

A.J. Stevens *ajs*

Minutes of meeting: Radiation Safety Committee, sub-committee

Date: Monday, October 19, 1998

Present: A. Etkin, W. Mackay, R. Marascia, S. Musolino, T. Robinson, A. Stevens

Subjs: 10 o'clock Area, Straight Penetrations, Perimeter Fence Specifications

Three separate topics were considered in this sub-committee meeting. The first was concerned with the 10 o'clock IR region, which is the only IR not previously discussed by any RSC sub-committee. The issues are minimal here. An array of 14 inch diameter, 40 ft. long cable penetrations exist, but estimates by Stevens indicate less than 0.5 mrem at the exit of these for a beam fault at 4 times design intensity. The first leg of a labyrinth must be blocked with 5 ft. thick light concrete blocks as shown by Marascia. The worst case fault dose outside these blocks was estimated to be 58 mrem by Stevens (again at 4 times design). The largest problem at 10 o'clock is associated with the 5 ft. cryogenic penetrations which are identical to their counterparts at 12 o'clock. Stevens presented the results of calculations which indicates that the dose (adding the results from LCS and CASIM) decreased to about 140 mrem at 20 ft. from the edge of the hole. Stevens recommendation for a fence 60 ft. long by 40 ft. wide around each of the penetrations was approved. The first 4 pages of the attachment are copies of transparencies presented by Stevens on 10 o'clock.

The second topic briefly considered was a continuation of the topic of the straight penetrations in the berm represented by the survey shafts. At the walk-through reported in the minutes of the RSC sub-committee meeting on 9/10/98, it was reported that shafts of various diameters exist. Stevens had been requested to estimate the dose. The last two pages of the attachment show the results of LCS estimates of the dose as a function of diameter. Dose estimates were made as a function of diameter, position, and whether or not a 6 inch patio block cover exists directly above the penetration. The last two pages of the attachment show the results of the estimates (as always at 4 times design and 2 times QF). The dose directly over the hole with no cover can be as high as 2.2 rem (for the largest diameter hole), although even slightly off to one side (last page of the attachment) the estimate drops to a nominal 150 mrem. No "final" recommendation was made concerning these holes, but a suggestion that a 6 inch thick polyethylene "plug" lowered into the hole and attached to the cover plate with a rod deserves further investigation.

The third topic considered was perimeter fence around the IR's. The RHIC Project plans to have fence in place prior to the March 1999 Test Run. Stevens presented preliminary drawings (containing some errors). Fence around the 4 o'clock and 12 o'clock regions had been considered by previous sub-committees. In connection with the 12 o'clock fence, the "interior fence", which was previously requested by a sub-committee to be in place by FY2000, is not now part of the package. Stevens mentioned that the previous dose estimate at the exit of the large cryo. penetrations had not considered weather covers which are now in place. These are substantial barriers (over 4 ft. tall) over the most exposed part of the opening which Stevens

estimates lowers the previous estimate of 95 rem to below 50 rem (although a calculation has not yet been performed).

The remainder of the perimeter fence (2 o'clock, 6 o'clock, and 8 o'clock) had not previously been considered by a sub-committee. In general these fences are positioned well away from any area of thin shield (roofs over IRs or areas of side wall – roof overlap) or penetration. Stevens mentioned that the fence at 6 o'clock, while perfectly adequate up to Design Intensity, may require later extension because of the unique "end wall" problem of the 6 o'clock hall. The sub-committee approved the perimeter fences subject to the following changes: (1) The drawing for 2 o'clock shows a fence line that may interfere with a road. This must be checked and, if modified, dose estimates should be made to validate that the fence line is far enough from the 2 o'clock roof (CK-RHIC-2-04, Stevens). (2) The 8 o'clock drawing must be changed to correct an error which shows an outside stairway in the cryo. support building inside the fence rather than outside. (3) The 10 o'clock drawing should be changed to show a 40 ft. width rather than the 30 ft. now on the drawing, (4) The drawing for 12 o'clock must show the fence on the pad more clearly than the preliminary drawing. A copy of the revised drawings should be sent to the RSC chair for approval.

Subsequent to the meeting it was noted by Ken Reece that assembly buildings must be checked for any access routes (inside or outside) which would lead into the fenced regions.

It was noted that maintenance on the cooling tower, immediately outside the fence on the east side at 6 o'clock, is intended to be performed by radiation workers only. Some appropriate barrier should be placed across the front of this tower and posted as a Controlled Area for radiation workers only (CK-RHIC-6-04).²²

Attachment

Distribution(with attachment):

- D. Beavis
- A. Etkin
- W. Mackay
- R. Marascia
- S. Musolino
- K. Reece
- T. Robinson
- A. Stevens

cc: RSC file (w/attachment)
RSC (w/o attachment)