

PDP11/34

11/34 TRAPS TST
CFKABD0

AH-8047D-MC

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IDENTIFICATION

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2675	1112	TEST THE 'WAIT' INSTRUCTION
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: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

000006
000006
000003
000001
000005
000002
000000
000003
000004
000004
000014
000030
000020
000034
177564
177560
177564
177566
000240
000240
177776
000007
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
 41 000200 000167 000414
 42 000210 000210
 43 000210 005037 000306
 44 000214 000167 000400
 45 000300
 46
 47
 48
 49
 50 000300
 51 000046 000046
 52 000046 015530
 53 000052 000052
 54 000052 000000
 55 000300
 56
 57
 58
 59
 60
 61
 62
 63 000300
 64 000300 000000
 65 000302 000000
 66 000304 000000
 67 000306 000000
 68 000310 000000
 69 000312 000000
 70 000314 000000
 71 000316 000000
 72 000320
 73 000320 000
 74 000321 000
 75 000322 000000
 76 000324 000000
 77 000326 000000
 78
 79
 80
 81
 82
 83
 84 000330
 85
 86
 87
 88
 89
 90
 91 000330
 92 000024 000024
 93 000024 000200
 94 000044 000044
 95 000044 000330

```

.=200
JMP BEGIN
.=210
CLR @#$PASS
JMP BEGIN
.=300
:*****
.SBTTL ACT11 HOOKS
:HOOKS REQUIRED BY ACT11
$SVPC=.;SAVE PC
.=46
$ENDAD ;:1)SET LOC.46 TO ADDRESS OF $ENDAD IN .$EOP
.=52
.WORD 0 ;:2)SET LOC.52 TO ZERO
.$SVPC ;: RESTORE PC
:*****
.SBTTL APT MAILBOX-ETABLE
.EVEN
$MAIL: ;:APT MAILBOX
$MSGTY: .WORD AMSTY ;:MESSAGE TYPE CODE
$FATAL: .WORD AFATAL ;:FATAL ERROR NUMBER
$TESTN: .WORD ATESTN ;:TEST NUMBER
$PASS: .WORD APASS ;:PASS COUNT
$DEVCT: .WORD ADEVCT ;:DEVICE COUNT
$UNIT: .WORD AUNIT ;:I/O UNIT NUMBER
$MSGAD: .WORD AMSGAD ;:MESSAGE ADDRESS
$MSGLG: .WORD AMSLG ;:MESSAGE LENGTH
$ETABLE: ;:APT ENVIRONMENT TABLE
$ENV: .BYTE AENV ;:ENVIRONMENT BYTE
$ENVM: .BYTE AENVM ;:ENVIRONMENT MODE BITS
$SWREG: .WORD ASWREG ;:APT SWITCH REGISTER
$USWR: .WORD AUSWR ;:USER SWITCHES
$CPUOP: .WORD ACPUOP ;:CPU TYPE,OPTIONS
BITS 15-11=CPU TYPE
11/04=01,11/05=02,11/20=03,11/40=04,11/45=05
11/70=06,PDQ=07,Q=10
BIT 10=REAL TIME CLOCK
BIT 9=FLOATING POINT PROCESSOR
BIT 8=MEMORY MANAGEMENT
$ETEND:
.MEXIT
:*****
.SBTTL APT PARAMETER BLOCK
:SET LOCATIONS 24 AND 44 AS REQUIRED FOR APT
:*****
.$X=.;:SAVE CURRENT LOCATION
.=24 ;:SET POWER FAIL TO POINT TO START OF PROGRAM
200 ;:FOR APT START UP
.=44 ;:POINT TO APT INDIRECT ADDRESS PNTR.
$APTHDR ;:POINT TO APT HEADER BLOCK
    
```

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96          000330          .=$X      ;;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          .WORD $ETEND-$MAIL/2 ;;LENGTH MAILBOX-ETABLE (WORDS)
108          $STNM=$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
    
```

152 000610 172352
153 000612 172354
154 000614 172356
155 000616 000614
156
157
158

KPAR5: 172352
KPAR6: 172354
KPAR7: 172356
ADREND: .-2


```

159
160 000620 012737 177777 015556 BEGIN: MOV #1,@#PASSPT ;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 INCRFMNT 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,@#$FATAL ;MOVE TO MAILBOX # ***** 1 *****
200 000776 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
201 001000 000000 HALT ;R6 DID NOT AUTO INCREMENT BY TWO
202 ; TO SCOPE REPLACE HALT W/ 240
203 ; AND REPLACE NEXT INST W/ 764
204
205 001002 012706 001000 BR1: MOV #1000,%6
206 001006 114627 000000 MOVB -(6),#HERE ;SHOULD DECREMENT BY TWO
207 001012 020627 000776 CMP %6,#776
208 001016 001405 BEQ BR2
209 001020 012737 000002 000302 MOV #2,@#$FATAL ;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,@#FATAL		;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,@#FATAL		;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,@#FATAL		;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,@#FATAL		;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	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,@#FATAL		;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

```

271 001214 020427 000001      CMP      %4,#1
272 001220 001405      BEQ      BR10
273 001222 012737 000010 000302  MOV      #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

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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 $STNM
                                ; TO SCOPE REPLACE HALT W/ 240
                                ; AND REPLACE NEXT INST W/ 633
286
287
288

```

 :TEST 2 TEST TRANSFER OF .BYTE USING R6

```

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

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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

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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,@#FATAL      ;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                      MOVVB   (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,@#FATAL      ;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                      MOVVB   (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,@#FATAL      ;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 $TSTNM
                               ; 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,@#FATAL      ;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,@#FATAL      ;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          ;SEQUENTIAL .BYTES
381 001676 001405                      BEQ     BR17
382 001700 012737 000021 000302      MOV      #21,@#FATAL      ;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 STSTNM
424                                     ; TO SCOPE REPLACE HALT W/ 240
425                                     ; AND REPLACE NEXT INST W/ 667
426
427
428
429
430

```

 ;TEST 4 TEST THE CC BITS

```

431 002044 005237 000304          TST4:  INC     @#STESTN    ;UPDATE TEST NUMBER
432 002050 022737 000004 000304  CMP     #4,@#STESTN    ;SEQUENCE ERROR?
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

```

```

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,@#$FATAL ;MOVE TO MAILBOX # ***** 30 *****
444 002104 012737 000030 000302      INC          (R2)      ;SET MSGTYP TO FATAL ERROR
445 002112 005212          HALT          ;V NOT CLEAR
446 002114 000000          ; TO SCOPE REPLACE HALT W/ 240
447                                     ; AND REPLACE NEXT INST W/ 760
448
449 002116          BR34:          BNE          BR35
450 002116 001005          MOV          #31,@#$FATAL ;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,@#$FATAL ;MOVE TO MAILBOX # ***** 32 *****
458 002134 012737 000032 000302      INC          (R2)      ;SET MSGTYP TO FATAL ERROR
459 002142 005212          HALT          ;N NOT CLEAR
460 002144 000000          ; TO SCOPE REPLACE HALT W/ 240
461                                     ; AND REPLACE NEXT INST W/ 744
462                                     ;CLEAR CONDITION CODES
463 002146 000257          BR36:          CCC          #17,STATUS ;SET STATUS TO ONES
464 002150 052767 000017 175620      BIS
465
466 002156 103405          BCS          BR37
467 002160 012737 000033 000302      MOV          #33,@#$FATAL ;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,@#$FATAL ;MOVE TO MAILBOX # ***** 34 *****
475 002174 012737 000034 000302      INC          (R2)      ;SET MSGTYP TO FATAL ERROR
476 002202 005212          HALT          ;V NOT SET
477                                     ; TO SCOPE REPLACE HALT W/ 240
478                                     ; AND REPLACE NEXT INST W/ 724
479
480 002206          BR40:          BEQ          BR41
481 002206 001405          MOV          #35,@#$FATAL ;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,@#$FATAL ;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 INSTRUCTION

```

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 @#$TESTN      ;UPDATE TEST NUMBER
        CMP #5,@#$TESTN  ;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,@#$FATAL  ;MOVE TO MAILBOX # ***** 37 *****
        INC (R2)         ;SET MSGTYP TO FATAL ERROR
        HALT            ;RESERVE INSTRUCTION DIDN'T TRAP,OR WRONG $STNM
        ; 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 @#$TESTN      ;UPDATE TEST NUMBER
        CMP #6,@#$TESTN  ;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,@#$FATAL ;MOVE TO MAILBOX # ***** 40 *****
        INC (R2)         ;SET MSGTYP TO FATAL ERROR
        HALT            ;NOT DECREMENTED TWO WORDS,OR WRONG $STNM
        ; TO SCOPE REPLACE HALT W/ 240
        ; AND REPLACE NEXT INST W/ 761

:*****
:TEST 7 TEST THAT PROPER P.C. IS SAVED
:*****
TST7:  INC @#$TESTN      ;UPDATE TEST NUMBER
        CMP #7,@#$TESTN  ;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
        RETC:  CMP #. ,BUFF-4 ;CHECK FOR INCREMENTED P.C.
        BEQ TST10
        MOV #41,@#$FATAL ;MOVE TO MAILBOX # ***** 41 *****
        INC (R2)         ;SET MSGTYP TO FATAL ERROR
        HALT            ;INCORRECT P.C.,OR WRONG $STNM
        ; 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 @#$TESTN      ;UPDATE TEST NUMBER
        CMP #10,@#$TESTN ;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 1$: 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 $STNM
: TO SCOPE REPLACE HALT W/ 240
: AND REPLACE NEXT INST W/ 732
569
570
571
572 :*****
573 :TEST 11 TEST THAT 'NEW' STATUS IS CORRECT
574 002550 005237 000304 TST11: INC @#STESTN :UPDATE TEST NUMBER
575 002554 022737 000011 000304 CMP #11,@#STESTN :SEQUENCE ERROR?
576 002562 001121 BNE STPP :BR TO ERROR HALT ON SEQ ERROR
577 002564 012706 000500 MOV #BUFF,SP
578 002570 012767 002604 175212 MOV #RETF,RTRAP
579 002576 005067 175210 CLR RTRAP+2 :CLEAR FUTURE PRIORITY AND CC
580 002602 000007 TRAPA
581 002604 RETF: :TEST FOR 'C' CLEARED
582 002604 100005 BPL 1$
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 1$: BNE 2$
589 002620 001005 MOV #45,@#FATAL :MOVE TO MAILBOX # ***** 45 *****
590 002622 012737 000045 000302 INC (R2) :SET MSGTYP TO FATAL ERROR
591 002630 005212 HALT :Z NOT CLEARED
592 002632 000000 : TO SCOPE REPLACE HALT W/ 240
: AND REPLACE NEXT INST W/ 753
593
594
595 002634 2$: BVC 3$
596 002634 102005 MOV #46,@#FATAL :MOVE TO MAILBOX # ***** 46 *****
597 002636 012737 000046 000302 INC (R2) :SET MSGTYP TO FATAL ERROR
598 002644 005212 HALT :V NOT CLEARED
599 002646 000000 : TO SCOPE REPLACE HALT W/ 240
: AND REPLACE NEXT INST W/ 745
600
601
602 002650 3$: BCC 4$
603 002650 103005 MOV #47,@#FATAL :MOVE TO MAILBOX # ***** 47 *****
604 002652 012737 000047 000302 INC (R2) :SET MSGTYP TO FATAL ERROR
605 002660 005212 HALT :C NOT CLEARED
606 002662 000000

```



