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.REM *

IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DFKTC-A-D
PRODUCT NAME: MTRI/MFPI WITH MEMORY MANAGEMENT
DATE CREATED: DECEMBER 21,1975
MAINTAINER: DIAGNOSTIC ENGINEERING
AUTHOR: GLENN JOHNSON

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1.0 ABSTRACT

PROGRAM DFKTC TESTS THE MFPI AND MTPI INSTRUCTIONS WITH MEMORY MANAGEMENT ENABLED. THESE INSTRUCTIONS ARE EXECUTED IN ALL COMBINATIONS OF CURRENT MODES AND EQUAL OR LOWER HEIRARCHY PREVIOUS MODES.

2.0 REQUIREMENTS

2.1 EQUIPMENT

PDP-11/34

2.2 STORAGE

PROGRAM STORAGE - THE ROUTINE USES MEMORY 0-17777

3.0 LOADING AND STARTING PROCEDURE

LOAD PROGRAM INTO MEMORY USING ABS LOADER

LOAD ADDRESS 200

START.

THE PROGRAM WILL LOOP AND RING BELL ON COMPLETION.

4.0 SWITCH SETTINGS

5.0 SUBROUTINE ABSTRACTS

5.1 HLT

THE HLT (HALT) INSTRUCTION IS EXECUTED WHEN AN ERROR IS DETECTED. NOTE THAT THE HLT (HALT) INSTRUCTION TRAPS TO LOC 10 IN USER MODE. IF A HLT (HALT) INSTRUCTION IS EXECUTED IN THESE MODES THE TRAP IS TAKEN AND THE PROGRAM RETURNS TO THE HLT IN KERNEL MODE AND HALTS. NOTE: THE USER STACK POINTER IS NOT AFFECTED. FURTHER TESTING SHOULD NOT BE CONTINUED (BY PRESSING CONTINUE). THE TEST SHOULD BE RESTARTED EITHER AT THE PREVIOUS SCOPE OR AT 200.

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5.2 SCOPE

THE SCOPE (EMT) SERVICE ROUTINE STORES IN R1 THE PC OF THE LAST TEST SUCCESSFULLY EXECUTED AND MAY BE USED AS AN AID IN DEBUGGING IF THE PROGRAM 'BOMBS' BECAUSE OF A HARDWARE FAILURE. A BRANCH INSTRUCTION MAY BE INSERTED AT THE SCOPE LOCATION TO THE PREVIOUS SCOPE (EMT) INSTRUCTION TO CONTINUOUSLY LOOP A TEST. ADDITIONALLY THE SCOPE ROUTINE SETS ALL STACK POINTERS TO THEIR INITIAL SETTINGS (SEE SEC 8.2) AND ENTERS EACH TEST IN KERNEL MODE, PREVIOUS KERNEL MODE. ALL TESTS MAY BE RESTARTED AT THE PREVIOUS SCOPE.

6.0 ERRORS

THE TEST HALTS WHEN AN ERROR IS DETECTED AND DISPLAYS THE PC+2 OF THE HLT (HALT) INSTRUCTION IN THE ADDRESS LIGHTS.

6.1 ERROR RECOVERY

PRESS CONTINUE OR RESTART AT 200 OR PREVIOUS SCOPE.

6.2 ERROR LOOPING

TO LOOP ON AN ERROR REPLACE THE HLT INSTRUCTION WITH A BRANCH BACK TO THE PREVIOUS SCOPE. NOTE: IF THE ERROR IS INTERMITTENT THE TEST WILL DROP THROUGH THE HLT AND CONTINUE TO THE NEXT TEST.

6.3 MEMORY MANAGEMENT ABORT ERRORS

IF AN ABORT OCCURS (EXCEPT WHEN A TEST EXPECTS AN ABORT) THE PROGRAM WILL TRAP. THE TRAP SERVICE ROUTINE SAVES THE CONTENTS OF SR0 IN LOCATION SSR0T, CLEARS SR0, JUMPS TO LOCATION 252 AND HALTS. TO DETERMINE WHICH TEST CAUSED THE ABORT EITHER EXAMINE THE KERNEL STACK OR EXAMINE R1 (R1 CONTAINS THE PC OF THE FIRST INSTRUCTION IN THE TEST).

133
134
135
136
137
138 7.0 RESTRICTIONS
139
140 7.1 STARTING RESTRICTION
141
142 NONE
143
144 7.2 OPERATIONAL RESTRICTION
145
146 NONE
147
148 8.0 MISCELLANEOUS
149
150 IF THE PROGRAM HALTS IN THE TRAP/INTERRUPT VECTOR AREA
151 (0-1000), EXAMINE REGISTER 6 (THE KERNEL STACK PTR). R6
152 CONTAINS THE ADDRESS WHERE THE PC OF THE INSTRUCTION THAT
153 CAUSED THE TRAP ABORT IS STORED. SEE ALSO R1 (R1 SPECIFIES
154 THE LAST TEST COMPLETED).
155
156 8.1 NOTE THAT THE PROGRAM TAGS EACH MFPI INSTRUCTION UNDER TEST.
157 THE TAG DENOTES CURRENT SPACE, 'PREVIOUS' SPACE. FOR EXAMPLE:
158
159 1) KU14:
160 2) UUI7:
161
162 DENOTE:
163
164 1) 'CURRENT' KERNEL MODE, 'PREVIOUS' USER MODE
165 2) 'CURRENT' USER MODE, 'PREVIOUS' USER MODE,
166
167 NOTE ALSO THAT MEMORY MANAGEMENT IS ENABLED ONLY WHEN THE
168 MFPI/MTPI INSTRUCTION BEING TESTED IS EXECUTED AND IS OFF AT
169 ALL OTHER TIMES.

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8.2 STACK POINTER

THE STACK POINTERS ARE INITIALLY SET TO THE FOLLOWING VALUES
 KERNEL = 1060
 USER = 600

AND ARE RESET TO THESE VALUES AT THE START OF EACH SUBTEST (BY SCOPE).

8.3 PASS COUNT

1000(8) PASSES ARE REQUIRED FOR COMPLETION OF THIS PROGRAM; AT WHICH TIME THE BELL WILL RING AT THE TTY.

8.4 DEBUGGING TIPS

WHEN THE FAILING SUBTEST HAS BEEN ISOLATED, REPLACE THE FIRST WORD OF THE MPI INSTRUCTION WITH A BR SELF (000777), AND START THE SUBTEST AT THE PREVIOUS SCOPE. STOP THE PROGRAM (SINGLE INSTRUCTION) AND RESTORE THE REPLACED INSTRUCTION; USING THE MAINTENANCE CARD SINGLE STEP THE FAILING INSTRUCTION THROUGH EACH MICRO STATE OBSERVING THE FLOW IN THE DATA/ADDRESS LIGHTS. THIS PRACTICE HAS BEEN FOUND TO BE SUCCESSFUL IN FINDING MOST MEMORY MANAGEMENT ERRORS.

8.5 MEMORY MANAGEMENT MEMORY MAP

THE MAPPING OF THE MEMORY MANAGEMENT REGISTERS IS DONE AT THE BEGINNING OF THE PROGRAM BEFORE ANY TESTING IS STARTED. THE USER SHOULD ACQUAINT HIMSELF WITH THE MEMORY MANAGEMENT MAP BEFORE USING THIS PROGRAM.

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207
208          .ABS
209          .LIST ME
210          .TITLE DFKTCA-A
211          ;SEGMENTATION TEST. THIS TEST TESTS THE MTP1 & MFPI INSTRUCTIONS.
212
213          ;GENERAL REGISTER ASSIGNMENTS
214          R0=X0
215          R1=X1
216          R2=X2
217          R3=X3
218          R4=X4
219          R5=X5
220          PC=X7
221
222          ;STACK POINTER REGISTERS
222          KSP=X6          ;KERNEL STACK POINTER
223          USP=X6          ;USER STACK POINTER
224
225          ;STATUS REGISTER BIT ASSIGNMENTS
226          C=1          ;CARRY BIT
227          Z=4          ;ZERO BIT
228          N=10         ;NEGATIVE BIT
229          PRTY7=340    ;PRIORITY LEVEL 7
230          PRTY4=200    ;PRIORITY LEVEL 4
231          KM=000000    ;KERNEL MODE
232          UM=140000    ;USER MODE
233          PUM=030000   ;PREVIOUS USER MODE
234
235          ;VECTOR ADDRESSES
236          ERVEC=10      ;ADDRESS OF ERROR VECTOR
237          PFVEC=24      ;ADDRESS OF POWER FAIL TRAP VECTOR
238          EMTVEC=30     ;ADDRESS OF EMT VECTOR
239          MNVEC=250     ;ADDRESS OF MNGT ERROR TRAP VECTOR
240
241          ;REGISTER ADDRESSES
241          PSW=177776    ;ADDRESS OF STATUS REGISTER
242          SLR=177774    ;ADDRESS OF STACK LIMIT REGISTER
243          TKS=177560    ;ADDRESS OF KEYBOARD CSR
244          TKB=177562    ;ADDRESS OF KEYBOARD BUFFER
245          TPS=177564    ;ADDRESS OF TELEPRINTER CSR
246          TPB=177566    ;ADDRESS OF TELEPRINTER BUFFER
247          DISPLAY=177570 ;ADDRESS OF CONSOL DISPLAY REGISTER
248

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249
250          ;INITIAL STACK POINTER SETTINGS
251          KPTR=1060     ;BOTTOM OF KERNEL STACK
252          UPTR=600      ;USER STACK SETTING
253          ;*****NOTE*****
254          ;THE KERNEL & USER STACK POINTER ARE AT PHYSICAL 1060 & 0600
255          ;*****
256
257          ;MNGTMENTATION REGISTER ADDRESS ASSIGNMENTS
258          SR0=177572    ;ADDRESS OF SEGMENTATION REGISTER SR0
259          SR1=177574    ; " " " " " SR1
260          SR2=177576    ; " " " " " SR2
261
262          UPDR0=177600   ;USER PDR'S
263          UPDR1=177602
264          UPDR2=177604
265          UPDR3=177606
266          UPDR4=177610
267          UPDR5=177612
268          UPDR6=177614
269          UPDR7=177616
270
271          UPAR0=177640   ;USER PAR'S
272          UPAR1=177642
273          UPAR2=177644
274          UPAR3=177646
275          UPAR4=177650
276          UPAR5=177652
277          UPAR6=177654
278          UPAR7=177656
279
280
281          KPDR0=172300   ;KERNEL PDR'S
282          KPDR1=172302
283          KPDR2=172304
284          KPDR3=172306
285          KPDR4=172310
286          KPDR5=172312
287          KPDR6=172314
288          KPDR7=172316
289
290          KPAR0=172340   ;KERNEL PAR'S
291          KPAR1=172342
292          KPAR2=172344
293          KPAR3=172346
294          KPAR4=172350
295          KPAR5=172352
296          KPAR6=172354
297          KPAR7=172356

