47
1557 007204 012737 000174 000302  MOV     #174,@#SFATAL ;MOVE TO MAILBOX # ***** 174 *****
1558 007212 005212          INC     (R2)           ;SET MSGTYP TO FATAL ERROR

```

1559 007214 000000 HALT ;NOT DECREMENTED TWO WORDS,OR WRONG \$TSTNM
 1560 ; TO SCOPE REPLACE HALT W/ 240
 1561 ; AND REPLACE NEXT INST W/ 761

1562
 1563 :TEST 47 TEST THAT PROPER P.C. IS SAVED
 1564 :.....

1565 007216 005237 000304 TST47: INC @#\$TSTN ;UPDATE TEST NUMBER
 1566 007222 022737 000047 000304 CMP #47,@#\$TSTN ;SEQUENCE ERROR?
 1567 007230 001012 BNE TST50-12 ;BR TO ERROR HALT ON SEQ ERROR
 1568 007232 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
 1569 007236 012767 007246 170540 MOV #RETK,RTRAP5 ;RETURN FROM TRAP POINTER
 1570 007244 004000 INSTK: JSR %0,%0 ;TRAP ON THIS INSTRUCTION
 1571 007246 022767 007246 171220 RETR: CMP #INSTK+2,BUFF-4 ;CHECK FOR INCREMENEED P.C.
 1572 007254 001405 BEQ TST50
 1573 007256 012737 000175 000302 MOV #175,@#\$FATAL ;MOVE TO MAILBOX # ***** 175 *****
 1574 007264 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
 1575 007266 000000 HALT ;INCORRECT P.C.,OR WRONG \$TSTNM
 1576 ; TO SCOPE REPLACE HALT W/ 240
 1577 ; AND REPLACE NEXT INST W/ 760

1578
 1579 :TEST 50 TEST THAT 'OLD' CC AND PRIORITY ARE PLACED ON STACK
 1580 :.....

1581 007270 005237 000304 TST50: INC @#\$TSTN ;UPDATE TEST NUMBER
 1582 007274 022737 000050 000304 CMP #50,@#\$TSTN ;SEQUENCE ERROR?
 1583 007302 001040 BNE TST51-12 ;BR TO ERROR HALT ON SEQ ERROR
 1584 007304 012706 000500 MOV #BUFF,SP ;SET UP
 1585 007310 012767 007326 170466 MOV #RETL,RTRAP5 ;SET UP
 1586 007316 005067 170454 CLR CC ;CLEAR CC AND PRIORITY
 1587 007322 000257 CCC
 1588 007324 004000 JSR %0,%0 ;TRAP
 1589 007326 026727 171144 000000 RETL: CMP BUFF-2,%0 ;TEST THAT OLD STATUS WENT 0 STACK
 1590 007334 001405 BEQ 1\$
 1591 007336 012737 000176 000302 MOV #176,@#\$FATAL ;MOVE TO MAILBOX # ***** 176 *****
 1592 007344 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
 1593 007346 000000 HALT ;INCORRECT STATUS
 1594 ; TO SCOPE REPLACE HALT W/ 240
 1595 ; AND REPLACE NEXT INST W/ 755

1596 007350 012706 000500 1\$: MOV #BUFF,SP ;SET UP
 1597 007354 012767 007374 170422 MOV #RETM,RTRAP5 ;SET UP
 1598 007362 012767 000357 170406 MOV #357,CC ;SET PRIORITY
 1599 007370 000277 SCC ;SET CC
 1600 007372 004000 JSR %0,%0 ;TRAP
 1601 007374 026727 171076 000357 RETM: CMP BUFF-2,#357 ;COMPARES STATUS ON STACK
 1602 007402 001405 BEQ TST51
 1603 007404 012737 000177 000302 MOV #177,@#\$FATAL ;MOVE TO MAILBOX # ***** 177 *****
 1604 007412 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
 1605 007414 000000 HALT ;INCORRECT STATUS ON STACK,OR WRONG \$TSTNM
 1606 ; TO SCOPE REPLACE HALT W/ 240
 1607 ; AND REPLACE NEXT INST W/ 732

1608
 1609 :TEST 51 TEST THAT 'NEW' STATUS IS CORRECT
 1610 :.....

1611 007416 005237 000304 TST51: INC @#\$TSTN ;UPDATE TEST NUMBER
 1612 007422 022737 000051 000304 CMP #51,@#\$TSTN ;SEQUENCE ERROR?
 1613 007430 001116 BNE TST52-12 ;BR TO ERROR HALT ON SEQ ERROR
 1614

1615	007432	012706	000500			MOV	#BUFF,SP		
1616	007436	012767	007452	170340		MOV	#RETN,RTRAPS		
1617	007444	005067	170336			CLR	RTRAPS+2		:CLEAR FUTURE PRIORITY AND ((
1618	007450	004000				JSR	%0,%0		
1619	007452				RETN:				:TEST FOR 'C' CLEARED
1620	007452	100005				BPL	1\$		
1621	007454	012737	000200	000302		MOV	#200,@#SFATAL		:MOVE TO MAILBOX # ***** 200 *****
1622	007462	005212				INC	(R2)		:SET MSGTYP TO FATAL ERROR
1623	007464	000000				HALT			:C NOT CLEARED
1624									: TO SCOPE REPLACE HALT W/ 240
1625									: AND REPLACE NEXT INST W/ 761
1626	007466				1\$:				
1627	007466	001005				BNE	2\$		
1628	007470	012737	000201	000302		MOV	#201,@#SFATAL		:MOVE TO MAILBOX # ***** 201 *****
1629	007476	005212				INC	(R2)		:SET MSGTYP TO FATAL ERROR
1630	007500	000000				HALT			:Z NOT CLEARED
1631									: TO SCOPE REPLACE HALT W/ 240
1632									: AND REPLACE NEXT INST W/ 753
1633	007502				2\$:				
1634	007502	102005				BVC	3\$		
1635	007504	012737	000202	000302		MOV	#202,@#SFATAL		:MOVE TO MAILBOX # ***** 202 *****
1636	007512	005212				INC	(R2)		:SET MSGTYP TO FATAL ERROR
1637	007514	000000				HALT			:V NOT CLEARED
1638									: TO SCOPE REPLACE HALT W/ 240
1639									: AND REPLACE NEXT INST W/ 745
1640	007516				3\$:				
1641	007516	103005				BCC	4\$		
1642	007520	012737	000203	000302		MOV	#203,@#SFATAL		:MOVE TO MAILBOX # ***** 203 *****
1643	007526	005212				INC	(R2)		:SET MSGTYP TO FATAL ERROR
1644	007530	000000				HALT			:C NOT CLEARED
1645									: TO SCOPE REPLACE HALT W/ 240
1646									: AND REPLACE NEXT INST W/ 737
1647	007532	016700	170240		4\$:	MOV	CC,%0		:TEMP STORAGE
1648	007536	001405				BEQ	5\$		
1649	007540	012737	000204	000302		MOV	#204,@#SFATAL		:MOVE TO MAILBOX # ***** 204 *****
1650	007546	005212				INC	(R2)		:SET MSGTYP TO FATAL ERROR
1651	007550	000000				HALT			:PRIORITY NOT ZERO
1652									: TO SCOPE REPLACE HALT W/ 240
1653									: AND REPLACE NEXT INST W/ 727
1654	007552	012706	000500		5\$:	MOV	#BUFF,SP		
1655	007556	012767	007574	170220		MOV	#RETN,RTRAPS		
1656	007564	012767	000357	170214		MOV	#357,RTRAPS+2		: T NEW 'CC' AND PRIORITY
1657	007572	004000				JSR	%0,%0		:TRAP HERE
1658	007574				RETN:				
1659	007574	100405				BMI	1\$		
1660	007576	012737	000205	000302		MOV	#205,@#SFATAL		:MOVE TO MAILBOX # ***** 205 *****
1661	007604	005212				INC	(R2)		:SET MSGTYP TO FATAL ERROR
1662	007606	000000				HALT			:N NOT SET
1663									: TO SCOPE REPLACE HALT W/ 240
1664									: AND REPLACE NEXT INST W/ 710
1665	007610				1\$:				
1666	007610	001405				BEQ	2\$		
1667	007612	012737	000206	000302		MOV	#206,@#SFATAL		:MOVE TO MAILBOX # ***** 206 *****
1668	007620	005212				INC	(R2)		:SET MSGTYP TO FATAL ERROR
1669	007622	000000				HALT			:Z NOT SET
1670									: TO SCOPE REPLACE HALT W/ 240

```

1671
1672 007624 28:
1673 007624 102405 BVS 38
1674 007626 012737 000207 000302 MOV #207,@#FATAL :MOVE TO MAILBOX # ***** 207 *****
1675 007634 005212 INC (R2) :SET MSGTYP TO FATAL ERROR
1676 007636 000000 HALT :V NOT SET
: TO SCOPE REPLACE HALT W/ 240
: AND REPLACE NEXT INST W/ 674
1677
1678
1679 007640 38:
1680 007640 103405 BCS 48
1681 007642 012737 000210 000302 MOV #210,@#FATAL :MOVE TO MAILBOX # ***** 210 *****
1682 007650 005212 INC (R2) :SET MSGTYP TO FATAL ERROR
1683 007652 000000 HALT :C NOT SET
: TO SCOPE REPLACE HALT W/ 240
: AND REPLACE NEXT INST W/ 666
1684
1685
1686 007654 016700 170116 48: MOV (C,20
1687 007660 022700 000357 (MP #357,20
1688 007664 001405 BEQ TST52
1689 007666 012737 000211 000302 MOV #211,@#FATAL :MOVE TO MAILBOX # ***** 211 *****
1690 007674 005212 INC (R2) :SET MSGTYP TO FATAL ERROR
1691 007676 000000 HALT :PRIORITY WAS CHANGED,OR WRONG $STNM
: TO SCOPE REPLACE HALT W/ 240
: AND REPLACE NEXT INST W/ 654
1692
1693
1694
1695
1696
1697

```

 : TEST 52 TEST THAT A TRAP OCCURES ON AN ILLEGAL ADDRESS

```

1698 007700 005237 000304 TST52: INC @#STESTN :UPDATE TEST NUMBER
1699 007704 022737 000052 000304 (MP #52,@#STESTN :SEQUENCE ERROR?
1700 007712 001007 BNE TST53-12 :BR TO ERROR HALT ON SEQ ERROR
1701 007714 012706 000500 MOV #BUFF,SP :STACK POINTER SETUP
1702 007720 012767 007744 170056 MOV #RETP,RTRAPS :RETURN LOCATION
1703 007726 005767 170047 TST 1 :ILLEGAL ADDRESS INSTRUCTION, SHOULD TRAP
1704 007732 012737 000212 000302 MOV #212,@#FATAL :MOVE TO MAILBOX # ***** 212 *****
1705 007740 005212 INC (R2) :SET MSGTYP TO FATAL ERROR
1706 007742 000000 HALT :ILLEGAL ADDRESS DID NOT TRAP,OR WRONG $STNM
: TO SCOPE REPLACE HALT W/ 240
: AND REPLACE NEXT INST W/ 763
1707
1708
1709 007744 RETP:

```

 : TEST 53 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION

```

1710
1711
1712
1713 007744 005237 000304 TST53: INC @#STESTN :UPDATE TEST NUMBER
1714 007750 022737 000053 000304 (MP #53,@#STESTN :SEQUENCE ERROR?
1715 007756 001012 BNE TST54-12 :BR TO ERROR HALT ON SEQ ERROR
1716 007760 012706 000500 MOV #BUFF,SP :STACK POINTER SETUP
1717 007764 012767 007776 170012 MOV #RETO,RTRAPS :RETURN POINTER
1718 007772 005767 170003 TST 1 :RESERVED INSTRUCTION
1719 007776 020627 000474 RETO: (MP SP,#BUFF-4 :TEST DECREMENT OF SP
1720 010002 001405 BEQ TST54
1721 010004 012737 000213 000302 MOV #213,@#FATAL :MOVE TO MAILBOX # ***** 213 *****
1722 010012 005212 INC (R2) :SET MSGTYP TO FATAL ERROR
1723 010014 000000 HALT :NOT DECREMENTED TWO WORDS,OR WRONG $STNM
: TO SCOPE REPLACE HALT W/ 240
: AND REPLACE NEXT INST W/ 760
1724
1725
1726

```

```

1727 :TEST 54 TEST THAT PROPER P.C. IS SAVED
1728 :*****
1729 010016 005237 000304 TST54: INC @%STESTN ;UPDATE TEST NUMBER
1730 010022 022737 000054 000304 CMP #54,@%STESTN ;SEQUENCE ERROR?
1731 010030 001013 BNE TST55-12 ;BR TO ERROR HALT ON SEQ ERROR
1732 010032 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1733 010036 012767 010050 167740 MOV #RETR,RTRAP5 ;RETURN FROM TRAP POINTER
1734 010044 005767 167731 TST 1 ;TRAP ON THIS INSTRUCTION
1735 010050 022767 010050 170416 RETR: CMP #,BUFF-4 ;CHECK FOR INCREMENTED P.C.
1736 010056 001405 BEQ TST55
1737 010060 012737 000214 000302 MOV #214,@%SFATAL ;MOVE TO MAILBOX # ***** 214 *****
1738 010066 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1739 010070 000000 HALT ;INCORRECT P.C.,OR WRONG $STNM
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 757

```