```

607                                     ; TO SCOPE REPLACE HALT W/ 240
608                                     ; AND REPLACE NEXT INST W/ 737
609 002664 032767 000340 175104 4$: BIT #340,CC ;TEST PRIORITY
610 002672 001405 BEQ 5$
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,@#$FATAL ;MOVE TO MAILBOX # ***** 51 *****
623 002740 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
624 002742 000000 HALT ;N NOT SET
625                                     ; TO SCOPE REPLACE HALT W/ 240
626                                     ; AND REPLACE NEXT INST W/ 707
627 002744 1$: BEQ 2$
628 002744 001405 MOV #52,@#$FATAL ;MOVE TO MAILBOX # ***** 52 *****
629 002746 012737 000052 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
630 002754 005212 HALT ;Z NOT SET
631 002756 000000 ; TO SCOPE REPLACE HALT W/ 240
632                                     ; AND REPLACE NEXT INST W/ 701
633 002760 2$: BVS 3$
634 002760 102405 MOV #53,@#$FATAL ;MOVE TO MAILBOX # ***** 53 *****
635 002762 012737 000053 000302 INC (R2) ;SET MSGTYP TO FATAL ERRGR
636 002770 005212 HALT ;V NOT SET
637 002772 000000 ; TO SCOPE REPLACE HALT W/ 240
638                                     ; AND REPLACE NEXT INST W/ 673
639 002774 3$: BCS 4$
640 002774 103405 MOV #54,@#$FATAL ;MOVE TO MAILBOX # ***** 54 *****
641 002776 012737 000054 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
642 003004 005212 HALT ;C NOT SET
643 003006 000000 ; TO SCOPE REPLACE HALT W/ 240
644                                     ; AND REPLACE NEXT INST W/ 665
645 003010 016706 174762 4$: MOV CC,SP
646 003014 042706 000017 BIC #17,SP
647 003020 022706 000340 CMP #340,SP
648 003024 001405 BEQ STPPA
649 003026 STPP: MOV #55,@#$FATAL ;MOVE TO MAILBOX # ***** 55 *****
650 003026 012737 000055 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
651 003034 005212 HALT ;PRIORITY WAS CHANGED,OR WRONG $T$INM
652 003036 000000 ; TO SCOPE REPLACE HALT W/ 240
653                                     ; AND REPLACE NEXT INST W/ 651
654 003040 012767 000012 174742 STPPA: MOV #12,10
655 003046 005067 174740 CLR 12
656
657
658
659
660 ;*****
661 ;TEST 12 TEST THAT A TRAP OCCURS FOR A 'TRAP' INSTRUCTION
662 ;*****
    
```

```

663 003052 005237 000304          TST12: INC @#STESTN      :UPDATE TEST NUMBER
664 003056 022737 000012 000304  CMP #12,@#STESTN  :SEQUENCE ERROR?
665 003064 001013          BNE TST13-12     :BR TO ERROR HALT ON SEQ ERROR
666 003066 012767 000012 174714  MOV #12,10
667 003074 005067 174712          CLR 12
668 003100 012706 000500          MOV #BUFF,SP     :STACK POINTER SETUP
669 003104 012767 003126 174722  MOV #RETA1,RTRAP1:RETURN LOCATION
670 003112 104400          TRAP             :RESERVED INSTRUCTION, SHOULD TRAP
671 003114 012737 000056 000302  MOV #56,@#SFATAL :MOVE TO MAILBOX # ***** 56 *****
672 003122 005212          INC (R2)         :SET MSGTYP TO FATAL ERROR
673 003124 000000          HALT            :TRAP DIDN'T TRAP,OR WRONG $STNM
                          : TO SCOPE REPLACE HALT W/ 240
                          : AND REPLACE NEXT INST W/ 757
    
```

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

```

680 003126 005237 000304          TST13: INC @#STESTN      :UPDATE TEST NUMBER
681 003132 022737 000013 000304  CMP #13,@#STESTN  :SEQUENCE ERROR?
682 003140 001011          BNE TST14-12     :BR TO ERROR HALT ON SEQ ERROR
683 003142 012706 000500          MOV #BUFF,SP     :STACK POINTER SETUP
684 003146 012767 003156 174660  MOV #RETB1,RTRAP1:RETURN POINTER
685 003154 104400          TRAP             :RESERVED INSTRUCTION
686 003156 020627 000474          RETB1: CMP SP,#BUFF-4  :TEST DECREMENT OF SP
687 003162 001405          BEQ TST14
688 003164 012737 000057 000302  MOV #57,@#SFATAL :MOVE TO MAILBOX # ***** 57 *****
689 003172 005212          INC (R2)         :SET MSGTYP TO FATAL ERROR
690 003174 000000          HALT            :NOT DECREMENTED TWO WORDS,OR WRONG $STNM
                          : TO SCOPE REPLACE HALT W/ 240
                          : AND REPLACE NEXT INST W/ 761
    
```

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

```

696 003176 005237 000304          TST14: INC @#STESTN      :UPDATE TEST NUMBER
697 003202 022737 000014 000304  CMP #14,@#STESTN  :SEQUENCE ERROR?
698 003210 001012          BNE TST15-12     :BR TO ERROR HALT ON SEQ ERROR
699 003212 012706 000500          MOV #BUFF,SP     :STACK POINTER SETUP
700 003216 012767 003226 174610  MOV #RETC1,RTRAP1:RETURN FROM TRAP POINTER
701 003224 104400          TRAP             :TRAP ON THIS INSTRUCTION
702 003226 022767 003226 175240  RETC1: CMP #,BUFF-4   :CHECK INCREMENTED P.C.
703 003234 001405          BEQ TST15
704 003236 012737 000060 000302  MOV #60,@#SFATAL :MOVE TO MAILBOX # ***** 60 *****
705 003244 005212          INC (R2)         :SET MSGTYP TO FATAL ERROR
706 003246 000000          HALT            :INCORRECT P.C.,OR WRONG $STNM
                          : TO SCOPE REPLACE HALT W/ 240
                          : AND REPLACE NEXT INST W/ 760
    
```

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

```

712 003250 005237 000304          TST15: INC @#STESTN      :UPDATE TEST NUMBER
713 003254 022737 000015 000304  CMP #15,@#STESTN  :SEQUENCE ERROR?
714 003262 001037          BNE TST16-12     :BR TO ERROR HALT ON SEQ ERROR
715 003264 012706 000500          MOV #BUFF,SP     :SET UP
716 003270 012767 003306 174536  MOV #RETD1,RTRAP1:SET UP
717 003276 005067 174474          CLR CC           :CLEAR CC AND PRIORITY
718 003302 000257          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,RTRAP1
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,@#$FATAL ;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
    
```

```

845      ;*****
846      ;TEST 20      TEST THAT A TRAP OCCURES ON AN 'IOT' INSTRUCTION
847      ;*****
848 003762 005237 000304      TST20: INC     @#$TESTN ;UPDATE TEST NUMBER
849 003766 022737 000020 000304      CMP     #20,@#$TESTN ;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,@#$FATAL ;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
    
```

```

859 004024      RETA2:
860      ;*****
861      ;TEST 21      TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
862      ;*****
863 004024 005237 000304      TST21: INC     @#$TESTN ;UPDATE TEST NUMBER
864 004030 022737 000021 000304      CMP     #21,@#$TESTN ;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,@#$FATAL ;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
    
```

```

876      ;*****
877      ;TEST 22      TEST THAT PROPER P.C. IS SAVED
878      ;*****
879 004074 005237 000304      TST22: INC     @#$TESTN ;UPDATE TEST NUMBER
880 004100 022737 000022 000304      CMP     #22,@#$TESTN ;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,@#FATAL      ;MOVE TO MAILBOX # ***** 100 *****
888 004142 005212                      INC      (R2)              ;SET MSGTYP TO FATAL ERROR
889 004144 000000                      HALT                       ;INCORRECT P.C.,OR WRONG $STNM
890                                     ; TO SCOPE REPLACE HALT W/ 240
891                                     ; AND REPLACE NEXT INST W/ 760
892                                     ;*****
893                                     ;TEST 23      TEST THAT 'OLD' CC AND PRIORITY ARE PLACED ON STACK
894                                     ;*****
895 004146 005237 000304 000304      TST23:  INC      @#STESTN      ;UPDATE TEST NUMBER
896 004152 022737 000023 000304      CMP      #23,@#STESTN      ;SEQUENCE ERROR?
897 004160 001040                      BNE     TST24-12          ;BR TO ERROR HALT ON SEQ ERROR
898 004162 012706 000500                      MOV     #BUFF,SP          ;SET UP
899 004166 012767 004204 173624      MOV     #RETD2,RTRAP2      ;SET UP
900 004174 005067 173576                      CLR     CC                ;CLEAR CC AND PRIORITY
901 004200 000257                      CCC
902 004202 000004                      IOT      ;TRAP
903 004204 026727 174266 000000      RETD2:  CMP     BUFF-2,#0    ;TEST THAT OLD STATUS WENT TO STACK
904 004212 001405                      BEQ     1$
905 004214 012737 000101 000302      MOV     #101,@#FATAL      ;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
914 004250 000004                      IOT      ;TRAP
915 004252 026727 174230 000357      RETE2:  CMP     BUFF-2,#357  ;COMPARES STATUS ON STACK
916 004260 001405                      BEQ     TST24
917 004262 012737 000102 000302      MOV     #102,@#FATAL      ;MOVE TO MAILBOX # ***** 102 *****
918 004270 005212                      INC     (R2)              ;SET MSGTYP TO FATAL ERROR
919 004272 000000                      HALT                       ;INCORRECT STATUS ON STACK,OR WRONG $STNM
920                                     ; TO SCOPE REPLACE HALT W/ 240
921                                     ; AND REPLACE NEXT INST W/ 732
922                                     ;*****
923                                     ;TEST 24      TEST THAT 'NEW' STATUS IS CORRECT
924                                     ;*****
925 004274 005237 000304 000304      TST24:  INC      @#STESTN      ;UPDATE TEST NUMBER
926 004300 022737 000024 000304      CMP     #24,@#STESTN      ;SEQUENCE ERROR?
927 004306 001121                      BNE     BR46              ;BR TO ERROR HALT ON SEQ ERROR
928 004310 012706 000500                      MOV     #BUFF,SP          ;SET UP
929 004314 012767 004330 173476      MOV     #RETF2,RTRAP2      ;SET UP
930 004322 005067 173474                      CLR     RTRAP2+2          ;CLEAR FUTURE PRIORITY AND CC
931 004326 000004                      IOT      ;TRAP
932 004330      RETF2:  ;TEST FOR 'C' CLEARED
933 004330 100005                      BPL     1$
934 004332 012737 000103 000302      MOV     #103,@#FATAL      ;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 000104 000302      MOV     #104,@#FATAL      ;MOVE TO MAILBOX # ***** 104 *****
941 004346 012737                      INC     (R2)              ;SET MSGTYP TO FATAL ERROR
942 004354 005212
    