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298  
299  
300 000006 JACCESS CONTROL FIELD DEFINITIONS (IN PDR)  
301 RW=6 JREAD & WRITE  
302  
303 JINSTRUCTION EQUATES  
304 000000 HLT=HALT  
305 104000 SCOPE=EVT JSCOPE IS AN EVT TRAP INST.  
306  
307 000000 .#0  
308 .REPT 100  
309  
310  
311  
312 000000 000002 .#2  
313 000002 000000 HALT  
314 000004 000006 .#2  
315 000006 000000 HALT  
316 000010 000012 .#2  
317 000012 000000 HALT  
318 000014 000016 .#2  
319 000016 000000 HALT  
320 000020 000022 .#2  
321 000022 000000 HALT  
322 000024 000026 .#2  
323 000026 000000 HALT  
324 000030 000032 .#2  
325 000032 000000 HALT  
326 000034 000036 .#2  
327 000036 000000 HALT  
328 000040 000042 .#2  
329 000042 000000 HALT  
330 000044 000046 .#2  
331 000046 000000 HALT  
332 000050 000052 .#2  
333 000052 000000 HALT  
334 000054 000056 .#2  
335 000056 000000 HALT  
336 000060 000062 .#2  
337 000062 000000 HALT  
338 000064 000066 .#2  
339 000066 000000 HALT  
340 000070 000072 .#2  
341 000072 000000 HALT  
342 000074 000076 .#2  
343 000076 000000 HALT  
344 000100 000102 .#2  
345 000102 000000 HALT  
346 000104 000106 .#2  
347 000106 000000 HALT  
348 000110 000112 .#2  
349 000112 000000 HALT  
350 000114 000116 .#2  
351 000116 000000 HALT
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352 000120 000122 .#2  
353 000122 000000 HALT  
354 000124 000126 .#2  
355 000126 000000 HALT  
356 000130 000132 .#2  
357 000132 000000 HALT  
358 000134 000136 .#2  
359 000136 000000 HALT  
360 000140 000142 .#2  
361 000142 000000 HALT  
362 000144 000146 .#2  
363 000146 000000 HALT  
364 000150 000152 .#2  
365 000152 000000 HALT  
366 000154 000156 .#2  
367 000156 000000 HALT  
368 000160 000162 .#2  
369 000162 000000 HALT  
370 000164 000166 .#2  
371 000166 000000 HALT  
372 000170 000172 .#2  
373 000172 000000 HALT  
374 000174 000176 .#2  
375 000176 000000 HALT  
376 000200 000202 .#2  
377 000202 000000 HALT  
378 000204 000206 .#2  
379 000206 000000 HALT  
380 000210 000212 .#2  
381 000212 000000 HALT  
382 000214 000216 .#2  
383 000216 000000 HALT  
384 000220 000222 .#2  
385 000222 000000 HALT  
386 000224 000226 .#2  
387 000226 000000 HALT  
388 000230 000232 .#2  
389 000232 000000 HALT  
390 000234 000236 .#2  
391 000236 000000 HALT  
392 000240 000242 .#2  
393 000242 000000 HALT  
394 000244 000246 .#2  
395 000246 000000 HALT  
396 000250 000252 .#2  
397 000252 000000 HALT  
398 000254 000256 .#2  
399 000256 000000 HALT  
400 000260 000262 .#2  
401 000262 000000 HALT  
402 000264 000266 .#2  
403 000266 000000 HALT  
404 000270 000272 .#2  
405 000272 000000 HALT
```

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006 000274 000276      .+2
007 000276 000000      HALT
008 000300 000302      .+2
009 000302 000000      HALT
010 000304 000306      .+2
011 000306 000000      HALT
012 000310 000312      .+2
013 000312 000000      HALT
014 000314 000316      .+2
015 000316 000000      HALT
016 000320 000322      .+2
017 000322 000000      HALT
018 000324 000326      .+2
019 000326 000000      HALT
020 000330 000332      .+2
021 000332 000000      HALT
022 000334 000336      .+2
023 000336 000000      HALT
024 000340 000342      .+2
025 000342 000000      HALT
026 000344 000346      .+2
027 000346 000000      HALT
028 000350 000352      .+2
029 000352 000000      HALT
030 000354 000356      .+2
031 000356 000000      HALT
032 000360 000362      .+2
033 000362 000000      HALT
034 000364 000366      .+2
035 000366 000000      HALT
036 000370 000372      .+2
037 000372 000000      HALT
038 000374 000376      .+2
039 000376 000000      HALT
040
041      000010
042 000010 000400      .#ERRVEC      .WORD SHLT      ISET USER HALT TRAP
043      000030      .#EMTVEC
044 000030 000432      .WORD SCOPEA      ISET SCOPE (EMT) TRAP VECTOR
045      000250      .#MMVEC
046 000250 000462      .WORD MMEWR      ISET SEG. ERROR TRAP VECTOR
047
048      000046      .#46
049 000046 007552      LOGIC
050      000052      .#52
051 000052 000000      0
052
053
054      000200      .NLIST MC
055 000200 000167 000664      .#200      .#200      JMP START      IGO START TEST
    
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056
057      000400      .#400
058
059      IUSER HALT TRAP SERVICE ROUTINE,
060 000400 162716 000002      SHLT: SUB #2,(KSP)      IADJUST PC
061 000404 005776 000000      TST 0(KSP)      ICHECK IF HLT CAUSED TRAP
062 000410 001404      BEQ SHLTA
063 000412 0062716 000002      ADD #2,(KSP)      IRESTORE PC
064 000416 000167 177364      JMP 6      IGO HALT AT 6
065 000422 042766 140000 000002      SHLTA: BIC #UM,2(KSP)      IKERNEL MODE ON RETURN
066 000430 000002      RTI      IRETURN
067
068
069      ISCOPE (EMT) SERVICE ROUTINE
070 000432 011601      SCOPEA: MOV (KSP),R1      ISAVE RETURN ADDRESS IN R1
071 000434 012706 001060      MOV #KPTR,KSP      ISET KERNEL STACK PTR
072 000440 005046      CLR -(KSP)
073 000442 010146      MOV R1,-(KSP)
074 000444 012746 000600      MOV #UPTR,-(KSP)
075 000450 012737 030000 177776      MOV #PUM,#PSW      IPREVIOUS USER MODE
076 000456 006626      MTPI USP      ISET USER STACK PTR
077 000460 000002      RTI      IRETURN & START NEXT TEST
078
079
080 000462 015767 177572 000312      ISEGMENTATION ERROR SERVICE
081 000470 005037 177572      MMERR: MOV ##SR0,SSR0T      ISAVE SR0
082 000474 000137 000252      CLR ##SR0
083
084      001000      .#1000
085
086 001000 000000      ITAGS
087 001202 000000      ICNT: 0      ICONTAINS PASS COUNT
088 001004 000000      SSR0T: 0      ICONTAINS SSR0 CONTENTS ON ERROR
089
090      001014      .#+6
091
092
    
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491
492
493          001070          ,=1070
494          JSTART SEGMENTATION TEST-55
495 001070 000240          START: NOP
496 001072 005067 177702          CLR ICNT          JCLEAR PASS COUNT
497 001076 005037 177776          BEGIN: CLR #0PSW          JKERNEL MODE11,PREV KERNEL MODE11
498 001102 012706 001060          MOV #KPTR,KSP          JSET KERNEL STACK PTR
499 001106 104000          SCOPE          JSCOPE SETS UP ALL STACK PTRS
500 001110 012737 000462 000250          MOV #MHERR,#MHMVEC
501 001116 005037 000252          CLR #MHMVEC+2          JKERNEL MODE ON SEG ABORT
502 001122 000240          NOP          JCLEAR MEMORY MANAGEMENT REGISTERS
503 001124 005037 177572          CLR #MSR0
504 001130 012702 177600          MOV #UPDR0,R2
505 001134 012703 000010          MOV #10,R3
506 001140 005022          CLR (R2)+
507 001142 077302          SOB R3,-2
508 001144 012702 177640          MOV #UPAR0,R2
509 001150 012703 000010          MOV #10,R3
510 001154 005022          CLR (R2)+
511 001156 077302          SOB R3,-2
512 001160 012702 172300          MOV #KPDR0,R2
513 001164 012703 000010          MOV #10,R3
514 001170 005022          CLR (R2)+
515 001172 077302          SOB R3,-2
516 001174 012702 172340          MOV #KPAR0,R2
517 001200 012703 000010          MOV #10,R3
518 001204 005022          CLR (R2)+
519 001206 077302          SOB R3,-2
520 001210 012767 073006 171062          MOV #73006,KPDR0          JRW,UP 167 BLOCKS
521 001216 012767 000006 171070          MOV #6,KPDR6          JRW,UP 1 BLOCK
522 001224 012767 077406 171064          MOV #77406,KPDR7          JRW,UP 200 BLOCKS
523 001232 012767 000006 176350          MOV #6,UPDR4          JRW,UP 1 BLOCK
524 001240 012767 000006 176344          MOV #6,UPDR5          JRW,UP 1 BLOCK
525 001246 005067 171066          CLR KPAR0          JVA=PA=000-12077
526 001252 012767 000167 171074          MOV #167,KPAR6          JVA=140000-140077/PA=16700-16777
527 001260 012767 007600 171070          MOV #7600,KPAR7          JVA=160000-177776,PA=760000-777776
528 001266 012767 000173 176354          MOV #173,UPAR4          JVA=100000-100077/PA=17300-17377
529 001274 012767 000172 176350          MOV #172,UPAR5          JVA=120000-120077/PA=17400-17277
    
```

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530
531
532
533          016600          JTESTS KK0-KK16 TEST THE MTPI INSTRUCTION KERNEL MODE, PREV KERNEL MODE,
534          016600          J*****
535          VIRT=16600          JKERNEL VIRTUAL ADDRESS FOR THESE TESTS
536          PHYS=16600          JCORRESPONDING KERNEL PHYSICAL ADDRESS
537          J*****
538          JTEST THAT MTPI CAN LOAD A GENERAL REGISTER (R2)
539 001302 005016          CLR (KSP)          JPUT 0 ON KERNEL STACK
540 001304 012702 177777          MOV #-1,R2          JPRESET REGISTER
541 001310 005237 177572          INC #MSR0          JENABLE MEMORY MANAG.
542
543 001314 006602          KK0: MTPI R2          JR2,(KSP)+
544 001316 016703 176454          MOV PSW,R3          JSAVE STATUS RESULT
545 001322 005037 177572          CLR #MSR0          JDISABLE MEMORY MANAG.
546 001326 022706 001062          CMP #KPTR+2,KSP          JCHECK THAT STACK POPPED
547 001332 001401          BEQ .+4
548 001334 000000          HLT          JERROR! INCORRECT STACK PTR
549 001336 122703 000004          CMPB #Z,H3          JCHECK STATUS RESULT
550 001342 001401          BEQ .+4
551 001344 000000          HLT          JERROR! INCORRECT STATUS RESULT
552 001346 005702          TST R2          JCHECK RESULT
553 001350 001401          BEQ .+4
554 001352 000000          HLT          JERROR! INCORRECT RESULT
555 001354 104000          SCOPE
556
557          JTEST THAT MTPI CAN LOAD KERNEL ADDRESS (VIRT)
558          JDM=1
559
560 001356 005016          CLR (KSP)          JPUT 0 ON KERNEL STACK
561 001360 012702 016600          MOV #VIRT,R2          JR2=VIRT ADDRESS
562 001364 012737 177777 016600          MOV #-1,#PHYS          JPRESET DATA
563 001372 005237 177572          INC #MSR0          JENABLE MEMORY MANAG.
564
565 001376 000277          KK1: SCC
566 001400 006612          MTPI (R2)          JVIRT,(KSP)+
567 001402 016703 176370          MOV PSW,R3          JSAVE STATUS RESULT
568 001406 005037 177572          CLR #MSR0          JDISABLE MEMORY MANAG.
569 001412 022706 001062          CMP #KPTR+2,KSP          JCHECK THAT STACK POPPED
570 001416 001401          BEQ .+4
571 001420 000000          HLT          JERROR! INCORRECT STACK PTR
572 001422 122703 000005          CMPB #Z+C,R3          JCHECK STATUS RESULT
573 001426 001401          BEQ .+4
574 001430 000000          HLT          JERROR! INCORRECT STATUS RESULT
575 001432 005737 016600          TST #PHYS          JCHECK RESULT
576 001436 001401          BEQ .+4
577 001440 000000          HLT          JERROR! INCORRECT RESULT
578 001442 104000          SCOPE
579
580          JDM=2
581 001444 012737 000000 177776          MOV #0,#PSW          JKERNEL MODE11,PREV KERNEL MODE
582 001452 012716 177777          MOV #-1,(KSP)          JPUT #-1 ON KERNEL STACK
583 001456 012702 016600          MOV #VIRT,R2          JR2=VIRT ADDRESS
    
```

```

584 001462 005037 016600 CLR ##PHYS ;PRESET DATA
585 001466 005237 177572 INC ##SR0 ;ENABLE MEMORY MANAG.
586
587 001472 006622 KK2: MTP1 (R2)+ ;VIRT_(KSP)+
588 001474 005037 CLR ##SR0 ;DISABLE MEMORY MANAG.
589 001500 005237 016600 INC ##PHYS ;CHECK RESULT
590 001504 001401 BEQ .+4
591 001506 000000 HLT ;ERROR! INCORRECT RESULT
592 001510 022702 016600 CMP #VIRT+2,R2 ;CHECK AUTO-INCREMENT
593 001514 001401 BEQ .+4
594 001516 000000 HLT ;ERROR! AUTO-INCREMENT FAILED
595 001520 005067 176252 CLR PSW
596 001524 104000 SCOPE
597
598 001526 012716 177777 ;DM=3 MOV #-1,(KSP) ;PUT #-1 ON KERNEL STACK
599 001532 012702 001004 MOV #TEMP,R2 ;LOAD INDIRECT ADDRESS
600 001536 012737 016604 MOV #VIRT+4,#TEMP ;LOAD ADDRESS
601 001544 005037 016604 CLR ##PHYS+4 ;PRESET DATA
602 001550 005237 177572 INC ##SR0 ;ENABLE MEMORY MANAG.
603
604 001554 006632 KK3: MTP1 0-(R2)+ ;VIRT+4_(KSP)+
605 001556 005037 CLR ##SR0 ;DISABLE MEMORY MANAG.
606 001562 005237 016604 INC ##PHYS+4 ;CHECK RESULT
607 001566 001401 BEQ .+4
608 001570 000000 HLT ;ERROR! INCORRECT RESULT
609 001572 104000 SCOPE
610
611 ;DM=4
612 001574 005016 CLR (KSP) ;PUT 0 ON KERNEL STACK
613 001576 012704 016602 MOV #VIRT+2,R4 ;LOAD ADDRESS
614 001602 012737 177777 016600 MOV #-1,##PHYS ;PRESET DATA
615 001610 005237 177572 INC ##SR0 ;ENABLE MEMORY MANAG.
616
617 001614 006644 KK4: MTP1 -(R4) ;VIRT_(KSP)+
618 001616 005037 CLR ##SR0 ;DISABLE MEMORY MANAG.
619 001622 022704 016600 CMP #VIRT,R4 ;CHECK AUTO-DECREMENT
620 001626 001401 BEQ .+4
621 001630 000000 HLT ;ERROR! AUTO-DECREMENT FAILED
622 001632 005737 016600 TST ##PHYS ;CHECK RESULT
623 001636 001401 BEQ .+4
624 001640 000000 HLT ;ERROR! INCORRECT RESULT
625 001642 104000 SCOPE
626
627 ;DM=5
628 001644 012737 000000 177776 MOV #0,##PSW ;KERNEL MODE!!!,PREV KERNEL MODE
629 001652 012716 177777 MOV #-1,(KSP) ;PUT #-1 ON KERNEL STACK
630 001656 012702 001010 MOV #TEMP+4,R2 ;LOAD INDIRECT ADDRESS
631 001662 012767 016600 177116 MOV #VIRT,TEMP+2 ;LOAD ADDRESS
632 001670 005037 016600 CLR ##PHYS ;PRESET DATA
633 001674 005237 177572 INC ##SR0 ;ENABLE MEMORY MANAG.
634
635 001700 006652 KK5: MTP1 0-(R2) ;VIRT_(KSP)+
636 001702 005037 CLR ##SR0 ;DISABLE MEMORY MANAG.
637 001706 005237 016600 INC ##PHYS ;CHECK RESULT

