



## Memo

*date:* May 14, 2009  
*to:* RSC  
*from:* D. Beavis   
*subject:* Thompson Road West Injection Arc Slope

There was concern based on physical inspection that the west slope to the X-injection arc may not provide sufficient shielding. F. Karl has provided survey numbers for relocating the chipmunks and measuring the elevations on the slope near the arc.

The design criteria used for the RHIC Project AD/RHIC/RD-83 was examined in relation to the slope numbers. The road and berm over the tunnel was considered to be at an elevation of just over 86 feet. This would provide a minimum shielding coverage of 11 feet of soil at about 16 feet from the source.

The elevation line of 83 feet does not go over the top of the tunnel outside the fence. Using 75 feet for the beam height I estimate that if the 83 foot contour line was at the edge of the tunnel there would be 8 feet of dirt shielding. The distance from the center of the tunnel would be 14 feet which is two feet less than to the road. A rough estimation is that the potential fault levels may be an order of magnitude higher than on the road. This does not take into account potential increase in shielding by the magnets.

Based on the memorandum of Nov. 18, 2008 by D. Beavis I would suggest that the risk at this location is acceptable for the rest of the run. A single bunch at  $2.5 \times 10^{12}$  protons (B15 transformer limit) would produce a dose of 3-4 mrem. The chipmunk on the arc should stop the fault after the one bunch. After the run it should be examined whether to add shielding, change barrier locations, leave unchanged, or use other options. **(CK-fy2010-RHIC-607)**

It is recommended the area on the west slop be posted as no entry without appropriate permission. After this the larger area can return to its normal posting for RHIC operations.

**CC:**  
D. Phillips  
A. Drees