```



```

999 004534 016706 173236 4$: MOV CL,SP
1000 004540 042706 000017 BIC #17,SP
1001 004544 022706 000340 CMP #340,SP
1002 004550 001405 BEQ BR46A
1003 004552 BR46: MOV #114,@#$FATAL ;MOVE TO MAILBOX # ***** 114 *****
1004 004552 012737 000114 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
1005 004560 005212 HALT ;PRIORITY WAS CHANGED,OR WRONG $STNM
1006 004562 000000 ; TO SCOPE REPLACE HALT W/ 240
1007 ; AND REPLACE NEXT INST W/ 651
1008 ;. +2
1009 004564 012767 000022 173226 BR46A: MOV #22,20
1010 004572 005067 173224 CLR 22 ;HALT
1011 ;*****
1012 ;TEST 25 TEST THAT A TRAP OCCURS ON AN EMT INSTRUCTION
1013 ;*****
1014 004576 005237 000304 TST25: INC @#$TESTN ;UPDATE TEST NUMBER
1015 004602 022737 000025 000304 CMP #25,@#$TESTN ;SEQUENCE ERROR?
1016 004610 001006 BNE TST26-12 ;BR TO ERROR HALT ON SEQ ERROR
1017 004612 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1018 004616 012767 004640 173204 MOV #RETA3,RTRAP3 ;RETURN LOCATION
1019 004624 104000 EMT ;RESERVE INSTRUCTION, SHOULD TRAP
1020 004626 012737 000115 000302 MOV #115,@#$FATAL ;MOVE TO MAILBOX # ***** 115 *****
1021 004634 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1022 004636 000000 HALT ;EMT DIDN'T TRAP,OR WRONG $STNM
1023 ; TO SCOPE REPLACE HALT W/ 240
1024 ; AND REPLACE NEXT INST W/ 764
1025 004640 RETA3:
1026 ;*****
1027 ;TEST 26 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION
1028 ;*****
1029 004640 005237 000304 TST26: INC @#$TESTN ;UPDATE TEST NUMBER
1030 004644 022737 000026 000304 CMP #26,@#$TESTN ;SEQUENCE ERROR?
1031 004652 001011 BNE TST27-12 ;BR TO ERROR HALT ON SEQ ERROR
1032 004654 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1033 004660 012767 004670 173142 MOV #RETB3,RTRAP3 ;RETURN POINTER
1034 004666 104000 EMT ;RESERVED INSTRUCTION
1035 004670 020627 000474 RETB3: CMP SP,#BUFF-4 ;TEST DECREMENT OF SP
1036 004674 001405 BEQ TST27
1037 004676 012737 000115 000302 MOV #116,@#$FATAL ;MOVE TO MAILBOX # ***** 116 *****
1038 004704 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1039 004706 000000 HALT ;NOT DECREMENTED TWO WORDS,OR WRONG $STNM
1040 ; TO SCOPE REPLACE HALT W/ 240
1041 ; AND REPLACE NEXT INST W/ 761
1042 ;*****
1043 ;TEST 27 TEST THAT PROPER P.C. IS SAVED
1044 ;*****
1045 004710 005237 000304 TST27: INC @#$TESTN ;UPDATE TEST NUMBER
1046 004714 022737 000027 000304 CMP #27,@#$TESTN ;SEQUENCE ERROR?
1047 004722 001012 BNE TST30-12 ;BR TO ERROR HALT ON SEQ ERROR
1048 004724 012706 000500 MOV #BUFF,SP ;STACK POINTER SETUP
1049 004730 012767 004740 173072 MOV #RETC3,RTRAP3 ;RETURN FROM TRAP POINTER
1050 004736 104000 EMT ;TRAP ON THIS INSTRUCTION
1051 004740 022767 004740 173526 RETC3: CMP #,BUFF-4 ;CHECK FOR INCREMENTED P.C.
1052 004746 001405 BEQ TST30
1053 004750 012737 000117 000302 MOV #117,@#$FATAL ;MOVE TO MAILBOX # ***** 117 *****
1054 004756 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
    
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1111                                     ; AND REPLACE NEXT INST W/ 753
1112 005174 2$:
1113 005174 102005 BVC 3$
1114 005176 012737 000124 000302 MOV #124,@#FATAL ;MOVE TO MAILBOX # ***** 124 *****
1115 005204 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1116 005206 000000 HALT ;V NOT CLEARED
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 745
1117
1118
1119 005210 3$:
1120 005210 103005 BCC 4$
1121 005212 012737 000125 000302 MOV #125,@#FATAL ;MOVE TO MAILBOX # ***** 125 *****
1122 005220 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1123 005222 000000 HALT ;C NOT CLEARED
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 737
; TEST PRIORITY
1124
1125
1126 005224 032767 000340 172544 4$: BIT #340,CC
1127 005232 001405 BEQ 5$
1128 005234 012737 000126 000302 MOV #126,@#FATAL ;MOVE TO MAILBOX # ***** 126 *****
1129 005242 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1130 005244 000000 HALT ;PRIORITY NOT ZERO
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 726
1131
1132
1133 005246 012706 000500 5$: MOV #BUFF,SP
1134 005252 012767 005270 172550 MOV #RETG3,RTRAP3
1135 005260 012767 000357 172544 MOV #357,RTRAP3+2 ;SET NEW 'CC' AND PRIORITY
1136 005266 104000 EMT ;TRAP HERE
1137 005270 RETG3:
1138 005270 100405 BMI 1$
1139 005272 012737 000127 000302 MOV #127,@#FATAL ;MOVE TO MAILBOX # ***** 127 *****
1140 005300 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1141 005302 000000 HALT ;N NOT SET
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 707
1142
1143
1144 005304 1$:
1145 005304 001405 BEQ 2$
1146 005306 012737 000130 000302 MOV #130,@#FATAL ;MOVE TO MAILBOX # ***** 130 *****
1147 005314 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1148 005316 000000 HALT ;Z NOT SET
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 701
1149
1150
1151 005320 2$:
1152 005320 102405 BVS 3$
1153 005322 012737 000131 000302 MOV #131,@#FATAL ;MOVE TO MAILBOX # ***** 131 *****
1154 005330 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1155 005332 000000 HALT ;V NOT SET
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 673
1156
1157
1158 005334 3$:
1159 005334 103405 BCS 4$
1160 005336 012737 000132 000302 MOV #132,@#FATAL ;MOVE TO MAILBOX # ***** 132 *****
1161 005344 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1162 005346 000000 HALT ;C NOT SET
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 665
1163
1164
1165 005350 4$: CCC
1166 005352 022767 000340 172416 CMP #340,CC
    
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1167 005360 001405          BEQ      TST32
1168 005362 012737 000133 000302  MOV     #133,@#FATAL ;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,@#FATAL ;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,@#FATAL ;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,@#FATAL ;MOVE TO MAILBOX # ***** 136 *****
                                ;SET MSGTYP TO FATAL ERROR
1223 005600 005212          INC     (R2)
    
```

```

1223 005602 000000          HALT          ;NOT DECREMENTED TWO WORDS,OR WRONG $STSTM
1224                                     ; TO SCOPE REPLACE HALT W/ 240
1225                                     ; AND REPLACE NEXT INST W/ 761
1226
1227 :*****
1228 :TEST 35      TEST THAT PROPER P.C. IS SAVED
1229 :*****
1229 005604 005237 000304  TST35: INC    @#$TESTN      ;UPDATE TEST NUMBER
1230 005610 022737 000035 000304  CMP    #35,@#$TESTN    ;SEQUENCE ERROR?
1231 005616 001012          BNE    TST36-12        ;BR TO ERROR HALT ON SEQ ERROR
1232 005620 012706 000500  MOV    #BUFF,SP        ;STACK POINTER SETUP
1233 005624 012767 005634 172162  MOV    #RETC4,RTRAP4   ;RETURN FROM TRAP POINTER
1234 005632 000003          TRT                    ;TRAP ON THIS INSTRUCTION
1235 005634 022767 005634 172632  RETC4: CMP    #.,BUFF-4  ;CHECK FOR INCREMENTED P.C.
1236 005642 001405          BEQ    TST36
1237 005644 012737 000137 000302  MOV    #137,@#$FATAL   ;MOVE TO MAILBOX # ***** 137 *****
1238 005652 005212          INC    (R2)            ;SET MSGTYP TO FATAL ERROR
1239 005654 000000          HALT                    ;INCORRECT P.C.,OR WRONG $STSTM
1240                                     ; TO SCOPE REPLACE HALT W/ 240
1241                                     ; AND REPLACE NEXT INST W/ 760

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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 $STSTM
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

```

1279	006020	012706	000500			MOV	#BUFF,SP		
1280	006024	012767	006040	171762		MOV	#RETF4,RTRAP4		
1281	006032	005067	171760			CLR	RTRAP4+2		:CLEAR FUTURE PRIORITY AND CC
1282	006036	000003				TRT			
1283	006040				RETF4:				:TEST FOR 'C' CLEARED
1284	006040	100005				BPL	1\$		
1285	006042	012737	000142	000302		MOV	#142,@#\$FATAL		:MOVE TO MAILBOX # ***** 142 *****
1286	006050	005212				INC	(R2)		:SET MSGTYP TO FATAL ERROR
1287	006052	000000				HALT			:C NOT CLEARED
1288									: TO SCOPE REPLACE HALT W/ 240
1289									: AND REPLACE NEXT INST W/ 761
1290	006054				1\$:				
1291	006054	001005				BNE	2\$		
1292	006056	012737	000143	000302		MOV	#143,@#\$FATAL		:MOVE TO MAILBOX # ***** 143 *****
1293	006064	005212				INC	(R2)		:SET MSGTYP TO FATAL ERROR
1294	006066	000000				HALT			:Z NOT CLEARED
1295									: TO SCOPE REPLACE HALT W/ 240
1296									: AND REPLACE NEXT INST W/ 753
1297	006070				2\$:				
1298	006070	102005				BVC	3\$		
1299	006072	012737	000144	000302		MOV	#144,@#\$FATAL		:MOVE TO MAILBOX # ***** 144 *****
1300	006100	005212				INC	(R2)		:SET MSGTYP TO FATAL ERROR
1301	006102	000000				HALT			:V NOT CLEARED
1302									: TO SCOPE REPLACE HALT W/ 240
1303									: AND REPLACE NEXT INST W/ 745
1304	006104				3\$:				
1305	006104	103005				BCC	4\$		
1306	006106	012737	000145	000302		MOV	#145,@#\$FATAL		:MOVE TO MAILBOX # ***** 145 *****
1307	006114	005212				INC	(R2)		:SET MSGTYP TO FATAL ERROR
1308	006116	000000				HALT			:C NOT CLEARED
1309									: TO SCOPE REPLACE HALT W/ 240
1310									: AND REPLACE NEXT INST W/ 737
1311	006120	032767	000340	171650	4\$:	BIT	#340,CC		:TEST PRIORITY
1312	006126	001405				BEQ	5\$		
1313	006130	012737	000146	000302		MOV	#146,@#\$FATAL		:MOVE TO MAILBOX # ***** 146 *****
1314	006136	005212				INC	(R2)		:SET MSGTYP TO FATAL ERROR
1315	006140	000000				HALT			:PRIORITY NOT ZERO
1316									: TO SCOPE REPLACE HALT W/ 240
1317									: AND REPLACE NEXT INST W/ 726
1318	006142	012706	000500		5\$:	MOV	#BUFF,SP		
1319	006146	012767	006164	171640		MOV	#RETG4,RTRAP4		:SET NEW 'CC' AND PRIORITY
1320	006154	012767	000357	171634		MOV	#357,RTRAP4+2		:TRAP HERE
1321	006162	000003				TRT			
1322	006164				RETG4:				
1323	006164	100405				BMI	1\$		
1324	006166	012737	000147	000302		MOV	#147,@#\$FATAL		:MOVE TO MAILBOX # ***** 147 *****
1325	006174	005212				INC	(R2)		:SET MSGTYP TO FATAL ERROR
1326	006176	000000				HALT			:N NOT SET
1327									: TO SCOPE REPLACE HALT W/ 240
1328									: AND REPLACE NEXT INST W/ 707
1329	006200				1\$:				
1330	006200	001405				BEQ	2\$		
1331	006202	012737	000150	000302		MOV	#150,@#\$FATAL		:MOVE TO MAILBOX # ***** 150 *****
1332	006210	005212				INC	(R2)		:SET MSGTYP TO FATAL ERROR
1333	006212	000000				HALT			:Z NOT SET
1334									: TO SCOPE REPLACE HALT W/ 240

```

1335
1336 006214
1337 006214 102405
1338 006216 012737 000151 000302
1339 006224 005212
1340 006226 000000
1341
1342
1343 006230
1344 006230 103405
1345 006232 012737 000152 000302
1346 006240 005212
1347 006242 000000
1348
1349
1350 006244 016706 171526
1351 006250 042706 000017
1352 006254 022706 000340
1353 006260 001405
1354 006262
1355 006262 012737 000153 000302
1356 006270 005212
1357 006272 000000
1358
1359
1360 006274 012767 000016 171512
1361 006302 005067 171510
1362
1363
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1365
1366
1367
1368
1369
1370
1371
1372 006306 005237 000304
1373 006312 022737 000040 000304
1374 006320 001006
1375 006322 012706 000500
1376 006326 012767 006350 171450
1377 006334 000100
1378 006336 012737 000154 000302
1379 006344 005212
1380 006346 000000
1381
1382
1383 006350
1384
1385
1386
1387 006350 005237 000304
1388 006354 022737 000041 000304
1389 006362 001011
1390 006364 012706 000500
    