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638 001712 001401 BEQ .+4
639 001714 000000 HLT ;ERROR! INCORRECT RESULT
640 001716 005067 176054 CLR PSW
641 001722 104000 SCOPE
642
643 ;DM=6
644 001724 012737 000000 177776 MOV #0,##PSW ;KERNEL MODE!!!,PREV KERNEL MODE
645 001732 005016 CLR (KSP) ;PUT 0 ON KERNEL STACK
646 001734 012702 000002 MOV #2,R2 ;LOAD INDEX REGISTER
647 001740 012767 177777 014634 MOV #-1,PHYS+2 ;PRESET DATA
648 001746 005237 177572 INC ##SR0 ;ENABLE MEMORY MANAG.
649
650 001752 006662 016600 KK6: MTP1 VIRT(R2) ;VIRT+2_(KSP)+
651 001756 016700 MOV PSW,R0 ;SAVE STATUS RESULT
652 001762 005037 177572 CLR ##SR0 ;DISABLE MEMORY MANAG.
653 001766 022706 001062 CMP #KPTR+2,KSP ;CHECK THAT STACK POINTER POPPED
654 001772 001401 BEQ .+4
655 001774 000000 HLT ;ERROR! INCORRECT STACK PTR
656 001776 122700 000004 CMPB #Z,R0 ;CHECK STATUS RESULT
657 002002 001401 BEQ .+4
658 002004 000000 HLT ;ERROR! INCORRECT STATUS RESULT
659 002006 005737 016602 TST ##PHYS+2 ;CHECK RESULT
660 002012 001401 BEQ .+4
661 002014 000000 HLT ;ERROR! INCORRECT RESULT
662 002016 104000 SCOPE
663
664 ;DM=7
665 002020 012716 177777 MOV #-1,(KSP) ;PUT #-1 ON KERNEL STACK
666 002024 012702 000002 MOV #2,R2 ;LOAD INDEX REGISTER
667 002030 012737 016600 001010 MOV #VIRT,#TEMP+4 ;LOAD ADDRESS
668 002036 005037 016600 CLR ##PHYS ;PRESET DATA
669 002042 005237 177572 INC ##SR0 ;ENABLE MEMORY MANAG.
670
671 002046 006672 001006 KK7: MTP1 0TEMP+2(R2) ;VIRT_(KSP)+
672 002052 005037 CLR ##SR0 ;DISABLE MEMORY MANAG.
673 002056 005237 016600 INC ##PHYS ;CHECK RESULT
674 002062 001401 BEQ .+4
675 002064 000000 HLT ;ERROR! INCORRECT RESULT
676 002066 104000 SCOPE
677
678 ;TEST THAT MTP1 CAN LOAD KERNEL
679 ;DM=1,PC
680 002070 012716 000403 KK10B: MOV #403,(KSP) ;PUT BR .+10 INST AS DATA ON STACK
681 002074 005037 CLR ##KK10A ;PUT HALT FOLLOWING MTP1
682 002100 005237 177572 INC ##SR0 ;ENABLE MEMORY MANAG.
683
684 002104 006617 KK10: MTP1 (PC) ;KK10A_(KSP)+
685 002106 000000 MALT ;ERROR! MTP1 DID NOT POP BR .+10
686
687 002110 005037 177572 CLR ##SR0 ;INTO KK10A
688 002114 000765 BR KK10B ;DISABLE MEMORY MANAG.
689 002116 005037 177572 CLR ##SR0 ;LOOP TEST IF ERROR
690 002122 104000 SCOPE ;DISABLE MEMORY MANAG.
691

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692                                JDM=2,PC
693 002124 012716 177777          MOV    #-1,(KSP)          IPUT #-1 ON KERNEL STACK
694 002130 005267 000006          CLR    KK11A              IENABLE MEMORY MANAG.
695 002134 005237 177572          INC    #SR0
696
697 002140 006627                    KK11:  MTP1    (PC)+          I(PC)+_(KSP)+
698 002142 000000                    KK11A: 0
699 002144 005037 177572          CLR    #SR0              IDISABLE MEMORY MANAG.
700 002150 005267 177766          INC    #-6                ICHECK THAT DATA POPPED TO
701 002154 001401                    BEQ    .+4                ICORRECT ADDRESS
702 002156 000000                    HLT
703 002160 104000                    SCOPE                    IERROR!
704
705
706 002162 012737 000000 177776    JDM=3,PC
707 002170 012716 177777          MOV    #0,#PSW           IKERNEL MODE!!!,PREV KERNEL MODE
708 002174 005037 016600          MOV    #-1,(KSP)         IPUT #-1 ON KERNEL STACK
709 002200 005237 177572          CLR    #PHYS
710                                INC    #SR0              IENABLE MEMORY MANAG.
711
712 002204 006637 016600                    KK12:  MTP1    #VIRT          IVIRT_(KSP)+
713 002210 016700 175562          MOV    PSW,R0            ISAVE STATUS RESULT
714 002214 005037 177572          CLR    #SR0              IDISABLE MEMORY MANAG.
715 002220 122700 000010          CMPB  #N,K0             ICHECK STATUS RESULT
716 002224 001401                    BEQ    .+4
717 002226 000000                    HLT
718 002230 005267 014344          INC    PHYS              IERROR! INCORRECT STATUS RESULT
719 002234 001401                    BEQ    .+4                ICHECK RESULT
720 002236 000000                    HLT
721 002240 005067 175532          CLR    PSW               IERROR! INCORRECT RESULT
722 002244 104000                    SCOPE
723
724 002246 012737 000000 177776    JDM=4,PC
725 002254 012716 000401          MOV    #0,#PSW           IKERNEL MODE!!!,PREV KERNEL MODE
726 002260 016700 000004          MOV    #401,(KSP)        IPUT BR ,+4 ON STACK AS DATA
727 002264 005237 177572          MOV    KK13,R2          ISAVE MTP1 INSTRUCTION
728                                INC    #SR0              IENABLE MEMORY MANAG.
729
730 002270 006647                    KK13:  MTP1    -(PC)         I-(PC)_(KSP)+
731 002272 000000                    HALT                    IERROR! MTP1 = (PC) FAILED
732 002274 005037 177572          CLR    #SR0              IDISABLE MEMORY MANAG.
733 002300 010267 177764          MOV    R2,KK13          IRESTORE INSTRUCTION
734                                SCOPE
735
736 002306 005016                    JDM=6,PC
737 002310 012767 177777 01426A    CLR    (KSP)             IPUT 0 ON KERNEL STACK
738 002316 005237 177572          MOV    #-1,PHYS+4
739                                INC    #SH0              IENABLE MEMORY MANAG.
740
741 002322 000277                    KK14:  SCC
742 002324 006667 014254          MTP1  VIRI+4            IVIRT+4_(KSP)+
743 002330 016703 175442          MOV    PSW,R3            ISAVE STATUS RESULT
744 002334 005037 177572          CLR    #SH0              IDISABLE MEMORY MANAG.
745 002340 022706 001062          CMP   #KPTR+2,KSP       ICHECK THAT STACK PTR POPPED
746                                BEQ    .+4

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746 002346 000000                    HLT                    IERROR! INCORRECT STACK PTR
747 002350 122703 000005          CMPB  #Z+C,R3           ICHECK STATUS RESULT
748 002354 001401                    BEQ    .+4
749 002356 000000                    HLT                    IERROR! INCORRECT STATUS RESULT
750 002360 005737 016604          TST   #PHYS+4          ICHECK RESULT
751 002364 001401                    BEQ    .+4
752 002366 000000                    HLT                    IERROR! INCORRECT RESULT
753
754 002370 104000                    SCOPE
755
756                                JDM=7,PC
757 002372 005037 177776          CLR    #PSW              IKERNEL MODE!!!,PREV KERNEL MODE!!
758 002376 012716 177777          MOV    #-1,(KSP)         IPUT #-1 ON KERNEL STACK
759 002402 012737 016604 001004    MOV    #VIRT+4,#TEMP     ILOAD ADDRESS
760 002410 005037 016604          CLR    #PHYS+4          IPRESET DATA
761 002414 005237 177572          INC    #SR0              IENABLE MEMORY MANAG.
762
763
764 002420 006677 176360                    KK15:  MTP1    #TEMP          IVIRT+4_(KSP)+
765 002424 005037 177572          CLR    #SH0              IDISABLE MEMORY MANAG.
766 002430 005237 016604          INC    #PHYS+4          ICHECK RESULT
767 002434 001401                    BEQ    .+4
768 002436 000000                    HLT
769 002440 104000                    SCOPE                    IERROR! INCORRECT RESULT
770
771
772                                ICHECK THAT MTP1 CAN SET STACK PTR
773 002442 012737 000000 177776    MOV    #0,#PSW           IKERNEL MODE!!!,PREV KERNEL MODE
774 002450 005016                    CLR    (KSP)             IPUT 0 ON KERNEL STACK
775 002452 005237 177572          INC    #SR0              IENABLE MEMORY MANAG.
776
777 002456 006606                    KK16:  MTP1    KSP          IKSP_(KSP)+
778 002460 005037 177572          CLR    #SR0              IDISABLE MEMORY MANAG.
779 002464 005706                    TST   KSP                ICHECK STACK PTR
780 002466 001401                    BEQ    .+4
781 002470 000000                    HLT
782 002472 012706 001060          MOV    #KPTR,KSP        ISET KERNEL STACK PTR
783 002476 104000                    SCOPE
784
785                                ITESTS KUB-KU16 TEST THE MTP1 INSTRUCTION KERNEL MODE, PREV USER MODE.
786                                ITEST THAT MTP1 CAN LOAD A GENERAL REGISTER (R2)
787 002500 012737 030340 177776    MOV    #PUM+PRTY7,#PSW   IKERNEL MODE!!!,PREV USER MODE!!!
788 002506 005016                    CLR    (KSP)             IPUT 0 ON KERNEL STACK
789 002510 012702 177777          MOV    #-1,R2            IPRESET REGISTER
790 002514 005237 177572          INC    #SR0              IENABLE MEMORY MANAG.
791
792 002520 006602                    KUB:   MTP1    R2          IR2_(KSP)+
793 002522 016703 175250          MOV    PSW,R3            ISAVE STATUS RESULT
794 002526 005037 177572          CLR    #SR0              IDISABLE MEMORY MANAG.
795 002532 022706 001062          CMP   #KPTR+2,KSP       ICHECK THAT STACK POPPED
796 002536 001401                    BEQ    .+4
797 002540 000000                    HLT
798 002542 122703 000344          CMPB  #PRTY+2,R3        IERROR! INCORRECT STACK PTR
799 002546 001401                    BEQ    .+4                ICHECK STATUS RESULT

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800 002550 000000          HLT                                ;ERROR! INCORRECT STATUS RESULT
801 002552 005702          TST                                ;CHECK RESULT
802 002554 001401          BEQ                                ;+4
803 002556 000000          HLT                                ;ERROR! INCORRECT RESULT
804 002560 104000          SCOPE
805
806          ;TEST MFPI INSTRUCTION KERNEL MODE PREVIOUS KERNEL MODE.
807 002562 012767 000340 175206  ;TEST THAT MFPI CAN GET DATA FROM A GENRAL REGISTER (R3)
808 002570 005066 177776          MOV #PRIY7,PSW ;KERNEL MODE!!!,PREV KERNEL MODE!!
809 002574 012703 177777          CLR -2(KSP)
810 002600 005237 177572          MOV #=1,R3 ;PRESET GENERAL REGISTER
811 002604 006503          INC #*SR0 ;ENABLE MEMORY MANAGEMENT
812 002606 016702 175164          KKF0: MFPI R3 ;I=(KSP)_R3
813 002612 005037 177572          MOV PSW,R2 ;SAVE CC'S
814 002616 122702 000350          CLR #*SR0 ;DISABLE MEMORY MANAGEMENT
815 002622 001401          CMPB #PRIY7+N,R2 ;CHECK CC'S
816 002624 000000          BEQ                                ;+4
817 002626 022706 001056          HLT                                ;ERROR! INCORRECT CC'S AFTER MFPI
818 002632 001401          CMP #KPTR-2,KSP ;CHECK THAT STACK WAS PUSHED
819 002634 000000          BEQ                                ;+4
820 002636 005216          HLT                                ;ERROR! INCORRECT STACK PTR
821 002640 001401          INC (KSP) ;CHECK RESULT
822 002642 000000          BEQ                                ;+4
823 002644 104000          HLT                                ;ERROR! INCORRECT RESULT
824          SCOPE
825
826          ;TEST THAT MFPI CAN GET DATA FROM A KERNEL VIRTUAL ADDRESS
827 002646 005067 175124          ;DM#1
828 002652 005066 177776          CLR PSW ;KERNEL MODE!!!,PREV KERNEL MODE!!
829 002656 012702 016600          CLR -2(KSP)
830 002662 012737 177777          MOV #VIRT,R2 ;R2=VIRTUAL ADDRESS
831 002670 005237 177572          MOV #=1,#*PHYS ;PRESET PHYSICAL ADDRESS
832 002674 000277          INC #*SR0 ;ENABLE MEMORY MANAGEMENT
833 002676 006512          SCC ;PRESET CC'S
834 002700 016703 175072          KKF1: MFPI (R2) ;I=(KSP)_R2
835 002704 005037 177572          MOV PSW,R3 ;SAVE CC'S
836 002710 122703 000011          CLR #*SR0 ;DISABLE MEMORY MANAGEMENT
837 002714 001401          CMPB #N+C,R3 ;CHECK CC'S
838 002716 000000          BEQ                                ;+4
839 002720 022706 001056          HLT                                ;ERROR! INCORRECT CC'S
840 002724 001401          CMP #KPTR-2,KSP ;CHECK THAT STACK WAS PUSHED
841 002726 000000          BEQ                                ;+4
842 002730 005216          HLT                                ;ERROR! INCORRECT STACK PTR
843 002732 001401          INC (KSP) ;CHECK RESULT
844 002734 000000          BEQ                                ;+4
845 002736 104000          HLT                                ;ERROR! INCORRECT RESULT
846          SCOPE
847
848          ;DM#2
849 002740 012767 000000 175030          MOV #0,PSW ;KERNEL MODE!!!,PREV KERNEL MODE!!
850 002746 012766 177777 177776          MOV #=-1,-2(KSP)
851 002754 012702 016600          MOV #VIRT,R2 ;R2=VIRTUAL ADDRESS
852 002760 005037 016600          CLR #*PHYS ;PRESET PHYSICAL ADDRESS
853 002764 005237 177572          INC #*SR0 ;ENABLE MEMORY MANAGEMENT
854 002770 006522          KKF2: MFPI (R2)+ ;I=(KSP)_VIRT
    
