Memo: Waldo’s recommendations for interlocking gates while the AGS has beam.
Date: 31 Mar 1994
To: Bob Frankel

First I list the key bending magnet power supplies in the ATR transfer lines:

1) U-line 4 degree arc
   Name: psuarc4
   Magnets: ud1 & ud2
2) U-line 8 degree arc
   Name: psuarc8
   Magnets: ud3, ud4, ud5, & ud6
3) W-line 20 degree arc
   Name: pswarc20
   Magnets: wd1 -> wd8
4) Switch magnet
   Name: psswm
   Magnet: swm
5) X-line large arc
   Name: pssxarc90
   Magnets: xd1 -> xd3 & xlambda(main bus)
6) Y-line large arc
   Name: psyarc90
   Magnets: yd1 -> yd31 & ylambda(main bus)

Here is my list of your proposed locations:

1) UG11 stub tunnel
2) UG11 entrance at upstream end of U-line upstream of ug6
3) UGS1 downstream of utv7
4) WEL1 exit from of tunnel near old neutrino line between wd3 & wd4
   EXIT only
5) WEL1 beam dump in old neutrino line, downstream of wd3
6) WGS1 gate upstream of wd7 at step in floor
7) WGE1 entrance to tunnel at wd7
8) WGE2 entrance to tunnel upstream of wg6
9) XG11 gate between xd2 & xd3
10) XG12 gate between xd26 & xq1
11) YG11 gate between yd2 & yd3
12) YG12 gate between yd26 & yq1

From an injection point of view:

If any of 1 through 6 are violated then extraction from the AGS should
be stopped and the power supplies to both the 4 degree (psuarc4) and
8 degree (psuarc8) bends should be made inactive. The extraction kicker
should also be inhibited.

If any of the other interlocks are broken downstream of WGS1 then the power
supplies to the 8 degree (psuarc8) bend should be disabled. The power supply
to the 20 degree arc (pswarc20) could be disabled, if necessary; however
the string of magnets operates at about 0.5MW, so the possibility of frequent
dumping might cause some electrical damage.
Disabling psuarc8 should allow people to work downstream of WGE1, without
interrupting g-2 operation, assuming, of course, that radiation levels are
acceptable in this region. If the levels are too high, then access could be
restricted to only the X and Y arcs.

Due to the large amount of stored energy in the W, X and Y line arcs, we would
prefer not to crash the power supplies pswarc20, psxarc90 and psyarc90.