```

```

; AND REPLACE NEXT INST W/ 701
2$:
BVS 3$
MOV #151,@#$FATAL ;MOVE TO MAILBOX # ***** 151 *****
INC (R2) ;SET MSGTYP TO FATAL ERROR
HALT ;V NOT SET
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 673
3$:
BCS 4$
MOV #152,@#$FATAL ;MOVE TO MAILBOX # ***** 152 *****
INC (R2) ;SET MSGTYP TO FATAL ERROR
HALT ;C NOT SET
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 665
4$:
MOV CC,SP
BIC #17,SP
CMP #340,SP
BEQ BR51A
BR51:
MOV #153,@#$FATAL ;MOVE TO MAILBOX # ***** 153 *****
INC (R2) ;SET MSGTYP TO FATAL ERROR
HALT ;PRIORITY WAS CHANGED,OR WRONG $STNM
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 651
BR51A:
MOV #16,14
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

```

TST40: INC @#$TESTN ;UPDATE TEST NUMBER
        CMP #40,@#$TESTN ;SEQUENCE ERROR?
        BNE TST41-12 ;BR TO ERROR HALT ON SEQ ERROR
        MOV #BUFF,SP ;STACK POINTER SETUP
        MOV #RETA5,RTRAP5 ;RETURN LOCATION
        JMP %0 ;ILLEGAL INSTRUCTION, SHOULD TRAP
        MOV #154,@#$FATAL ;MOVE TO MAILBOX # ***** 154 *****
        INC (R2) ;SET MSGTYP TO FATAL ERROR
        HALT ;ILLEGAL INSTRUCTION DIDN'T TRAP,OR WRONG $STNM
        ; TO SCOPE REPLACE HALT W/ 240
        ; AND REPLACE NEXT INST W/ 764
    
```

RETA5:

:TEST 41 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION

```

TST41: INC @#$TESTN ;UPDATE TEST NUMBER
        CMP #41,@#$TESTN ;SEQUENCE ERROR?
        BNE TST42-12 ;BR TO ERROR HALT ON SEQ ERROR
        MOV #BUFF,SP ;STACK POINTER SETUP
    
```

```

1391 006370 012767 006400 171406      MOV    #RETB5,RTRAP5  ;RETURN POINTER
1392 006376 000100      JMP    %0             ;RESERVED INSTRUCTION
1393 006400 020627 000474      RETB5: CMP    SP,#BUFF-4 ;TEST DECREMENT OF SP
1394 006404 001405      BEQ    TST42
1395 006406 012737 000155 000302      MOV    #155,@#$FATAL ;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
1398
1399
1400
1401
1402

```

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

```

1403 006420 005237 000304      TST42: INC    @#$TESTN ;UPDATE TEST NUMBER
1404 006424 022737 000042 000304      CMP    #42,@#$TESTN ;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    #RETC5,RTRAP5 ;RETURN FROM TRAP POINTER
1408 006446 000100      JMP    %0             ;TRAP ON THIS INSTRUCTION
1409 006450 022767 006450 172016      RETC5: CMP    #.BUFF-4 ;CHECK FOR INCREMENTED P.C.
1410 006456 001405      BEQ    TST43
1411 006460 012737 000156 000302      MOV    #156,@#$FATAL ;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
1414
1415
1416
1417
1418

```

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

```

1419 006472 005237 000304      TST43: INC    @#$TESTN ;UPDATE TEST NUMBER
1420 006476 022737 000043 000304      CMP    #43,@#$TESTN ;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 171264      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,@#$FATAL ;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$:  MOV    #BUFF,SP      ;SET UP
1435 006556 012767 006576 171220      MOV    #RETE5,RTRAP5 ;SET UP
1436 006564 012767 000357 171204      MOV    #357,CC       ;SET PRIORITY
1437 006572 000277      SCC
1438 006574 000100      JMP    %0             ;SET CC
                                ;TRAP
1439 006576 026727 171674 000357      RETE5: CMP    BUFF-2,#357 ;COMPARES STATUS ON STACK
1440 006604 001405      BEQ    TST44
1441 006606 012737 000160 000302      MOV    #160,@#$FATAL ;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 @#TESTN      :UPDATE TEST NUMBER
1450 006624 022737 000044 000304      CMP #44,@#TESTN  :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 #RET5,RTRAPS
1454 006646 005067 171134      CLR RTRAPS+2      :CLEAR FUTURE PRIORITY AND CC
1455 006652 000100      JMP %0
1456 006654      RETF5:          :TEST FOR 'C' CLEARED
1457 006654 100005      BPL 1$
1458 006656 012737 000161 000302      MOV #161,@#FATAL :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,@#FATAL :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,@#FATAL :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,@#FATAL :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$: BIT #357,CC
1485 006742 001405      BEQ 5$
1486 006744 012737 000165 000302      MOV #165,@#FATAL :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$: MOV #BUFF,SP
1492 006762 012767 007000 171014      MOV #RET5,RTRAPS
1493 006770 012767 000357 171010      MOV #357,RTRAPS+2
1494 006776 000100      JMP %0            :SET NEW 'CC' AND PRIORITY
1495 007000      RETG5:          :TRAP HERE
1496 007000 100405      BMI 1$
1497 007002 012737 000166 000302      MOV #166,@#FATAL :MOVE TO MAILBOX # ***** 166 *****
1498 007010 005212      INC (R2)          :SET MSGTYP TO FATAL ERROR
1499 007012 000000      HALT             :N NOT SET
1500      :              : TO SCOPE REPLACE HALT W/ 240
1501      :              : AND REPLACE NEXT INST W/ 707
1502 007014      1$:
    
```



```

1503 007014 001405          BEQ      2$
1504 007016 012737 000167 000302  MOV     #167,@#$FATAL ;MOVE TO MAILBOX # ***** 167 *****
1505 007024 005212          INC     (R2)           ;SET MSGTYP TO FATAL ERROR
1506 007026 000000          HALT                    ;Z NOT SET
1507                                     ; TO SCOPE REPLACE HALT W/ 240
1508                                     ; AND REPLACE NEXT INST W/ 701
1509 007030          2$:
1510 007030 102405          BVS     3$
1511 007032 012737 000170 000302  MOV     #170,@#$FATAL ;MOVE TO MAILBOX # ***** 170 *****
1512 007040 005212          INC     (R2)           ;SET MSGTYP TO FATAL ERROR
1513 007042 000000          HALT                    ;V NOT SET
1514                                     ; TO SCOPE REPLACE HALT W/ 240
1515                                     ; AND REPLACE NEXT INST W/ 673
1516 007044          3$:
1517 007044 103405          BCS     4$
1518 007046 012737 000171 000302  MOV     #171,@#$FATAL ;MOVE TO MAILBOX # ***** 171 *****
1519 007054 005212          INC     (R2)           ;SET MSGTYP TO FATAL ERROR
1520 007056 000000          HALT                    ;C NOT SET
1521                                     ; TO SCOPE REPLACE HALT W/ 240
1522                                     ; AND REPLACE NEXT INST W/ 665
1523 007060 016706 170712          MOV     CC,SP          4$:
1524 007064 022706 000357          CMP     #357,SP
1525 007070 001405          BEQ     TST45
1526 007072 012737 000172 000302  MOV     #172,@#$FATAL ;MOVE TO MAILBOX # ***** 172 *****
1527 007100 005212          INC     (R2)           ;SET MSGTYP TO FATAL ERROR
1528 007102 000000          HALT                    ;PRIORITY WAS CHANGED,OR WRONG $STNM
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
1533
1534 007104 005237 000304          TST45: INC     @#$TESTN ;UPDATE TEST NUMBER
1535 007110 022737 000045 000304  CMP     #45,@#$TESTN ;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,@#$FATAL ;MOVE TO MAILBOX # ***** 173 *****
1541 007142 005212          INC     (R2)           ;SET MSGTYP TO FATAL ERROR
1542 007144 000000          HALT                    ;DIDN'T TRAP,OR WRONG $STNM
1543                                     ; TO SCOPE REPLACE HALT W/ 240
1544                                     ; AND REPLACE NEXT INST W/ 764

```

RETH5:

 :TEST 46 TEST DECREMENT OF STACK POINTER ON A TRAP OPERATION

```

1545 007146
1546
1547
1548
1549 007146 005237 000304          TST46: INC     @#$TESTN ;UPDATE TEST NUMBER
1550 007152 022737 000046 000304  CMP     #46,@#$TESTN ;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,@#$FATAL ;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 @#\$TESTN ;UPDATE TEST NUMBER
 1566 007222 022737 000047 000304 CMP #47,@#\$TESTN ;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 RETK: CMP #INSTK+2,BUFF-4 ;CHECK FOR INCREMEND 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 @#\$TESTN ;UPDATE TEST NUMBER
 1583 007274 022737 000050 000304 CMP #50,@#\$TESTN ;SEQUENCE ERROR?
 1584 007302 001040 BNE TST51-12 ;BR TO ERROR HALT ON SEQ ERROR
 1585 007304 012706 000500 MOV #BUFF,SP ;SET UP
 1586 007310 012767 007326 170466 MOV #RETL,RTRAP5 ;SET UP
 1587 007316 005067 170454 CLR CC ;CLEAR CC AND PRIORITY
 1588 007322 000257 CCC
 1589 007324 004000 JSR %0,%0 ;TRAP
 1590 007326 026727 171144 000000 RETL: CMP BUFF-2,#0 ;TEST THAT OLD STATUS WENT TO STACK
 1591 007334 001405 BEQ 1\$
 1592 007336 012737 000176 000302 MOV #176,@#\$FATAL ;MOVE TO MAILBOX # ***** 176 *****
 1593 007344 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
 1594 007346 000000 HALT ;INCORRECT STATUS
 1595 ; TO SCOPE REPLACE HALT W/ 240
 1596 ; AND REPLACE NEXT INST W/ 755

1597 007350 012706 000500 1\$: MOV #BUFF,SP ;SET UP
 1598 007354 012767 007374 170422 MOV #RETM,RTRAP5 ;SET UP
 1599 007362 012767 000357 170406 MOV #357,CC ;SET PRIORITY
 1600 007370 000277 SCC ;SET CC
 1601 007372 004000 JSR %0,%0 ;TRAP
 1602 007374 026727 171076 000357 RETM: CMP BUFF-2,#357 ;COMPARES STATUS ON STACK
 1603 007402 001405 BEQ TST51
 1604 007404 012737 000177 000302 MOV #177,@#\$FATAL ;MOVE TO MAILBOX # ***** 177 *****
 1605 007412 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
 1606 007414 000000 HALT ;INCORRECT STATUS ON STACK,OR WRONG \$TSTNM
 1607 ; TO SCOPE REPLACE HALT W/ 240
 1608 ; AND REPLACE NEXT INST W/ 732

1609 :*****
 1610 :TEST 51 TEST THAT 'NEW' STATUS IS CORRECT
 1611 :*****

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