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854 002772 005037 177572          CLR #*SR0 ;DISABLE MEMORY MANAGEMENT
855 002776 005716          TST (KSP) ;CHECK RESULT
856 003000 001401          BEQ                                ;+4
857 003002 000000          HLT                                ;ERROR! INCORRECT RESULT ON STACK
858 003004 022702 016602          CMP #VIRT+2,R2 ;CHECK AUTO INCREMENT
859 003010 001401          BEQ                                ;+4
860 003012 000000          HLT                                ;ERROR! AUTO INCREMENT FAILED
861 003014 005067 174756          CLR PSW
862 003020 104000          SCOPE
863
864          ;DM#3
865 003022 005067 174750          CLR PSW ;KERNEL MODE!!!,PREV KERNEL MODE!!
866 003026 005066 177776          CLR -2(KSP)
867 003032 012702 001004          MOV #TEMP,R2 ;LOAD INDIRECT ADDRESS
868 003036 012737 016602 001004          MOV #VIRT+2,#*TEMP ;LOAD ADDRESS
869 003044 012737 177777 016602          MOV #=-1,#*PHYS+2 ;PRESET DATA
870 003052 005237 177572          INC #*SR0 ;ENABLE MEMORY MANAGEMENT
871 003056 006532          KKF3: MFPI 0(R2)+ ;I=(KSP)_VIRT+2
872 003060 005037 177572          CLR #*SR0 ;DISABLE MEMORY MANAGEMENT
873 003064 005216          INC (KSP) ;CHECK RESULT
874 003066 001401          BEQ                                ;+4
875 003070 000000          HLT                                ;ERROR! INCORRECT RESULT
876 003072 104000          SCOPE
877
878          ;DM#4
879 003074 005067 174676          CLR PSW ;KERNEL MODE!!!,PREV KERNEL MODE!!
880 003100 012766 177777 177776          MOV #=-1,-2(KSP)
881 003106 012704 016602          MOV #VIRT+2,R4 ;R4=VIRTUAL ADDRESS+2
882 003112 005037 016600          CLR #*PHYS ;PRESET PHYSICAL ADDRESS DATA
883 003116 005237 177572          INC #*SR0 ;ENABLE MEMORY MANAGEMENT
884 003122 006544          KKF4: MFPI -(R4) ;I=(KSP)_VIRT
885 003124 005037 177572          CLR #*SR0 ;DISABLE MEMORY MANAGEMENT
886 003130 022704 016600          CMP #VIRT,R4 ;CHECK AUTO-DECREMENT
887 003134 001401          BEQ                                ;+4
888 003136 000000          HLT                                ;ERROR! AUTO-DECREMENT FAILED
889 003140 005716          TST (KSP) ;CHECK RESULT
890 003142 001401          BEQ                                ;+4
891 003144 000000          HLT                                ;ERROR! INCORRECT RESULT
892 003146 104000          SCOPE
893
894          ;DM#5
895 003150 012767 000000 174620          MOV #0,PSW ;KERNEL MODE!!!,PREV KERNEL MODE!!
896 003156 005066 177776          CLR -2(KSP)
897 003162 012700 001006          MOV #TEMP+2,R0 ;R1=INDIRECT ADDRESS
898 003166 012737 016604 001004          MOV #VIRT+4,#*TEMP ;LOAD ADDRESS
899 003174 012737 177777 016604          MOV #=-1,#*PHYS+4 ;PRESET PHYSICAL ADDRESS DATA
900 003202 005237 177572          INC #*SR0 ;ENABLE MEMORY MANAGEMENT
901 003206 006550          KKF5: MFPI 0=(R0) ;I=(KSP)_VIRT+4
902 003210 005037 177572          CLR #*SR0 ;DISABLE MEMORY MANAGEMENT
903 003214 005216          INC (KSP) ;CHECK RESULT
904 003216 001401          BEQ                                ;+4
905 003220 000000          HLT
906 003222 005067 174550          CLR PSW
907 003226 104000          SCOPE
    
```

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908
909
910 003230 012767 020000 174540 JDM#6 MOV #0,PSW ;KERNEL MODE!!!,PREV KERNEL MODE!!
911 003236 012766 177777 177776 MOV #-1,-2(KSP)
912 003244 012702 000002 MOV #2,R2 ;LOAD INDEX REGISTER
913 003250 005037 016600 CLR ##PHYS+2 ;PRESET PHYSICAL ADDRESS DATA
914 003254 005237 177572 INC ##SR0 ;ENABLE MEMORY MANAGEMENT
915 003260 006562 016600 KKF6: MFPI VIRT(R2) ;I=(KSP)_VIRT-2
916 003264 005037 177572 CLR ##SR0 ;DISABLE MEMORY MANAGEMENT
917 003270 022706 001056 CMP #KPTR-2,KSP ;CHECK STACK PTR
918 003274 001401 BEQ .+4
919 003276 000000 HLT ;ERROR! INCORRECT STACK PTR
920 003300 005716 TST (KSP) ;CHECK RESULT
921 003302 001401 BEQ .+4
922 003304 000000 HLT ;ERROR! INCORRECT RESULT
923 003306 005067 174464 CLR PSW
924 003312 104000 SCOPE
925
926
927 003314 005067 174456 JDM#7 CLR PSW ;KERNEL MODE!!!,PREV KERNEL MODE!!
928 003320 005066 177776 CLR -2(KSP)
929 003324 012702 177774 MOV #-4,R2 ;LOAD INDEX REGISTER
930 003330 012737 016600 001004 MOV #VIRT,##TEMP ;LOAD ADDRESS
931 003336 012737 177777 016600 MOV #-1,##PHYS ;CLEAR PHYSICAL ADDRESS DATA
932 003344 005237 177572 INC ##SR0 ;ENABLE MEMORY MANAGEMENT
933 003350 006572 001010 KKF7: MFPI @TEMP+4(R2) ;I=(KSP)_VIRT
934 003354 005037 177572 CLR ##SR0 ;DISABLE MEMORY MANAGEMENT
935 003360 005216 INC (KSP) ;CHECK RESULT
936 003362 001401 BEQ .+4
937 003364 000000 HLT ;ERROR! INCORRECT RESULT
938 003366 104000 SCOPE
939
940
941
942 003370 005067 174402 ;TEST THAT MFPI OPERATES PROPERLY US PC IN DESTINATION
943 003374 012706 001060 JDM#0,PC
944 003400 005066 177776 CLR PSW ;KERNEL MODE!!!,PREV KERNEL MODE!!
945 003404 005237 177572 MOV #KPTR,KSP ;SET KERNEL STACK PTR
946 003410 000277 CLR -2(KSP)
947 003412 006507 INC ##SR0 ;ENABLE MEMORY MANAGEMENT
948 003414 016702 174356 KKF10: MFPI PC ;I=(KSP)_PC
949 003420 005037 177572 MOV PSW,R2 ;SAVE CC'S
950 003424 122702 000001 CLR ##SR0 ;DISABLE MEMORY MANAGEMENT
951 003430 001401 CMPB #C,R2 ;CHECK CC'S
952 003432 000000 BEQ .+4
953 003434 022706 001056 HLT ;CHECK STACK PTR
954 003440 001401 CMP #KPTR-2,KSP
955 003442 000000 BEQ .+4
956 003444 022716 003414 HLT ;ERROR! STACK NOT PUSHED
957 003450 001401 CMP ##KF10+2,(KSP) ;CHECK THAT PS WAS PUSHED ON THE STACK
958 003452 000000 BEQ .+4
959 003454 104000 HLT ;ERROR! PC NOT PUSHED ON THE STACK
960
961
    
```

```

962
963
964 003456 012767 000000 174312 JDM#3,PC MOV #0,PSW ;KERNEL MODE!!!,PREV KERNEL MODE!!
965 003464 005066 177776 CLR -2(KSP)
966 003470 012737 177777 016600 MOV #-1,##PHYS
967 003476 005237 177572 INC ##SR0 ;ENABLE MEMORY MANAGEMENT
968 003502 006537 016600 KKF11: MFPI ##VIRT ;I=(KSP)_VIRT
969 003506 005037 177572 CLR ##SR0 ;DISABLE MEMORY MANAGEMENT
970 003512 005216 INC (KSP) ;CHECK RESULT
971 003514 001401 BEQ .+4
972 003516 000000 HLT ;ERROR! INCORRECT RESULT
973 003520 104000 SCOPE
974
975
976 003522 012767 000340 174246 JDM#6,PC MOV #PRTY7,PSW ;KERNEL MODE!!!,PREV KERNEL MODE!!
977 003530 012766 177777 177776 MOV #-1,-2(KSP)
978 003536 005037 016600 CLR ##PHYS ;PRESET PHYSICAL ADDRESS DATA
979 003542 005237 177572 INC ##SR0 ;ENABLE MEMORY MANAGEMENT
980 003546 006567 013026 KKF12: MFPI VIRT ;I=(KSP)_VIRT
981 003552 005037 177572 CLR ##SR0 ;DISABLE MEMORY MANAGEMENT
982 003556 005716 TST (KSP) ;CHECK RESULT
983 003560 001401 BEQ .+4
984 003562 000000 HLT ;ERROR! INCORRECT RESULT
985 003564 104000 SCOPE
986
987
988 003566 005067 174204 JDM#7,PC CLR PSW ;KERNEL MODE!!!,PREV KERNEL MODE!!
989 003572 005066 177776 CLR -2(KSP)
990 003576 012737 016600 001004 MOV #VIRT+4,##TEMP ;LOAD ADDRESS
991 003604 012737 177777 016600 MOV #-1,##PHYS+4 ;PRESET DATA
992 003612 005237 177572 INC ##SR0 ;ENABLE MEMORY MANAGEMENT
993 003616 000277 SCC
994 003620 006577 175160 KKF13: MFPI @TEMP ;I=(KSP)_VIRT+4
995 003624 016702 174146 MOV PSW,R2 ;SAVE CC'S
996 003630 005037 177572 CLR ##SR0 ;DISABLE MEMORY MANAGEMENT
997 003634 122702 000011 CMPB #N+C,R2 ;CHECK CC'S
998 003640 001401 BEQ .+4
999 003642 000000 HLT ;ERROR! INCORRECT CC'S
1000 003644 005216 INC (KSP) ;CHECK RESULT
1001 003646 001401 BEQ .+4
1002 003650 000000 HLT ;ERROR! INCORRECT RESULT ON STACK
1003 003652 104000 SCOPE
1004
1005
1006 003654 012766 177777 177776 JDM#1,PC MOV #-1,-2(KSP)
1007 003662 005237 177572 INC ##SR0 ;ENABLE MEMORY MANAGEMENT
1008 003666 006517 KKF14: MFPI (PC) ;PUSH NEXT WORD ON THE STACK
1009 003670 000400 KKF14A: BR .+2 ;THIS DATA GOES ONTO THE STACK
1010 003672 005037 177572 CLR ##SR0 ;DISABLE MEMORY MANAGEMENT
1011 003676 023716 003670 CMP #KKF14A,(KSP) ;CHECK DATA ON THE STACK
1012 003702 001401 BEQ .+4
1013 003704 000000 HLT ;ERROR! INCORRECT DATA ON STACK
1014 003706 104000 SCOPE
1015
    
```

```

1016
1017
1018
1019
1020
1021          120000
1022          017200
1023
1024
1025 003710 012737 030000 177776      MOV    #KM+PUM,##PSW    ;KERNEL MODE!!!,PREV USER MODE!!
1026 003716 005016                CLR    (KSP)           ;PUT 0 ON KERNEL STACK
1027 003720 012702 120000            MOV    #VIRT,R2       ;R2=VIRT ADDRESS
1028 003724 012737 177777 017200    MOV    #-1,##PHYS     ;PRESET DATA
1029 003732 005237 177572            INC    ##SR0          ;ENABLE MEMORY MANAG.

1030
1031 003736 000277                SCC
1032 003740 006612                MTP1  (R2)            ;VIRT_(KSP)+
1033 003742 016703 174030            MOV    PSW,R3         ;SAVE STATUS RESULT
1034 003746 005037 177572            CLR    ##SR0          ;DISABLE MEMORY MANAG.
1035 003752 022706 001062            CMP    #KPTR+2,KSP   ;CHECK THAT STACK POPPED
1036 003756 001401                BEQ   .+4
1037 003760 000000                HLT
1038 003762 122703 000005            CMPB  #2+C,R3        ;ERROR! INCORRECT STACK PTR
1039 003766 001401                BEQ   .+4             ;CHECK STATUS RESULT
1040 003770 000000                HLT
1041 003772 005737 017200            TST   ##PHYS         ;ERROR! INCORRECT STATUS RESULT
1042 003776 001401                BEQ   .+4             ;CHECK RESULT
1043 004000 000000                HLT
1044 004002 104000                SCOPE                 ;ERROR! INCORRECT RESULT
1045
1046
1047 004004 012737 030000 177776      MOV    #PUM,##PSW    ;KERNEL MODE!!!,PREV USER MODE!!
1048 004012 012716 177777            MOV    #-1,(KSP)     ;PUT #-1 ON KERNEL STACK
1049 004016 012702 120000            MOV    #VIRT,R2       ;R2=VIRT ADDRESS
1050 004022 005037 017200            CLR    ##PHYS         ;PRESET DATA
1051 004026 005237 177572            INC    ##SR0          ;ENABLE MEMORY MANAG.

1052
1053 004032 006622                KUP1  MTP1  (R2)+      ;VIRT_(KSP)+
1054 004034 005037 177572            CLR    ##SR0          ;DISABLE MEMORY MANAG.
1055 004040 005237 017200            INC    ##PHYS         ;CHECK RESULT
1056 004044 001401                BEQ   .+4
1057 004046 000000                HLT
1058 004050 022702 120002            CMP    #VIRT+2,R2    ;ERROR! INCORRECT RESULT
1059 004054 001401                BEQ   .+4             ;CHECK AUTO-INCREMENT
1060 004056 000000                HLT
1061 004062 005067 173712            CLR    PSW            ;ERROR! AUTO-INCREMENT FAILED
1062 004064 104000                SCOPE
1063
1064 004066 012737 030340 177776      MOV    #PUM+PRTY7,##PSW ;KERNEL MODE!!!,PREV USER MODE!!
1065 004074 012716 177777            MOV    #-1,(KSP)     ;PUT #-1 ON KERNEL STACK
1066 004100 012702 001004            MOV    #TEMP,R2      ;LOAD INDIRECT ADDRESS
1067 004104 012712 120004            MOV    #VIRT+4,(R2)  ;LOAD ADDRESS
1068 004110 005037 017204            CLR    ##PHYS+4     ;PRESET DATA
1069 004114 005237 177572            INC    ##SR0          ;ENABLE MEMORY MANAG.

