Saltzer
Webber

TOTAL PAGE FAULT TIME (INSTRUCTION COUNT)

FAULT: 424 + SSBS + EQBS + 3*(SET_ABS) + PAGE$IN

PAGE$IN:

case 1 page must be read from device

393 + DEVICE_CONTROL$READ + CORE_MAN$ASSIGN + UPDATES

case 2 page must be zeroed in core (devadd = -1, pmr = ON)

396 + CORE_MAN$ASSIGN + CORE_MAN$UNWIRE + ZERO + CAM_ + UPDATES

case 3 page must be read is OFF

352 + CORE_MAN$ASSIGN + CORE_MAN$UNWIRE + ZERO + CAM_ + UPDATES

PAGE$OUT:

case 1 dev. add = -1 (first time written out)

318 + CAM_ + FREE_STORE$WITHDRAW +
DEVICE_CONTROL$WRITE + UPDATES +
PAGE$MOVE

case 2 dev. add is meaningful, etc.

296 + CAM_ + DEVICE_CONTROL$WRITE + UPDATES
+ PAGE$MOVE

PAGE$DONE:

n = IOQ.COUNT

case 1 read

82 + n*216 + CAM_ + CORE_MAN$UNWIRE +
2*(NOTIFY)

case 2 write

82 + n*170 + CORE_MAN$UNASSIGN + PC$CHECKENTRY
+ 2*(NOTIFY)

CORE_MAN$ASSIGN: (save 2 ms in case 1 if use better threading)

case 1 We replenish (1/3 of the time) page can be immediately freed (i.e. all 3 can be freed)

1,395 + 3*(SET_ABS) + 3*(PAGE$OUT) +
3*(CHECKENTRY) + DEVICE_CONTROL$RUN ← if trouble

case 2 We replenish but pages can't be immediately freed.

813 + 3*(SET_ABS) + 3*(PAGE$OUT) +
3*(CHECKENTRY) + DEVICE_CONTROL$RUN

case 3 No replenishing done.

344 + DEVICE_CONTROL$RUN ← if trouble.

ESTIMATES:

SETABS	20
SSBS	100
EQBS	50
UPDATES	25
PAGES MOVE	25
ZERO	550
CAM_	10

TAKE MAXIMUM PATHS:

FAULT: 694 + PAGE$IN

400
~~500~~ + ASSIGN + (READ)

1700 + 3*PAGE$OUT + (RUN)