```

1742 :*****
1743 :TEST 55 TEST THAT 'OLD' CC AND PRIORITY ARE PLACED ON STACK
1744 :*****
1745 010072 005237 000304 TST55: INC @%STESTN ;UPDATE TEST NUMBER
1746 010076 022737 000055 000304 CMP #55,@%STESTN ;SEQUENCE ERROR?
1747 010104 001042 BNE TST56-12 ;BR TO ERROR HALT ON SEQ ERROR
1748 010106 012706 000500 MOV #BUFF,SP ;SET UP
1749 010112 012767 010132 167664 MOV #RETS,RTRAP5 ;SET UP
1750 010120 005067 167652 CLR CC ;CLEAR CC AND PRIORITY
1751 010124 000257 CCC
1752 010126 005767 167647 TST 1 ;TRAP
1753 010132 026727 170340 000000 RETS: CMP BUFF-2,#0 ;TEST THAT OLD STATUS WENT TO STACK
1754 010140 001405 BEQ 1$
1755 010142 012737 000215 000302 MOV #215,@%SFATAL ;MOVE TO MAILBOX # ***** 215 *****
1756 010150 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1757 010152 000000 HALT ;INCORRECT STATUS
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 754
1758 1$: MOV #BUFF,SP ;SET UP
1759 010154 012706 000500 MOV #RETT,RTRAP5 ;SET UP
1760 010160 012767 010202 167616 MOV #357,CC ;SET PRIORITY
1761 010166 012767 000357 167602 SCC ;SET CC
1762 010174 000277 TST 1 ;TRAP
1763 010176 005767 167577 RETT: CMP BUFF-2,#357 ;COMPARES STATUS ON STACK
1764 010202 026727 170270 000357 BEQ TST56
1765 010210 001405 MOV #216,@%SFATAL ;MOVE TO MAILBOX # ***** 216 *****
1766 010212 012737 000216 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
1767 010220 005212 HALT ;INCORRECT STATUS ON STACK,OR WRONG $STNM
1768 010222 000000 ; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 730
1769 010222 000000
1770
1771
1772 :*****
1773 :TEST 56 TEST THAT 'NEW' STATUS IS CORRECT
1774 :*****
1775 010224 005237 000304 TST56: INC @%STESTN ;UPDATE TEST NUMBER
1776 010230 022737 000056 000304 CMP #56,@%STESTN ;SEQUENCE ERROR?
1777 010236 001121 BNE TST57-12 ;BR TO ERROR HALT ON SEQ ERROR
1778 010240 012706 000500 MOV #BUFF,SP
1779 010244 012767 010262 167532 MOV #RETT,RTRAP5
1780 010252 005067 167530 CLR RTRAP5+2 ;CLEAR FUTURE PRIORITY AND CC
1781 010256 005767 167517 TST 1 ;TRAP HERE
1782 010262 RETU: ;TEST FOR 'C' CLEARED

```

1783	010262	100005				BPL	1\$		
1784	010264	012737	000217	000302		MOV	#217,@#FATAL	:MOVE TO MAILBOX # ***** 217 *****	
1785	010272	005212				INC	(R2)	:SET MSGTYP TO FATAL ERROR	
1786	010274	000000				HALT		:C NOT CLEARED	
1787								: TO SCOPE REPLACE HALT W/ 240	
1788								: AND REPLACE NEXT INST W/ 760	
1789	010276				1\$:				
1790	010276	001005				BNE	2\$		
1791	010300	012737	000220	000302		MOV	#220,@#FATAL	:MOVE TO MAILBOX # ***** 220 *****	
1792	010306	005212				INC	(R2)	:SET MSGTYP TO FATAL ERROR	
1793	010310	000000				HALT		:Z NOT CLEARED	
1794								: TO SCOPE REPLACE HALT W/ 240	
1795								: AND REPLACE NEXT INST W/ 752	
1796	010312				2\$:				
1797	010312	102005				BVC	3\$		
1798	010314	012737	000221	000302		MOV	#221,@#FATAL	:MOVE TO MAILBOX # ***** 221 *****	
1799	010322	005212				INC	(R2)	:SET MSGTYP TO FATAL ERROR	
1800	010324	000000				HALT		:V NOT CLEARED	
1801								: TO SCOPE REPLACE HALT W/ 240	
1802								: AND REPLACE NEXT INST W/ 744	
1803	010326				3\$:				
1804	010326	103005				BCC	4\$		
1805	010330	012737	000222	000302		MOV	#222,@#FATAL	:MOVE TO MAILBOX # ***** 222 *****	
1806	010336	005212				INC	(R2)	:SET MSGTYP TO FATAL ERROR	
1807	010340	000000				HALT		:C NOT CLEARED	
1808								: TO SCOPE REPLACE HALT W/ 240	
1809								: AND REPLACE NEXT INST W/ 736	
1810	010342	032767	000357	167426	4\$:	BIT	#357,CC	:TEST PRIORITY FOR ZERO	
1811	010350	001405				BEQ	5\$		
1812	010352	012737	000223	000302		MOV	#223,@#FATAL	:MOVE TO MAILBOX # ***** 223 *****	
1813	010360	005212				INC	(R2)	:SET MSGTYP TO FATAL ERROR	
1814	010362	000000				HALT		:PRIORITY NOT ZERO	
1815								: TO SCOPE REPLACE HALT W/ 240	
1816								: AND REPLACE NEXT INST W/ 725	
1817	010364	012706	000500		5\$:	MOV	#BUFF,SP		
1818	010370	012767	010410	167406		MOV	#RETV,RTRAP5	:SET NEW 'CC' AND PRIORITY	
1819	010376	012767	000357	167402		MOV	#357,RTRAP5+2	:TRACE HERE	
1820	010404	005767	167371			TST	1		
1821	010410				RETV:				
1822	010410	100405				BMI	1\$		
1823	010412	012737	000224	000302		MOV	#224,@#FATAL	:MOVE TO MAILBOX # ***** 224 *****	
1824	010420	005212				INC	(R2)	:SET MSGTYP TO FATAL ERROR	
1825	010422	000000				HALT		:N NOT SET	
1826								: TO SCOPE REPLACE HALT W/ 240	
1827								: AND REPLACE NEXT INST W/ 705	
1828	010424				1\$:				
1829	010424	001405				BEQ	2\$		
1830	010426	012737	000225	000302		MOV	#225,@#FATAL	:MOVE TO MAILBOX # ***** 225 *****	
1831	010434	005212				INC	(R2)	:SET MSGTYP TO FATAL ERROR	
1832	010436	000000				HALT		:Z NOT SET	
1833								: TO SCOPE REPLACE HALT W/ 240	
1834								: AND REPLACE NEXT INST W/ 677	
1835	010440				2\$:				
1836	010440	102405				BVS	3\$		
1837	010442	012737	000226	000302		MOV	#226,@#FATAL	:MOVE TO MAILBOX # ***** 226 *****	
1838	010450	005212				INC	(R2)	:SET MSGTYP TO FATAL ERROR	


```

1890
1891
1892
1893 010626 005237 000304
1894 010632 022737 000061 000304
1895 010640 001043
1896 010642 012706 000150
1897 010646 005067 167274
1898 010652 012767 010662 167124
1899 010660 005246
1900 010662 005767 167260
1901 010666 001005
1902 010670 012737 000233 000302
1903 010676 005212
1904 010700 000000
1905
1906
1907 010702 012705 001000
1908 010706 012706 000400
1909 010712 012767 010734 167064
1910 010720 124645
1911 010722 012737 000234 000302
1912 010730 005212
1913 010732 000000
1914
1915
1916 010734 012706 000400
1917 010740 012767 010762 167036
1918 010746 134540
1919 010750
1920 010750 012737 000235 000302
1921 010756 005212
1922 010760 000000
1923
1924
1925 010762
1926
1927
1928
1929
1930 010762 005237 000304
1931 010766 022737 000062 000304
1932 010774 001011
1933 010776 012706 000400
1934 011002 012767 011020 167000
1935 011010 012767 011032 166766
1936 011016 000007
1937 011020
1938 011020 012737 000236 000302
1939 011026 005212
1940 011030 000000
1941
1942
1943 011032 012767 000012 166750
1944
1945

:*****
:TEST 61 TEST DIFFERENT TYPES OF OVERFLOW
:*****
TST61: INC @RSTESTN ;UPDATE TEST NUMBER
        CMP #61,@RSTESTN ;SEQUENCE ERROR?
        BNE TST62-12 ;BR TO ERROR HALT ON SEQ ERROR
        MOV #150,%6
        CLR 146 ;STATUS WORD OF LOC 10
        MOV #TDEC3,4 ;RETURN TO LOC 4
        INC -(6)
TDEC3: TST 146
        BNE 1$
        MOV #233,@R$FATAL ;MOVE TO MAILBOX # ***** 233 *****
        INC (R2) ;SET MSGTYP TO FATAL ERROR
        HALT ;INCREMENT OPERATION NOT INHIBITED
        ; TO SCOPE REPLACE HALT W/ 240
        ; AND REPLACE NEXT INST W/ 757

1$: MOV #1000,%5
        MOV #400,%6
        MOV #TDEC4,4
        CMPB -(6),-(5)
        MOV #234,@R$FATAL ;MOVE TO MAILBOX # ***** 234 *****
        INC (R2) ;SET MSGTYP TO FATAL ERROR
        HALT ;STACK = 400 AND DECREMENTED, SHOULD TRAP
        ; TO SCOPE REPLACE HALT W/ 240
        ; AND REPLACE NEXT INST W/ 742

TDEC4: MOV #400,%6
        MOV #TDEC7,4
        BITB -(5),-(6)

TDEC6: MOV #235,@R$FATAL ;MOVE TO MAILBOX # ***** 235 *****
        INC (R2) ;SET MSGTYP TO FATAL ERROR
        HALT ;NO STACK OVERFLOW,OR WRONG $STNM
        ; TO SCOPE REPLACE HALT W/ 240
        ; AND REPLACE NEXT INST W/ 727

TDEC7:

:*****
:TEST 62 TEST THAT AN 7 CAUSES AN OVERFLOW TRAP
:*****
TST62: INC @RSTESTN ;UPDATE TEST NUMBER
        CMP #62,@RSTESTN ;SEQUENCE ERROR?
        BNE VDEC2 ;BR TO ERROR HALT ON SEQ ERROR
        MOV #400,%6 ;SET UP STACK TO OVERFLOW
        MOV #VDEC2,10 ;SET UP 7 VECTOR
        MOV #VDEC1,4 ;SET UP OVERFLOW VECTOR
        7 ;THIS TRAP SHOULD CAUSE OVERFLOW

VDEC2: MOV #236,@R$FATAL ;MOVE TO MAILBOX # ***** 236 *****
        INC (R2) ;SET MSGTYP TO FATAL ERROR
        HALT ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $STNM
        ; TO SCOPE REPLACE HALT W/ 240
        ; AND REPLACE NEXT INST W/ 761

VDEC1: MOV #10+2,10

:*****
:TEST 63 TEST THAT AN IOT CAUSES AN OVERFLOW TRAP
:*****

```



```

1946
1947 011040 005237 000304
1948 011044 022737 000063 000304
1949 011052 001011
1950 011054 012706 000400
1951 011060 012767 011076 166732
1952 011066 012767 011110 166710
1953 011074 000004
1954 011076
1955 011076 012737 000237 000302
1956 011104 005212
1957 011106 000000
1958
1959
1960 011110 012767 000022 166702
1961
1962
1963
1964 011116 005237 000304
1965 011122 022737 000064 000304
1966 011130 001011
1967 011132 012706 000400
1968 011136 012767 011154 166664
1969 011144 012767 011166 166632
1970 011152 104000
1971 011154
1972 011154 012737 000240 000302
1973 011162 005212
1974 011164 000000
1975
1976
1977 011166 012767 000032 166634
1978
1979
1980
1981 011174 005237 000304
1982 011200 022737 000065 000304
1983 011206 001011
1984 011210 012706 000400
1985 011214 012767 011232 166612
1986 011222 012767 011244 166554
1987 011230 104400
1988 011232
1989 011232 012737 000241 000302
1990 011240 005212
1991 011242 000000
1992
1993
1994 011244 012767 000036 166562
1995
1996
1997
1998 011252 005237 000304
1999 011256 022737 000066 000304
2000 011264 001011
2001 011266 012706 000400

:*****
TST63: INC @#STESTN ;UPDATE TEST NUMBER
      CMP #63,@#STESTN ;SEQUENCE ERROR?
      BNE VDEC4 ;BR TO ERROR HALT ON SEQ ERROR
      MOV #400,%6 ;SET UP STACK TO OVERFLOW
      MOV #VDEC4,20 ;SET UP IOT VECTOR
      MOV #VDEC3,4 ;SET UP OVERFLOW VECTOR
      IOT ;THIS TRAP SHOULD CAUSE OVERFLOW

VDEC4: MOV #237,@#SFATAL ;MOVE TO MAILBOX # ***** 237 *****
      INC (R2) ;SET MSGTYP TO FATAL ERROR
      HALT ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $TSTNM
      ; TO SCOPE REPLACE HALT W/ 240
      ; AND REPLACE NEXT INST W/ 761

VDEC3: MOV #20+2,20
:*****
:TEST 64 TEST THAT AN EMT CAUSES AN OVERFLOW TRAP
:*****
TST64: INC @#STESTN ;UPDATE TEST NUMBER
      CMP #64,@#STESTN ;SEQUENCE ERROR?
      BNE VDEC6 ;BR TO ERROR HALT ON SEQ ERROR
      MOV #400,%6 ;SET UP STACK TO OVERFLOW
      MOV #VDEC6,30 ;SET UP EMT VECTOR
      MOV #VDEC5,4 ;SET UP OVERFLOW VECTOR
      EMT ;THIS TRAP SHOULD CAUSE OVERFLOW

VDEC6: MOV #240,@#SFATAL ;MOVE TO MAILBOX # ***** 240 *****
      INC (R2) ;SET MSGTYP TO FATAL ERROR
      HALT ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $TSTNM
      ; TO SCOPE REPLACE HALT W/ 240
      ; AND REPLACE NEXT INST W/ 761

VDEC5: MOV #30+2,30
:*****
:TEST 65 TEST THAT AN TRP CAUSES AN OVERFLOW TRAP
:*****
TST65: INC @#STESTN ;UPDATE TEST NUMBER
      CMP #65,@#STESTN ;SEQUENCE ERROR?
      BNE VDEC8 ;BR TO ERROR HALT ON SEQ ERROR
      MOV #400,%6 ;SET UP STACK TO OVERFLOW
      MOV #VDEC8,34 ;SET UP TRAP VECTOR
      MOV #VDEC7,4 ;SET UP OVERFLOW VECTOR
      TRAP ;THIS TRAP SHOULD CAUSE OVERFLOW

VDEC8: MOV #241,@#SFATAL ;MOVE TO MAILBOX # ***** 241 *****
      INC (R2) ;SET MSGTYP TO FATAL ERROR
      HALT ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $TSTNM
      ; TO SCOPE REPLACE HALT W/ 240
      ; AND REPLACE NEXT INST W/ 761

VDEC7: MOV #34+2,34
:*****
:TEST 66 TEST THAT AN TRT CAUSES AN OVERFLOW TRAP
:*****
TST66: INC @#STESTN ;UPDATE TEST NUMBER
      CMP #66,@#STESTN ;SEQUENCE ERROR?
      BNE VDEC10 ;BR TO ERROR HALT ON SEQ ERROR
      MOV #400,%6 ;SET UP STACK TO OVERFLOW
    