```

```

1070
1071 004120 006632                KUP3  MTP1  0(R2)+    ;VIRT+4_(KSP)+
1072 004122 005037 177572            CLR    ##SR0          ;DISABLE MEMORY MANAG.
1073 004126 005237 017204            INC    ##PHYS+4     ;CHECK RESULT
1074 004132 001401                BEQ   .+4
1075 004134 000000                HLT
1076 004136 104000                SCOPE                 ;ERROR! INCORRECT RESULT
1077
1078
1079 004140 012737 030000 177776      MOV    #KM+PUM,##PSW ;KERNEL MODE!!!,PREV USER MODE!!
1080 004146 005016                CLR    (KSP)         ;PUT 0 ON KERNEL STACK
1081 004150 012704 120002            MOV    #VIRT+2,R4    ;LOAD ADDRESS
1082 004154 012737 177777 017200    MOV    #-1,##PHYS     ;PRESET DATA
1083 004162 005237 177572            INC    ##SR0          ;ENABLE MEMORY MANAG.

1084
1085 004166 006644                KUP4  MTP1  =(R4)     ;VIRT_(KSP)+
1086 004170 005037 177572            CLR    ##SR0          ;DISABLE MEMORY MANAG.
1087 004174 022704 120000            CMP    #VIRT,R4      ;CHECK AUTO-DECREMENT
1088 004200 001401                BEQ   .+4
1089 004202 000000                HLT
1090 004204 005737 017200            TST   ##PHYS         ;ERROR! AUTO-DECREMENT FAILED
1091 004210 001401                BEQ   .+4             ;CHECK RESULT
1092 004212 000000                HLT
1093 004214 104000                SCOPE                 ;ERROR! INCORRECT RESULT
1094
1095
1096 004216 012737 030000 177776      MOV    #PUM,##PSW    ;KERNEL MODE!!!,PREV USER MODE!!
1097 004224 012716 177777            MOV    #-1,(KSP)     ;PUT #-1 ON KERNEL STACK
1098 004230 012702 001010            MOV    #TEMP+4,R2    ;LOAD INDIRECT ADDRESS
1099 004234 012767 120000 174544    MOV    #VIRT,TEMP+2  ;LOAD ADDRESS
1100 004242 005037 017200            CLR    ##PHYS         ;PRESET DATA
1101 004246 005237 177572            INC    ##SR0          ;ENABLE MEMORY MANAG.

1102
1103 004252 006652                KUP5  MTP1  0-(R2)    ;VIRT_(KSP)+
1104 004254 005037 177572            CLR    ##SR0          ;DISABLE MEMORY MANAG.
1105 004260 005237 017200            INC    ##PHYS         ;CHECK RESULT
1106 004264 001401                BEQ   .+4
1107 004266 000000                HLT
1108 004270 005067 173502            CLR    PSW            ;ERROR! INCORRECT RESULT
1109 004274 104000                SCOPE
1110
1111
1112 004276 012737 030000 177776      MOV    #PUM,##PSW    ;KERNEL MODE!!!,PREV USER MODE!!
1113 004304 005016                CLR    (KSP)         ;PUT 0 ON KERNEL STACK
1114 004306 012702 000002            MOV    #2,R2         ;LOAD INDEX REGISTER
1115 004312 012767 177777 012662    MOV    #-1,PHYS+2    ;PRESET DATA
1116 004320 005237 177572            INC    ##SR0          ;ENABLE MEMORY MANAG.

1117
1118 004324 006662 120000                KUP6  MTP1  VIRT(R2)  ;VIRT+2_(KSP)+
1119 004330 016700 173442            MOV    PSW,R0        ;SAVE STATUS RESULT
1120 004334 005037 177572            CLR    ##SR0          ;DISABLE MEMORY MANAG.
1121 004340 022706 001062            CMP    #KPTR+2,KSP   ;CHECK THAT STACK POINTER POPPED
1122 004344 001401                BEQ   .+4
1123 004346 000000                HLT

```



```

1232 005020 012737 120004 001004      MOV      #VIRT+4,#TEMP      ILOAD ADDRESS
1233 005026 005037 017204      CLR      ##PHYS+4          IPRESET DATA
1234 005032 005237 177572      INC      ##SR0             IENABLE MEMORY MANAG.
1235
1236 005036 006677 173742      KUI5:   MTPI      #TEMP      IVIRT+4,(KSP)+
1237 005042 005037 177572      CLR      ##SR0             IDISABLE MEMORY MANAG.
1238 005046 005237 017204      INC      ##PHYS+4          ICHECK RESULT
1239 005052 001401      BEQ      .+4
1240 005054 000000      HLT
1241 005056 104000      SCOPE
1242
1243
1244
1245 005060 012737 030000 177776      ICHECK THAT MTPI CAN SET USER STACK PTR & PUSH DATA ONTO USER STACK
1246 005066 012746 120000      MOV      #PUM,#PSW        IKERNEL MODE!!!,PREV USER MODE!!
1247 005072 005046      MOV      #VIRT,=(KSP)
1248 005074 012746 120000      CLR      =(KSP)           IPUT DATA ON THE STACK
1249 005100 012737 177777 017200      MOV      #VIRT,=(KSP)
1250 005106 005237 177572      MOV      #-1,##PHYS      IPRESET STACK DATA
1251
1252 005112 006606      KUI6:   MTPI      USP      IUSP_(KSP)+
1253 005114 006636      MTPI     @(KSP)+          IVIRT_(KSP)+
1254 005116 005037 177572      CLR      ##SR0             IDISABLE MEMORY MANAG.
1255 005122 106506      MFPD     USP              IGET USER STACK PTR
1256 005124 022716 120000      CMP      #VIRT,(KSP)     ICEHECK THAT MTPI USP SET USER STACK PTR
1257 005130 001401      BEQ      .+4
1258 005132 000000      HLT
1259 005134 005737 017200      TST      ##PHYS          IERROR! MTPI USP FAILED
1260 005140 001401      BEQ      .+4             ICHECK THAT MTPI @(KSP)+ PUT THE
1261 005142 000000      HLT                      ICORRECT DATA ONTO THE USER STACK
1262 005144 022706 001056      CMP      #KPTR-2,KSP     IERROR! MTPI @(KSP)+ FAILED
1263 005150 001401      BEQ      .+4             ICEHECK KERNEL STACK PTR AFTER TEST
1264 005152 000000      HLT
1265 005154 104000      SCOPE
1266
1267
1268 005156 012767 030000 172612      ITEST MFPI INSTRUCTION KERNEL MODE PREVIOUS USER MODE
1269 005164 012766 177777 177776      ITEST THAT MFPI CAN GET DATA FROM A GENERAL REGISTER (R1).
1270 005172 005000      MOV      #PUM,PSW        IKERNEL MODE!!!,PREV USER MODE!!
1271 005174 005237 177572      MOV      #-1,-2(KSP)
1272 005200 000277      CLR      R0              IPRESET REGISTER
1273 005202 006500      INC      ##SR0             IENABLE MEMORY MANAGEMENT
1274 005204 016704 172566      SCC      R0              IPRESET CC'S
1275 005210 005037 177572      MFPI     R0              I=(KSP)_(R1)
1276 005214 122704 000005      MOV      PSW,R4          ISAVE CC'S
1277 005220 001401      CLR      ##SR0             IDISABLE MEMORY MANAGEMENT
1278 005222 000000      CMPB     #Z+C,R4        ICEHECK CC'S
1279 005224 022706 001056      BEQ      .+4
1280 005230 001401      HLT                      IERROR! INCORRECT CC'S
1281 005232 000000      CMP      #KPTR-2,KSP     ICHECK THAT STACK PTR WAS PUSHED
1282 005234 005716      BEQ      .+4
1283 005236 001401      HLT                      IERROR! INCORRECT STACK PTR
1284 005240 000000      TST      (KSP)           ICHECK RESULT
1285 005242 005067 172530      HLT                      IERROR! INCORRECT RESULT
1285 005242 005067 172530      CLR      PSW
    
```

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1286 005246 104000      SCOPE
1287
1288
1289
1290 005250 012767 030000 172520      ITEST THAT MFPI CAN GET DATA FROM A KERNEL VIRTUAL ADDRESS
1291 005256 005066 177776      IJM#1
1292 005262 012702 120000      MOV      #KH+PUM,PSW     IKERNEL MODE!!!,PREV USER MODE!!
1293 005266 012737 177777 017200      CLR      -(KSP)
1294 005274 005237 177572      MOV      #VIRT,R2        IR2=VIRTUAL ADDRESS
1295 005300 000277      MOV      #-1,##PHYS      IPRESET PHYSICAL ADDRESS
1296 005302 006512      INC      ##SR0             IENABLE MEMORY MANAGEMENT
1297 005304 016703 172466      SCC      R2              IPRESET CC'S
1298 005310 005037 177572      MFPI     (R2)            I=(KSP)_(R2)
1299 005314 122703 000011      MOV      PSW,R3          ISAVE CC'S
1300 005320 001401      CLR      ##SR0             IDISABLE MEMORY MANAGEMENT
1301 005322 000000      CMPB     #N+C,R3        ICEHECK CC'S
1302 005324 022706 001056      BEQ      .+4
1303 005330 001401      HLT                      IERROR! INCORRECT CC'S
1304 005332 000000      CMP      #KPTR-2,KSP     ICHECK THAT STACK WAS PUSHED
1305 005334 005216      BEQ      .+4
1306 005336 001401      HLT                      IERROR! INCORRECT STACK PTR
1307 005340 000000      INC      (KSP)           ICHECK RESULT
1308 005342 104000      BEQ      .+4
1309
1310      HLT                      IERROR! INCORRECT RESULT
1310      SCOPE
1311
1312 005344 012767 030000 172424      IJM#2
1313 005352 012766 177777 177776      MOV      #PUM,PSW        IKERNEL MODE!!!,PREV USER MODE!!
1314 005360 012702 120000      MOV      #-1,-2(KSP)
1315 005364 005037 017200      MOV      #VIRT,R2        IR2=VIRTUAL ADDRESS
1316 005370 005237 177572      CLR      ##PHYS          IPRESET PHYSICAL ADDRESS
1317 005374 006522      INC      ##SR0             IENABLE MEMORY MANAGEMENT
1318 005376 005037 177572      MFPI     (R2)+          I=(KSP)_VIRT
1319 005402 005716      CLR      ##SR0             IDISABLE MEMORY MANAGEMENT
1320 005404 001401      TST      (KSP)           ICHECK RESULT
1321 005406 000000      BEQ      .+4
1322 005410 022702 120002      HLT                      IERROR! INCORRECT RESULT ON STACK
1323 005414 001401      CMP      #VIRT+2,R2     ICHECK AUTO INCREMENT
1324 005416 000000      BEQ      .+4
1325 005420 005067 172352      HLT                      IERROR! AUTO INCREMENT FAILED
1326 005422 104000      CLR      PSW
1327
1328      SCOPE
1328 005426 012767 030000 172342      IJM#3
1329 005434 005066 177776      MOV      #KH+PUM,PSW     IKERNEL MODE!!!,PREV USER MODE!!
1330 005440 012702 001004      CLR      -(KSP)
1331 005444 012737 120002 001004      MOV      #TEMP,R2        ILOAD INDIRECT ADDRESS
1332 005452 012737 177777 017202      MOV      #VIRT+2,##TEMP  ILOAD ADDRESS
1333 005460 005237 177572      MOV      #-1,##PHYS+2   IPRESET DATA
1334 005464 006532      INC      ##SR0             IENABLE MEMORY MANAGEMENT
1335 005466 005037 177572      MFPI     @(R2)+          I=(KSP)_VIRT+2
1336 005472 005216      CLR      ##SR0             IDISABLE MEMORY MANAGEMENT
1337 005474 001401      INC      (KSP)           ICHECK RESULT
1338 005476 000000      BEQ      .+4
1339 005500 104000      HLT                      IERROR! INCORRECT RESULT
1339      SCOPE
    
