

A. J. S. *AJS*

Minutes of meeting: Radiation Safety Committee, sub-committee

Date: Friday, March 5, 1999

Present: A. Etkin, W. Mackay, S. Musolino, A. Stevens

Subjs: Review of Collimators and Other Topics Related to RHIC Turn-On

Several topics were discussed in this meeting, among which were collimators which will be installed downstream of the 8 o'clock IR.

The analysis of radiological topics associated with collimators now planned for RHIC was performed some time ago by A. Stevens. The technical note describing this analysis is included here as Attachment 1. A follow-up memorandum, which describes a more accurate calculation of dose from the collimator at the exit of a nearby personnel labyrinth in the clockwise ring, is included as Attachment 2.

The berm exterior to the position of the collimators will be fenced. Long liners will also cover the berm, and soil added over the first ~ 100 ft. With these berm modifications, skyshine from the collimators is expected to be below 0.5 mrem per year at the closest point to the site boundary, groundwater is protected from leachable radioisotopes to well below the values at the beam dumps, and the annual dose at the fence boundary is expected to be well below the 240 mrem per year limit. All these numbers refer to 4 times design intensity. Within the support building labyrinth (Bldg. 1008A) a door with some polyethylene will be installed to reduce the dose at the labyrinth exit, which is within a controlled area – TLD required. A chipmunk will also be deployed at this location. This is regarded as an ALARA concern, rather than a prompt radiation issue.

No issues relative to the plans regarding collimators were identified by the sub-committee. Plant engineering intends to have all work completed – the re-grading as well as liner and fence installation – by the May/June commissioning run. If delays develop, the fence alone may be installed. It is not clear at the present time whether the collimators will be installed prior to the commissioning run.

Following up an issue identified in the minutes of the meeting of 01/19/1999, it was agreed that the berm over both Lambertson injection septum magnets should be located, and snow fence erected here if practicable for the commissioning run. Stevens reported that Ed Lessard has informed him that he (Lessard) intends to deploy a few hundred TLD's around the berm in this run, and will reserve several to place at these locations which might be troublesome apertures.

Stevens reported the "discovery" by Chou Lac of two additional holes in the berm within the 8 o'clock fence perimeter. These have the appearance of 21 inch diameter survey holes, but Frank Karl, who was aware of these holes, does not use them. The dose at the exit of these holes would be about 4 rem for the full beam loss at 4 times design intensity. This would not normally be a concern,

given the fenced location, but the pipes emerge about 15 ft. from the downstream edge of the fence. Skyshine from these holes, added to the "no-hole" dose, might well put the dose at the edge of the fence beyond the 160 mrem criteria. It was decided that a patio block barrier should be erected around them, but this is clearly not a concern for the near future. If possible, a radiation barrier should be constructed prior to the physics run now scheduled to begin on Nov. 1, 99.

In a follow-up to the meeting of 02/19/1999, the subcommittee rescinds RSC CK-12 o'clock-5. This was a recommendation to install light sensors across the shield walls at 12 o'clock if practical. The RSC minutes of 07/29/98 state that "This is NOT regarded as a personnel protection device, but as perimeter protection information." This area is well inside the perimeter fence. The estimated maximum fault dose levels at human height (full 4 times design intensity lost and $\times 2$ QF applied) is 10 rem at human height on the ring center inside location and about 20 rem on the opposite side. Other locations exist within fenced areas with comparable fault dose estimates.

In another follow-up to the meeting of 02/19/1999, it was reported that W. MacKay, R. Marascia, and A. Stevens, accompanied by Mike Gaffney, visited several of the radiation barriers at the exits of the cryogenic penetrations. Gaffney recommended lowering the stacked patio blocks to a stacked height not to exceed 4 ft., and, in instances where the line of blocks is longer than about 6 ft., taking additional stabilizing measures, an example of which was an inverted "U" shaped plywood structure hung over the blocks. Marasica will pursue this further with input from Gaffney.

Attachments

Distribution:

- D. Beavis (w/o Attachments)
- A. Etkin (w/o Attachments)
- W. Mackay (w/o Attachments)
- S. Musolino (w/o Attachments)
- A. Stevens (w/o Attachments)

cc: RSC file (w Attachments)
RSC (w Attachments)