```

```

2002 011272 012767 011310 166514      MOV      #VDEC10,14      ;SET UP TRT VECTOR
2003 011300 012767 011322 166476      MOV      #VDEC9,4       ;SET UP OVERFLOW VECTOR
2004 011306 000003                      TRT                          ;THIS TRAP SHOULD CAUSE OVERFLOW
2005 011310                                VDEC10:
2006 011310 012737 000242 000302      MOV      #242,@#SFATAL  ;MOVE TO MAILBOX # ***** 242 *****
2007 011316 005212                      INC      (R2)             ;SET MSGTYP TO FATAL ERROR
2008 011320 000000                      HALT                       ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $STNM
2009                                          ; TO SCOPE REPLACE HALT W/ 240
2010                                          ; AND REPLACE NEXT INST W/ 761
2011 011322 012767 000016 166464      VDEC9:  MOV      #14+2,14
2012                                          ;*****
2013                                          ;TEST 67          TEST THAT AN ILLA CAUSES AN OVERFLOW TRAP
2014                                          ;*****
2015 011330 005237 000304                      TST67:  INC      @#STESTN  ;UPDATE TEST NUMBER
2016 011334 022737 000067 000304      CMP      #67,@#STESTN   ;SEQUENCE ERROR?
2017 011342 001011                      BNE     VDEC11          ;BR TO ERROR HALT ON SEQ ERROR
2018 011344 012706 000400                      MOV      #400,%6        ;SET UP STACK TO OVERFLOW
2019 011350 012767 011366 166426      MOV      #VDEC11,4      ;SET UP ILLA VECTOR
2020 011356 012767 011400 166420      MOV      #VDEC12,4      ;SET UP OVERFLOW VECTOR
2021 011364 004700                      ILLA                       ;THIS TRAP SHOULD CAUSE OVERFLOW
2022 011366                                VDEC11:
2023 011366 012737 000243 000302      MOV      #243,@#SFATAL  ;MOVE TO MAILBOX # ***** 243 *****
2024 011374 005212                      INC      (R2)             ;SET MSGTYP TO FATAL ERROR
2025 011376 000000                      HALT                       ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $STNM
2026                                          ; TO SCOPE REPLACE HALT W/ 240
2027                                          ; AND REPLACE NEXT INST W/ 761
2028 011400 012767 000006 166376      VDEC12: MOV      #4+2,4
2029 011406 020627 000370                      CMP      %6,#370        ;STACK PUSHED FOUR WORDS?
2030 011412 001405                      BEQ     TST70
2031 011414 012737 000244 000302      MOV      #244,@#SFATAL  ;MOVE TO MAILBOX # ***** 244 *****
2032 011422 005212                      INC      (R2)             ;SET MSGTYP TO FATAL ERROR
2033 011424 000000                      HALT                       ;TRAP OVERFLOW DID NOT OCCUR
2034                                          ; TO SCOPE REPLACE HALT W/ 240
2035                                          ; AND REPLACE NEXT INST W/ 746
2036                                          ;*****
2037                                          ;TEST 70          TEST THAT AN ILLB CAUSES AN OVERFLOW TRAP
2038                                          ;*****
2039 011426 005237 000304                      TST70:  INC      @#STESTN  ;UPDATE TEST NUMBER
2040 011432 022737 000070 000304      CMP      #70,@#STESTN   ;SEQUENCE ERROR?
2041 011440 001011                      BNE     VDEC13          ;BR TO ERROR HALT ON SEQ ERROR
2042 011442 012706 000400                      MOV      #400,%6        ;SET UP STACK TO OVERFLOW
2043 011446 012767 011464 166330      MOV      #VDEC13,4      ;SET UP ILLB VECTOR
2044 011454 012767 011476 166322      MOV      #VDEC14,4      ;SET UP OVERFLOW VECTOR
2045 011462 000100                      ILLB                       ;THIS TRAP SHOULD CAUSE OVERFLOW
2046 011464                                VDEC13:
2047 011464 012737 000245 000302      MOV      #245,@#SFATAL  ;MOVE TO MAILBOX # ***** 245 *****
2048 011472 005212                      INC      (R2)             ;SET MSGTYP TO FATAL ERROR
2049 011474 000000                      HALT                       ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $STNM
2050                                          ; TO SCOPE REPLACE HALT W/ 240
2051                                          ; AND REPLACE NEXT INST W/ 761
2052 011476 012767 000006 166300      VDEC14: MOV      #4+2,4
2053                                          ;*****
2054                                          ;TEST 71          TEST FOR FALSE OVERFLOW TRAP
2055                                          ;*****
2056                                          ;*****
2057 011504 005237 000304                      TST71:  INC      @#STESTN  ;UPDATE TEST NUMBER
    
```

```

2058 011510 022737 000071 000304      CMP      #71,@$TESTN      ;SEQUENCE ERROR?
2059 011516 001023                    BNE      FOVER           ;BR TO ERROR HALT ON SEQ ERROR
2060
2061 011520 012767 011566 166256      MOV      #FOVER,4        ;SET UP OVERFLOW POINTER
2062 011526 012706 001002                    MOV      #1002,%6
2063 011532 005746                    TST      -(6)           ;SHOULD NOT OVERFLOW
2064 011534 012706 002002                    MOV      #2002,%6
2065 011540 005746                    TST      -(6)           ;SHOULD NOT OVERFLOW
2066 011542 012706 004002                    MOV      #4002,%6
2067 011546 005746                    TST      -(6)           ;SHOULD NOT OVERFLOW
2068 011550 012706 010002                    MOV      #10002,%6
2069 011554 005746                    TST      -(6)
2070 011556 012706 020000                    MOV      #20000,%6     ;SHOULD NOT OVERFLOW
2071 011562 005746                    TST      -(6)
2072 011564 000405                    BR       STP
    
```

```

FOVER:
2073 011566
2074 011566 012737 000246 000302      MOV      #246,@$FATAL    ;MOVE TO MAILBOX # ***** 246 *****
2075 011574 005212                    INC      (R2)           ;SET MSGTYP TO FATAL ERROR
2076 011576 000000                    HALT                    ;IT OVERFLOWED,OR WRONG $STNM
2077                                     ; TO SCOPE REPLACE HALT W/ 240
2078                                     ; AND REPLACE NEXT INST W/ 747
    
```

```

2079 011600 012767 000006 166176      STP:    MOV      #6,4
2080 011606 005067 166174                    CLR      6
2081
2082                                     ;*****
2083                                     ;TEST 72      TEST THAT BIT 4 PSW WILL CAUSE A TRAP TO 14
2084                                     ;*****
    
```

```

2084 011612 005237 000304 000304      TST72: INC      @$TESTN      ;UPDATE TEST NUMBER
2085 011616 022737 000072 000304      CMP      #72,@$TESTN    ;SEQUENCE ERROR?
2086 011624 001013                    BNE      TST73-12       ;BR TO ERROR HALT ON SEQ ERROR
2087 011626 012706 000500                    MOV      #BUFF,SP
2088 011632 012767 011666 166154      MOV      #RETAT,RTRAP4 ;SET UP TO TRAP TO 14
2089 011640 012746 000020                    MOV      #20,-(SP)      ;PUSH T BIT
2090 011644 012746 011652                    MOV      #.+6,-(SP)    ;PUSH PC
2091 011650 000002                    RTI                    ;SET T BIT
2092 011652 000240                    NOP                    ;TRAP HERE
2093 011654 012737 000247 000302      MOV      #247,@$FATAL   ;MOVE TO MAILBOX # ***** 247 *****
2094 011662 005212                    INC      (R2)           ;SET MSGTYP TO FATAL ERROR
2095 011664 000000                    HALT                    ;TRACE BIT DID NOT TRAP!,OR WRONG $TESTN
2096                                     ; TO SCOPE REPLACE HALT W/ 240
2097                                     ; AND REPLACE NEXT INST W/ 757
    
```

```

RETAT:
2098 011666
2099
2100                                     ;*****
2101                                     ;TEST 73      TEST STACK POINTER DECREMENTS
2102                                     ;*****
    
```

```

2102 011666 005237 000304 000304      TST73: INC      @$TESTN      ;UPDATE TEST NUMBER
2103 011672 022737 000073 000304      CMP      #73,@$TESTN    ;SEQUENCE ERROR?
2104 011700 001023                    BNE      TST74-12       ;BR TO ERROR HALT ON SEQ ERROR
2105 011702 012706 000500                    MOV      #BUFF,SP
2106 011706 012767 011742 166100      MOV      #RETBT,RTRAP4 ;PUSH T BIT
2107 011714 012746 000020                    MOV      #20,-(SP)      ;PUSH PC
2108 011720 012746 011726                    MOV      #.+6,-(SP)    ;SET T BIT
2109 011724 000002                    RTI                    ;TRAP HERE
2110 011726 000240                    NOP
2111 011730 012737 000250 000302      MOV      #250,@$FATAL   ;MOVE TO MAILBOX # ***** 250 *****
2112 011736 005212                    INC      (R2)           ;SET MSGTYP TO FATAL ERROR
2113 011740 000000                    HALT                    ;TRACE BIT DID NOT TRAP.
    
```

```

2114                                     : TO SCOPE REPLACE HALT W/ 240
2115                                     : AND REPLACE NEXT INST W/ 757
2116 011742 020627 000474 RETBT:  CMP    SP,#BUFF-4
2117 011746 001405          BEQ    TST74
2118 011750 012737 000251 000302      MOV    #251,@#SFATAL ;MOVE TO MAILBOX # ***** 251 *****
2119 011756 005212          INC    (R2) ;SET MSGTYP TO FATAL ERROR
2120 011760 000000          HALT   ;STACK POINTER WAS NOT PUSHED BY TRAP,OR WRONG $TESTN
2121                                     : TO SCOPE REPLACE HALT W/ 240
2122                                     : AND REPLACE NEXT INST W/ 747
2123 *****
2124 :TEST 74          TEST FOR PROPER PC ON STACK
2125 *****
2126 011762 005237 000304 TST74: INC    @#$TESTN ;UPDATE TEST NUMBER
2127 011766 022737 000074 000304      CMP    #74,@#$TESTN ;SEQUENCE ERROR?
2128 011774 001016          BNE    TST75-12 ;BR TO ERROR HALT ON SEQ ERROR
2129 011776 012706 000500          MOV    #BUFF,SP
2130 012002 012767 012022 166004      MOV    #RETCT,RTRAP4
2131 012010 012746 000020          MOV    #20,-(SP) ;PUSH T BIT
2132 012014 012746 012022          MOV    #.+6,-(SP) ;PUSH PC
2133 012020 000002          RTI    ;SET T BIT
2134                                     :TRAP HERE
2135 012022 022767 012022 166444 RETCT:  CMP    #. ,BUFF-4
2136 012030 001405          BEQ    TST75
2137 012032 012737 000252 000302      MOV    #252,@#SFATAL ;MOVE TO MAILBOX # ***** 252 *****
2138 012040 005212          INC    (R2) ;SET MSGTYP TO FATAL ERROR
2139 012042 000000          HALT   ;CORRECT PC WAS NOT SAVED ON STACK,OR WRONG $TESTN
2140                                     : TO SCOPE REPLACE HALT W/ 240
2141                                     : AND REPLACE NEXT INST W/ 754
2142 *****
2143 :TEST 75          TEST THAT RTT POPS T- BIT
2144 *****
2145 :TEST 75          TEST THAT RTT POPS T- BIT
2146 *****
2147 012044 005237 000304 TST75: INC    @#$TESTN ;UPDATE TEST NUMBER
2148 012050 022737 000075 000304      CMP    #75,@#$TESTN ;SEQUENCE ERROR?
2149 012056 001015          BNE    TST76-12 ;BR TO ERROR HALT ON SEQ ERROR
2150
2151 012060 012706 000500          MOV    #BUFF,SP
2152 012064 005001          CLR    R1 ;CLEAR R1
2153 012066 012746 000020          MOV    #20,-(SP)
2154 012072 012746 012106          MOV    #RTT1,-(SP)
2155 012076 012767 012124 165710      MOV    #RTT2,14
2156 012104 000006          RTT
2157 012106 000240          RTT1:  NOP
2158 012110 001405          BEQ    TST76
2159 012112 012737 000253 000302      MOV    #253,@#SFATAL ;MOVE TO MAILBOX # ***** 253 *****
2160 012120 005212          INC    (R2) ;SET MSGTYP TO FATAL ERROR
2161 012122 000000          HALT   ;T-BIT DID NOT TRAP,OR WRONG $TESTN
2162                                     : TO SCOPE REPLACE HALT W/ 240
2163                                     : AND REPLACE NEXT INST W/ 755
2164
2165 012124          RTT2:
2166 *****
2167 :TEST 76          TEST THAT RTT ALLOWS ONE INST. BEFORE TRAP
2168 *****
2169 012124 005237 000304 TST76: INC    @#$TESTN ;UPDATE TEST NUMBER
    
```

```

2170 012130 022737 000076 000304      CMP      #76,@%STESTN      ;SEQUENCE ERROR?
2171 012136 001031                    BNE      TST77-12        ;BR TO ERROR HALT ON SEQ ERROR
2172 012140 012705 177777                    MOV      #177777,%5
2173 012144 012706 000500      RTT5:   MOV      #BUFF,SP
2174 012150 012746 000020                    MOV      #20,-(SP)
2175 012154 012746 012172                    MOV      #RTT3,-(SP)
2176 012160 012767 012212 165626                    MOV      #RTT4,14
2177 012166 005001                    CLR      R1              ;CLEAR R0
2178 012170 000006                    RTT      ;SET T-BIT
2179 012172 005201      RTT3:   INC      R1
2180 012174 005205                    INC      %5
2181 012176 001762                    BEQ      RTT5            ;DO THIS TEST NO MORE THAN 2 TIMES
2182 012200 012737 000254 000302                    MOV      #254,@%SFATAL ;MOVE TO MAILBOX # ***** 254 *****
2183 012206 005212                    INC      (R2)           ;SET MSGTYP TO FATAL ERROR
2184 012210 000000                    HALT      ;DID NOT TRAP
2185                                     ; TO SCOPE REPLACE HALT W/ 240
2186                                     ; AND REPLACE NEXT INST W/ 752
2187 012212 005301      RTT4:   DEC      R1              ;SEE IF RTT ALLOWS 1 INST.
2188 012214 001407                    BEQ      RTT6
2189 012216 005205                    INC      %5            ;DO THIS TEST NO MORE THAN TWO TIMES
2190 012220 001751                    BEQ      RTT5
2191 012222 012737 000255 000302                    MOV      #255,@%SFATAL ;MOVE TO MAILBOX # ***** 255 *****
2192 012230 005212                    INC      (R2)           ;SET MSGTYP TO FATAL ERROR
2193 012232 000000                    HALT      ;RTT DID NOT ALLOW 1 INST.,OR WRONG $TESTN
2194                                     ; TO SCOPE REPLACE HALT W/ 240
2195                                     ; AND REPLACE NEXT INST W/ 741
2196 012234      RTT6:
2197      ;*****
2198      ;TEST 77      TEST THAT RTI DOES NOT ALLOW 1 INST.
2199      ;*****
2200 012234 005237 000304      TST77:  INC      @%STESTN      ;UPDATE TEST NUMBER
2201 012240 022737 000077 000304      CMP      #77,@%STESTN      ;SEQUENCE ERROR?
2202 012246 001023                    BNE      TST100-12      ;BR TO ERROR HALT ON SEQ ERROR
2203 012250 012706 000500                    MOV      #BUFF,SP
2204 012254 012746 000020                    MOV      #20,-(SP)
2205 012260 012746 012276                    MOV      #RTI1,-(SP)
2206 012264 012767 012312 165522                    MOV      #RTI2,14
2207 012272 005001                    CLR      R1
2208 012274 000002                    RTI      ;SET T-BIT
2209 012276 005201      RTI1:   INC      R1              ;RTI SHOULD NOT ALLOW THIS
2210 012300 012737 000256 000302                    MOV      #256,@%SFATAL ;MOVE TO MAILBOX # ***** 256 *****
2211 012306 005212                    INC      (R2)           ;SET MSGTYP TO FATAL ERROR
2212 012310 000000                    HALT      ;T-BIT DID NOT CAUSE TRAP
2213                                     ; TO SCOPE REPLACE HALT W/ 240
2214                                     ; AND REPLACE NEXT INST W/ 756
2215 012312 005701      RTI2:   TST      R1              ;RTI SHOULD NOT ALLOW 1 INST. BEFORE TRAP
2216                                     ;
2217 012314 001405                    BEQ      TST100
2218 012316 012737 000257 000302                    MOV      #257,@%SFATAL ;MOVE TO MAILBOX # ***** 257 *****
2219 012324 005212                    INC      (R2)           ;SET MSGTYP TO FATAL ERROR
2220 012326 000000                    HALT      ;RTI DID ALLOW 1 INST. BEFORE TRAP,OR WRONG $TESTN
2221                                     ; TO SCOPE REPLACE HALT W/ 240
2222                                     ; AND REPLACE NEXT INST W/ 747
2223
2224      ;*****
2225      ;TEST 100      DOES THE PROCESSOR TRAP WHEN %7 IS ODD?
  
```

