

BROOKHAVEN NATIONAL LABORATORY

MEMORANDUM

DATE: Monday, July 22, 1996
TO: RSC Files
FROM: J. W. Glenn
SUBJECT: Co-injection Meeting of July 17, 1996

Present: L. Ahrens, H. Brown, A. Etkin, J. W. Glenn, E. Lessard, W. MacKay, S. Musolino, K. Reece, T. Robinson, and A. Stevens. At the request of E. Lessard, minutes were recorded by J. W. Glenn since not all persons were present all the time.

During the meeting, the first half of the Attachment 1 was discussed. Detailed comments by the Committee are noted as bracketed comments {} on Attachment 1. Additional comments were recorded by D. Beavis (see Attachment 2).

Information regarding beam intensity reduction was also submitted by J. Alessi via D. Beavis. This information is given in Attachment 3.

S. Musolino submitted information regarding DOE imposed conditions on hazard class determination for the RHIC Facility. See Attachment 4.

W. Mac Kay submitted his requirement for proton intensity limit for the Sextant Test. See Attachment 5.

Summary And Checklist Items That Were Recorded During The Meeting

1. Compilation and possibly expansion of ATR Fault Studies with Heavy Ions will be needed to give further confidence in calculated levels with protons (pATR-Checklist).
2. A careful review of potential weak spots in the ATR and "sextant" areas will be needed. This review must assure that the limits on beam-particles in one hour and beam-particles per fault set for safe access to Thompson Rd. are also acceptable for safe access everywhere else (pATR-Checklist).
3. On the basis of a memorandum supplied by S. Musolino (see Attachment 6), all agreed that allowing only one bunch ($1/8^{\text{th}}$ of an AGS cycle) would limit the worst credible accident to about 17 rem/h at Thompson Rd. That is, the Stevens' value of 282 rem/h is divided by 2 to adjust for quality factor and divided by 8 to adjust for reduction in bunches per cycle. This modification on bunches per cycle must be removed for some g-2 running. Thus, the AGS Department must ensure a mechanism is in place such that only one bunch can be extracted for ATR running (pATR-Checklist).

4. Chipmunk radiation monitors have been used at AGS to limit an unplanned dose to staff or the public. Chipmunks are typically used to limit incremental dose to less than 2.5 mrem in an hour. Traditionally, chipmunks were only used where the maximum instantaneous dose rates could be no greater than 3 rem/h. The restriction on instantaneous dose rate was increased to 5 rem/h in the early 1990s. In the last year, Chipmunks were classified by the RSC as equivalent to a hardwired device which in effect removed the limitation on instantaneous dose rate. However, an instantaneous limit derived from the AGS limit of no more than 20 mrem per fault was used since the RSC prefers to use fences and shields where it is reasonably achievable. It had been determined that 9 seconds was the increment of time necessary for chipmunk-trip-to-interlock-off. Thus, 20 mrem per fault limited the chipmunk to situations involving instantaneous dose rates less than 7 rem/h.
5. There was discomfort by some in expanding the AGS limit of 7 rem/h for areas controlled by redundant Chipmunks. However, it is noted that the DOE considers it a reportable event for members of the public who may be on-site to receive an unplanned exposure greater than 50 mrem, and staff greater than 100 mrem. These unplanned exposures are greater than 20 mrem per fault used at AGS. If 9 seconds are used as the chipmunk-trip-to-interlock interval, then 50 mrem per fault corresponds to instantaneous dose rates less than 20 rem/h. Thus, an AGS Procedure will be needed to assure the ATR beam faults do not cause more than 2.5 mrem in an hour using chipmunks at Thomson Rd. where the maximum dose rate is thought to be less than 20 rem/h. An additional administrative system to track and limit the routine number of protons in one hour to ATR is also needed to assure safety (pATR-Checklist).
6. The committee did not address the future needs of ATR. Multiple bunches per AGS cycle will be needed in '98, not '99. A proposal to achieve this safely is needed for review soon.
7. The Liaison Physicist for ATR has little control on what comes out of the AGS. The limits imposed by the Liaison Physicist for ATR need be formally passed "up" to the Liaison Physicist of the AGS who must respond with a reviewed sub-system to comply (pATR-Checklist).
8. An overseer to the resultant "system" involving multiple Liaison Physicists will help ensure the committee's recommendations are carried out (L. Aherns).

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AGS/RHIC Radiation Safety Committee