```



```

1340
1341
1342 005502 012767 030000 172266 JDM=4 MOV #KM+PUM,PSW ;KERNEL MODE!!!,PREV USER MODE!!
1343 005510 012766 177777 177776 MOV #-1,-2(KSP)
1344 005516 012704 120002 MOV #VIRT+2,R4 ;R4=VIRTUAL ADDRESS+2
1345 005522 005037 017200 CLR #PHYS ;PRESET PHYSICAL ADDRESS DATA
1346 005526 005237 177572 INC #SR0 ;ENABLE MEMORY MANAGEMENT
1347 005532 006544 KUF4: MFPI -(R4) ;I=(KSP)_VIRT
1348 005534 005037 177572 CLR #SR0 ;DISABLE MEMORY MANAGEMENT
1349 005540 022704 120000 CMP #VIRT,R4 ;CHECK AUTO-DECREMENT
1350 005544 001401 BEQ .+4
1351 005546 000000 HLT ;ERROR! AUTO-DECREMENT FAILED
1352 005550 005716 TST (KSP) ;CHECK RESULT
1353 005552 001401 BEQ .+4
1354 005554 000000 HLT ;ERROR! INCORRECT RESULT
1355 005556 104000 SCOPE
1356
1357
1358 005560 012767 030000 172210 JDM=5 MOV #PUM,PSW ;KERNEL MODE!!!,PREV USER MODE!!
1359 005566 005066 177776 CLR -2(KSP)
1360 005572 012701 001006 MOV #TEMP+2,R1 ;R1=INDIRECT ADDRESS
1361 005576 012737 120004 001004 MOV #VIRT+4,#TEMP ;LOAD ADDRESS
1362 005604 012737 177777 017204 MOV #-1,#PHYS+4 ;PRESET PHYSICAL ADDRESS DATA
1363 005612 005237 177572 INC #SR0 ;ENABLE MEMORY MANAGEMENT
1364 005616 006551 KUF5: MFPI 0-(R1) ;I=(KSP)_VIRT+4
1365 005620 005037 177572 CLR #SR0 ;DISABLE MEMORY MANAGEMENT
1366 005624 005216 INC (KSP) ;CHECK RESULT
1367 005626 001401 BEQ .+4
1368 005630 000000 HLT
1369 005632 005067 172140 CLR PSW
1370 005636 104000 SCOPE
1371
1372
1373 005640 012767 030000 172130 JDM=6 MOV #PUM,PSW ;KERNEL MODE!!!,PREV USER MODE!!
1374 005646 012766 177777 177776 MOV #-1,-2(KSP)
1375 005654 012702 000002 MOV #2,R2 ;LOAD INDEX REGISTER
1376 005660 005037 017202 CLR #PHYS+2 ;PRESET PHYSICAL ADDRESS DATA
1377 005664 005237 177572 INC #SR0 ;ENABLE MEMORY MANAGEMENT
1378 005670 006562 120000 KUF6: MFPI VIRT(R2) ;I=(KSP)_VIRT-2
1379 005674 005037 177572 CLR #SR0 ;DISABLE MEMORY MANAGEMENT
1380 005700 022706 001056 CMP #KPTR-2,KSP ;CHECK STACK PTR
1381 005704 001401 BEQ .+4
1382 005706 000000 HLT ;ERROR! INCORRECT STACK PTR
1383 005710 005716 TST (KSP) ;CHECK RESULT
1384 005712 001401 BEQ .+4
1385 005714 000000 HLT ;ERROR! INCORRECT RESULT
1386 005716 005067 172054 CLR PSW
1387 005722 104000 SCOPE
1388
1389
1390 005724 012767 030000 172044 JDM=7 MOV #KM+PUM,PSW ;KERNEL MODE!!!,PREV USER MODE!!
1391 005732 005066 177776 CLR -2(KSP)
1392 005736 012702 177774 MOV #-4,R2 ;LOAD INDEX REGISTER
1393 005742 012737 120000 001004 MOV #VIRT,#TEMP ;LOAD ADDRESS
    
```

```

1394 005750 012737 177777 017200 MOV #-1,#PHYS ;CLEAR PHYSICAL ADDRESS DATA
1395 005756 005237 177572 INC #SR0 ;ENABLE MEMORY MANAGEMENT
1396 005762 006572 001010 KUF7: MFPI #TEMP+4(R2) ;I=(KSP)_VIRT
1397 005766 005037 177572 CLR #SR0 ;DISABLE MEMORY MANAGEMENT
1398 005772 005216 INC (KSP) ;CHECK RESULT
1399 005774 001401 BEQ .+4
1400 005776 000000 HLT ;ERROR! INCORRECT RESULT
1401 006000 104000 SCOPE
1402
1403 ;TEST THAT MFPI OPERATES PROPERLY US PC IN DESTINATION
1404 JDM=0,PC
1405 006002 012767 030000 171766 MOV #KM+PUM,PSW ;KERNEL MODE!!!,PREV USER MODE!!
1406 006010 005066 177776 CLR -2(KSP)
1407 006014 005237 177572 INC #SR0 ;ENABLE MEMORY MANAGEMENT
1408 006020 000277 SCC
1409 006022 006507 KUF10: MFPI PC ;I=(KSP)_PC
1410 006024 016702 171746 MOV PSW,R2 ;SAVE CC'S
1411 006030 005037 177572 CLR #SR0 ;DISABLE MEMORY MANAGEMENT
1412 006034 122702 000001 CMPB #C,R2 ;CHECK CC'S
1413 006040 001401 BEQ .+4
1414 006042 000000 HLT
1415 006044 022706 001056 CMP #KPTR-2,KSP ;CHECK STACK PTR
1416 006050 001401 BEQ .+4
1417 006052 000000 HLT ;ERROR! STACK NOT PUSHED
1418 006054 022716 006024 CMP #KUF10+2,(KSP) ;CHECK THAT PC WAS PUSHED ON THE STACK
1419 006060 001401 BEQ .+4
1420 006062 000000 HLT ;ERROR! PC NOT PUSHED ON THE STACK
1421 006064 104000 SCOPE
1422
1423
1424
1425 JDM=3,PC
1426 006066 012767 030000 171702 MOV #PUM,PSW ;KERNEL MODE!!!,PREV USER MODE!!
1427 006074 005066 177776 CLR -2(KSP)
1428 006100 012737 177777 017200 MOV #-1,#PHYS
1429 006106 005237 177572 INC #SR0 ;ENABLE MEMORY MANAGEMENT
1430 006112 006537 120000 KUF11: MFPI #VIRT ;I=(KSP)_VIRT
1431 006116 005037 177572 CLR #SR0 ;DISABLE MEMORY MANAGEMENT
1432 006122 005216 INC (KSP) ;CHECK RESULT
1433 006124 001401 BEQ .+4
1434 006126 000000 HLT ;ERROR! INCORRECT RESULT
1435 006130 104000 SCOPE
1436
1437 JDM=6,PC
1438 006132 012767 030340 171636 MOV #PUM+PRTY7,PSW ;KERNEL MODE!!!,PREV USER MODE!!
1439 006140 012766 177777 177776 MOV #-1,-2(KSP)
1440 006146 005037 017200 CLR #PHYS
1441 006152 005237 177572 INC #SR0 ;PRESET PHYSICAL ADDRESS DATA
1442 006156 006567 111616 KUF12: MFPI VIRT ;ENABLE MEMORY MANAGEMENT
1443 006162 005037 177572 CLR #SR0 ;I=(KSP)_VIRT
1444 006166 005716 TST (KSP) ;DISABLE MEMORY MANAGEMENT
1445 006170 001401 BEQ .+4 ;CHECK RESULT
1446 006172 000000 HLT ;ERROR! INCORRECT RESULT
1447 006174 104000 SCOPE
    
```

```

1448
1449
1450 006176 012767 030000 171572 JDM=7,PC MOV #KM+PUM,PSW ;KERNEL MODE!!!,PREV USER MODE!!
1451 006204 005066 177776 CLR -2(KSP)
1452 006210 012737 120004 001004 MOV #VIRT+4,#TEMP ;LOAD ADDRESS
1453 006216 012737 177777 017200 MOV #=-1,#PHYS+4 ;PRESET DATA
1454 006224 005237 177572 INC ##SR0 ;ENABLE MEMORY MANAGEMENT
1455 006230 002777 SCC
1456 006232 005777 172546 KUF13: MFPI @TEMP ;-(KSP),VIRT+4
1457 006236 016702 171534 MOV PSW,R2 ;SAVE CC'S
1458 006242 005037 177572 CLR ##SR0 ;DISABLE MEMORY MANAGEMENT
1459 006246 122702 000011 CMPB #N+C,R2 ;CHECK CC'S
1460 006252 001401 BEQ .+4
1461 006254 000000 HLT ;ERROR! INCORRECT CC'S
1462 006256 005216 INC (KSP) ;CHECK RESULT
1463 006260 001401 BEQ .+4
1464 006262 000000 HLT ;ERROR! INCORRECT RESULT ON STACK
1465 006264 104000 SCOPE
1466
1467 006266 012767 030000 171502 MOV #KM+PUM,PSW ;KERNEL MODE!!!,PREV USER MODE!!
1468 006274 012716 120000 MOV #VIRT,(KSP)
1469 006300 005037 017200 CLR ##PHYS
1470 006304 005237 177572 INC ##SR0 ;ENABLE MEMORY MANAGEMENT
1471 006310 006576 000000 KUF14: MFPI @(KSP) ;-(KSP),VIRT
1472 006314 005037 177572 CLR ##SR0 ;DISABLE MEMORY MANAGEMENT
1473 006320 005737 001056 TST ##KPTR-2 ;CHECK DATA ON THE STACK
1474 006324 001401 BEQ .+4
1475 006326 000000 HLT ;ERROR! INCORRECT DATA ON THE STACK
1476 006330 104000 SCOPE
1477
1478 ;BEGIN TESTING IN USER MODE
1479 ;NOTE: ALL HLT (HALT) INSTRUCTIONS WILL TRAP TO LOC 10, THE PROGRAM WILL
1480 ;ALLOW THE TRAP, ADJUST THE PC AND RETURN TO THE HLT IN KERNEL MODE. THE
1481 ;USER STACK POINTER IS NOT AFFECTED BY THIS TRAP, THE USER STACK POINTER
1482 ;IS AT PHYSICAL 0600.
1483
1484 006332 012706 000600 MOV #UPTR,USP ;SET USER STACK PTR
1485 006336 000240 USRST: NOP ;BEGIN TESTS IN USER MODE
1486 006340 012767 077406 171232 MOV #77406,UPDR0 ;RW,UP 200 BLOCKS
1487 006346 012767 077406 171242 MOV #77406,UPDR7 ;RW,UP 200 BLOCKS
1488 006354 012767 007600 171274 MOV #7600,UPART
1489
1490 ;TESTS UU0-UU6 TEST THE MTP1 INSTRUCTION IN USER MODE, PREV USER MODE.
1491 ;TEST THAT MTP1 CAN LOAD A GENERAL REGISTER (R2)
1492 006362 012737 170340 177776 MOV #UM+PUM+PRTY7,##PSW ;USER MODE!!!,PREV USER MODE!!
1493 006370 005016 CLR (USP)
1494 006372 012702 177777 MOV #-1,R2 ;PRESET REGISTER
1495 006376 005237 177572 INC ##SR0 ;ENABLE MEMORY MANAG.
1496
1497 006402 006602 UU0: MTP1 R2 ;R2_(USP)+
1498 006404 016703 171366 MOV PSW,R3 ;SAVE STATUS RESULT
1499 006410 005037 177572 CLR ##SR0 ;DISABLE MEMORY MANAG.
1500 006414 022706 000602 CMP #UPTR+2,USP ;CHECK THAT STACK POPPED
1501 006420 001401 BEQ .+4

```