1125 + 3*WITHDRAW + 3*WRITE

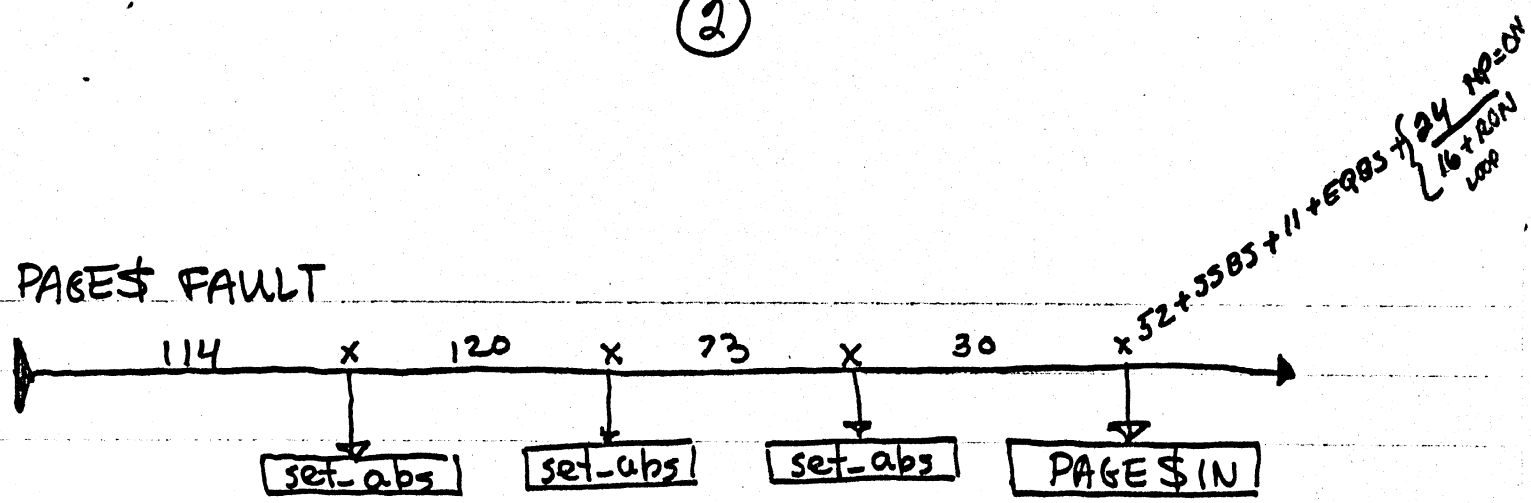
200*

300 + 3*PAGE$~~OUT~~ DONE

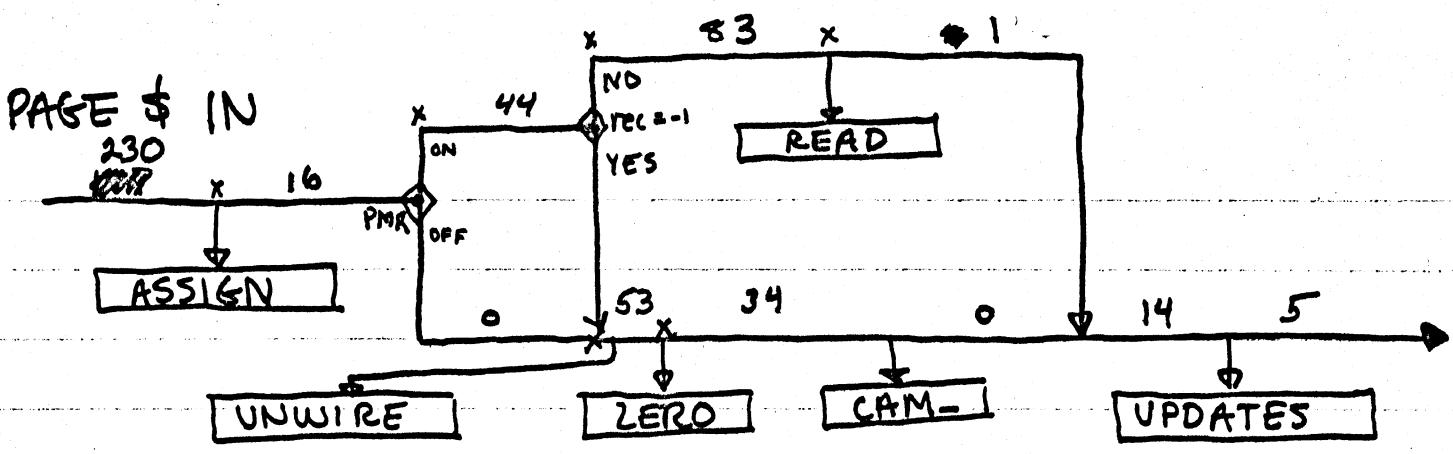
~~2700~~ 6440 + (UNWIRE)

(6440 INSTRUCTIONS)

