

Radiation

REVISED: October 13, 2000

Safety

Minutes of RSC subcommittee on - 27 July 2000

Committee

E938 Target Cave Shielding

Present: D. Beavis, A. Etkin, R. Marascia, A. Pendzick, A. Stevens, A. Carroll

This subcommittee met to make an initial review of the shielding around the target cave of E938, neutron spallation studies. This was done so that construction of the shielding could begin with reasonable confidence.

Dose estimates were based on a maximum of 5×10^{15} , 25.5 GeV protons per hour. The runs for E938 during 2001 are expected to be of short duration, a few days of mainly a few hours interleaved with running for g-2.

At this incident proton flux, the roof shielding allowed a maximum dose of 60 mRem/hour over the target. The downstream portion of the hadron shield with the mercury target out of the beam allowed a dose of 1.5 mRem/hr. Based on these CASIM calculations, the hadron shield for E938 was deemed acceptable. Also the floor shielding was found to be adequate for keeping the soil activation to within limits. Based on these calculations,

A. Pendzick and R. Marascia were given the go ahead to begin construction of the hadron shield.

The rather narrow muon stop outside of the hadron shield was found to be marginal. There were possibly elevated levels in the corners where the muon stop abutted the hadron shield. It was decided that A. Stevens would perform more complete calculations of the muon fluxes, and that sufficient shielding should be installed to keep the dose/hour below at least 25 mRem/hour, and preferably to below 5 mRem/hour.

Subsequently a 10' long section of 10' wide by 8' high section of steel has been inserted into the upstream portion of the muon stop. Estimates for the current configuration made by A. Stevens are attached to these minutes.

An administrative process to limit the beam intensity to less than 5×10^{12} protons per spill must be in place. This limit can be modified after the surveys are viewed. (CK-C1-FY2001)

The final updated shielding drawing will need to be reviewed by a sub-committee and signed. (CK-C1-FY2001)

Surveys of the shielding will need to be conducted with and without the target in place. (CK-C1-FY2001)

The drawing for the building need to be examined to ensure that there are no water/drain/sewer pipes in the vicinity of the target area which could leach radioactive products from the soil. (CK-C1-FY2001)

The interlocks for the new cave and potential transport faults need to be reviewed. (CK-C1-FY2001)

Attachments to file:

1. A. Carroll, April 26, 2000; Radiation notes for Neutron Spallation Test Facility
2. Memo A.J. Stevens to A. Carroll dated Sept. 21, 2000, Muon dose estimate in E938.

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