2) B2 Test Beam Intensity Limitation - A. Carroll.

For a significant period in this upcoming proton run, the B2 Test Beam will be the only User of the B Primary beam. As noted in the e-mail notice for this meeting [2], the committee is responsible for defining the means used to limit the secondary beam intensity allowed into the B2 Test Beam Area.

Review:

In previous years, another "main" experiment operated in the "B" line (B5 User). The secondary flux generated from the "B" Target Station Flag (w/no other target in place) was sufficient for B2 Test Beam purposes. In this mode of running, the maximum possible B2 secondary beam intensity was only ~ x2 of the nominal operating intensity (e.g. if the "B Primary" beam intensity increased from ~ 25TP to ~ 50TP). For the initial FY98 proton operation, in order to minimize the intensity in the "B" line with the B2 Test Beam as the only User the Liaison Physicist has suggested installing a target in the "B" Station (rather than using only the flag material as the target). The "B Primary" beam intensity could then be set to approximately ≤ 1 TP to yield the desired (and allowed) B2 secondary beam flux. However, with a "real target" in place at the "B" station though, if the primary beam intensity were to increase significantly (now a factor of ≥ x60+ possible), this would yield a B2 secondary beam intensity excursion much larger than previously achievable or allowed.

The B2 Test Beam secondary beam intensity is limited/interlocked by several means. These include,

1) Dual NMC units in the secondary beamline, (interlock set to 2×10^5 particles/pulse).
2) Minimum length "B Primary" target.
3) Production angle at "B Primary" target, (fixed by "B Primary"/B2 Secondary geometry).
4) An interlocking chipmunk at the B2 Enclosure Fence Gate.
5) Administrative Limit (with Alarm) in MCR for the "B Primary" beam intensity.

Referring to item #5 above, Primary beam target station intensity limits are routinely defined by the Liaison Physicists and given to MCR. These intensity limits are then monitored by the Operations computer and corresponding MCR alarms generated if the limit is exceeded.

Proposal for B2 Test Beam Intensity Limit.

The RSC approved the operation of the B2 Test Beam as the sole "B primary" User given the following are included and completed in the RSC Check-Off List,

1. Dual NMC units installed in the B2 secondary beamline, **(CK-B2Test-01)**.
2. Dual NMC unit interlock limits set to trip at 2×10^5 particles per spill, **(CK-B2Test-02)**.
3. Calculation of secondary production per unit TP incident on "B Primary" target that is to be used, **(CK-B2Test-03)**.
4. CE010 SEC "Fast Spill" interlock in place and operational, **(CK-B2Test-04)**.
5. B2 Enclosure Chipmunk in place and in interlocking mode, **(CK-B2Test-05)**.
6. Additional chipmunk (w/interlock) placed in/around the B2 Test Beam Area if indicated by thorough HP measurements of the area, **(CK-B2Test-06)**.
7. Interlocking chipmunk placed at the "B Primary" Target Telescope Port, **(CK-B2Test-07)**.
8. "Telescope chipmunk" included in the B2 Test Beam Security System to interlock the AGS Beam, **(CK-B2Test-08)**.

   [Note: The interlock limit/location of this "telescope chipmunk" should be set to interlock the AGS if the B2 Secondary Beam intensity were to increase ≥ x 10 nominal intensity].
9. The liaison physicist will provide MCR with a memorandum defining the "B Primary" target intensity limit, **(CK-B2Test-09)**.
10. MCR will enter the "B Primary" target Alarm Limit in the WATCH Program and test the alarm, **(CK-B2Test-10)**.
11. Target to be installed in the B Target Station reviewed and approved by the AGS Chief Mechanical Engineer, **(CK-B2Test-11)**.

Attachments:

1) A. Carroll, "Radiation Safety Analysis for C1 Beamline", updated for 1998.
2) Reece, "RSC meeting notice for E850 and B2 Test Beam", 19 May 1998.

cc: RSC (w/o attachments)
RSC File (w/attachments)