```

1671                                     ; AND REPLACE NEXT INST W/ 702
1672 007624 2$:
1673 007624 102405 BVS 3$
1674 007626 012737 000207 000302 MOV #207,@#$FATAL ;MOVE TO MAILBOX # ***** 207 *****
1675 007634 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1676 007636 000000 HALT ;V NOT SET
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 674
1677
1678
1679 007640 3$:
1680 007640 103405 BCS 4$
1681 007642 012737 000210 000302 MOV #210,@#$FATAL ;MOVE TO MAILBOX # ***** 210 *****
1682 007650 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
1683 007652 000000 HALT ;C NOT SET
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 666
1684
1685
1686 007654 016700 170116 4$: MOV CC,%0
1687 007660 022700 000357 CMP #357,%0
1688 007664 001405 BEQ TST52
1689 007666 012737 000211 000302 MOV #211,@#$FATAL ;MOVE TO MAILBOX # ***** 2 *****
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 @#$TESTN ;UPDATE TEST NUMBER
1699 007704 022737 000052 000304 CMP #52,@#$TESTN ;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,RTRAP5 ;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 @#$TESTN ;UPDATE TEST NUMBER
1714 007750 022737 000053 000304 CMP #53,@#$TESTN ;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 #RETP,RTRAP5 ;RETURN POINTER
1718 007772 005767 170003 TST 1 ;RESERVED INSTRUCTION
1719 007776 020627 000474 RETQ: CMP 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      @#$TESTN      ;UPDATE TEST NUMBER
1730      010022 022737 000054 000304  CMP      #54,@#$TESTN      ;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,@#$FATAL      ;MOVE TO MAILBOX # ***** 214 *****
1738      010066 005212      INC
1739      010070 000000      HALT      ;SET MSGTYP TO FATAL ERROR
1740      ;INCORRECT P.C.,OR WRONG $STNM
1741      ;TO SCOPE REPLACE HALT W/ 240
1742      ;AND REPLACE NEXT INST W/ 757
1743      ;*****
    
```

```

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

```

1781      ;TEST 56      TEST THAT 'NEW' STATUS IS CORRECT
1782      ;*****
1783      010224 005237 000304      TST56: INC      @#$TESTN      ;UPDATE TEST NUMBER
1784      010230 022737 000056 000304  CMP      #56,@#$TESTN      ;SEQUENCE ERROR?
1785      010236 001121      BNE      TST57-12      ;BR TO ERROR HALT ON SEQ ERROR
1786      010240 012706 000500      MOV      #BUFF,SP
1787      010244 012767 010262 167532  MOV      #RETT,RTRAP5
1788      010252 005067 167530      CLR      RTRAP5+2
1789      010256 005767 167517      TST 1      ;CLEAR FUTURE PRIORITY AND CC
1790      RETU:      ;TRAP HERE
1791      ;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	

```

1839 010452 000000          HALT          ;V NOT SET
1840                                     ; TO SCOPE REPLACE HALT W/ 240
1841                                     ; AND REPLACE NEXT INST W/ 671
1842 010454          3$:          BCS          4$
1843 010454 103405          MOV          #227,@#$FATAL ;MOVE TO MAILBOX # ***** 227 *****
1844 010456 012737 000227 000302      INC          (R2)          ;SET MSGTYP TO FATAL ERROR
1845 010464 005212          HALT          ;C NOT SET
1846 010466 000000          ; TO SCOPE REPLACE HALT W/ 240
1847                                     ; AND REPLACE NEXT INST W/ 663
    
```

```

1849 010470 016700 167302          4$:          MOV          CC,%0
1850 010474 022700 000357          CMP          #357,%0
1851 010500 001405          BEQ          TST57
1852 010502 012737 000230 000302      MOV          #230,@#$FATAL ;MOVE TO MAILBOX # ***** 230 *****
1853 010510 005212          INC          (R2)          ;SET MSGTYP TO FATAL ERR.OR
1854 010512 000000          HALT          ;PRIORITY WAS CHANGED,OR WRONG $STNM
1855                                     ; TO SCOPE REPLACE HALT W/ 240
1856                                     ; AND REPLACE NEXT INST W/ 651
    
```

 :TEST 57 TEST THAT DECREMENT R6 TO A VALUE LESS THAN 400 TRAPS

```

1859          TST57:          INC          @#$TESTN          ;UPDATE TEST NUMBER
1860 010514 005237 000304          CMP          #57,@#$TESTN ;SEQUENCE ERROR?
1861 010520 022737 000057 000304      BNE          TST60-12      ;BR TO ERROR HALT ON SEQ ERROR
1862 010526 001006          MOV          #150,%6        ;R6 = 150
1863 010530 012706 000150          MOV          #TDEC1,4      ;STACK OVERFLOW TRAP POINTER
1864 010534 012767 010556 167242      TST          -(6)          ;WITH R6 = 150 SHOULD TRAP
1865 010542 005746          MOV          #231,@#$FATAL ;MOVE TO MAILBOX # ***** 231 *****
1866 010544 012737 000231 000302      INC          (R2)          ;SET MSGTYP TO FATAL ERROR
1867 010552 005212          HALT          ;SHOULD HAVE TRAPPED,OR WRONG $STNM
1868 010554 000000          ; TO SCOPE REPLACE HALT W/ 240
1869                                     ; AND REPLACE NEXT INST W/ 764
    
```

TDEC1:

 :TEST 60 TEST FOR DECREMENT OF R6 ON OVERFLOW TRAP

```

1871 010556          TDEC1:
1872
1873          TST60:          INC          @#$TESTN          ;UPDATE TEST NUMBER
1874          CMP          #60,@#$TESTN ;SEQUENCE ERROR?
1875          BNE          TST61-12      ;BR TO ERROR HALT ON SEQ ERROR
1876 010556 005237 000304          MOV          #150,%6        ;R6 = 150
1877 010562 022737 000060 000304      MOV          #TDEC2,4      ;TRAP POINTER
1878 010570 001011          TST          -(6)          ;WITH R6 = 150 SHOULD TRAP
1879 010572 012706 000150          CMP          %6,#142      ;DID R6 DECREMENT
1880 010576 012767 010606 167200      BEQ          TST61
1881 010604 005746          MOV          #232,@#$FATAL ;MOVE TO MAILBOX # ***** 232 *****
1882 010606 020627 000142          INC          (R2)          ;SET MSGTYP TO FATAL ERROR
1883 010612 001405          HALT          ;R6 NOT = 142,OR WRONG $STNM
1884 010614 012737 000232 000302      ; TO SCOPE REPLACE HALT W/ 240
1885 010622 005212          ; AND REPLACE NEXT INST W/ 761
1886 010624 000000
1887
1888
1889
    
```

```

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 134546
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 @#$TESTN ;UPDATE TEST NUMBER
        CMP #61,@#$TESTN ;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,@#$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$: MOV #1000,%5
      MOV #400,%6
      MOV #TDEC4,4
      CMPB -(6),-(5)
      MOV #234,@#$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,@#$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 @#$TESTN ;UPDATE TEST NUMBER
        CMP #62,@#$TESTN ;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,@#$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 @#$TESTN ;UPDATE TEST NUMBER
      CMP #63,@#$TESTN ;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,@#$FATAL ;MOVE TO MAILBOX # ***** 237 *****
      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

VDEC3: MOV #20+2,20
:*****
:TEST 64 TEST THAT AN EMT CAUSES AN OVERFLOW TRAP
:*****
TST64: INC @#$TESTN ;UPDATE TEST NUMBER
      CMP #64,@#$TESTN ;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,@#$FATAL ;MOVE TO MAILBOX # ***** 240 *****
      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

VDEC5: MOV #30+2,30
:*****
:TEST 65 TEST THAT AN TRAP CAUSES AN OVERFLOW TRAP
:*****
TST65: INC @#$TESTN ;UPDATE TEST NUMBER
      CMP #65,@#$TESTN ;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,@#$FATAL ;MOVE TO MAILBOX # ***** 241 *****
      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

VDEC7: MOV #34+2,34
:*****
:TEST 66 TEST THAT AN TRT CAUSES AN OVERFLOW TRAP
:*****
TST66: INC @#$TESTN ;UPDATE TEST NUMBER
      CMP #66,@#$TESTN ;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                               ;SET MSGTYP TO FATAL ERROR
2008 011320 000000                      HALT                              ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $STNM
2009                                         ; TO SCOPE REPLACE HALT W/ 240
2010                                         ; AND REPLACE NEXT INST W/ 761
2011 011322 012767 000016 166464      VDEC9: MOV      #14+2,14
2012                                         ;*****
2013                                         ;TEST 67      TEST THAT AN ILLA CAUSES AN OVERFLOW TRAP
2014                                         ;*****
2015 011330 005237 000304                      TST67: INC      @#$TESTN      ;UPDATE TEST NUMBER
2016 011334 022737 000067 000304      CMP      #67,@#$TESTN    ;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                               ;SET MSGTYP TO FATAL ERROR
2025 011376 000000                      HALT                              ;TRAP FLAG OVERFLOW DID NOT OCCUR,OR WRONG $STNM
2026                                         ; TO SCOPE REPLACE HALT W/ 240
2027                                         ; AND REPLACE NEXT INST W/ 761
2028 011400 012767 000006 166376      VDEC12: MOV     #4+2,4
2029 011406 020627 000370                      CMP     %6,#370          ;STACK PUSHED FOUR WORDS?
2030 011412 001405                      BEQ     TST70
2031 011414 012737 000244 000302      MOV     #244,@#SFATAL  ;MOVE TO MAILBOX # ***** 244 *****
2032 011422 005212                      INC     (R2)             ;SET MSGTYP TO FATAL ERROR
2033 011424 000000                      HALT                              ;TRAP OVERFLOW DID NOT OCCUR
2034                                         ; TO SCOPE REPLACE HALT W/ 240
2035                                         ; AND REPLACE NEXT INST W/ 746
2036                                         ;*****
2037                                         ;TEST 70      TEST THAT AN ILLB CAUSES AN OVERFLOW TRAP
2038                                         ;*****
2039 011426 005237 000304                      TST70: INC     @#$TESTN    ;UPDATE TEST NUMBER
2040 011432 022737 000070 000304      CMP     #70,@#$TESTN    ;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 $STNM
2050                                         ; TO SCOPE REPLACE HALT W/ 240
2051                                         ; AND REPLACE NEXT INST W/ 761
2052 011476 012767 000006 166300      VDEC14: MOV     #4+2,4
2053                                         ;*****
2054                                         ;TEST 71      TEST FOR FALSE OVERFLOW TRAP
2055                                         ;*****
2056                                         ;*****
2057 011504 005237 000304                      TST71: INC     @#$TESTN    ;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
2078
2079
2080
2081
2082
2083
2084
2085
2086
2087
2088
2089
2090
2091
2092
2093
2094
2095
2096
2097
2098
2099
2100
2101
2102
2103
2104
2105
2106
2107
2108
2109
2110
2111
2112
2113
    
```

```

STP:  MOV      #6,4
      CLR      6
    
```

```

:*****
:TEST 72      TEST THAT BIT 4 PSW WILL CAUSE A TRAP TO 14
:*****
    
```

```

TST72: INC      @#$TESTN      ;UPDATE TEST NUMBER
      CMP      #72,@#$TESTN    ;SEQUENCE ERROR?
      BNE      TST73-12        ;BR TO ERROR HALT ON SEQ ERROR
      MOV      #BUFF,SP
      MOV      #RETAT,RTRAP4   ;SET UP TO TRAP TO 14
      MOV      #20,-(SP)       ;PUSH T BIT
      MOV      #,+6,-(SP)      ;PUSH PC
      RTI                    ;SET T BIT
      NOP                    ;TRAP HERE
      MOV      #247,@#$FATAL    ;MOVE TO MAILBOX # ***** 247 *****
      INC      (R2)            ;SET MSGTYP TO FATAL ERROR
      HALT                    ;TRACE BIT DID NOT TRAP!,OR WRONG $TESTN
      ; TO SCOPE REPLACE HALT W/ 240
      ; AND REPLACE NEXT INST W/ 757
    
```

```

RETAT:
:*****
:TEST 73      TEST STACK POINTER DECREMENTS
:*****
    
```

```

TST73: INC      @#$TESTN      ;UPDATE TEST NUMBER
      CMP      #73,@#$TESTN    ;SEQUENCE ERROR?
      BNE      TST74-12        ;BR TO ERROR HALT ON SEQ ERROR
      MOV      #BUFF,SP
      MOV      #RETBT,RTRAP4   ;PUSH T BIT
      MOV      #20,-(SP)       ;PUSH PC
      MOV      #,+6,-(SP)      ;SET T BIT
      RTI                    ;TRAP HERE
      MOV      #250,@#$FATAL    ;MOVE TO MAILBOX # ***** 250 *****
      INC      (R2)            ;SET MSGTYP TO FATAL ERROR
      HALT                    ;TRACE BIT DID NOT TRAP!
    