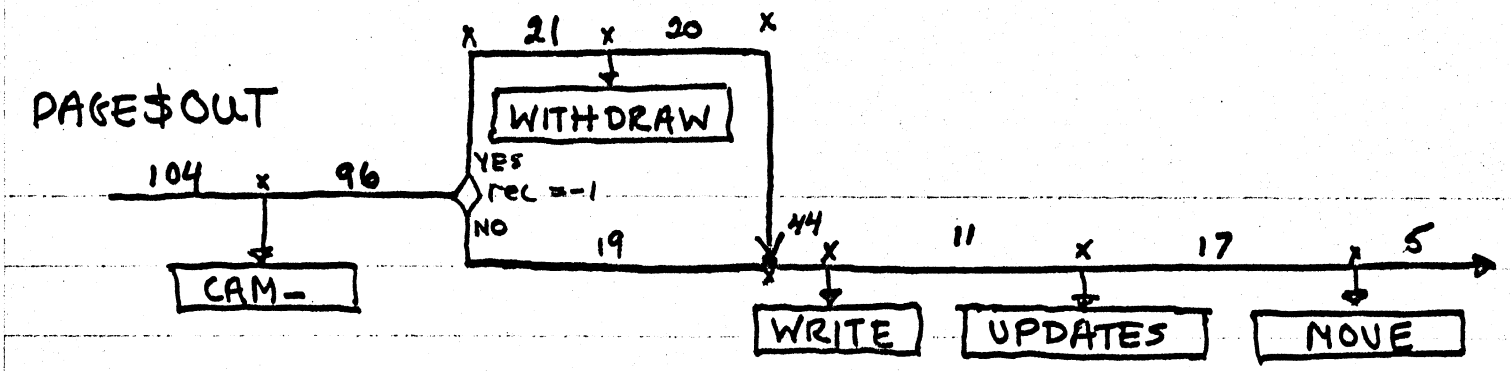
PAGE$ FAULT


114
x
120
x
73
x
30
x
52+SSBS+11+EQBS+{24 MP=ON / 16+RON LOOP
set_abs
set_abs
set_abs
PAGE$IN