```

2226 .....
2227 012330 005237 000304          TST100: INC      @%STESTN      ;UPDATE TEST NUMBER
2228 012334 022737 000100 000304    (CMP      #100,@%STESTN    ;SEQUENCE ERROR?
2229 012342 001120                      BNE      TST101-12        ;BR TO ERROR HALT ON SEQ ERROR
2230 012344 012706 000500          MOV      #BUFF,%6        ;SET UP STACK POINTER
2231 012350 012767 012374 165426    MOV      #R7TR1,4        ;RETURN FROM TRAP
2232 012356 012707 000001          MOV      #1,%7           ;PC EQUALS ONE
2233 012362 012737 000260 000302    MOV      #260,@%SFATAL   ;MOVE TO MAILBOX # ***** 260 .....
2234 012370 005212                      INC      (R2)            ;SET MSGTYP TO FATAL ERROR
2235 012372 000000                      HALT                    ;ODD ADDRESS SHOULD HAVE TRAPPED
2236                                     ; TO SCOPE REPLACE HALT W/ 240
2237                                     ; AND REPLACE NEXT INST W/ 763
2238 012374 022767 000001 166072    R7TR1:  CMP      #1,BUFF-4
2239 012402 001405                      BEQ
2240 012404 012737 000261 000302    MOV      #261,@%SFATAL   ;MOVE TO MAILBOX # ***** 261 .....
2241 012412 005212                      INC      (R2)            ;SET MSGTYP TO FATAL ERROR
2242 012414 000000                      HALT                    ;CORRECT PC WAS NOT SAVED ON STACK
2243                                     ; TO SCOPE REPLACE HALT W/ 240
2244                                     ; AND REPLACE NEXT INST W/ 752
2245
2246 012416 012706 000500          1$:     MOV      #BUFF,%6      ;STACK POINTER
2247 012422 012767 012444 165354    MOV      #R7TR2,4
2248 012430 005207                      INC      %7              ;PC BECOMES ODD
2249 012432
2250 012432 012737 000262 000302    R7TR2A: MOV      #262,@%SFATAL  ;MOVE TO MAILBOX # ***** 262 .....
2251 012440 005212                      INC      (R2)            ;SET MSGTYP TO FATAL ERROR
2252 012442 000000                      HALT                    ;
2253                                     ; TO SCOPE REPLACE HALT W/ 240
2254                                     ; AND REPLACE NEXT INST W/ 737
2255 012444 022767 012433 166022    R7TR2:  CMP      #R7TR2A+1,BUFF-4
2256 012452 001405                      BEQ      1$
2257 012454 012737 000263 000302    MOV      #263,@%SFATAL  ;MOVE TO MAILBOX # ***** 263 .....
2258 012462 005212                      INC      (R2)            ;SET MSGTYP TO FATAL ERROR
2259 012464 000000                      HALT                    ;CORRECT PC NOT ON STACK
2260                                     ; TO SCOPE REPLACE HALT W/ 240
2261                                     ; AND REPLACE NEXT INST W/ 726
2262 012466 012706 000500          1$:     MOV      #BUFF,%6
2263 012472 012767 012514 165304    MOV      #R7TR3,4
2264 012500 005307                      BR60:   DEC      %7
2265 012502 012737 000264 000302    MOV      #264,@%SFATAL  ;MOVE TO MAILBOX # ***** 264 .....
2266 012510 005212                      INC      (R2)            ;SET MSGTYP TO FATAL ERROR
2267 012512 000000                      HALT                    ;SHOULD TRAP
2268                                     ; TO SCOPE REPLACE HALT W/ 240
2269                                     ; AND REPLACE NEXT INST W/ 713
2270 012514 022767 012501 165752    R7TR3:  CMP      #BR60+1,BUFF-4
2271 012522 001405                      BEQ      1$
2272 012524 012737 000265 000302    MOV      #265,@%SFATAL  ;MOVE TO MAILBOX # ***** 265 .....
2273 012532 005212                      INC      (R2)            ;SET MSGTYP TO FATAL ERROR
2274 012534 000000                      HALT                    ;WRONG VALUE ON STACK
2275                                     ; TO SCOPE REPLACE HALT W/ 240
2276                                     ; AND REPLACE NEXT INST W/ 702
2277
2278 012536 012706 000500          1$:     MOV      #BUFF,%6
2279 012542 012767 012566 165234    MOV      #R7TR4,4
2280 012550 000261                      SEC
2281 012552 006107                      ROL      %7
;CARRY EQUALS A 1
;PC BECOMES ODD

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2282 012554 TR4A:
2283 012554 012737 000266 000302 MOV #26,@#SFATAL ;MOVE TO MAILBOX # ***** 266 *****
2284 012562 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2285 012564 000000 HALT ;ODD ADDRESS DIDN'T TRAP
2286 ; TO SCOPE REPLACE HALT W/ 240
2287 ; AND REPLACE NEXT INST W/ 666
2288 012566 012767 000006 165210 R7-R4: MOV #6,4 ;RESET UP A HALT FOR TRAP
2289 012574 022767 025331 165672 CMP #<2*TR4A+1>,RUFF-4 ;CHECK FOR VALUE ON STACK
2290 012602 001405 BFO TST101
2291 012604 012737 000267 000302 MOV #267,@#SFATAL ;MOVE TO MAILBOX # ***** 267 *****
2292 012612 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2293 012614 000000 HALT ;WRONG VALUE ON STACK,OR WRONG $TSTNM
2294 ; TO SCOPE REPLACE HALT W/ 240
2295 ; AND REPLACE NEXT INST W/ 652
2296 :*****
2297 :TEST 101 TEST TRAP ON TRAP THAT TRACE BIT TRAPS ARE INHIBITED ON TRAP INST
2298 :*****
2299 012616 005237 000304 TST101: INC @#STESTN ;UPDATE TEST NUMBER
2300 012622 022737 000101 000304 CMP #101,@#STESTN ;SEQUENCE ERROR?
2301 012630 001027 BNE BR70 ;BR TO ERROR HALT ON SEQ ERROR
2302
2303 012632 012706 000500 MOV #BUFF,%6
2304 012636 012767 012676 165150 MOV #TRACE,14 ;TRACE TRAP
2305 012644 005027 000016 CLR #16
2306 012650 005027 000022 CLR #22
2307 012654 012767 012722 165136 MOV #TONT1,20 ;IOT TRAP
2308 012662 012746 000020 MOV #20,-(SP) ;PUSH T BIT
2309 012666 012746 012674 MOV #.+6,-(SP) ;PUSH PC
2310 012672 000006 RTI
2311 012674 000004 IOT ;TRAP, NEW CC HAVE TRACE RESET
2312 012676
2313 012676 012737 000270 000302 TRACE: MOV #270,@#SFATAL ;MOVE TO MAILBOX # ***** 270 *****
2314 012704 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2315 012706 000000 HALT ;TRACE TRAP WAS NOT INHIBITED
2316 ; TO SCOPE REPLACE HALT W/ 240
2317 ; AND REPLACE NEXT INST W/ 750
2318 012710
2319 012710 012737 000271 000302 BR70: MOV #271,@#SFATAL ;MOVE TO MAILBOX # ***** 271 *****
2320 012716 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2321 012720 000000 HALT ;WRONG TSTNM,OR WRONG $TSTNM
2322 ; TO SCOPE REPLACE HALT W/ 240
2323 ; AND REPLACE NEXT INST W/ 743
2324 012722 012767 000016 165064 TONT1: MOV #16,14
2325 012730 012767 000022 165062 MOV #22,20
2326 :*****
2327 :TEST 102 TEST THAT THE TRACE BIT IS SAVED IN THE STACK
2328 :*****
2329 012736 005237 000304 TST102: INC @#STESTN ;UPDATE TEST NUMBER
2330 012742 022737 000102 000304 CMP #102,@#STESTN ;SEQUENCE ERROR?
2331 012750 001020 BNE STP3 ;BR TO ERROR HALT ON SEQ ERROR
2332 012752 012706 000500 MOV #BUFF,%6 ;SET UP STACK POINTER
2333 012756 012767 013002 165030 MOV #TRC1,14 ;TRACE TRAP RETURN
2334 012764 005067 165026 CLR 16
2335 012770 012746 000020 MOV #20,-(SP) ;SET THE T BIT
2336 012774 012746 013002 MOV #TRC1,-(SP)
2337 013000 000002 RTI
  
```

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2338 013002 036727 165470 000020 TRC1: BIT      BUFF-2,#20      ;CHECK FOR 1 BIT ON STACK
2339 013010 001005          BNE      STP3D
2340 013012          STP3:
2341 013012 012737 000272 000302  MOV     #272,@#SFATAL ;MOVE TO MAILBOX # ***** 272 *****
2342 013020 005212          INC     (R2)          ;SET MSGTYP TO FATAL ERROR
2343 013022 000000          HALT          ;T BIT NOT SAVED ON THE STACK,OR WRONG $STNM
                ; TO SCOPE REPLACE HALT W/ 240
                ; AND REPLACE NEXT INST W/ 752
2344
2345
2346 013024 012767 000016 164762 STP3D: MOV     #*6,14
2347
2348
2349          ;THIS ROUTINE TEST THAT NO LEGAL ADDRESS TRAPS.
2350          ;AND THAT AN ILLEGAL ADDRESS TRAPS TO LOCATION 4
2351          ;*****
2352          ;TEST 103      TEST NON-EXISTENT ADDRESS TRAPS
2353          ;*****
2354 013032 005237 000304          TST103: INC     @#STESTN ;UPDATE TEST NUMBER
2355 013036 022737 000103 000304  CMP     #103,@#STESTN ;SEQUENCE ERROR?
2356 013044 001063          BNE     AUTO1        ;BR TO ERROR HALT ON SFO ERROR
2357
2358          ;THIS ROUTINE TESTS MEMORY UNTIL IT DOES A NXM TRAP
2359 013046 000402          BR      ADALL
2360 013050 000000          TSL:    0
2361 013052 000000          CORH:  0
2362 013054 005000          ADALL: CLR     %0
2363 013056 005067 164724          CLR     6
2364 013062 012767 013116 164714  MOV     #ATRAP,4      ;SET UP ADDRESS TRAP ENTRANCE
2365 013070 012706 000500          NOR:   MOV     #BUFF,SP
2366 013074 105720          TSTB   (0)+          ;IF OUTSIDE OF CORE, TRAP TO 4
2367 013076 020027 160000          CMP     %0,#160000   ;IS POINTER IN SIDE CORE
2368 013102 101772          BLOS   NOR           ;TEST THE REST OF CORE
2369 013104          AUTO:
2370 013104 012737 000273 000302  MOV     #273,@#SFATAL ;MOVE TO MAILBOX # ***** 273 *****
2371 013112 005212          INC     (R2)          ;SET MSGTYP TO FATAL ERROR
2372 013114 000000          HALT          ;SHOULD HAVE TRAPED
                ; TO SCOPE REPLACE HALT W/ 240
                ; AND REPLACE NEXT INST W/ 753
2373
2374
2375          ;RETURN HERE ON AN ADDRESS TRAP
2376 013116 010067 177730          ATRAP: MOV     RO,CORH ;MOVE THE FIRST NXM LOCATION IN CORH
2377          ;THIS ROUTINE DOES NXM TRAPS UNTIL IT FINDS AN EXISTANT MEMORY LOCATION
2378 013122 012700 160000          MOV     #160001,RO   ;SET UP THE HIGHEST MEM LOCATION
2379 013126 012767 013164 164650  CTRAP: MOV     #BTRAP,4 ;SET UP THE VECTOR
2380 013134 012706 000500          MOV     #BUFF,SP
2381 013140 105740          TSTB   -(RO)         ;DOES IT EXIST?
2382 013142 005200          DTRAP: INC     RO      ;IF YES INCREMENT IT
2383 013144 020067 177702          CMP     RO,CORH      ;IS IT THE SAME LOCATION?
2384 013150 001426          BEQ    TRAPS
2385 013152 012737 000274 000302  MOV     #274,@#SFATAL ;MOVE TO MAILBOX # ***** 274 *****
2386 013160 005212          INC     (R2)          ;SET MSGTYP TO FATAL ERROR
2387 013162 000000          HALT          ;CONTENTS OF RO AND CORH SHOULD HAVE BEEN EQUAL
                ; TO SCOPE REPLACE HALT W/ 240
                ; AND REPLACE NEXT INST W/ 730
2388
2389          ;IF THIS COMPARISON FAILS IT MEANS
2390          ;THAT SOME LEGAL ADDRESS TRAPPED OR
2391          ;THAT AN ILLFAL ADDRESS DID NOT TRAP
2392
2393 013164 005767 164606          BTRAP: TST     STATUS
  
```



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2394 013170 001405          BEQ      1$
2395 013172 012737 000275 000302  MOV     #275,@#SFATAL ;MOVE TO MAILBOX # ***** 275 *****
2396 013200 005212          INC     (R2)           ;SET MSGTYP TO FATAL ERROR
2397 013202 000000          HALT                    ;NEW PSW SHOULD HAVE BEEN ZERO
2398                                     ; TO SCOPE REPLACE HALT W/ 240
2399                                     ; AND REPLACE NEXT INST W/ 720
2400 013204 026727 165264 013142 1$:    CMP     BUFF-4,#DTRAP
2401 013212 001745          BEQ     CTRAP
2402 013214          AUTO1:
2403 013214 012737 000276 000302  MOV     #276,@#SFATAL ;MOVE TO MAILBOX # ***** 276 *****
2404 013222 005212          INC     (R2)           ;SET MSGTYP TO FATAL ERROR
2405 013224 000000          HALT                    ;OLD PC WAS NOT SAVED OR WRONG $TESTN
2406                                     ; TO SCOPE REPLACE HALT W/ 240
2407                                     ; AND REPLACE NEXT INST W/ 707
2408 013226 012767 000006 164550 TRAPB: MOV     #6,4
2409 013234 005067 164546          CLR     6
2410                                     ;THIS ROUTINE WILL FIGURE OUT IF YOU HAVE A DL11W
2411
2412 013240 005067 000020          CLR     PROFTE
2413 013244 012706 000500          MOV     #BUFF,SP      ;SET UP THE STACK POINTER
2414 013250 012767 013266 164526  MOV     #DL11W,4      ;SET UP THE TRAP VECTOR
2415 013256 005767 164302          TST     TPS           ;TEST THE PUNCH STATUS REGISTER
2416 013262 000403          BR     DL11W1        ;BRANCH IF IT EXISTS
2417 013264 000000          PROFTE: 000000
2418 013266 005267 177772          DL11W:  INC     PROFTE ;INCREMENT IF NO DL11W
2419 013272 012767 000006 164504  DL11W1: MOV     #6,4
2420
2421 :*****
2422 :TEST 104 TEST THAT A TTY INTERRUPT CAUSES AN OVERFLOW TRAP
2423 :*****
2424 013300 005237 000304          TST104: INC     @#STESTN ;UPDATE TEST NUMBER
2425 013304 022737 000104 000304  CMP     #104,@#STESTN ;SEQUENCE ERROR?
2426 013312 001031          BNE     TDEC8        ;BR TO ERROR HALT ON SEQ ERROR
2427 013314 005767 177744          TST     PROFTE
2428 013320 001042          BNE     R7TRX
2429 013322 000005          RESET
2430 013324 012767 000340 164444  MOV     #340,STATUS  ;LOCK OUT INTERRUPT
2431 013332 012706 000400          MOV     #400,#6     ;SET UP STACK TO OVERFLOW
2432 013335 012767 013410 164440  MOV     #TDEC77,4   ;SET UP OVERFLOW TRAP
2433 013344 012767 013376 164512  MOV     #TDEC8,64   ;SET UP INTERRUPT VECTOR
2434 013352 012767 000100 164204  MOV     #100,TTCSR  ;SET INTERRUPT ENABLE
2435 013360 005067 164412          CLR     STATUS      ;ALLOW INTERRUPT TO OCCUR
2436 013364 012737 000277 000302  MOV     #277,@#SFATAL ;MOVE TO MAILBOX # ***** 277 *****
2437 013372 005212          INC     (R2)           ;SET MSGTYP TO FATAL ERROR
2438 013374 000000          HALT                    ;NO INTERRUPT OCCURRED
2439                                     ; TO SCOPE REPLACE HALT W/ 240
2440                                     ; AND REPLACE NEXT INST W/ 746
2441 013376          TDEC8:
2442 013376 012737 000300 000302  MOV     #300,@#SFATAL ;MOVE TO MAILBOX # ***** 300 *****
2443 013404 005212          INC     (R2)           ;SET MSGTYP TO FATAL ERROR
2444 013406 000000          HALT                    ;OVERFLOW TRAP DID NOT OCCUR OR WRONG $STNM
2445                                     ; TO SCOPE REPLACE HALT W/ 240
2446                                     ; AND REPLACE NEXT INST W/ 741
2447 013410 005067 164150          TDEC77: CLR     TTCSR ;CLEAR INTERRUPT ENABLE
2448 013414 012767 000006 164362  MOV     #6,4
2449 013422 005067 164360          CLR     6
    