```

1502 006422 000000 HLT ;ERROR! INCORRECT STACK PTR
1503 006424 122703 000344 CMPB #PRTY7+Z,R3 ;CHECK STATUS RESULT
1504 006430 001401 BEQ .+4
1505 006432 000000 HLT ;ERROR! INCORRECT STATUS RESULT
1506 006434 005702 TST R2 ;CHECK RESULT
1507 006436 001401 BEQ .+4
1508 006440 000000 HLT ;ERROR! INCORRECT RESULT
1509 006442 104000 SCOPE
1510
1511 ;TEST THAT USER CAN LOAD USER ADDRESS (VIRT)
1512
1513 ;*****
1514 VIRT=120000 ;USER VIRTUAL ADDRESS FOR THESE TESTS
1515 PHYS=17200 ;CORRESPONDING PHYSICAL ADDRESS
1516 ;*****
1517
1518 JDM=2
1519
1520 006444 012737 170000 177776 MOV #UM+PUM,##PSW ;USER MODE!!!,PREV USER MODE!!
1521 006452 012716 177777 MOV #-1,(USP)
1522 006456 012702 120000 MOV #VIRT,R2 ;R2=VIRT ADDRESS
1523 006462 005037 017200 CLR ##PHYS ;PRESET DATA
1524 006466 005237 177572 INC ##SR0 ;ENABLE MEMORY MANAG.
1525
1526 006472 006622 UU1: MTP1 (R2)+ ;VIRT_(USP)+
1527 006474 005037 177572 CLR ##SR0 ;DISABLE MEMORY MANAG.
1528 006500 005237 017200 INC ##PHYS ;CHECK RESULT

```

```

1529 006504 001401      BEQ      ,+4
1530 006506 000000      HLT
1531 006510 022702 120002      CMP      #VIRT+2,R2      ;ERROR! INCORRECT RESULT
1532 006514 001401      BEQ      ,+4      ;CHECK AUTO-INCREMENT
1533 006516 000000      HLT
1534 006520 005067 171252      CLR      PSW      ;ERROR! AUTO-INCREMENT FAILED
1535 006524 104000      SCOPE
1536
1537 006526 012737 170000 177776      DM#4      MOV      #UM+PUM,##PSW      ;USER MODE!!!,PREV USER MODE!!
1538 006534 005016      CLR      (USP)
1539 006536 012704 120002      MOV      #VIRT+2,R4      ;LOAD ADDRESS
1540 006542 012737 177777 017200      MOV      #-1,##PHYS      ;PRESET DATA
1541 006550 005237 177572      INC      ##SR0      ;ENABLE MEMORY MANAG.
1542
1543 006554 006644      UU2:     MTPI      -(R4)      ;VIRT_(USP)+
1544 006556 005037 177572      CLR      ##SR0      ;DISABLE MEMORY MANAG.
1545 006562 022704 120000      CMP      #VIRT,R4      ;CHECK AUTO-DECREMENT
1546 006566 001401      BEQ      ,+4
1547 006570 000000      HLT
1548 006572 005737 017200      TST      ##PHYS      ;ERROR! AUTO-DECREMENT FAILED
1549 006576 001401      BEQ      ,+4      ;CHECK RESULT
1550 006600 000000      HLT
1551 006602 104000      SCOPE      ;ERROR! INCORRECT RESULT
1552
1553
1554 006604 012737 170000 177776      DM#6      MOV      #UM+PUM,##PSW      ;USER MODE!!!,PREV USER MODE!!
1555 006612 005016      CLR      (USP)
1556 006614 012702 000002      MOV      #2,R2      ;LOAD INDEX REGISTER
1557 006620 012767 177777 010354      MOV      #-1,PHYS+2      ;PRESET DATA
1558 006626 005237 177572      INC      ##SR0      ;ENABLE MEMORY MANAG.
1559
1560 006632 006662 120000      UU3:     MTPI      VIRT(R2)      ;VIRT+2_(USP)+
1561 006636 016700 171134      MOV      PSW,R0      ;SAVE STATUS RESULT
1562 006642 005037 177572      CLR      ##SR0      ;DISABLE MEMORY MANAG.
1563 006646 022706 000002      CMP      #UPTR+2,USP      ;CHECK THAT STACK POINTER POPPED
1564 006652 001401      BEQ      ,+4
1565 006654 000000      HLT
1566 006656 122700 000004      CMPB     #2,R0      ;CHECK STATUS RESULT
1567 006662 001401      BEQ      ,+4
1568 006664 000000      HLT
1569 006666 005737 017202      TST      ##PHYS+2      ;ERROR! INCORRECT STATUS RESULT
1570 006672 001401      BEQ      ,+4      ;CHECK RESULT
1571 006674 000000      HLT
1572 006676 104000      SCOPE      ;ERROR! INCORRECT RESULT
1573
1574
1575      ;TEST THAT MTPI CAN LOAD PC
1576      DM#0,PC
1577 006700 012737 170000 177776      MOV      #UM+PUM,##PSW      ;USER MODE!!!,PREV USER MODE!!
1578 006706 012716 006722      MOV      #UU4A,(USP)      ;PUT NEW PC ON STACK AS DATA
1579 006712 005237 177572      INC      ##SR0      ;ENABLE MEMORY MANAG.
1580
1581 006716 006607      UU4:     MTPI      PC      ;PC_(USP)+
1582 006720 000000      HLT      ;ERROR! MTPI DID NOT LOAD PC
1583 006722 005037 177572      UU4A:    CLR      ##SR0      ;DISABLE MEMORY MANAG.
    
```

```

1583 006726 104000      SCOPE
1584
1585
1586 006730 012737 170000 177776      DM#3,PC      MOV      #UM+PUM,##PSW      ;USER MODE!!!,PREV USER MODE!!
1587 006736 012716 177777      MOV      #-1,(USP)
1588 006742 005037 017200      CLR      ##PHYS
1589 006746 005237 177572      INC      ##SR0      ;ENABLE MEMORY MANAG.
1590
1591 006752 006637 120000      UU5:     MTPI      ##VIRT      ;VIRT_(USP)+
1592 006756 016700 171014      MOV      PSW,R0      ;SAVE STATUS RESULT
1593 006762 005037 177572      CLR      ##SR0      ;DISABLE MEMORY MANAG.
1594 006766 122700 000010      CMPB     #N,R0      ;CHECK STATUS RESULT
1595 006772 001401      BEQ      ,+4
1596 006774 000000      HLT
1597 006776 005267 010176      INC      PHYS      ;ERROR! INCORRECT STATUS RESULT
1598 007002 001401      BEQ      ,+4      ;CHECK RESULT
1599 007004 000000      HLT
1600 007006 005067 170764      CLR      PSW      ;ERROR! INCORRECT RESULT
1601 007012 104000      SCOPE
1602
1603
1604 007014 012737 170000 177776      DM#7,PC      MOV      #UM+PUM,##PSW      ;USER MODE!!!,PREV USER MODE!!
1605 007022 012716 177777      MOV      #-1,(USP)
1606 007026 012737 120004 001004      MOV      #VIRT+4,##TEMP      ;LOAD ADDRESS
1607 007034 005037 017204      CLR      ##PHYS+4      ;PRESET DATA
1608 007040 005237 177572      INC      ##SR0      ;ENABLE MEMORY MANAG.
1609
1610 007044 006677 171734      UU6:     MTPI      #TEMP      ;VIRT+4_(USP)+
1611 007050 005037 177572      CLR      ##SR0      ;DISABLE MEMORY MANAG.
1612 007054 005237 017204      INC      ##PHYS+4      ;CHECK RESULT
1613 007060 001401      BEQ      ,+4
1614 007062 000000      HLT
1615 007064 104000      SCOPE      ;ERROR INCORRECT RESULT
1616
1617 007066 012767 170000 170702      ;TEST MFPI INSTRUCTION USER MODE PREVIOUS USER MODE
1618 007074 012703 177777      MOV      #UM+PUM,PSW      ;USER MODE!!!,PREV USER MODE!!
1619 007100 005237 177572      MOV      #-1,R3      ;PRESET GENERAL REGISTER
1620 007104 006503      UUF0:    MFPI      R3      ;ENABLE MEMORY MANAGEMENT
1621 007106 016702 170664      MOV      PSW,R2      ;SAVE STATUS AFTER MFPI
1622 007112 005037 177572      CLR      ##SR0      ;DISABLE MEMORY MANAGEMENT
1623 007116 022702 170010      CMP      #UM+PUM+N,R2      ;CHECK STATUS AFTER MFPI
1624 007122 001401      BEQ      ,+4
1625 007124 000000      HLT
1626 007126 022706 000576      CMP      #UPTR-2,USP      ;ERROR! INCORRECT STATUS AFTER MFPI
1627 007132 001401      BEQ      ,+4      ;CHECK THAT STACK WAS PUSHED
1628 007134 000000      HLT
1629 007136 005216      INC      (USP)      ;ERROR! INCORRECT STACK PTR
1630 007140 001401      BEQ      ,+4      ;CHECK RESULT
1631 007142 000000      HLT
1632 007144 104000      SCOPE      ;ERROR! INCORRECT RESULT
1633
1634
1635
1636 007146 012767 170000 170622      ;TEST THAT MFPI CAN GET DATA FROM A USER VIRTUAL ADDRESS
1637      DM#2      MOV      #UM+PUM,PSW      ;USER MODE!!!,PREV USER MODE!!
    
```

```

1637 007154 012766 177777 177776 MOV #=-1,-2(USP)
1638 007162 012702 120000 MOV #VIRT,R2 ;R2=VIRTUAL ADDRESS
1639 007166 005037 017200 CLR ##PHYS ;PRESET PHYSICAL ADDRESS
1640 007172 005237 177572 INC ##SR0 ;ENABLE MEMORY MANAGEMENT
1641 007176 006522 UUF2: MFPI (R2)+ ;-(USP)_VIRT
1642 007200 005037 177572 CLR ##SR0 ;DISABLE MEMORY MANAGEMENT
1643 007204 005716 TST (USP) ;CHECK RESULT
1644 007206 001401 BEQ .+4
1645 007210 000000 HLT ;ERROR! INCORRECT RESULT ON STACK
1646 007212 022702 120002 CMP #VIRT+2,R2 ;CHECK AUTO INCREMENT
1647 007216 001401 BEQ .+4
1648 007220 000000 HLT ;ERROR! AUTO INCREMENT FAILED
1649 007222 005067 170550 CLR PSW
1650 007226 104000 SCOPE
1651
1652
1653 007230 012767 170000 170540 JDM=4 MOV #UM+PUM,PSW ;USER MODE!!!,PREV USER MODE!!!
1654 007236 012766 177777 177776 MOV #=-1,-2(USP)
1655 007244 012704 120002 MOV #VIRT+2,R4 ;R4=VIRTUAL ADDRESS+2
1656 007250 005037 017200 CLR ##PHYS ;PRESET PHYSICAL ADDRESS DATA
1657 007254 005237 177572 INC ##SR0 ;ENABLE MEMORY MANAGEMENT
1658 007260 006544 UUF4: MFPI -(R4) ;-(USP)_VIRT
1659 007262 005037 177572 CLR ##SR0 ;DISABLE MEMORY MANAGEMENT
1660 007266 022704 120000 CMP #VIRT,R4 ;CHECK AUTO-DECREMENT
1661 007272 001401 BEQ .+4
1662 007274 000000 HLT ;ERROR! AUTO-DECREMENT FAILED
1663 007276 005716 TST (USP) ;CHECK RESULT
1664 007300 001401 BEQ .+4
1665 007302 000000 HLT ;ERROR! INCORRECT RESULT
1666 007304 104000 SCOPE
1667
1668
1669 007306 012767 170000 170462 JDM=6 MOV #UM+PUM,PSW ;USER MODE!!!,PREV USER MODE!!!
1670 007314 012766 177777 177776 MOV #=-1,-2(USP)
1671 007322 012702 000002 MOV #2,R2 ;LOAD INDEX REGISTER
1672 007326 005037 017202 CLR ##PHYS+2 ;PRESET PHYSICAL ADDRESS DATA
1673 007332 005237 177572 INC ##SR0 ;ENABLE MEMORY MANAGEMENT
1674 007336 006562 UUF6: MFPI VIRT(R2) ;-(USP)_VIRT-2
1675 007342 005037 177572 CLR ##SR0 ;DISABLE MEMORY MANAGEMENT
1676 007346 022706 000576 CMP #UPTR-2,USP ;CHECK STACK PTR
1677 007352 001401 BEQ .+4
1678 007354 000000 HLT ;ERROR! INCORRECT STACK PTR
1679 007356 005716 TST (USP) ;CHECK RESULT
1680 007360 001401 BEQ .+4
1681 007362 000000 HLT ;ERROR! INCORRECT RESULT
1682 007364 005067 170406 CLR PSW
1683 007370 104000 SCOPE
1684
1685 ;TEST THAT MFPI OPERATES PROPERLY US PC IN DESTINATION
1686 JDM=3,PC
1687 007372 012767 170000 170376 MOV #UM+PUM,PSW ;USER MODE!!!,PREV USER MODE!!!
1688 007400 005066 177776 CLR -2(USP)
1689 007404 012737 177777 017200 MOV #=-1,##PHYS
1690 007412 005237 177572 INC ##SR0 ;ENABLE MEMORY MANAGEMENT