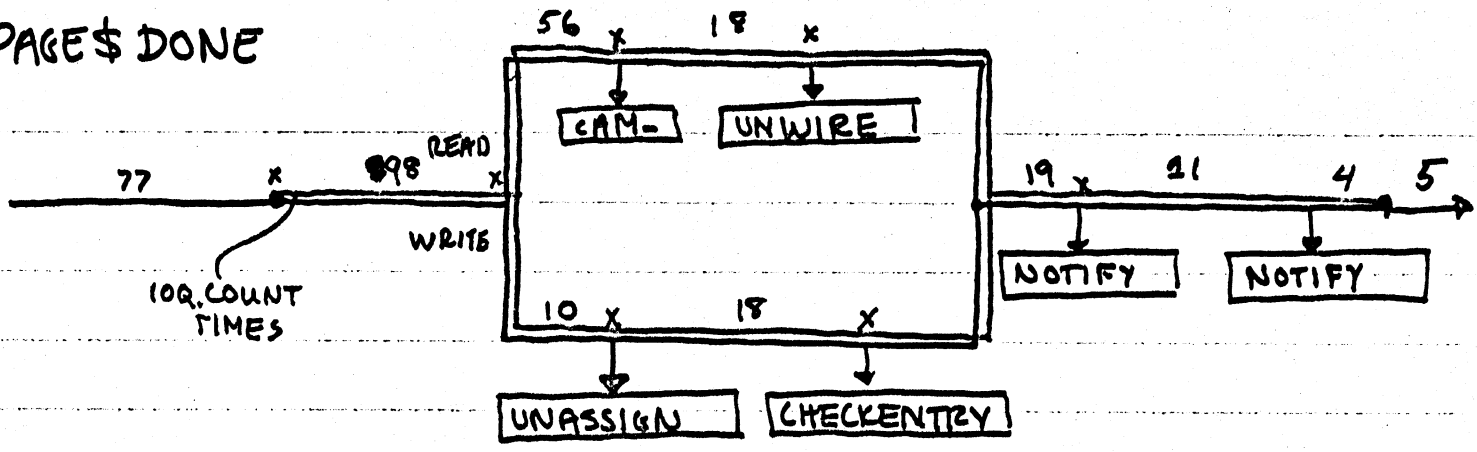
③

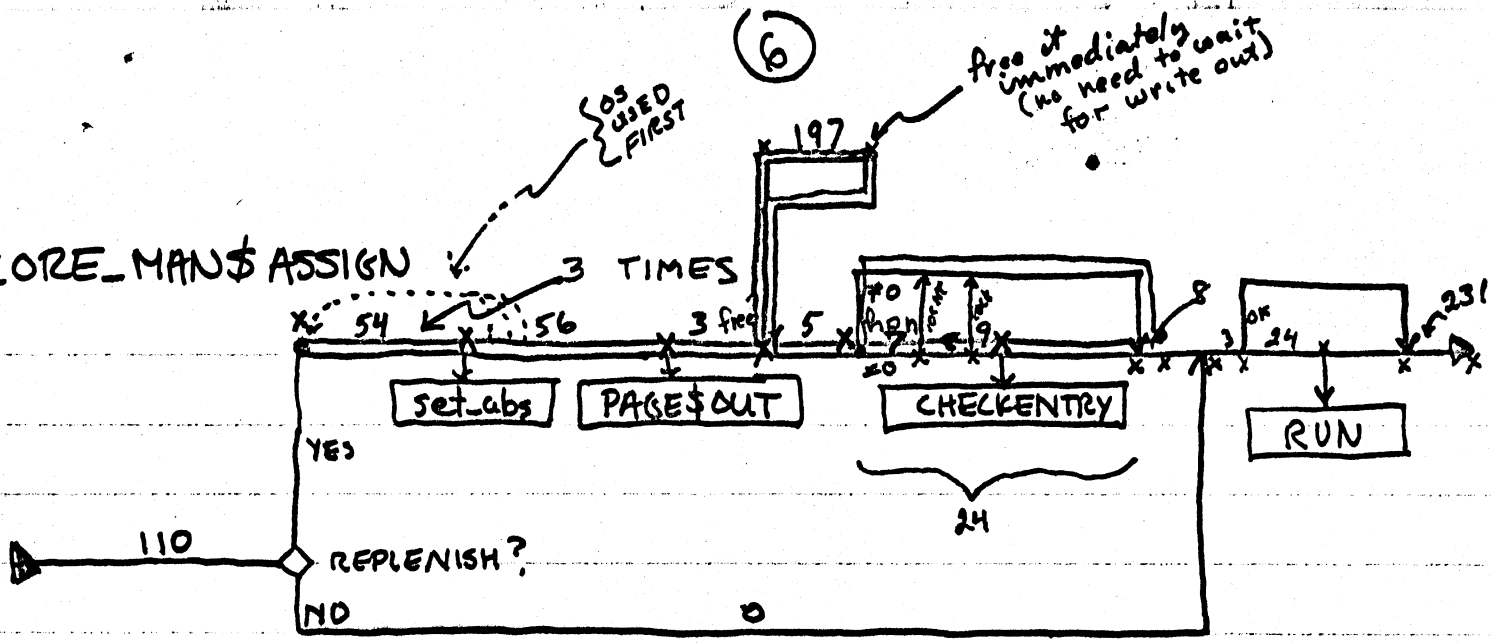

PAGE $ IN
230
x
16
PMR
ON
OFF
ASSIGN
x
44
NO
rec = -1
YES
READ
x
83
x
1
0
53
x
34
0
14
5
UNWIRE
ZERO
CAM=
UPDATES

(4)


PAGE$OUT
104
x
96
CAM-
x
21
x
20
x
WITHDRAW
YES
rec = -1
NO
19
44
x
WRITE
11
x
UPDATES
17
x
5
MOVE

PAGE$ DONE


56
18
CAM-
UNWIRE
77
$98
READ
WRITE
IOQ.COUNT
TIMES
19
21
4
5
NOTIFY
NOTIFY
10
18
UNASSIGN
CHECKENTRY


(6)
free it immediately (no need to wait for write out)
OS USED FIRST
197
CORE_MAN$ASSIGN
3 TIMES
54
56
3 free
5
8
24
231
set_abs
PAGE$OUT
CHECKENTRY
RUN
YES
24
110
REPLENISH?
NO
0