```

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2450 013426 R7TRX:
2451 :*****
2452 :TEST 105 TEST THAT A PENDING INTERRUPT OCCURS BEFORE TRAP
2453 :*****
2454 013426 005237 000304 TST105: INC @#STESTN ;UPDATE TEST NUMBER
2455 013432 022737 000105 000304 CMP #105,@#STESTN ;SEQUENCE ERROR?
2456 013440 001037 BNE BR71 ;BR TO ERROR HALT ON SEQ ERROR
2457 013442 005767 177616 TST PROFTE
2458 013446 001046 BNE NODL
2459 013450 012706 000500 MOV #BUFF,%6
2460 013454 012767 000340 164314 MOV #340,STATUS ;SET TO A HIGH PRIORITY LEVEL
2461 013462 012767 013526 164374 MOV #TR0,64
2462 013470 012767 000100 164066 MOV #100,TTCSR ;INTERRUPT FOR TTY PUNCH/PRINTER
2463 013476 012767 013540 164330 MOV #BR71,34 ;TRAP VECTOR
2464 013504 012767 013552 164352 MOV #TR2,64 ;TTY VECTOR
2465 013512 012767 000340 164316 MOV #340,36 ;IF TRAP TRAPS, MOVE 340 TO PRIORITY
2466 013520 005067 164252 CLR STATUS ;SHOULD INTERRUPT AT END OF CLR INST
2467 013524 104400 TRAP ;TTY INTERRUPT SHOULD OVERRIDE TRAP
2468 013526
2469 013526 012737 000301 000302 TR0: MOV #301,@#SFATAL ;MOVE TO MAILBOX # ***** 301 *****
2470 013534 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2471 013536 000000 HALT ;TTY SHOULDN'T HAVE INTERRUPTED
2472 ; TO SCOPE REPLACE HALT W/ 240
2473 ; AND REPLACE NEXT INST W/ 740
2474 013540
2475 013540 012737 000302 000302 BR71: MOV #302,@#SFATAL ;MOVE TO MAILBOX # ***** 302 *****
2476 013546 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2477 013550 000000 HALT ;TRAP OCCURRED FIRST,OR WRONG $STNM
2478 ; TO SCOPE REPLACE HALT W/ 240
2479 ; AND REPLACE NEXT INST W/ 733
2480 013552 005067 164260 TR2: CLR 36
2481 013556 042767 000100 164000 BIC #100,TTCSR
2482 013564
2483 NODL:
2484 :*****
2485 :TEST 106 TEST THAT A PENDING INTERRUPT, INTERRUPTS BETWEEN TRAPS
2486 :*****
2487 013564 005237 000304 TST106: INC @#STESTN ;UPDATE TEST NUMBER
2488 013570 022737 000106 000304 CMP #106,@#STESTN ;SEQUENCE ERROR?
2489 013576 001031 BNE TR5 ;BR TO ERROR HALT ON SEQ ERROR
2490 013600 005767 177460 TST PROFTE
2491 013606 001046 BNE NODL1
2492 013612 012706 000500 MOV #BUFF,%6
2493 013620 012767 000340 164156 MOV #340,STATUS
2494 013626 012767 013660 164200 MOV #100,TTCSR
2495 013634 012767 013674 154222 MOV #TR3,34 ;TRAP
2496 013642 012767 013662 164150 MOV #TR4,64 ;TTY OUTPUT
2497 013650 012767 000340 164144 MOV #TR5,20 ;IOT
2498 013656 104400 TRAP ;IOT PRIORITY
2499 013660 000004 TR3: IOT ;THE ACT OF TRAPPING LOWER PRIORITY
2500 013662 TR5: ;INTERRUPT SHOULD OCCUR IN PLACE OF IOT TRAP
2501 013662 012737 000303 000302 MOV #303,@#SFATAL ;MOVE TO MAILBOX # ***** 303 *****
2502 013670 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2503 013672 000000 HALT ;NO INTERRUPT BETWEEN TRAPS,OR WRONG $STNM
2504 ; TO SCOPE REPLACE HALT W/ 240
2505 ; AND REPLACE NEXT INST W/ 741
    
```

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2506 013674 005067 164122 TR4: CLR 22 ;CLR IOT PRIORITY
2507 013700 012767 000036 164126 MOV #36,34
2508 013706 012767 000066 164150 MOV #66,64
2509 013714 012767 000022 164076 MOV #22,20
2510 013722
2511
2512
2513 :*****
:TEST 107 TEST THAT 'RESET' GOES TO OUTSIDE WORLD
2514 :*****
2515 013722 005237 000304 TST107: INC @RSTESTN ;UPDATE TEST NUMBER
2516 013726 022737 000107 000304 CMP #107,@RSTESTN ;SEQUENCE ERROR?
2517 013734 001027 BNE TST110-12 ;BR TO ERROR HALT ON SEQ ERROR
2518 013736 005767 177322 TST PROFTE
2519 013742 001031 BNE NODL2
2520 013744 012767 000100 163612 MOV #100,TTCSR ;SET INTERRUPT ENABLE
2521 013752 012767 000100 163600 MOV #100,TRCSR ;SET INTERRUPT ENABLE
2522 013760 000005 RESET ;SHOULD CLEAR INTERRUPT ENABLE
2523 013762 032767 000100 163574 BIT #100,TTCSR ;TEST FOR CLEAR
2524 013770 001405 BEQ 1$
2525 013772 012737 000304 000302 MOV #304,@R$FATAL ;MOVE TO MAILBOX # ***** 304 *****
2526 014000 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2527 014002 000000 HALT ;RESET FAILED TO CLEAR TTCSR
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 754
2528
2529
2530 014004 032767 000100 163546 1$: BIT #100,TRCSR ;TEST FOR CLEAR
2531 014012 001405 BEQ TST110
2532 014014 012737 000305 000302 MOV #305,@R$FATAL ;MOVE TO MAILBOX # ***** 305 *****
2533 014022 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2534 014024 000000 HALT ;RESET FAILED TO CLEAR TRCSR,OR WRONG $STNM
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 743
2535
2536
2537 014026 NODL2:
2538 :*****
2539 :TEST 110 TEST THAT RESET HAS NO EFFECT ON THE TRACE TRAP
2540 :*****
2541 014026 005237 000304 TST110: INC @RSTESTN ;UPDATE TEST NUMBER
2542 014032 022737 000110 000304 CMP #110,@RSTESTN ;SEQUENCE ERROR?
2543 014040 001014 BNE RESET3 ;BR TO ERROR HALT ON SEQ ERROR
2544 014042 012706 000500 MOV #BUFF,26 ;SET STACK
2545 014046 012767 014104 163740 MOV #RESET2,14 ;SET UP TRACE VECTOR
2546 014054 012746 000020 MOV #20,-(R6) ;SET THE T-BIT ON STACK
2547 014060 012746 014066 MOV #1$,-(R6) ;MOVE NEW PC ON STACK
2548 014064 000006 RTT
2549 014066 000005 1$: RESET ;SHOULD HAVE NO EFFECT
2550 014070 000005 RESET ;NO EFFECT
2551 014072
2552 014072 012737 000306 000302 RESET3: MOV #306,@R$FATAL ;MOVE TO MAILBOX # ***** 306 *****
2553 014100 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2554 014102 000000 HALT ;TRACE TRAP FAILED,OR WRONG $STNM
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 756
2555
2556
2557 014104 005067 163666 RESET2: CLR STATUS ;CLEAR TRACK
2558 014110 005067 163702 CLR 16 ;TRACE STATUS
2559 014114 012767 000016 163672 MOV #16,14
2560
2561 :*****

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2562          ;TEST 111          TEST THAT WHEN TTY INTERRUPTS IT POPS NEW STATUS
2563          :*****
2564 014122 005237 000304          TST111: INC      @W$TESTN          ;UPDATE TEST NUMBER
2565 014126 022737 000111 000304  CMP      #111,@W$TESTN          ;SEQUENCE ERROR?
2566 014134 001051          BNE      TTY11          ;BR TO ERROR HALT ON SEQ ERROR
2567 014136 005767 177122          TST      PROFTE
2568 014142 001055          BNE      NODL3
2569 014144 000005          RESET
2570 014146 012706 000500          MOV      #BUFF,%6          ;SET UP STACK
2571 014152 012767 014176 163704  MOV      #TTY3,%6          ;INTERRUPT VECTOR
2572 014160 005067 163612          CLR      STATUS          ;DROP PROCESSOR PRIORITY
2573 014164 012767 000357 163674  MOV      #357,%6          ;HIGH PRIORITY ON INTERRUPT
2574 014172 005167 163366          COM      TTCSR          ;SHOULD SET INTERRUPT ENABLE & INTERRUPT
2575 014176 026727 163574 000357  TTY3:  CMP      STATUS,#357
2576 014204 001405          BEQ      1$
2577 014206 012737 000307 000302  MOV      #307,@W$FATAL          ;MOVE TO MAILBOX # ***** 307 *****
2578 014214 005212          INC      (R2)          ;SET MSGTYP TO FATAL ERROR
2579 014216 000000          HALT          ;INTERRUPT DID NOT POP CORRECT STATUS
2580          ; TO SCOPE REPLACE HALT W/ 240
2581          ; AND REPLACE NEXT INST W/ 746
2582 014220 000005          1$:  RESET          ;CLR INTERRUPT ENABLE
2583 014222 012706 000500          MOV      #BUFF,%6          ;STACK SET UP
2584 014226 012767 014252 163630  MOV      #TTY4,%6          ;INTERRUPT VECTOR
2585 014234 005067 163626          CLR      66          ;CLR NEW STATUS
2586 014240 012767 000157 163530  MOV      #157,STATUS          ;PROCESSOR STATUS
2587 014246 005167 163312          COM      TTCSR          ;SET INTERRUPT ENABLE
2588 014252 005767 163520          TTY4:  TST      STATUS
2589 014256 001405          BEQ      TTT37
2590 014260          TTY11:
2591 014260 012737 000310 000302  MOV      #310,@W$FATAL          ;MOVE TO MAILBOX # ***** 310 *****
2592 014266 005212          INC      (R2)          ;SET MSGTYP TO FATAL ERROR
2593 014270 000000          HALT          ;INCORRECT STATUS,OR WRONG $STNM
2594          ; TO SCOPE REPLACE HALT W/ 240
2595          ; AND REPLACE NEXT INST W/ 721
2596 014272 005067 163266          TTT37: CLR      TTCSR
2597 014276          NODL3:
2598          ;*****
2599          ;TEST 112          TEST THE 'WAIT' INSTRUCTION
2600          :*****
2601          TST112: INC      @W$TESTN          ;UPDATE TEST NUMBER
2602 014276 005237 000304          CMP      #112,@W$TESTN          ;SEQUENCE ERROR?
2603 014302 022737 000112 000304  BNE      STP4          ;BR TO ERROR HALT ON SEQ ERROR
2604 014310 001055          BIC      #100,TPS          ;CLEAR INTERRUPT ENABLE
2605 014312 042767 000100 163244  MOV      #BUFF,SP          ;SET UP THE STACK
2606 014320 012706 000500          MOV      #WATE,%6          ;SET UP THE INTERRUPT VECTOR
2607 014324 012767 014414 163532  CLR      66
2608 014332 005067 163530          WATE1: TSTB     TPS          ;WAIT FOR READY
2609 014336 105767 163222          BPL     WATE1          ;TO BE UP
2610 014342 100375          MOV     #15,TPB          ;DO A CARRIAGE RETURN
2611 014344 012767 000015 163214  WATE2: TSTB     TPS          ;WAIT FOR READY TO COME UP
2612 014352 105767 163206          BPL     WATE2
2613 014356 100375          MOV     #15,TPB          ;DO ANOTHER CARRIAGE RETURN
2614 014360 012767 000015 163200  BIS     #100,TPS          ;SET THE INTERRUPT ENABLE
2615 014366 052767 000100 163170  CLR     STATUS          ;CLEAR THE PSW
2616 014374 005067 163376          WATE3: WAIT
2617 014400 000001

