

Wednesday 18 December 1996

K. Reece



Minutes of Meeting: Radiation Safety Committee

Date: Wednesday 18 December 1996

Present: L. Ahrens, Leo Greiner (E896), R. Hubbard, E. Lessard, W. Meng, D. Phillips, K. Reece, A. Stevens, R. Thern.

Subject: E896 "walkway" over C5D11 during high intensity Au operation.

The C5D11 "sweeper" magnet in E896 experimental area is a cryogenic magnet. The estimated leak rate of the magnet is such that the liquid He will have to be replenished once every ~ 4 days. Transfer of the liquid He is a process that should take ~ 4 hours to complete and this would result in a noticeable "tax" on the experiment if they were required to turn the beam off during the process.

An AGS Temporary Procedure (attachment) has been written (AGS-TPL 97-17, "Procedure for Transferring Liquid Helium - AGS E896") that permits a trained experimenter to participate in the transfer process; an AGS Cryogenics Technician is also required to be present. During the LHe transfer, ~ 1/2 hour is initially required for personnel to be on the "walkway" over C5D11 to "crane" the LHe transfer dewar in place, then 3 hours to fill the "permanent" dewar and finally ~1/2 hour to "crane" the LHe transfer dewar out of the area.

The "walkway" would be accessed from the roof of the E896 Electronics hut (ladder to roof) and would have a gate + lock (key under E896 control), (CK-C5-E896-01). This gate will be posted as "Access to walkway for LHe transfer ONLY. Contact on-duty Cryogenics Technician for assistance", (CK-C5-E896-02). There will be a 4 ft. fence around the perimeter of this walkway along with a ~ 2 ft. elevation from the surface of C5D11. The committee accepted the sum of these two distances as meeting the guideline of a 6 ft. "barrier".

E. Lessard presented a summary (at 1×10^5 Au/second) of estimated prompt radiation levels (attachment) for a "thick" target upstream of, and with NO shielding to, the walkway ($\Rightarrow 45^\circ$ source to walkway) and a target immediately underneath the walkway ($\Rightarrow 90^\circ$ source to walkway, BUT with the magnet iron shielding). In the first case ($\Rightarrow 45^\circ$ source to walkway), the result was ~ 1 Rem/hour on the walkway and the second case yielded ~ few mrem/hour levels at

the same location. The upstream "thick" target is unlikely to be possible given there are no beam insertions in the vicinity. Therefore, only a "scraping" loss should be possible here, resulting in a fraction of the "thick" target estimate. [Note: the "in-beam" hazard is Class I but the beam will be fully enclosed in the high intensity mode and areas outside the beam will be Class II.] The committee recommended that an interlocking chipmunk (interlock = 20 mrem/hour) be placed on the walkway over C5D11. The alarm level should be possible to be set to ~ 10 mrem/hour for nominal operation of the C5 beamline. Both the interlock and alarm level may require modification given HP surveys with the high intensity beam running. These HP survey must be done immediately when E896 makes the transition to high intensity operation (CK-C5-E896-03).

The liaison physicist must inform the experimenters (memorandum) of 1) the "possible" prompt radiation levels on the walkway with the beam ON, and 2) that ANY violation of the walkway perimeter fence (e.g. climbing over the fence with the C5 area secured for beam) would be immediately addressed by the AGS Department and could result in the end of E896 operation, CK-C5-E896-04). Finally, both the liaison physicist and liaison engineer must sign-off that the walkway has been built as specified and represents a "complete barrier" to prohibit personnel access, (CK-C5-E896-05).

During E896 high intensity turn-on and operation, any issues not addressed by the RSC in this review must be brought to the attention of the RSC Chair or AGS Department Chair for Safety for resolution.

cc: RSC (w/o attachments)
RSC file (w/attachments)
L . Jia (w/o attachments)