```

```

2114
2115
2116 011742 020627 000474 RETBT: CMP SP,#BUFF-4
2117 011746 001405 BEQ TST74
2118 011750 012737 000251 000302 MOV #251,@#FATAL ;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
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 757
2121
2122
2123
2124
2125

```

 :TEST 74 TEST FOR PROPER PC ON STACK

```

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
;TRAP HERE
2134

```

```

2135 012022 022767 012022 166444 RETCT: CMP #.,BUFF-4
2136 012030 001405 BEQ TST75
2137 012032 012737 000252 000302 MOV #252,@#FATAL ;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
; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 754
2140
2141
2142
2143
2144

```

 :TEST 75 TEST THAT RTT POPS T- BIT

```

2146 012044 005237 000304 TST75: INC @#$TESTN ;UPDATE TEST NUMBER
2147 012050 022737 000075 000304 CMP #75,@#$TESTN ;SEQUENCE ERROR?
2148 012056 001015 BNE TST76-12 ;BR TO ERROR HALT ON SEQ ERROR
2149
2150 MOV #BUFF,SP
2151 012060 012706 000500 CLR R1 ;CLEAR R1
2152 012064 005001 MOV #20,-(SP)
2153 012066 012746 000020 MOV #RTT1,-(SP)
2154 012072 012746 012106 MOV #RTT2,14
2155 012076 012767 012124 165710 RTT
2156 012104 000006 RTT1: NOP
2157 012106 000240 BEQ TST76
2158 012110 001405 MOV #253,@#FATAL ;MOVE TO MAILBOX # ***** 253 *****
2159 012112 012737 000253 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
2160 012120 005212 HALT ;T-BIT DID NOT TRAP,OR WRONG $TESTN
2161 012122 000000 ; TO SCOPE REPLACE HALT W/ 240
; AND REPLACE NEXT INST W/ 755
2162
2163

```

 :TEST 76 TEST THAT RTT ALLOWS ONE INST. BEFORE TRAP

```

2165 012124 RTT2:
2166
2167
2168
2169 012124 005237 000304 TST76: INC @#$TESTN ;UPDATE TEST NUMBER

```

```

2170 012130 022737 000076 000304      CMP      #76,@#$TESTN      ;SEQUENCE ERROR?
2171 012136 001031                    BNE      TST77-12        ;BR TO ERROR HALT ON SEQ ERROR
2172 012140 012705 177777                    MOV      #177777,%5
2173 012144 012706 000500      RTT5:    MOV      #BUFF,SP
2174 012150 012746 000020                    MOV      #20,-(SP)
2175 012154 012746 012172                    MOV      #RTT3,-(SP)
2176 012160 012767 012212 165626                    MOV      #RTT4,14
2177 012166 005001                    CLR      R1              ;CLEAR R0
2178 012170 000006                    RTT                    ;SET T-BIT
2179 012172 005201      RTT3:    INC      R1
2180 012174 005205                    INC      %5
2181 012176 001762                    BEQ      RTT5            ;DO THIS TEST NO MORE THAN 2 TIMES
2182 012200 012737 000254 000302                    MOV      #254,@#$FATAL  ;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,@#$FATAL  ;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 $TESTN
2194                                     ; TO SCOPE REPLACE HALT W/ 240
2195                                     ; AND REPLACE NEXT INST W/ 741
2196 012234      RTT6:
2197      ;*****
2198      ;TEST 77      TEST THAT RTI DOES NOT ALLOW 1 INST.
2199      ;*****
2200 012234 005237 000304      TST77:  INC      @#$TESTN      ;UPDATE TEST NUMBER
2201 012240 022737 000077 000304      CMP      #77,@#$TESTN      ;SEQUENCE ERROR?
2202 012246 001023                    BNE      TST100-12        ;BR TO ERROR HALT ON SEQ ERROR
2203 012250 012706 000500                    MOV      #BUFF,SP
2204 012254 012746 000020                    MOV      #20,-(SP)
2205 012260 012746 012276                    MOV      #RTI1,-(SP)
2206 012264 012767 012312 165522                    MOV      #RTI2,14
2207 012272 005001                    CLR      R1
2208 012274 000002                    RTI                    ;SET T-BIT
2209 012276 005201      RTI1:    INC      R1              ;RTI SHOULD NOT ALLOW THIS
2210 012300 012737 000256 000302                    MOV      #256,@#$FATAL  ;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,@#$FATAL  ;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 000304 1ST100: INC @#$TESTN ;UPDATE TEST NUMBER
2228 012334 022737 000100 000304 CMP #100,@#$TESTN ;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,@#$FATAL ;MOVE TO MAILBOX # ***** 260 *****
2234 012370 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2235 012372 000000 HALT ;ODD ADDRESS SHOULD HAVE TRAPPED
2236 ; TO SCOPE REPLACE HALT W/ 240
2237 ; AND REPLACE NEXT INST W/ 763
2238 012374 022767 000001 166072 R7TR1: CMP #1,BUFF-4
2239 012402 001405 BEQ 1$
2240 012404 012737 000261 000302 MOV #261,@#$FATAL ;MOVE TO MAILBOX # ***** 261 *****
2241 012412 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2242 012414 000000 HALT ;CORRECT PC WAS NOT SAVED ON STACK
2243 ; TO SCOPE REPLACE HALT W/ 240
2244 ; AND REPLACE NEXT INST W/ 752
2245
2246 012416 012706 000500 1$: 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,@#$FATAL ;MOVE TO MAILBOX # ***** 262 *****
2251 012440 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2252 012442 000000 HALT
2253 ;
2254 ; TO SCOPE REPLACE HALT W/ 240
2255 ; AND REPLACE NEXT INST W/ 737
2256 012444 022767 012433 166022 R7TR2: CMP #R7TR2A+1,BUFF-4
2257 012452 001405 BEQ 1$
2258 012454 012737 000263 000302 MOV #263,@#$FATAL ;MOVE TO MAILBOX # ***** 263 *****
2259 012462 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2260 012464 000000 HALT ;CORRECT PC NOT ON STACK
2261 ; TO SCOPE REPLACE HALT W/ 240
2262 ; AND REPLACE NEXT INST W/ 726
2263 012466 012706 000500 1$: MOV #BUFF,%6
2264 012472 012767 012514 165304 MOV #R7TR3,4
2265 012500 005307 BR60: DEC %7 ;MAKE PC ODD
2266 012502 012737 000264 000302 MOV #264,@#$FATAL ;MOVE TO MAILBOX # ***** 264 *****
2267 012510 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2268 012512 000000 HALT ;SHOULD TRAP
2269 ; TO SCOPE REPLACE HALT W/ 240
2270 ; AND REPLACE NEXT INST W/ 713
2271 012514 022767 012501 165752 R7TR3: CMP #BR60+1,BUFF-4
2272 012522 001405 BEQ 1$
2273 012524 012737 000265 000302 MOV #265,@#$FATAL ;MOVE TO MAILBOX # ***** 265 *****
2274 012532 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2275 012534 000000 HALT ;WRONG VALUE ON STACK
2276 ; TO SCOPE REPLACE HALT W/ 240
2277 ; AND REPLACE NEXT INST W/ 702
2278 012536 012706 000500 1$: MOV #BUFF,%6
2279 012542 012767 012566 165234 MOV #R7TR4,4
2280 012550 000261 SEC ;CARRY EQUALS A 1
2281 012552 006107 ROL %7 ;PC BECOMES ODD
    
```

```

2282 012554 TR4A: MOV #265,@#SFATAL ;MOVE TO MAILBOX # ***** 265 *****
2283 012554 012737 000266 000302 INC (R2) ;SET MSGTYP TO FATAL ERROR
2284 012562 005212 HALT ;ODD ADDRESS DIDN'T TRAP
2285 012564 000000 ; TO SCOPE REPLACE HALT W/ 240
2286 ; AND REPLACE NEXT INST W/ 666
2287 ;RESET UP A HALT FOR TRAP
2288 012566 012767 000006 165210 R7TR4: MOV #6,4
2289 012574 022767 025331 165672 CMP #<2*TR4A+1>,BUFF-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 $TSTNM
2294 ; TO SCOPE REPLACE HALT W/ 240
2295 ; AND REPLACE NEXT INST W/ 652
2296
2297 :*****
2298 :TEST 101 TEST TRAP ON TRAP THAT TRACE BIT TRAPS ARE INHIBITED ON TRAP INST
2299 :*****
2299 012616 005237 000304 TST101: INC @#$TESTN ;UPDATE TEST NUMBER
2300 012622 022737 000101 000304 CMP #101,@#$TESTN ;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 $TSTNM
2322 ; TO SCOPE REPLACE HALT W/ 240
2323 ; AND REPLACE NEXT INST W/ 743
2324 012722 012767 000016 165064 TONT1: MOV #16,14
2325 012730 012767 000022 165062 MOV #22,20
2326
2327 :*****
2328 :TEST 102 TEST THAT THE TRACE BIT IS SAVED IN THE STACK
2329 :*****
2329 012736 005237 000304 TST102: INC @#$TESTN ;UPDATE TEST NUMBER
2330 012742 022737 000102 000304 CMP #102,@#$TESTN ;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
    
```

```

2338 013002 036727 165470 000020 TRC1: BIT      BUFF-2,#20      ;CHECK FOR T BIT ON STACK
2339 013010 001005          BNE      STP3D
2340 013012          STP3:
2341 013012 012737 000272 000302      MOV      #272,@#$FATAL ;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 $STNM
2344          ; TO SCOPE REPLACE HALT W/ 240
2345          ; AND REPLACE NEXT INST W/ 752
2346 013024 012767 000016 164762 STP3D: MOV      #16,14
2347
2348
2349          ;THIS ROUTINE TEST THAT NO LEGAL ADDRESS TRAPS.
2350          ;AND THAT AN ILLEGAL ADDRESS TRAPS TO LOCATION 4
2351          ;*****
2352          ;TEST 103          TEST NON-EXISTENT ADDRESS TRAPS
2353          ;*****
2354 013032 005237 000304          TST103: INC      @#$TESTN ;UPDATE TEST NUMBER
2355 013036 022737 000103 000304      CMP      #103,@#$TESTN ;SEQUENCE ERROR?
2356 013044 001063          BNE      AUTO1          ;BR TO ERROR HALT ON SEQ ERROR
2357
2358          ;THIS ROUTINE TESTS MEMORY UNTIL IT DOES A NXM TRAP
2359 013046 000402          BR      ADALL
2360 013050 000000          TSL:    0
2361 013052 000000          CORH:  0
2362 013054 005000          ADALL: CLR      %0
2363 013056 005067 164724          CLR      6
2364 013062 012767 013116 164714      MOV      #ATRAP,4      ;SET UP ADDRESS TRAP ENTRANCE
2365 013070 012706 000500          NOR:   MOV      #BUFF,SP
2366 013074 105720          TSTB   (0)+          ;IF OUTSIDE OF CORE, TRAP TO 4
2367 013076 020027 160000          CMP      %0,#160000   ;IS POINTER IN SIDE CORE
2368 013102 101772          BLOS   NOR          ;TEST THE REST OF CORE
2369 013104          AUTO:
2370 013104 012737 000273 000302      MOV      #273,@#$FATAL ;MOVE TO MAILBOX # ***** 273 *****
2371 013112 005212          INC      (R2)          ;SET MSGTYP TO FATAL ERROR
2372 013114 000000          HALT          ;SHOULD HAVE TRAPED
2373          ; TO SCOPE REPLACE HALT W/ 240
2374          ; AND REPLACE NEXT INST W/ 753
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 160001          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 C05200          DTRAP: INC      RO      ;IF YES INCREMENT IT
2383 013144 020067 177702          CMP      RO,CORH     ;IS IT THE SAME LOCATION?
2384 013150 001426          BEQ    TRAPB
2385 013152 012737 000274 000302      MOV      #274,@#$FATAL ;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
2388          ; TO SCOPE REPLACE HALT W/ 240
2389          ; AND REPLACE NEXT INST W/ 730
2390          ;IF THIS COMPARISON FAILS IT MEANS
2391          ;THAT SOME LEGAL ADDRESS TRAPPED OR
2392          ;THAT AN ILLEGAL ADDRESS DID NOT TRAP
2393 013164 005767 164606          BTRAP: TST      STATUS
    