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2618 014402 012737 000311 000302      MOV      #311,@#SFATAL      ;MOVE TO MAILBOX # ***** 311 *****
2619 014410 005212                      INC      (R2)              ;SET MSGTYP TO FATAL ERROR
2620 014412 000000                      HALT                       ;WAIT INSTRUCTION DID NOT LOOP
2621                                     ; TO SCOPE REPLACE HALT W/ 240
2622                                     ; AND REPLACE NEXT INST W/ 736
2623 014414 005767 163356      WATE:   TST      STATUS ;IS THE PSW CORRECT?
2624 014420 001405                      BEQ      1$
2625 014422 012737 000312 000302      MOV      #312,@#SFATAL      ;MOVE TO MAILBOX # ***** 312 *****
2626 014430 005212                      INC      (R2)              ;SET MSGTYP TO FATAL ERROR
2627 014432 000000                      HALT                       ;NEW PSW SHOULD HAVE BEEN ZERO
2628                                     ; TO SCOPE REPLACE HALT W/ 240
2629                                     ; AND REPLACE NEXT INST W/ 726
2630 014434 026727 164034 014402 1$:   CMP      BUFF-4,#WATE3+2 ;IS THE OLD PC SAVED
2631 014442 001405                      BEQ      STP4E
2632 014444                                     STP4:
2633 014444 012737 000313 000302      MOV      #313,@#SFATAL      ;MOVE TO MAILBOX # ***** 313 *****
2634 014452 005212                      INC      (R2)              ;SET MSGTYP TO FATAL ERROR
2635 014454 000000                      HALT                       ;OLD PC WAS NOT SAVED OR WRONG $TESTN
2636                                     ; TO SCOPE REPLACE HALT W/ 240
2637                                     ; AND REPLACE NEXT INST W/ 715
2638 014456 012767 000066 163400  STP4E:  MOV      #66,64
2639
2640 014464 004767 001424                      JSR      %7,CLRALL          ;CLEAR ALL KT11-D REGISTERS
2641 014470 012777 077406 164060      MOV      #77406,@KPDRO     ;MAP KERNEL 0 TO BANK 0, RW, 4K
2642 014476 004767 001500                      JSR      PC,KERN7          ;MAP KERNEL PAR/PDR 7 TO EXT BANK
2643 014502 012777 014536 164002      MOV      #INT25,@KTVEC     ;SETUP RETURN VECTOR
2644 014510 005077 164000                      CLR      @KTSTA
2645 014514 012704 020000                      MOV      #20000,R4         ;USE R4 TO REFERENCE NR KERNEL 1
2646 014520 005277 163756                      INC      @SRO              ;TURN ON KT11-D
2647 014524 005724                                     ADR25:  TST      (R4)+      ;REFERENCE NR KERNEL 1
2648 014526 000000                                     ADR25A: HALT           ;SHOULD HAVE ABORTE'D ALREADY
2649 014530 005077 163746                      CLR      @SRO              ;TURN OFF KT11-D
2650 014534 000442                      BR       DON25
2651 014536 017701 163740      INT25:  MOV      @SRO,R1     ;SAVE CONTENTS OF SRO
2652 014542 005377 163734                      DEC      @SRO              ;TURN OFF KT11-D
2653 014546 022701 100003                      CMP      #100003,R1       ;CHECK SAVED CONTENTS OF SRO
2654 014552 001401                      BEQ      .+4
2655 014554 000000                      HLT
2656                                     ;SRO INCORRECT AFTER NR ABORT
2657 014556 022777 014524 163724      CMP      #ADR25,@SR2      ;(SEE SAVED CONTENTS IN R1)
2658 014564 001401                      BEQ      .+4              ;CK SR2
2659 014566 000000                      HLT
2660                                     ;SR2 INCORRECT-SHOULD CONTAIN ADDRESS
2661 014570 005077 163714                      CLR      @SR2             ;OF LAST FETCH BEFORE THE ABORT
2662 014574 022777 014524 163706      CMP      #ADR25,@SR2      ;TRY TO WRITE INTO SR2
2663 014602 001401                      BEQ      .+4              ;SR2 SHOULD BE READ ONLY
2664 014604 000000                      HLT
2665 014606 022777 077506 163742      CMP      #77506,@KPDRO    ;SR2 NOT READ ONLY
2666 014614 001401                      BEQ      .+4
2667 014616 000000                      HLT
2668                                     ;KERNEL PDR 0 INCORRECT
2669 014620 005777 163734                      TST      @KPDRI           ;W BIT SHOULD HAVE BEEN SET BY THE STACK WRITE
2670 014624 001401                      BEQ      .+4
2671 014626 000000                      HLT
2672 014630 021627 014526                      CMP      (R6),#ADR25A
2673 014634 001401                      BEQ      .+4

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2674	014636	000000				HLT			:INCORRECT VALUE ON STACK
2675	014640	022626				CMP	(R6)+,(R6)+		:RESTORE STACK
2676	014642	005077	163646		DON25:	CLR	@KTSTA		:CHANGE TRAP VECTOR TO CAUSE A
2677	014646	016777	163642	163636		MOV	KTSTA,@KTVEC		:HALT ON A FALSE TRAP
2678									
2679									
2680									
2681	014654	004767	001260			JSR	%7,RWALL		:MAP ALL PAGES RW,4K,BANK 0
2682	014660	012777	000004	163672		MOV	#4,@KPDR1		:MAP KERNEL 1 NR, 1 PAGE
2683	014666	004767	001310			JSR	PC,KERN7		:MAP KERNEL PAR/PDR 7 TO EXT BANK
2684	014672	012777	014716	163612		MOV	#RET33,@KTVEC		:SETUP ABORT RETURN
2685	014700	005077	163610			CLR	@KTSTA		
2686	014704	005277	163572			INC	@SRO		:TURN ON KT11-D
2687	014710	005737	030000			TST	@#30000		:REFERENCE NR KERNEL 1 - SHOULD ABORT
2688	014714	000000				HALT			:NO NR ABORT
2689	014716	022777	140003	163556	RET33:	CMP	#140003,@SRO		:CHECK SRO
2690	014724	001401				BEQ	+.4		
2691	014726	000000				HLT			:SRO INCORRECT - SHOULD SHOW KERNEL
2692									:PAGE 1, AND BOTH NR + PL ERRORS SET
2693	014730	005077	163546			CLR	@SRO		
2694	014734	016777	163554	163550		MOV	KTSTA,@KTVEC		:RESTORE TRAP CATCHER
2695									
2696									
2697	014742	004767	001146			JSR	%7,CLRALL		:CLEAR ALL KT11-D REGISTERS
2698	014746	004767	001230			JSR	PC,KERN7		:MAP KERNEL PAR/PDR 7 TO EXT BANK
2699	014752	012777	077406	163576		MOV	#77406,@KPDR0		:MAP KERNEL 0 RW,RK,BANK0
2700	014760	012777	077402	163572		MOV	#77402,@KPDR1		:MAP KERNEL 1 NAM,KSZ K,BANK0
2701	014766	012777	015022	163516		MOV	#INT40,@KTVEC		:SETUP RETURN VECTOR
2702	014774	005077	163514			CLR	@KTSTA		
2703	015000	005277	163476			INC	@SRO		:TURN ON KT11-D
2704	015004	013737	037776	037776	ADR40:	MOV	@#37776,@#37776		:REFERENCE KERNEL 1 - 1ST ABORT
2705	015012	005077	163464			CLR	@SRO		:TURN OFF KT11-D
2706	015016	000000				HLT			:REFERENCE TO KERNEL 1
2707	015020	000510				BR	DONE40		:DIDN'T ABORT
2708	015022	042777	000001	163452	INT40:	BIC	#1,@SRO		:TURN OFF KT11-D
2709	015030	022777	020002	163444		CMP	#20002,@SRO		:CHECK SRO
2710	015036	001401				BEQ	+.4		
2711	015040	000000				HLT			:SRO INCORRECT AFTER NAM ABORT
2712	015042	012777	015076	163442		MOV	#INT40A,@KTVEC		:SETUP NEW RETURN VECTOR
2713	015050	022626				CMP	(R6)+,(R6)+		:RESTORE STACK POINTER
2714	015052	012702	037776			MOV	#37776,R2		:SETUP R2 TO REFERENCE KERNEL 1
2715	015056	052777	000001	163416		B.S	#1,@SRO		:TURN ON KT11-D
2716	015064	012242				MOV	(R2)+,-(R2)		:REFERENCE KERNEL 1 -2ND ABORT
2717	015066	005077	163410		ADR40A:	CLR	@SRO		:TURN OFF KT11-D
2718	015072	000000				HLT			:2ND REFERENCE TO KERNEL 1
2719	015074	000462				BR	DONE40		:DIDN'T ABORT
2720	015076	042777	000001	163376	INT40A:	BIC	#1,@SRO		:TURN OFF KT11-D
2721	015104	022777	020002	163370		CMP	#20002,@SRO		:CHECK SRO
2722	015112	001401				BEQ	+.4		
2723	015114	000000				HLT			:SRO INCORRECT AFTER 2ND NAM ABORT
2724	015116	022777	015004	163364		CMP	#ADR40,@SR2		:CHECK SR2
2725	015124	001401				BEQ	+.4		
2726	015126	000000				HLT			:SR2 DOESN'T CONTAIN VALUE FROM 1ST ABORT
2727	015130	021627	015066			CMP	(R6),#ADR40A		:CHECK ADDRESS PUSHED ON STACK
2728	015134	001401				BEQ	+.4		
2729	015136	000000				HLT			:INCORRECT ADDRESS ON STACK

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2730 015140 022626          CMP      (R6)+,(R6)+          ;RESTORE STACK POINTER
2731 015142 012777 015176 163342 MOV      #INT40B,@KTVEC      ;CHANGE RETURN ADDRESS
2732 015150 005077 163326 CLR      @SR0                ;CLEAR NAM ERROR BIT-SHOULD
2733                                     ;'UNLOCK' ERROR TRACKING
2734 015154 012702 037776          MOV      #37776,R2          ;SETUP R2 TO REFERENCE KERNEL 1
2735 015160 005277 163316          INC      @SR0              ;TURN ON KT11-D
2736 015164 012242          ADR40B: MOV      (R2)+,-(R2) ;3RD NAM REFERENCE, ERROR BIT WAS CLEARED
2737 015166 005077 163310          ADR40C: CLR      @SR0      ;TURN OFF KT11-D
2738 015172 000000          HLT                                     ;3RD REFERENCE TO KERNEL 1
2739 015174 000422          BR      DONE40            ;DIDN'T ABORT
2740 015176 042777 000001 163276 INT40B: BIC      #1,@SR0      ;TURN OFF KT11-D
2741 015204 022777 020002 163270          CMP      #20002,@SR0      ;CHECK SR0
2742 015212 001401          BEQ                                     ;SR0 INCORRECT
2743 015214 000000          HLT                                     ;CHECK SR2
2744 015216 022777 015164 163264          CMP      #ADR40B,@SR2
2745 015224 001401          BEQ      .+4
2746 015226 000000          HLT                                     ;SR2 INCORRECT - SHOULD CONTAIN
2747                                     ;LAST FETCH ADDRESS BEFORE ABORT
2748 015230 022716 015166          CMP      #ADR40C,(SP)
2749 015234 001401          BEQ      .+4
2750 015236 000000          HLT                                     ;PC ON STACK INCORRECT
2751 015240 022626          CMP      (R6)+,(R6)+      ;RESTORE STACK POINTER
2752 015242 005077 163234          DONE40: CLR      @SR0      ;CLEAR ERROR BIT
2753 015246 005077 163242          CLR      @KTSTA          ;CHANGE TRAP RETURN TO CAUSE A HALT
2754 015252 016777 163236 163232          MOV      KTSTA,@KTVEC    ;ON A FALSE INTERRUPT

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:TEST 113 TEST THAT ALL RESERVED INSTRUCTIONS TRAP

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2755
2756
2757
2758
2759 015260 005237 000304          TST113: INC      @#STESTN    ;UPDATE TEST NUMBER
2760 015264 022737 000113 000304          CMP      #113,@#STESTN    ;SEQUENCE ERROR?
2761 015272 001156          BNE      RET4             ;BR TO ERROR HALT ON SEQ ERROR
2762 015274 042767 000100 162262          BIC      #100,TPS
2763 015302 012737 015330 000244          MOV      #TRAP244,@#244   ; SET UP TO SEE IF
2764 015310 013767 000010 000024          MOV      @#10,TENSAVE     ; THIS PROCESSOR HAS THE
2765 015316 012737 015340 000010          MOV      #TRAP10,@#10     ; FLOATING POINT OPTION
2766 015324 170007          .WORD   170007           ; AN ILLEGAL FPP INSTRUCTION
2767 015326 000406          BR      AROUND           ; THE FOLLOWING
2768 015330          TRAP244:
2769 015330 013767 015674 000342          MOV      @#FPP,FINISH    ; IF FPP IN--
2770 015336 000002          RTI                     ; RESET END OF TABLE POINTER
2771 015340          TRAP10:
2772 015340 000002          RTI                     ; AND RETURN
2773 015342 000000          TENSARE: .WORD   0      ; LEAVE THE TABLE ALONE
2774                                     ; AND RETURN
2775 015344          AROUND:
2776 015344 012737 000246 000244          MOV      #246,@#244      ; CONTINUATION POINT
2777 015352 016737 177764 000010          MOV      TENSARE,@#10    ; RESTORE THE TRAP VECTOR
2778 015360 012703 015654          MOV      #TABLE,TAB      ; RESTORE THE ILLEGAL INST. VECTOR
2779 015364 012305          GIN1:  MOV      (TAB)+,FIRST ;TABLE POINTER
2780 015366 012301          MOV      (TAB)+,LAST    ;FIRST OR CURRENT INSTRUCTION
2781 015370 020567 000304          CMP      FIRST,FINISH    ;LAST INSTRUCTION OR GROUP
2782 015374 001415          BEQ                                     ;TESTED ALL
2783 015376 010567 000300          MOV      FIRST,INST      ;YES BRANCH
2784 015402 005267 000274          GIN2:  INC      INST      ;SET UP INST
2785 015406 012767 015560 162374          MOV      #RET,10        ;SET UP RETURN FROM TRAP

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2786 015414 012706 000500      MOV      #BUFF,SP      ;SET UP STACK POINTER
2787 015420 005067 162352      CLR      CC            ;CLEAR PRIORITY
2788 015424 000167 000252      JMP      INST          ;EXECUTE RESERVED INSTRUCTION
2789 015430 005237 000306      GIN3:   INC      @#SPASS
2790 015434 105267 000116      INCB    PASSPT        ;SHOULD PRINT THIS PASS?
2791 015440 001027                BNE     ACT            ;NO
2792 015442 132767 000040 162651  BITB    #40,$ENVM     ;WILL APT ALLOW PRINTING?
2793 015450 001023                BNE     ACT            ;NO
2794 015452 023727 000042 015530  CMP     @#42,#$ENDAD
2795 015460 001417                BEQ     ACT
2796 015462 012700 016000      MOV     #MSG,R0        ;GET MSG ADDR.
2797 015466 105737 177564      WAIT:  TSTB    @#TPS    ;TTY READY
2798 015472 100375                BPL     WAIT          ;NO WAIT
2799 015474 112037 177566      MOVB   (R0)+,@#TPB    ;PRINT CHARACTER
2800 015500 001372                BNE     WAIT          ;NEXT IF NOT DONE.
2801 015502 105737 177564      WAIT1: TSTB    @#TPS
2802 015506 100375                BPL     WAIT1
2803 015510 000005      RESET
2804 015512 012767 177761 000036  MOV     #177761,PASSPT ;DO IT ABOUT 15 DECIMAL TIMES
2805 015520 013700 000042      ACT:   MOV     @#42,R0  ;CHECK ACT
2806 015524 001405                BEQ     GOAGIN        ;KEEP GOING
2807 015526 000005      RESET
2808 015530 004710      $ENDAD: JSR     PC,(R0) ;ACT HOOKS
2809 015532 000240                NOP
2810 015534 000240                NOP
2811 015536 000240                NOP
2812 015540 012767 000012 162242  GOAGIN: MOV     #12,10
2813 015546 005067 162240      CLR     12
2814 015552 000167 163076      JMP     RESTRT        ;DO NEXT PASS
2815 015556 177777      PASSPT: -1
2816
2817      ;TRAPPING SHOULD SEND YOU HERE
2818 015560 020627 000474      RET:   CMP     SP,#BUFF-4 ;TEST DECREMENT OF SP
2819 015564 001405                BEQ     RET1
2820 015566 012737 000314 000302  MOV     #314,@#$FATAL ;MOVE TO MAILBOX # ..... 314 .....
2821 015574 005212                INC     (R2)          ;SET MSGTYP TO FATAL ERROR
2822 015576 000000                HALT                ;WRONG DECREMENT
2823      ; TO SCOPE REPLACE HALT W/ 240
2824      ; AND REPLACE NEXT INST W/ 635
2825 015600 026727 162670 015704  RET1:  CMP     BUFF-4,#INST+2 ;LOC OF INST UNINCREMENTED
2826 015606 001405                BEQ     RET2
2827 015610 012737 000315 000302  MOV     #315,@#$FATAL ;MOVE TO MAILBOX # ..... 315 .....
2828 015616 005212                INC     (R2)          ;SET MSGTYP TO FATAL ERROR
2829 015620 000000                HALT                ;INST INC ON TRAP
2830      ; TO SCOPE REPLACE HALT W/ 240
2831      ; AND REPLACE NEXT INST W/ 624
2832 015622 005767 162650      RET2:  TST     BUFF-2
2833 015626 001405                BEQ     RET3
2834 015630
2835 015630 012737 000316 000302  RET4:  MOV     #316,@#$FATAL ;MOVE TO MAILBOX # ..... 316 .....
2836 015636 005212                INC     (R2)          ;SET MSGTYP TO FATAL ERROR
2837 015640 000000                HALT                ;CONDITION CODES SET ON TRAP OR WRONG SYM
2838      ; TO SCOPE REPLACE HALT W/ 240
2839      ; AND REPLACE NEXT INST W/ 614
2840 015642 026701 000034      RET3:  CMP     INST,LAST
2841 015646 001646                BEQ     GIN1          ;SET UP NEW GROUP

