

Thursday 23 March 1995

K. Reece

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Minutes of meeting: Radiation Safety Committee

Date: Wednesday 22 March 1995

Present: L.Ahrens, H.Brown, G.Bunce, I.H.Chiang, R.Frankel, W.Glenn, D.Lazarus,
E.Lessard, C.Pearson, A.Pendzick, K.Reece, J.Spinner, A.Stevens, D.Trbojevic.

Subject(s): 1. g^{-2} area classifications - E. Lessard.
2. g^{-2} critical device definition - H. Brown.

1. Area classifications.

The area classifications and controls for each area associated with g^{-2} operation was reviewed for residual activity (w/one day cool-down) in the beamlines and pulsed radiation at locations adjacent to beamlines. For prompt radiation, the full intensity of 3×10^{13} protons per second on the g^{-2} target was considered. Using CASIM, H. Brown calculated the "star density" at several locations and the pulsed radiation was then estimated (E. Lessard) from these results. Ed provided a "map" of the general area that notes normal and fault levels for several adjacent locations (original in RSC file; copy attached).

In the transport of the π^+ beam from the production target to the μ -ring, there are several locations where an estimate of the fractional loss of beam can be made for "normal" operation. In the tunnel, there are a few locations that could yield 4,400Rem/hr @ 1' from the vacuum chamber. The secondary beamline is much closer to the left side of the tunnel than the right and therefore the prompt radiation estimates outside the tunnel are greater on the left side by a factor of ten or more. As an example, at the same location in the secondary transport line the maximum fault conditions could be 36 Rem/hr (LHS) and 2.3Rem/hr (RHS). Several chipmunks will be distributed along the LHS of this beamline (CK-V1-E821_1). Fencing along the RHS of the V1 beamline is only for a Radiation Area and as such, does not include a locked gate. However, access to the LHS of this beamline from the RHS must be controlled with "substantial barriers" and a locked gate (CK-V1-E821_2) since one can easily climb over the V1 beamline at the downstream end.

The μ -ring is 2' below grade, therefore the only location in the μ -beam plane is in the driveway where the estimated radiation could be 120mrem/hr. If all the injected beam were lost on the inflector, the pulsed radiation could be 100Rem/hr @ 1' from the inflector.

Access to the area immediately downstream of the target station should be restricted (gate) due to the probable high residual activity (CK-V1-E821_3). Similarly, access to the "Q9 House" will be restricted by the addition of a gate (CK-V1-E821_4).

Routine radiation in the Control Room should be 0.3mrem/hr. This location and the adjacent rooms will be classified as Controlled Areas.

2. g⁻² Critical Devices.

H. Brown provided a table (RSC file) of critical devices for access into several locations. The committee recommended and approved some changes to the proposed devices and those are included in the Table below.

Comments:

1. Each critical device will be verified by beam fault study measurements, (dual critical devices must EACH mitigate the fault sufficiently).
2. This review is for high intensity proton operation and some critical devices may be selected differently (less restrictive) for heavy ion operation. The RSC acknowledges this and will probably review these initial definitions after the first operation of both heavy ions and high intensity protons. For now, this "conservative" view of the critical devices will be implemented.
3. The use of the H10 ejector as a critical device was not approved because the attenuation factor of this device may only be 10^{-4} and therefore inadequate.
4. In cases where only one power supply is used as a critical device, it MUST be disabled (interlocked) by two independent means. J.Spinner and C.Pearson will review and recommend to the RSC (and R. Frankel) how this will be done for each case (CK-V1-E821_5).
5. Item #14 (H.Brown); berm over VQ9 will be fenced with a locked gate and have a chipmunk over the fault location.

The committee reviewed and approved (with modifications) items #1-8, 14 from H. Brown's table. The remaining items are to be reviewed independently with comments forwarded to the RSC chair.

This meeting concludes the RSC review of area classifications and critical devices for the initial commissioning and operation of the g^{-2} facility. There have been several other RSC meetings on this topic, (eg. 12 January 1995 - critical devices).

cc: RSC file