



Minutes of the RHIC Experiment Safety Subcommittee
and the Radiation Safety Subcommittee
January 11, 1999

Subject: Expected Radiation Doses and the need for TLD

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The meeting centered on the expected radiation doses during the upcoming beam tests at injection energy in the RHIC collider scheduled for March 1999 as well as the Collider run in June-July 1999.

The March beam tests will be conducted with protons. The nominal intensity is 3×10^{10} / bunch or pulse at a nominal frequency of 1 pulse/ minute. A sloppy operational scenario assumes that 10 beam pulses are lost at a single spot. This results in a calculated dose of 1.5 mRem per hour behind a shield wall such as the Assembly Building or in a counting house.

Three fault conditions were considered:

- 1) 60 bunches at 3×10^{10} protons are lost on a single spot that result in a dose of 9 mRem per hour,
- 2) 10 bunches at 3×10^{11} protons are lost on a single spot that result in a dose of 15 mRem per hour,
- 3) 60 bunches at 3×10^{11} protons are lost on a single spot that result in a dose of 90 mRem per hour,

These fault scenarios require the need for Radiation Worker I training and TLD badges to be worn by users and machine personnel working in posted radiation controlled areas. There are additional ill defined conditions that may make it desirable to minimize the occupancy of personnel in the counting houses during the March beam tests.

The above were culled from calculations by A. Stevens that were presented to the AGS/RHIC Radiation Safety Subcommittee, the minutes of which are attached. These minutes will be distributed to the full committee membership.

Fencing will be installed where required. The current plans call for fencing per the full high intensity RHIC operation.

Postings will also be required around the RHIC perimeter. This is anticipated to a significant job with additional personnel required to carry out the task. This may be complicated by the possibility that some postings will have to come down for the period of April and May. Administrative procedures and an inventory will be required.