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2842 015650 000167 177526          JMP      GIN2          ;FINISH OLD GROUP
2843                                     ;END OF INSTRUCTION GROUP
2844 015654 000006          TABLE: 6            ;END OF OPERATE
2845 015656 000077          77
2846 015660 000207          207                ;RIS,RT1,JMP
2847 015662 000227          227
2848 015664 006777          6777
2849 015666 007777          7777
2850 015670 075037          075037
2851 015672 076777          76777
2852 015674 167777          FPP: 167777        ; START OF THE FPP INSTRUCTIONS
2853 015676 177777          177777
2854 015700 015700          FINISH: .           ;END FLAG
2855 015702 000000          INST: HALT         ;WILL CONTINUE RESERVED INST
2856 015704 000000          HALT              ;SHOULD TRAP TO LOC 10
2857 015706 000000          HALT              ;LOC 10 SHOULD SEND YOU TO
2858 015710 000000          HALT              ;RET
2859 015712 000000          HALT
2860 015714 012767 015724 162102 PWRDWN: MOV      #PWRUP,24
2861 015722 000000          HALT
2862
2863 015724 012767 015714 162072 PWRUP: MOV      #PWRDWN,24
2864 015732 012706 000500          MOV      #BUFF,SP
2865 015736 132767 000040 162355 BITB      #40,$ENVM    ;WILL APT ALLOW PRINTING?
2866 015744 001013          BNE      PFRES      ;NO
2867 015746 012700 016041          MOV      #MSGPWF,RO ;GET MSG ADDR.
2868 015752 105737 177564          PWAIT: TSTB @#TPS   ;TTY READY
2869 015756 100375          BPL      PWAIT      ;NO WAIT
2870 015760 112037 177566          MOV      (RO)+,@#TPB ;PRINT CHARACTER
2871 015764 001372          BNE      PWAIT      ;NEXT IF NOT DONE.
2872 015766 105737 177564          PWAIT1: TSTB @#TPS
2873 015772 100375          BPL      PWAIT1
2874 015774 000167 162654          PFRES: JMP      RESTRT
2875 016000 005015 043103 040513 MSG:      .ASCIZ <15><12>.CFKABD0 11/34 TRAPS TST DONE .
2876 016006 042102 020060 030461
2877 016014 031457 020064 051124
2878 016022 050101 020123 051524
2879 016030 020124 047504 042516
2880 016036 020040 000
2881 016041 015 050012 053517 MSGPWF: .ASCIZ <15><12>.POWER FAILED!.
2882 016046 051105 043040 044501
2883 016054 042514 020504 000
2884 016061 015 041412 045506 MSG1:      .ASCIZ <15><12>.CFKABD0 11/34 TRAPS TST .
2885 016066 041101 030104 030440
2886 016074 027461 032063 052040
2887 016102 040522 051520 052040
2888 016110 052123 000040
2889 016114 005077 162362          CLRALL: CLR      @SR0
2890 016120 005000          CLR      R0
2891 016122 012701 000040          CLRLP: MOV      #32,R1 ;COUNT OF REGISTERS TO BE CLEARED
2892 016126 005070 000516          CLR      @ADRTAB(R0) ;CLEAR REGISTERS THRU ADDRESS TABLE
2893 016132 005720          TST      (R0)+      ;MOVE POINTER
2894 016134 077104          SOB      R1,CLRLP   ;LOOP TILL DONE
2895 016136 000207          RTS      %7
2896
2897          ;SUBROUTINE TO MAKE ALL PAGES RW, BANK 0, 4K, JP
    