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2394 013170 001405          BEQ      1$
2395 013172 012737 000275 000302  MOV     #275,@#$FATAL ;MOVE TO MAILBOX # ***** 275 *****
2396 013200 005212          INC     (R2)           ;SET MSGTYP TO FATAL ERROR
2397 013202 000000          HALT                    ;NEW PSW SHOULD HAVE BEEN ZERO
2398                                     ; TO SCOPE REPLACE HALT W/ 240
2399                                     ; AND REPLACE NEXT INST W/ 720
2400 013204 026727 165264 013142 1$:     CMP     BUFF-4,#DTRAP
2401 013212 001745          BEQ     CTRAP
2402 013214                                     AUTO1:
2403 013214 012737 000276 000302  MOV     #276,@#$FATAL ;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 $TESTN
2406                                     ; TO SCOPE REPLACE HALT W/ 240
2407                                     ; AND REPLACE NEXT INST W/ 707
2408 013226 012767 000006 164550 TRAPB:  MOV     #6,4
2409 013234 005067 164546          CLR     6
2410                                     ;THIS ROUTINE WILL FIGURE OUT IF YOU HAVE A DL11W
2411
2412 013240 005067 000020          CLR     PROFTE
2413 013244 012706 000500          MOV     #BUFF,SP      ;SET UP THE STACK POINTER
2414 013250 012767 013266 164526  MOV     #DL11W,4      ;SET UP THE TRAP VECTOR
2415 013256 005767 164302          TST     TPS           ;TEST THE PUNCH STATUS REGISTER
2416 013262 000403          BR     DL11W1        ;BRANCH IF IT EXISTS
2417 013264 000000          PROFTE: 000000
2418 013266 005267 177772          DL11W:  INC     PROFTE ;INCREMENT IF NO DL11W
2419 013272 012767 000006 164504  DL11W1: MOV     #6,4
2420
2421 :*****
2422 :TEST 104 TEST THAT A TTY INTERRUPT CAUSES AN OVERFLOW TRAP
2423 :*****
2424 013300 005237 000304          TST104: INC     @#$TESTN ;UPDATE TEST NUMBER
2425 013304 022737 000104 000304  CMP     #104,@#$TESTN ;SEQUENCE ERROR?
2426 013312 001031          BNE     TDEC8        ;BR TO ERROR HALT ON SEQ ERROR
2427 013314 005767 177744          TST     PROFTE
2428 013320 001042          BNE     R7TRX
2429 013322 000005          RESET
2430 013324 012767 000340 164444  MOV     #340,STATUS   ;LOCK OUT INTERRUPT
2431 013332 012706 000400          MOV     #400,%6      ;SET UP STACK TO OVERFLOW
2432 013336 012767 013410 164440  MOV     #TDEC77,4     ;SET UP OVERFLOW TRAP
2433 013344 012767 013376 164512  MOV     #TDEC8,64     ;SET UP INTERRUPT VECTOR
2434 013352 012767 000100 164204  MOV     #100,TTCSR   ;SET INTERRUPT ENABLE
2435 013360 005067 164412          CLR     STATUS       ;ALLOW INTERRUPT TO OCCUR
2436 013364 012737 000277 000302  MOV     #277,@#$FATAL ;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,@#$FATAL ;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
2451
2452
2453
2454 013426 005237 000304
2455 013432 022737 000105 000304
2456 013440 001037
2457 013442 005767 177616
2458 013446 001046
2459 013450 012706 000500
2460 013454 012767 000340 164314
2461 013462 012767 013526 164374
2462 013470 012767 000100 164066
2463 013476 012767 013540 164330
2464 013504 012767 013552 164352
2465 013512 012767 000340 164316
2466 013520 005067 164252
2467 013524 104400
2468 013526
2469 013526 012737 000301 000302
2470 013534 005212
2471 013536 000000
2472
2473
2474 013540
2475 013540 012737 000302 000302
2476 013546 005212
2477 013550 000000
2478
2479
2480 013552 005067 164260
2481 013556 042767 000100 164000
2482 013564
2483
2484
2485
2486 013564 005237 000304
2487 013570 022737 000106 000304
2488 013576 001031
2489 013600 005767 177460
2490 013604 001046
2491 013606 012706 000500
2492 013612 012767 000340 164156
2493 013620 012767 000100 163736
2494 013626 012767 013660 164200
2495 013634 012767 013674 164222
2496 013642 012767 013662 164150
2497 013650 012767 000340 164144
2498 013656 104400
2499 013660 000004
2500 013662
2501 013662 012737 000303 000302
2502 013670 005212
2503 013672 000000
2504
2505

R7TRX:
:*****
:TEST 105 TEST THAT A PENDING INTERRUPT OCCURS BEFORE TRAP
:*****
TST105: INC @#$TESTN ;UPDATE TEST NUMBER
        CMP #105,@#$TESTN ;SEQUENCE ERROR?
        BNE BR71 ;BR TO ERROR HALT ON SEQ ERROR
        TST PROFTE
        BNE NODL
        MOV #BUFF,%6
        MOV #340,STATUS ;SET TO A HIGH PRIORITY LEVEL
        MOV #TR0,64
        MOV #100,TTCSR ;INTERRUPT FOR TTY PUNCH/PRINTER
        MOV #BR71,34 ;TRAP VECTOR
        MOV #TR2,64 ;TTY VECTOR
        MOV #340,36 ;IF TRAP TRAPS, MOVE 340 TO PRIORITY
        CLR STATUS ;SHOULD INTERRUPT AT END OF CLR INST
        TRAP ;TTY INTERRUPT SHOULD OVERRIDE TRAP

TR0: MOV #301,@#$FATAL ;MOVE TO MAILBOX # ***** 301 *****
      INC (R2) ;SET MSGTYP TO FATAL ERROR
      HALT ;TTY SHOULDN'T HAVE INTERRUPTED
          ; TO SCOPE REPLACE HALT W/ 240
          ; AND REPLACE NEXT INST W/ 740

BR71: MOV #302,@#$FATAL ;MOVE TO MAILBOX # ***** 302 *****
      INC (R2) ;SET MSGTYP TO FATAL ERROR
      HALT ;TRAP OCCURRED FIRST,OR WRONG $STNM
          ; TO SCOPE REPLACE HALT W/ 240
          ; AND REPLACE NEXT INST W/ 733

TR2: CLR 36
      BIC #100,TTCSR

NODL:
:*****
:TEST 106 TEST THAT A PENDING INTERRUPT, INTERRUPTS BETWEEN TRAPS
:*****
TST106: INC @#$TESTN ;UPDATE TEST NUMBER
        CMP #106,@#$TESTN ;SEQUENCE ERROR?
        BNE TR5 ;BR TO ERROR HALT ON SEQ ERROR
        TST PROFTE
        BNE NODL1
        MOV #BUFF,%6
        MOV #340,STATUS
        MOV #100,TTCSR
        MOV #TR3,34 ;TRAP
        MOV #TR4,64 ;TTY OUTPUT
        MOV #TR5,20 ;IOT
        MCV #340,22 ;IOT PRIORITY
        TRAP ;THE ACT OF TRAPPING LOWER PRIORITY
          ;INTERRUPT SHOULD OCCUR IN PLACE OF IOT TRAP

TR3: IOT
TR5: MOV #303,@#$FATAL ;MOVE TO MAILBOX # ***** 303 *****
      INC (R2) ;SET MSGTYP TO FATAL ERROR
      HALT ;NO INTERRUPT BETWEEN TRAPS,OR WRONG $STNM
          ; TO SCOPE REPLACE HALT W/ 240
          ; 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
2514
2515 013722 005237 000304 TST107: INC @#$TESTN ;UPDATE TEST NUMBER
2516 013726 022737 000107 000304 CMP #107,@#$TESTN ;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,@#$FATAL ;MOVE TO MAILBOX # ***** 304 *****
2526 014000 005212 INC (R2) ;SET MSGTYP TO FATAL ERROR
2527 014002 000000 HALT ;RESET FAILED TO CLEAR TTCSR
2528 ; TO SCOPE REPLACE HALT W/ 240
2529 ; AND REPLACE NEXT INST W/ 754
2530 014004 032767 000100 163546 1$: BIT #100,TRCSR ;TEST FOR CLEAR
2531 014012 001405 BEQ TST110
2532 014014 012737 000305 000302 MOV #305,@#$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 $STNM
2535 ; TO SCOPE REPLACE HALT W/ 240
2536 ; AND REPLACE NEXT INST W/ 743
2537 014026 NODL2:
2538
2539
2540
2541 014026 005237 000304 TST110: INC @#$TESTN ;UPDATE TEST NUMBER
2542 014032 022737 000110 000304 CMP #110,@#$TESTN ;SEQUENCE ERROR?
2543 014040 001014 BNE RESET3 ;BR TO ERROR HALT ON SEQ ERROR
2544 014042 012706 000500 MOV #BUFF,%6 ;SET STACK
2545 014046 012767 014104 163740 MOV #RESET2,14 ;SET UP TRACE VECTOR
2546 014054 012746 000020 MOV #20,-(R6) ;SET THE T-BIT ON STACK
2547 014060 012746 014066 MOV #1$,-(R6) ;MOVE NEW PC ON STACK
2548 014064 000006 RTT
2549 014066 000005 1$: RESET ;SHOULD HAVE NO EFFECT
2550 014070 000005 RESET ;NO EFFECT
2551 014072
2552 014072 012737 000306 000302 RESET3: MOV #306,@#$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
2555 ; TO SCOPE REPLACE HALT W/ 240
2556 ; AND REPLACE NEXT INST W/ 756
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 @#$TESTN      ;UPDATE TEST NUMBER
2565 014126 022737 000111 000304  CMP #111,@#$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 #TTY3,64      ;INTERRUPT VECTOR
2572 014160 005067 163612      CLR STATUS        ;DROP PROCESSOR PRIORITY
2573 014164 012767 000357 163674  MOV #357,66      ;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,@#$FATAL ;MOVE TO MAILBOX # ***** 307 *****
2578 014214 005212          INC (R2)          ;SET MSGTYP TO FATAL ERROR
2579 014216 000000          HALT            ;INTERRUPT DID NOT POP CORRECT STATUS
2580          ; TO SCOPE REPLACE HALT W/ 240
2581          ; AND REPLACE NEXT INST W/ 746
2582 014220 000005          1$:  RESET        ;CLR INTERRUPT ENABLE
2583 014222 012706 000500      MOV #BUFF,%6      ;STACK SET UP
2584 014226 012767 014252 163630  MOV #TTY4,64      ;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,@#$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:

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2598          :*****
2599          ;TEST 112      TEST THE 'WAIT' INSTRUCTION
2600          :*****
2601          TST112: INC @#$TESTN      ;UPDATE TEST NUMBER
2602 014276 005237 000304          CMP #112,@#$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,64    ;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    ;WAIT FOR THE INTERRUPT
2617 014400 000001