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```

1691 007416 006537 120000 UUF11: MFPI ##VIRT ;-(USP)_VIRT
1692 007422 005037 177572 CLR ##SR0 ;DISABLE MEMORY MANAGEMENT
1693 007426 005216 INC (USP) ;CHECK RESULT
1694 007430 001401 BEQ .+4
1695 007432 000000 HLT ;ERROR! INCORRECT RESULT
1696 007434 104000 SCOPE
1697
1698
1699 007436 012767 170340 170332 JDM=6,PC MOV #UM+PUM+PRTY7,PSW ;USER MODE!!!,PREV USER MODE!!!
1700 007444 012766 177777 177776 MOV #=-1,-2(USP)
1701 007452 005237 017200 CLR ##PHYS ;PRESET PHYSICAL ADDRESS DATA
1702 007456 005237 177572 INC ##SR0 ;ENABLE MEMORY MANAGEMENT
1703 007462 006567 UUF12: MFPI VIRT ;-(USP)_VIRT
1704 007466 005037 177572 CLR ##SR0 ;DISABLE MEMORY MANAGEMENT
1705 007472 005716 TST (USP) ;CHECK RESULT
1706 007474 001401 BEQ .+4
1707 007476 000000 HLT ;ERROR! INCORRECT RESULT
1708 007500 104000 SCOPE
1709
1710 ;*****IMPORTANT NOTE*****
1711 ;NO CODE ALLOWED BETWEEN 16600-17776
1712 007502 005067 170270 END: CLR PSW
1713 007506 005267 171266 INC ICNT ;INCREMENT PASS COUNT
1714 007512 026727 171262 001000 CMP ICNT,#1000
1715 007520 001402 BEQ DONE
1716 007522 000167 171350 JMP BEGIN
1717 007526 012767 000007 170032 DONE: MOV #7,TPB ;RING BELL AFTER 1000
1718 007534 105767 170024 TSTB TPS ;PASSES
1719 007540 100375 BPL .-4
1720 007542 013702 000042 MOV #42,R2 ;MONITOR LOAD?
1721 007546 001405 BEQ DONE1 ;NO, CONTINUE
1722 007550 000005 RESET
1723 007552 004712 LOGIC: JSR 7,(2) ;RETURN TO MONITOR
1724 007554 000240 NOP
1725 007556 000240 NOP
1726 007560 000240 NOP
1727 007562 000167 171302 DONE1: JMP START ;RESTART
1728
1729 000001 .END

```

BEGIN	001076	C	= 000001	DISPLA	= 177570	DONE	007526
DONE1	007562	EMTVEC	= 000030	END	007502	ERRVEC	= 000010
HLT	= 000000	ICNT	001000	KKF0	002604	KKF1	002676
KKF10	003412	KKF11	003502	KKF12	003506	KKF13	003620
KKF14	003666	KKF14A	003670	KKF2	002770	KKF3	003056
KKF4	003122	KKF5	003206	KKF6	003260	KKF7	003350
KK0	001314	KK1	001400	KK10	002104	KK10A	002106
KK10B	002070	KK11	002140	KK11A	002142	KK12	002204
KK13	002270	KK14	002324	KK15	002420	KK16	002456
KK2	001472	KK3	001554	KK4	001614	KK5	001700
KK6	001752	KK7	002046	KK	= 000000	KPAR0	= 172340
KPAR1	= 172342	KPAR2	= 172344	KPAR3	= 172346	KPAR4	= 172350
KPAR5	= 172352	KPAR6	= 172354	KPAR7	= 172356	KPDR0	= 172300
KPDR1	= 172302	KPDR2	= 172304	KPDR3	= 172306	KPDR4	= 172310
KPDR5	= 172312	KPDR6	= 172314	KPDR7	= 172316	KPTR	= 001060
KSP	=X000006	KUF0	005202	KUF1	005302	KUF10	006022
KUF11	006112	KUF12	006156	KUF13	006232	KUF14	006310
KUF2	005374	KUF3	005464	KUF4	005532	KUF5	005616
KUF6	005670	KUF7	005762	KU0	002520	KU1	003740
KU10	004466	KU10A	004472	KU11	004524	KU11A	004532
KU12	004600	KU13	004670	KU13A	004674	KU14	004740
KU15	005036	KU16	005112	KU2	004032	KU3	004120
KU4	004166	KU5	004252	KU6	004324	KU7	004426
LOGIC	007552	MMERR	000462	MMVEC	= 000250	N	= 000010
PC	=X000007	PFVEC	= 000024	PHYS	= 017200	PRTY4	= 000200
PRTY7	= 000340	PSH	= 177776	PUM	= 030000	RH	= 000006
RD	=X000000	R1	=X000001	R2	=X000002	R3	=X000003
R4	=X000004	R5	=X000005	SCOPE	= 104000	SCOPEA	000432
SHLT	000400	SHLTA	000422	SLR	= 177774	SP	=X000006
SR0	= 177572	SR1	= 177574	SR2	= 177576	SSR0T	001002
START	001070	TEMP	001004	TK0	= 177562	TK3	= 177560
TPB	= 177566	TP0	= 177564	UH	= 140000	UPAR0	= 177640
UPAR1	= 177642	UPAR2	= 177644	UPAR3	= 177646	UPAR4	= 177650
UPAR5	= 177652	UPAR6	= 177654	UPAR7	= 177656	UPDR0	= 177600
UPDR1	= 177602	UPDR2	= 177604	UPDR3	= 177606	UPDR4	= 177610
UPDR5	= 177612	UPDR6	= 177614	UPDR7	= 177616	UPTR	= 000600
USP	=X000006	USRTST	006336	UUF0	007104	UUF11	007416
UUF12	007462	UUF2	007176	UUF4	007260	UUF6	007336
UU0	006402	UU1	006472	UU2	006554	UU3	006632
UU4	006716	UU4A	006722	UU5	006752	UU6	007044
VIRT	= 120000	Z	= 000004	.	= 007566		

ERRORS DETECTED: 0

*DFKTCA,DFKTCA=DFKTCA,SRC/SOL
 RUN-TIME: 5 10 0 SECONDS
 CORE USED: 5K



ENGINEERING CHANGE ORDER

ORIGINATOR Dan Casaletto
TEL EXT 3660 DATE 6/22/76
LOCATION ML21-4/E10
COST CENTER NO. 301

ECO NO. MD-11-DFKTD-A2/02
SHEET 1 OF 1
DATE RECEIVED 29-JUN-76
ISSUE DATE
FINAL RELEASE

PROBLEM 1) Reset problem when run under ACT Auto-Accept. Resets occur less than 200 ms apart.
AA 1955

UNIT TO BE CHANGED MD-11-DFKTD REV. A
PRODUCT AFFECTED PDP-11/34

CORRECTION 2) Put counter delay before next pass of program after ACT Hook Reset.

TYPE OF ECO
[] HARDWARE
[X] SOFTWARE
[] PURCHASE SPEC.

BREAK-IN/EFFECTIVITY

FIELD SERVICE AFFECTED
[] YES [X] NO
[] D, P, R DISTR.
[] L.O.U. CODE

QUICK-CHECK

TEST Conditional Patch

WHERE USED

Table with 5 columns: ITEM NO., DOCUMENT/PART NO., OLD REV, NEW REV, DESCRIPTION OF CHANGE/DISPOSITION OF MATERIAL. Contains 3 rows of change details.

APPROVAL SIGNATURE (TYPE NAME and SIGN)
PROJECT ENGR. Dan Casaletto
ENG. MGR. M. Horovitz
TEL. EXT. 3660 COST CENTER NO. 301
DISC. PROJ. NO. V2007846 DATE

REVIEW SIGNATURES (SEE INSTRUCTIONS FOR APPLIC.)
FIELD SERVICE
DIAGNOSTIC ENGR.



ENGINEERING
CHANGE ORDER

ORIGINATOR G.B. Johnson
TEL EXT 4138 DATE 1/8/76
LOCATION ML 21-4/E10
COST CENTER NO 301

ECO NO. MD-11-DFKTD-A1/01
SHEET 1 OF 1
DATE RECEIVED 15-JAN-76
ISSUE DATE _____
FINAL RELEASE _____

PROBLEM Timing differences in the DL-11W can cause an enabled interrupt to occur in two possible locations in the test for interrupting the memory management.

UNIT TO BE CHANGED
DFKTD

PRODUCT AFFECTED
Processor States
PDF-11/34

CORRECTION The PSW is used to block out interrupts until all DL-11W's can have the interrupt pending. Interrupts are then enabled, insuring that the interrupt always occurs at the same place.

TYPE OF ECO
 HARDWARE
 SOFTWARE
 PURCHASE SPEC.

BREAK-IN/EFFECTIVITY

IMMEDIATELY

FIELD SERVICE AFFECTED
 YES NO
 D, P, R DISTR.
 L.O.U. CODE

QUICK CHECK

WHERE USED
ZJØ1Ø-RB

TEST

ITEM NO.	DOCUMENT/PART NO.	OLD REV	NEW REV	DESCRIPTION OF CHANGE/DISPOSITION OF MATERIAL																					
1	MD-11-DFKTD	A	N/A	PATCHES: <table border="1"> <thead> <tr> <th>LOC.</th> <th>FROM</th> <th>TO</th> </tr> </thead> <tbody> <tr><td>1674</td><td>042737</td><td>012737</td></tr> <tr><td>1676</td><td>000200</td><td>000100</td></tr> <tr><td>1700</td><td>177776</td><td>177564</td></tr> <tr><td>1702</td><td>012767</td><td>042737</td></tr> <tr><td>1704</td><td>000100</td><td>000200</td></tr> <tr><td>1706</td><td>175654</td><td>177776</td></tr> </tbody> </table>	LOC.	FROM	TO	1674	042737	012737	1676	000200	000100	1700	177776	177564	1702	012767	042737	1704	000100	000200	1706	175654	177776
LOC.	FROM	TO																							
1674	042737	012737																							
1676	000200	000100																							
1700	177776	177564																							
1702	012767	042737																							
1704	000100	000200																							
1706	175654	177776																							

APPROVAL SIGNATURE (TYPE NAME and SIGN)
PROJECT ENGR Glenn Johnson
ENG MGR. W. Manter
TEL EXT. 4138 COST CENTER NO. 301
DISC PROJ NO E20-07846 DATE 1/8/76

REVIEW SIGNATURES (SEE INSTRUCTIONS FOR APPLIC)
FIELD SERVICE _____
DIAGNOSTIC ENGR. W. Kellicker
Mfg.: W. Kellicker

COORD NO ms. Ø166 REF. NO _____



ENGINEERING CHANGE ORDER

ORIGINATOR G.B. Johnson
TEL EXT 4138 DATE 1/8/76
LOCATION ML 21-4/E10
COST CENTER NO. 301

ECO NO. MD-11-DFKTD-A1/01
SHEET 1 OF 1
DATE RECEIVED 15-JAN-76
ISSUE DATE _____
FINAL RELEASE _____

PROBLEM Timing differences in the DL-11W can cause an enabled interrupt to occur in two possible locations in the test for interrupting the memory management.

UNIT TO BE CHANGED
DFKTD

PRODUCT AFFECTED

CORRECTION The PSW is used to block out interrupts until all DL-11W's can have the interrupt pending. Interrupts are then enabled, insuring that the interrupt always occurs at the same place.

PDF-11/34

TYPE OF ECO
 HARDWARE
 SOFTWARE
 PURCHASE SPEC.

BREAK-IN/EFFECTIVITY

IMMEDIATELY

FIELD SERVICE AFFECTED
 YES NO
 D, P, R DISTR.
 L.O.U. CODE

WHERE USED

QUICK-CHECK

ZJ 010 - RB

TEST

ITEM NO	DOCUMENT/PART NO.	OLD REV	NEW REV	DESCRIPTION OF CHANGE/DISPOSITION OF MATERIAL																					
1	MD-11-DFKTD	A	N/A	PATCHES: <table border="1"> <thead> <tr> <th>LOC.</th> <th>FROM</th> <th>TO</th> </tr> </thead> <tbody> <tr><td>1674</td><td>042737</td><td>012737</td></tr> <tr><td>1676</td><td>000200</td><td>000100</td></tr> <tr><td>1700</td><td>177776</td><td>177564</td></tr> <tr><td>1702</td><td>012767</td><td>042737</td></tr> <tr><td>1704</td><td>000100</td><td>000200</td></tr> <tr><td>1706</td><td>175654</td><td>177776</td></tr> </tbody> </table>	LOC.	FROM	TO	1674	042737	012737	1676	000200	000100	1700	177776	177564	1702	012767	042737	1704	000100	000200	1706	175654	177776
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1704	000100	000200																							
1706	175654	177776																							

APPROVAL SIGNATURE (TYPE NAME and SIGN)
PROJECT ENGR Glenn Johnson
ENG MGR. W. Manter
TEL EXT. 4138 COST CENTER NO. 301
DISC PROJ NO E20-07846 DATE 1/8/76

REVIEW SIGNATURES (SEE INSTRUCTIONS FOR APPLIC.)

FIELD SERVICE _____

DIAGNOSTIC ENGR. _____

Mfg.: W. Kellicker

COORD NO ms. 0166 REF. NO. _____