```

CFKABD0 11/34 TRAPS TEST MACY11 30A(1052) 22-MAY-79 12:32 PAGE 55
CFKABD.P11 22-MAY-79 11:32 T113 TEST THAT ALL RESERVED INSTRUCTIONS TRAP

2898	016140	005077	162336	RWALL:	CLR	@SR0	
2899	016144	012701	000516		MOV	#ADRTAB,R1	:R1 POINTS TO ADDRESS TABLE
2900	016150	012700	000010	RWL1:	MOV	#10,R0	:R0 IS COUNTER
2901	016154	005071	000020	RWL2:	CLR	@20(R1)	:CLEAR PAR
2902	016160	012731	077406		MOV	#77406,@(R1)+	:SET PDR RW, 4K
2903	016164	077005			SOB	R0,RWL2	
2904	016166	062701	000020		ADD	#20,R1	
2905	016172	020127	000616		CMP	R1,#ADREND	:POINTER TO NEXT GROUP
2906	016176	002764			BLT	RWL1	
2907	016200	000207			RTS	%7	
2908							:MAP KERNEL PAR/PDR 7 TO EXTERNAL BANK
2909	016202	012777	007600	KERN7:	MOV	#7600,@KPAR7	
2910	016210	012777	077406		MOV	#77406,@KPDR7	
2911	016216	000207			RTS	PC	
2912		000001			.END		

ABASE = 000000	59			
ACDW1 = 000000	59			
ACDW2 = 000000	59			
ACPIJOP= 000000	59	77		
ACT 015520	2791	2793	2745	2805#
ADALL 013054	2359	2362#		
ADDW0 = 000000	59			
ADDW1 = 000000	59			
ADDW10= 000000	59			
ADDW11= 000000	59			
ADDW12= 000000	59			
ADDW13= 000000	59			
ADDW14= 000000	59			
ADDW15= 000000	59			
ADDW2 = 000000	59			
ADDW3 = 000000	59			
ADDW4 = 000000	59			
ADDW5 = 000000	59			
ADDW6 = 000000	59			
ADDW7 = 000000	59			
ADDW8 = 000000	59			
ADDW9 = 000000	59			
ADEVCT= 000000	59	68		
ADEVN = 000000	59			
ADREND 000616	155#	2905		
ADRTAB 000516	119#	2892*	2899	
ADR25 014524	2647#	2657	2662	
ADR25A 014526	2648#	2672		
ADR40 015004	2704#	2724		
ADR40A 015066	2717#	2727		
ADR40B 015164	2736#	2744		
ADR40C 015166	2737#	2748		
AENV 000000	59	73		
AENVN 000000	59	74		
AFATAL= 000000	59	65		
AMADR1 000000	59			
AMADR2= 000000	59			
AMADR3= 000000	59			
AMADR4 000000	59			
AMAMS1 000000	59			
AMAMS2= 000000	59			
AMAMS3 000000	59			
AMAMS4= 000000	59			
AMSGAD= 000000	59	70		
AMSGLG= 000000	59	71		
AMSGTY= 000000	59	64		
AMTYP1= 000000	59			
AMTYP2= 000000	59			
AMTYP3= 000000	59			
AMTYP4= 000000	59			
APASS 000000	59	67		
APRIOR= 000000	59			
AROUND 015344	2767	2775#		
ASWREG= 000000	59	75		
ATESTN= 000000	59	66		
ATRAP 015116	2364	2376#		

TST104	013300	2424#		
TST105	013426	2454#		
TST106	013564	2486#		
TST107	013722	2515#		
TST11	002550	546	565	574#
TST110	014026	2517	2531	2541#
TST111	014122	2564#		
TST112	014276	2602#		
TST113	015260	2759#		
TST12	003052	663#		
TST13	003126	665	680#	
TST14	003176	682	687	696#
TST15	003250	698	703	712#
TST16	003374	714	732	741#
TST17	003664	743	818	827#
TST2	001264	194	282	291#
TST20	003762	848#		
TST21	004024	850	863#	
TST22	004074	865	870	879#
TST23	004146	881	886	895#
TST24	004274	897	916	925#
TST25	004576	1014#		
TST26	004640	1016	1029#	
TST27	004710	1031	1036	1045#
TST3	001610	293	352	361#
TST30	004762	1047	1052	1061#
TST31	005110	1063	1082	1091#
TST32	005374	1093	1167	1176#
TST33	005472	1198#		
TST34	005534	1200	1213#	
TST35	005604	1215	1220	1229#
TST36	005656	1231	1236	1245#
TST37	006004	1247	1267	1276#
TST4	002044	363	420	431#
TST40	006306	1372#		
TST41	006350	1374	1387#	
TST42	006420	1389	1394	1403#
TST43	006472	1405	1410	1419#
TST44	006620	1421	1440	1449#
TST45	007104	1451	1525	1534#
TST46	007146	1536	1549#	
TST47	007216	1551	1556	1565#
TST5	002236	433	487	496#
TST50	007270	1567	1572	1582#
TST51	007416	1584	1603	1612#
TST52	007700	1614	1688	1698#
TST53	007744	1700	1713#	
TST54	010016	1715	1720	1729#
TST55	010072	1731	1736	1745#
TST56	010224	1747	1766	1775#
TST57	010514	1777	1851	1860#
TST6	002300	512#		
TST60	010556	1862	1876#	
TST61	010626	1878	1883	1893#
TST62	010762	1895	1930#	
TST63	011040	1947#		

SEVCT 000310
 SENDAD 015530
 SENV 000320
 SENVM 000321
 SERN = 000317

68#														
52	2794	2808#												
73#														
74#	2792	2865												
1#	199	200#	209	210#	219	220#	230	231#	241	242#	252	253#		
262	263#	273	274#	283	284#	301	302#	314	315#	327	328#	340		
341#	353	354#	366	367#	374	375#	382	383#	390	391#	397	398#		
405	406#	413	414#	421	422#	437	438#	444	445#	451	452#	458		
459#	467	468#	474	475#	481	482#	488	489#	503	504#	520	521#		
536	537#	554	555#	566	567#	583	584#	590	591#	597	598#	604		
605#	611	612#	622	623#	629	630#	636	637#	643	644#	653	654#		
671	672#	688	689#	704	705#	722	723#	733	734#	750	751#	757		
758#	764	765#	771	772#	778	779#	789	790#	796	797#	803	804#		
810	811#	819	820#	835	836#	854	855#	871	872#	887	888#	905		
906#	917	918#	934	935#	941	942#	948	949#	955	956#	962	963#		
973	974#	980	981#	987	988#	994	995#	1004	1005#	1020	1021#	1037		
1038#	1053	1054#	1071	1072#	1083	1084#	1100	1101#	1107	1108#	1114	1115#		
1121	1122#	1128	1129#	1139	1140#	1146	1147#	1153	1154#	1160	1161#	1168		
1169#	1184	1185#	1204	1205#	1221	1222#	1237	1238#	1256	1257#	1268	1269#		
1285	1286#	1292	1293#	1299	1300#	1306	1307#	1313	1314#	1324	1325#	1331		
1332#	1338	1339#	1345	1346#	1355	1356#	1371	1379#	1395	1396#	1411	1412#		
1429	1430#	1441	1442#	1458	1459#	1465	1466#	1472	1473#	1479	1480#	1486		
1487#	1497	1498#	1504	1505#	1511	1512#	1518	1519#	1526	1527#	1540	1541#		
1557	1558#	1573	1574#	1592	1593#	1604	1605#	1621	1622#	1628	1629#	1635		
1636#	1642	1643#	1649	1650#	1660	1661#	1667	1668#	1674	1675#	1681	1682#		
1689	1690#	1704	1705#	1721	1722#	1737	1738#	1755	1756#	1767	1768#	1784		
1785#	1791	1792#	1798	1799#	1805	1806#	1812	1813#	1823	1824#	1830	1831#		
1837	1838#	1844	1845#	1852	1853#	1866	1867#	1884	1885#	1902	1903#	1911		
1912#	1920	1921#	1938	1939#	1955	1956#	1972	1973#	1989	1990#	2006	2007#		
2023	2024#	2031	2032#	2047	2048#	2074	2075#	2093	2094#	2111	2112#	2118		
2119#	2137	2138#	2159	2160#	2182	2183#	2191	2192#	2210	2211#	2218	2219#		
2233	2234#	2240	2241#	2250	2251#	2257	2258#	2265	2266#	2272	2273#	2283		
2284#	2291	2292#	2313	2314#	2319	2320#	2341	2342#	2370	2371#	2385	2386#		
2395	2396#	2403	2404#	2436	2437#	2442	2443#	2469	2470#	2475	2476#	2501		
2502#	2525	2526#	2532	2533#	2552	2553#	2577	2578#	2591	2592#	2618	2619#		
2625	2626#	2633	2634#	2820	2821#	2827	2828#	2835	2836#					

SERROR= 000302
 SETABL 000320
 SETEND 000330
 SFATAL 000302

109#	172*													
72#														
84#	107													
65#	109	199*	209*	219*	230*	241*	252*	262*	273*	283*	301*	314*		
327*	340*	353*	366*	374*	382*	390*	397*	405*	413*	421*	437*	444*		
451*	458*	467*	474*	481*	488*	503*	520*	536*	554*	566*	583*	590*		
597*	604*	611*	622*	629*	636*	643*	653*	671*	688*	704*	722*	733*		
750*	757*	764*	771*	778*	789*	796*	803*	810*	819*	835*	854*	871*		
887*	905*	917*	934*	941*	948*	955*	962*	973*	980*	987*	994*	1004*		
1020*	1037*	1053*	1071*	1083*	1100*	1107*	1114*	1121*	1128*	1139*	1146*	1153*		
1160*	1168*	1184*	1204*	1221*	1237*	1256*	1268*	1285*	1292*	1299*	1306*	1313*		
1324*	1331*	1338*	1345*	1355*	1378*	1395*	1411*	1429*	1441*	1458*	1465*	1472*		
1479*	1486*	1497*	1504*	1511*	1518*	1526*	1540*	1557*	1573*	1592*	1604*	1621*		
1628*	1635*	1642*	1649*	1660*	1667*	1674*	1681*	1689*	1704*	1721*	1737*	1755*		
1767*	1784*	1791*	1798*	1805*	1812*	1823*	1830*	1837*	1844*	1852*	1866*	1884*		
1902*	1911*	1920*	1938*	1955*	1972*	1989*	2006*	2023*	2031*	2047*	2074*	2093*		
2111*	2118*	2137*	2159*	2182*	2191*	2210*	2218*	2233*	2240*	2250*	2257*	2265*		
2272*	2283*	2291*	2313*	2319*	2341*	2370*	2385*	2395*	2403*	2436*	2442*	2469*		
2475*	2501*	2525*	2532*	2552*	2577*	2591*	2618*	2625*	2633*	2820*	2827*	2835*		

SHIBTS 000330

1732#	1740	1748#	1758	1770	1778#	1787	1794	1801	1808	1815	1826	1833
1840	1847	1855	1863#	1869	1879#	1887	1896#	1905	1914	1923	1933#	1941
1950#	1958	1967#	1975	1984#	1992	2001#	2009	2018#	2026	2034	2042#	2050
2060#	2077	2087#	2096	2105#	2114	2121	2129#	2140	2150#	2162	2172#	2185
2194	2203#	2213	2221	2230#	2236	2243	2253	2260	2268	2275	2286	2294
2302#	2316	2322	2332#	2344	2357#	2373	2388	2398	2406	2427#	2439	2445
2457#	2472	2478	2489#	2504	2518#	2528	2535	2544#	2555	2567#	2580	2594
2605#	2621	2628	2636	2762#	2823	2830	2838					
202#	212#	222#	233#	244#	255#	265#	276#	286#	304#	317#	330#	343#
356#	369#	377#	385#	393#	400#	408#	416#	424#	440#	447#	454#	461#
470#	477#	484#	491#	506#	523#	539#	557#	569#	586#	593#	600#	607#
614#	625#	632#	639#	646#	656#	674#	691#	707#	725#	736#	753#	760#
767#	774#	781#	792#	799#	806#	813#	822#	838#	857#	874#	890#	908#
920#	937#	944#	951#	958#	965#	976#	983#	990#	997#	1007#	1023#	1040#
1056#	1074#	1086#	1103#	1110#	1117#	1124#	1131#	1142#	1149#	1156#	1163#	1171#
1187#	1207#	1224#	1240#	1259#	1271#	1288#	1295#	1302#	1309#	1316#	1327#	1334#
1341#	1348#	1358#	1381#	1398#	1414#	1432#	1444#	1461#	1468#	1475#	1482#	1489#
1500#	1507#	1514#	1521#	1529#	1543#	1560#	1576#	1595#	1607#	1624#	1631#	1638#
1645#	1652#	1663#	1670#	1677#	1684#	1692#	1707#	1724#	1740#	1758#	1770#	1787#
1794#	1801#	1808#	1815#	1826#	1833#	1840#	1847#	1855#	1869#	1887#	1905#	1914#
1923#	1941#	1958#	1975#	1992#	2009#	2026#	2034#	2050#	2077#	2096#	2114#	2121#
2140#	2162#	2185#	2194#	2213#	2221#	2236#	2243#	2253#	2260#	2268#	2275#	2286#
2294#	2316#	2322#	2344#	2373#	2388#	2398#	2406#	2439#	2445#	2472#	2478#	2504#
2528#	2535#	2555#	2580#	2594#	2621#	2628#	2636#	2823#	2830#	2838#		
202#	212#	222#	233#	244#	255#	265#	276#	286#	304#	317#	330#	343#
356#	369#	377#	385#	393#	400#	408#	416#	424#	440#	447#	454#	461#
470#	477#	484#	491#	506#	523#	539#	557#	569#	586#	593#	600#	607#
614#	625#	632#	639#	646#	656#	674#	691#	707#	725#	736#	753#	760#
767#	774#	781#	792#	799#	806#	813#	822#	838#	857#	874#	890#	908#
920#	937#	944#	951#	958#	965#	976#	983#	990#	997#	1007#	1023#	1040#
1056#	1074#	1086#	1103#	1110#	1117#	1124#	1131#	1142#	1149#	1156#	1163#	1171#
1187#	1207#	1224#	1240#	1259#	1271#	1288#	1295#	1302#	1309#	1316#	1327#	1334#
1341#	1348#	1358#	1381#	1398#	1414#	1432#	1444#	1461#	1468#	1475#	1482#	1489#
1500#	1507#	1514#	1521#	1529#	1543#	1560#	1576#	1595#	1607#	1624#	1631#	1638#
1645#	1652#	1663#	1670#	1677#	1684#	1692#	1707#	1724#	1740#	1758#	1770#	1787#
1794#	1801#	1808#	1815#	1826#	1833#	1840#	1847#	1855#	1869#	1887#	1905#	1914#
1923#	1941#	1958#	1975#	1992#	2009#	2026#	2034#	2050#	2077#	2096#	2114#	2121#
2140#	2162#	2185#	2194#	2213#	2221#	2236#	2243#	2253#	2260#	2268#	2275#	2286#
2294#	2316#	2322#	2344#	2373#	2388#	2398#	2406#	2439#	2445#	2472#	2478#	2504#
2528#	2535#	2555#	2580#	2594#	2621#	2628#	2636#	2823#	2830#	2838#		
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195	202	212	222	233	244	255	265	276	286	294	304	317
330	343	356	364	369	377	385	393	400	408	416	424	434
440	447	454	461	470	477	484	491	499	506	515	523	531
534	539	547	557	569	577	586	593	600	607	614	625	632
639	646	656	666	674	683	691	699	702	707	715	725	736
744	753	760	767	774	781	792	799	806	813	822	830	838
851	857	866	874	882	885	890	898	908	920	928	937	944
951	958	965	976	983	990	997	1007	1017	1023	1032	1040	1048
1051	1056	1064	1074	1086	1094	1103	1110	1117	1124	1131	1142	1149
1156	1163	1171	1179	1187	1201	1207	1216	1224	1232	1235	1240	1248
1259	1271	1279	1288	1295	1302	1309	1316	1327	1334	1341	1348	1358
1375	1381	1390	1398	1406	1409	1414	1422	1432	1444	1452	1461	1468
1475	1482	1489	1500	1507	1514	1521	1529	1537	1543	1552	1560	1568
1576	1585	1595	1607	1615	1624	1631	1638	1645	1652	1663	1670	1677
1684	1692	1701	1707	1716	1724	1732	1735	1740	1748	1758	1770	1777

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ENDCOM	1#															
ERROR	1#															
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	651	671	687	703	721	732	749	755	762	769	777	788	794	801	808	
	818	834	854	870	886	904	916	933	939	946	953	961	972	978	985	
	992	1002	1020	1036	1052	1070	1082	1099	1105	1112	1119	1127	1138	1144	1151	
	1158	1167	1183	1204	1220	1236	1255	1267	1284	1290	1297	1304	1312	1323	1329	
	1336	1343	1353	1378	1394	1410	1428	1440	1457	1463	1470	1477	1485	1496	1502	
	1509	1516	1525	1540	1556	1572	1591	1603	1620	1626	1633	1640	1648	1659	1665	
	1672	1679	1688	1704	1720	1736	1754	1766	1783	1789	1796	1803	1811	1822	1828	
	1835	1842	1851	1866	1883	1901	1911	1919	1937	1954	1971	1988	2005	2022	2030	
	2046	2072	2093	2111	2117	2136	2158	2182	2190	2210	2217	2233	2239	2249	2256	
	2265	2271	2282	2290	2312	2318	2339	2369	2384	2394	2401	2436	2441	2468	2474	
	2500	2524	2531	2551	2576	2589	2618	2624	2631	2820	2827	2833				
ESCAPE	1#															
GETPRI	1#															
LOOP	1#															
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	491	377	385	393	400	408	416	424	440	447	454	461	470	477	484	
	656	506	523	539	557	569	586	593	600	607	614	625	632	639	646	
	822	674	691	707	725	736	753	760	767	774	781	792	799	806	813	
	997	838	857	874	890	908	920	937	944	951	958	965	976	983	990	
	1163	1007	1023	1040	1056	1074	1086	1103	1110	1117	1124	1131	1142	1149	1156	
	1341	1171	1187	1207	1224	1240	1259	1271	1288	1295	1302	1309	1316	1327	1334	
	1514	1348	1358	1381	1398	1414	1432	1444	1461	1468	1475	1482	1489	1500	1507	
	1677	1521	1529	1543	1560	1576	1595	1607	1624	1631	1638	1645	1652	1663	1670	
	1840	1684	1692	1707	1724	1740	1758	1770	1787	1794	1801	1808	1815	1826	1833	
	2050	1847	1855	1869	1887	1905	1914	1923	1941	1958	1975	1992	2009	2026	2034	
	2268	2077	2096	2114	2121	2140	2162	2185	2194	2213	2221	2236	2243	2253	2260	
	2504	2275	2286	2294	2316	2322	2344	2373	2388	2398	2406	2439	2445	2472	2478	
		2528	2535	2555	2580	2594	2621	2628	2636	2823	2830	2838				
MULT	1#															
NEW TST	1#															
	824	189	288	358	428	493	509	525	541	571	660	677	693	709	738	
	1242	845	860	876	892	922	1011	1026	1042	1058	1088	1173	1195	1210	1226	
	1742	1273	1369	1384	1400	1416	1446	1531	1546	1562	1579	1609	1695	1710	1726	
	2123	1772	1857	1873	1890	1927	1944	1961	1978	1995	2012	2036	2054	2081	2099	
	2756	2144	2166	2197	2224	2296	2326	2351	2421	2451	2483	2512	2538	2561	2599	
POP	1#															
PUSH	1#															
REPORT	1#															
SETPRI	1#															
SETUP	1#															
SKIP	1#															
SLASH	1#															
STARS	1#															
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	709	509	511	525	527	541	543	571	573	660	662	677	679	693	695	
	924	711	738	740	824	826	845	847	860	862	876	878	892	894	922	
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	2081	1944	1946	1961	1963	1978	1980	1995	1997	2012	2014	2036	2038	2054	2056	
	2298	2083	2099	2101	2123	2125	2144	2146	2166	2168	2197	2199	2224	2226	2256	
		2326	2328	2351	2353	2421	2423	2451	2453	2483	2485	2512	2514	2538	254	

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TYPBIN	1#														
TYPDEC	1#														
TYPNAM	1#														
TYPNUM	1#														
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TYPOCT	1#														
TYPXT	1#														
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	366	374	382	390	397	405	413	421	437	444	451	458	467	474	481
	488	503	520	536	554	566	583	590	597	604	611	622	629	636	643
	653	671	688	704	722	733	750	757	764	771	778	789	796	803	810
	819	835	854	871	887	905	917	934	941	948	955	962	973	980	987
	994	1004	1020	1037	1053	1071	1083	1100	1107	1114	1121	1128	1139	1146	1153
	1160	1168	1184	1204	1221	1237	1256	1268	1285	1292	1299	1306	1313	1324	1331
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	1674	1681	1689	1704	1721	1737	1755	1767	1784	1791	1798	1805	1812	1823	1830
	1837	1844	1852	1866	1884	1902	1911	1920	1938	1955	1972	1989	2006	2023	2031
	2047	2074	2093	2111	2118	2137	2159	2182	2191	2210	2218	2233	2240	2250	2257
	2265	2272	2283	2291	2313	2319	2341	2370	2385	2395	2403	2436	2442	2469	2475
	2501	2525	2532	2552	2577	2591	2618	2625	2633	2820	2827	2835			
SSFRM1	1#	199	209	219	230	241	252	262	273	283	301	314	327	340	353
	366	374	382	390	397	405	413	421	437	444	451	458	467	474	481
	488	503	520	536	554	566	583	590	597	604	611	622	629	636	643
	653	671	688	704	722	733	750	757	764	771	778	789	796	803	810
	819	835	854	871	887	905	917	934	941	948	955	962	973	980	987
	994	1004	1020	1037	1053	1071	1083	1100	1107	1114	1121	1128	1139	1146	1153
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	1837	1844	1852	1866	1884	1902	1911	1920	1938	1955	1972	1989	2006	2023	2031
	2047	2074	2093	2111	2118	2137	2159	2182	2191	2210	2218	2233	2240	2250	2257
	2265	2272	2283	2291	2313	2319	2341	2370	2385	2395	2403	2436	2442	2469	2475
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SSFRRO	1#	282	352	420	487	519	535	565	687	703	732	818	870	886	916
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SSLOOP	1#	202	212	222	233	244	255	265	276	286	304	317	330	343	356
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	491	506	523	539	557	569	586	593	600	607	614	625	632	639	646
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	822	838	857	874	890	908	920	937	944	951	958	965	976	983	990
	997	1007	1023	1040	1056	1074	1086	1103	1110	1117	1124	1131	1142	1149	1156
	1163	1171	1187	1207	1224	1240	1259	1271	1288	1295	1302	1309	1316	1327	1334
	1341	1348	1358	1381	1398	1414	1432	1444	1461	1468	1475	1482	1489	1500	1507
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	1677	1684	1692	1707	1724	1740	1758	1770	1787	1794	1801	1808	1815	1826	1833
	1840	1847	1855	1869	1887	1905	1914	1923	1941	1958	1975	1992	2009	2026	2034
	2050	2077	2096	2114	2121	2140	2162	2185	2194	2213	2221	2236	2243	2253	2260
	2268	2275	2286	2294	2316	2322	2344	2373	2388	2398	2406	2439	2445	2472	2479
	2504	2518	2535	2554	2580	2594	2621	2628	2636	2823	2830	2838			

ESM#	189	288	358	428	493	509	525	541	571	660	677	697	709	732
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1272	1369	1400	1416	1446	1531	1546	1562	1579	1609	1609	1695	1710	1726	1726
1722	1851	1873	1890	1927	1944	1961	1978	1995	2012	2036	2054	2081	2099	2099
1844	2166	2197	2224	2296	2326	2351	2421	2451	2483	2517	2538	2561	2599	2599
SSAIP														
.EQUAT														
.HEAD														
.K111														
.SETUP														
.SURN:														
.SACT1	46	46												
.SAPT8	40	56												
.SAPTH	40	86												
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.SASTA														
.SCATC														
.SCMTA														
.SDB2D														
.SDB2O														
.SDIV														
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.SERRO														
.SERRI														
.SMULT														
.SPOWF														
.SRAND														
.SRDDE														
.SRDOC														
.SREAD														
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.SSB2D														
.SSB2O														
.SCCOP														
.SSIZE														
.ESUPR														
.STRAP														
.STYP8														
.STYPD														
.STYPE														
.STYPO														
.S4OCA														

. ABS. 016220 000

ERRORS DETECTED: 0

CFKABD.BIN,CFKABD.LST/CRF/SOL-CFKABD.SML,CFKABD.P11
 RUN-TIME: 47 56 5 SECONDS
 RUN-TIME RATIO: 212/109=1.9
 CORE USED: 29% (57 PAGES)