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2618 014402 012737 000311 000302      MOV      #311,@#FATAL      ;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,@#FATAL      ;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,@#FATAL      ;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,@KPDR0     ;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 ABORTED 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,@KPDR0    ;SR2 NOT READ ONLY
2666 014614 001401                      BEQ      .+4
2667 014616 000000                      HLT
2668                                     ;KERNEL PDR 0 INCORRECT
2669 014620 005777 163734                      TST      @KPDR1           ;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		BIS	#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)  ;CHECK STACK
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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2755
2756
2757 :*****
2758 :TEST 113      TEST THAT ALL RESERVED INSTRUCTIONS TRAP
2759 :*****
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:           ; IF FPP IN--
2769 015330 013767 015674 000342          MOV      @#FPP,FINISH ; RESET END OF TABLE POINTER
2770 015336 000002          RTI                                     ; AND RETURN
2771 015340          TRAP10:           ; LEAVE THE TABLE ALONE
2772 015340 000002          RTI                                     ; AND RETURN
2773 015342 000000          TENSARE: .WORD   0    ; A PLACE TO STORE CONTENTS OF 10
2774
2775          AROUND:           ; CONTINUATION POINT
2776 015344 012737 000246 000244          MOV      #246,@#244   ; RESTORE THE TRAP VECTOR
2777 015352 016737 177764 000010          MOV      TENSARE,@#10 ; RESTORE THE ILLEGAL INST. VECTOR
2778 015360 012703 015654          MOV      #TABLE,TAB  ; TABLE POINTER
2779 015364 012305          GIN1:  MOV      (TAB)+,FIRST ; FIRST OR CURRENT INSTRUCTION
2780 015366 012301          MOV      (TAB)+,LAST  ; LAST INSTRUCTION OR GROUP
2781 015370 020567 000304          CMP      FIRST,FINISH ; TESTED ALL
2782 015374 001415          BEQ      GIN3         ; YES BRANCH
2783 015376 010567 000300          MOV      FIRST,INST  ; SET UP INST
2784 015402 005267 000274          GIN2:  INC      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
2823                ;WRONG DECREMENT
2824                ; TO SCOPE REPLACE HALT W/ 240
2825                ; 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,@#$FATAL ;MOVE TO MAILBOX # ***** 315 *****
2828 015616 005212                INC    (R2)          ;SET MSGTYP TO FATAL ERROR
2829 015620 000000                HALT
2830                ;INST INC ON TRAP
2831                ; TO SCOPE REPLACE HALT W/ 240
2832                ; AND REPLACE NEXT INST W/ 624
2832 015622 005767 162650      RET2:  TST     BUFF-2
2833 015626 001405                BEQ    RET3
2834 015630                RET4:
2835 015630 012737 000316 000302  MOV     #316,@#$FATAL ;MOVE TO MAILBOX # ***** 316 *****
2836 015636 005212                INC    (R2)          ;SET MSGTYP TO FATAL ERROR
2837 015640 000000                HALT
2838                ;CONDITION CODES SET ON TRAP OR WRONG $TSTNM
2839                ; TO SCOPE REPLACE HALT W/ 240
2840                ; 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                   ;RTS,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,R0  ;GET MSG ADDR.
2868 015752 105737 177564          PWAIT: TSTB @#TPS    ;TTY READY
2869 015756 100375          BPL      PWAIT       ;NO WAIT
2870 015760 112037 177566          MOV      (R0)+,@#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> .CFKABDO 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> .CFKABDO 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          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, UP
    
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CFKABD0 11/34 TRAPS TST MACY11 30A(1052) 22-MAY-79 12:32 PAGE 55
CFKABD.P11 22-MAY-79 11:32 T113 TEST THAT ALL RESERVED INSTRUCTIONS TRAP

SEQ 0057

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	162404	KERN7:	MOV	#7600,@KPAR7	
2910	016210	012777	077406	162356		MOV	#77406,@KPDR7	
2911	016216	000207				RTS	PC	
2912		000001				.END		

ABASE = 000000	59			
ACDW1 = 000000	59			
ACDW2 = 000000	59			
ACPUOP= 000000	59	77		
ACT 015520	2791	2793	2795	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#		

AUNIT = 000000	59	69												
AUSWR = 000000	59	76												
AUTO 013104	2369#													
AUTO1 013214	2356	2402#												
AVECT1= 000000	59													
AVECT2= 000000	59													
BEGIN 000620	41	44	160#											
BELL = 000240	32#													
BR1 001002	198	205#												
BR10 001234	272	279#												
BR11 001350	300	307#												
BR12 001420	313	320#												
BR13 001470	326	333#												
BR14 001540	339	346#												
BR15 001646	365	372#												
BR16 001670	373	380#												
BR17 001712	381	388#												
BR2 001032	208	215#												
BR20 001734	389	395#												
BR21 001756	396	403#												
BR22 002000	404	411#												
BR23 002022	412	419#												
BR3 001056	218	225#												
BR33 002102	436	442#												
BR34 002116	443	449#												
BR35 002132	450	456#												
BR36 002146	457	463#												
BR37 002172	466	472#												
BR4 001104	229	236#												
BR40 002206	473	479#												
BR41 002222	480	486#												
BR45 003722	829	834#												
BR46 004552	927	1003#												
BR46A 004564	1002	1009#												
BR47 005432	1178	1183#												
BR5 001132	240	247#												
BR51 006262	1278	1354#												
BR51A 006274	1353	1360#												
BR6 001160	251	257#												
BR60 012500	2264#	2270												
BR7 001206	261	268#												
BR70 012710	2301	2318#												
BR71 013540	2456	2463	2474#											
BTRAP 013164	2379	2393#												
BUFF 000500	112#	499	515	518	531	534	547	552	559	564	577	616	668	
	683	686	699	702	715	720	727	731	744	783	832	851	866	
	869	882	885	898	903	910	915	928	967	1017	1032	1035	1048	
	1051	1064	1069	1076	1081	1094	1133	1181	1201	1216	1219	1232	1235	
	1248	1253	1261	1266	1279	1318	1375	1390	1393	1406	1409	1422	1427	
	1434	1439	1452	1491	1537	1552	1555	1568	1571	1585	1590	1597	1602	
	1615	1654	1701	1716	1719	1732	1735	1748	1753	1760	1765	1778	1817	
	2087	2105	2116	2129	2135	2151	2173	2203	2230	2238	2246	2255	2252	
	2270	2278	2289	2303	2332	2338	2365	2380	2400	2413	2459	2491	2544	
	2570	2583	2606	2630	2786	2818	2825	2832	2864					
	39#	549*	561*	609	648	717*	729*	776	815	900*	912*	960	999	
	1066*	1078*	1126	1166	1250*	1263*	1311	1350	1424*	1436*	1484	1523	1587*	

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#		

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#
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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#
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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#
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614#	625#	632#	639#	646#	656#	674#	691#	707#	725#	736#	753#	760#
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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#
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1923#	1941#	1958#	1975#	1992#	2009#	2026#	2034#	2050#	2077#	2096#	2114#	2121#
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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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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
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1156	1163	1171	1179	1187	1201	1207	1216	1224	1232	1235	1240	1248
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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
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EXX = 177615

EXXX = 000614

016220

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0069

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	2090	2096	2105
2108	2114	2121	2129	2132	2135	2140	2150	2162	2172	2185	2194	2203
2213	2221	2230	2236	2243	2253	2260	2268	2275	2286	2294	2302	2309
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	2654	2658	2663	2666	2670	2673	2690	2710	2722	2725
2728	2742	2745	2749	2762	2823	2830	2838	2854				

000330

91# 96

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	218	535	703	870	1036	1204	1378	1540	1704	1866	2111	2290	2551		
	229	553	721	886	1052	1220	1394	1556	1720	1883	2117	2312	2576		
	240	565	732	904	1070	1236	1410	1572	1736	1901	2136	2318	2589		
	251	582	749	916	1082	1255	1428	1591	1754	1911	2158	2339	2618		
	261	588	755	933	1099	1267	1440	1603	1766	1919	2182	2369	2624		
	272	595	762	939	1105	1284	1457	1620	1783	1937	2190	2384	2631		
	282	602	769	946	1112	1290	1463	1626	1789	1954	2210	2394	2820		
	300	610	777	953	1119	1297	1470	1633	1796	1971	2217	2401	2827		
	313	621	788	961	1127	1304	1477	1640	1803	1988	2233	2436	2833		
	326	627	794	972	1138	1312	1485	1648	1811	2005	2239	2441			
	339	634	801	978	1144	1323	1496	1659	1822	2022	2249	2468			
	352	641	808	985	1151	1329	1502	1665	1828	2030	2256	2474			
ESCAPE	369	491	656	822	997	1163	1341	1514	1677	1840	2050	2268	2504		
GETPRI	202	506	674	838	1007	1171	1348	1521	1684	1847	2077	2275	2528		
LOOP	212	523	691	857	1023	1187	1358	1529	1692	1855	2096	2286	2535		
	222	539	707	874	1040	1207	1381	1543	1707	1869	2114	2294	2555		
	233	557	725	890	1056	1224	1398	1560	1724	1887	2121	2316	2580		
	244	569	736	908	1074	1240	1414	1576	1740	1905	2140	2322	2594		
	255	586	753	920	1086	1259	1432	1595	1758	1914	2162	2344	2621		
	265	593	760	937	1103	1271	1444	1607	1770	1923	2185	2373	2628		
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	286	607	774	951	1117	1295	1468	1631	1794	1958	2213	2398	2823		
	304	614	781	958	1124	1302	1475	1638	1801	1975	2221	2406	2830		
	317	625	792	965	1131	1309	1482	1645	1808	1992	2236	2439	2838		
	330	632	799	976	1142	1316	1489	1652	1815	2009	2243	2445			
	343	639	806	983	1149	1327	1500	1663	1826	2026	2253	2472			
	356	646	813	990	1156	1334	1507	1670	1833	2034	2260	2478			
MULT	824	1242	1742	2123	2756										
NEWST	189	845	1273	1772	2144										
	288	860	1369	1857	2166										
	358	876	1384	1873	2197										
	428	892	1400	1890	2224										
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	509	1011	1446	1944	2326										
	525	1026	1531	1961	2351										
	541	1042	1546	1978	2421										
	571	1058	1562	1995	2451										
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	677	1173	1609	2036	2512										
	693	1195	1695	2054	2538										
	709	1210	1710	2081	2561										
	738	1226	1726	2099	2599										
POP	495	709	924	1210	1418	1710	1929	2081	2298						
PUSH	509	711	1011	1212	1446	1712	1944	2083	2326						
REPORT	511	738	1013	1226	1448	1726	1946	2099	2328						
SETPRI	525	740	1026	1228	1531	1728	1961	2101	2351						
SETUP	527	824	1028	1242	1533	1742	1963	2123	2353						
SKIP	541	826	1042	1244	1546	1744	1978	2125	2421						
SLASH	543	845	1044	1273	1548	1772	1980	2144	2423						
STARS	571	847	1058	1275	1562	1774	1995	2146	2451						
	288	860	1060	1369	1564	1857	1997	2166	2453						
	290	862	1088	1371	1579	1859	2012	2168	2483						
	358	876	1090	1384	1581	1873	2014	2197	2485						
	360	878	1173	1386	1609	1875	2036	2199	2512						
	428	892	1175	1400	1611	1890	2038	2224	2514						
	430	894	1195	1402	1695	1892	2054	2226	2538						
	493	922	1197	1416	1697	1927	2056	2296	2540						

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TYPNAM	1#																
TYPNUM	1#																
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TYPTXT	1#																
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	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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	2047	2074	2093	2111	2118	2137	2159	2182	2191	2210	2218	2233	2240	2250	2257		
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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		
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	2501	2525	2532	2552	2577	2591	2618	2625	2633	2820	2827	2835					
SSERRO	1#	282	352	420	487	519	535	565	687	703	732	818	870	886	916		
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	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		
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	1242	1273	1369	1384	1400	1416	1446	1531	1546	1562	1579	1609	1695	1710	1726
	1742	1772	1857	1873	1890	1927	1944	1961	1978	1995	2012	2036	2054	2081	2099
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	2756														
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.SWRH:	1#														
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.\$CMTA	1#														
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.\$READ	1#														
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. ABS. 016220 000

ERRORS DETECTED: 0

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 RUN-TIME: 47 56 5 SECONDS
 RUN-TIME RATIO: 212/109=1.9
 CORE USED: 29K (57 PAGES)

CFRABDO 11/34 TRAPS TST MACY11 30A(1052) 22-MAY-79 12:32 PAGE 73
CFRABD.P11 22-MAY-79 11:32 CROSS REFERENCE TABLE -- MACRO NAMES

1 6

SEG 0073