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Date: December 21, 1993

Minutes of the AGS Radiation Safety Committee

Subject: Ex. 890, C8 Line; & 1 GeV Run

Meeting Date: July 7, 1993

Present: H Brown, C Flood, JW Glenn, E Lessard, K Reece, & K Woodle.
Guests: R Chrien, D Meany, J Ryan, J Scuduto, & WB Tippens.

Summary

Ex. 890 in the C8 line is approved to run. The 1 GeV "Activation Experiment" was reviewed. Many questions were raised, particularly about possible contamination. Further review will be carried out by a subcommittee. The matter may have to be brought back to the committee.

Meeting Minutes

C8 Line for Ex. 890.

K Woodle presented the proposed Radiation Safety system for Ex. 890 (Attachment 1). With 10^{12} protons on the C' target, the beam will run at 5×10^6 particles per spill in a 10 cm^2 spot ($1.3 \times 10^5/\text{cm}^2\text{-sec}$).

Access control will be for a Class IV area but the users will not be trained to enter a High Radiation Area. No access will be allowed with beam on.

Faults could increase the beam by a factor of 40, thus 2 NMC's will be needed to keep the area in compliance (C8CK1).

Fencing will be needed on the NW corner of the area, in the C6 line, out to about C6Q7&8 (C8CK2).

Control of the polarities of C6D1 and C6D2 will be by an EAG procedure, not Red Tags (C8CK3).

Woodle included the results of last years Fault Studies in his presentation.

A beam aperture down stream of D2 will assure that the beam cannot be steered out of the area (C8CK4).

A current comparitor will be needed to keep the beam on the second NMC downstream of Q7 (C8CK5).

Under fault conditions, levels outside the fenced area could exceed 100 mrem/hr. Some of the Committee felt that the NMC's would prevent this, others that a Chipmunk is always needed to reduce exposure to people. A Chipmunk will be installed for this run (C8CK6). The techniques of using NMC's to limit exposure to people needs development, that is Q/A paper, setup, calibration, etc. This will be tracked under ACT_ITM044.

1 GeV Irradiation for M Zucker.

As Zucker was not present, Glenn presented an overview of the experiment (Attachment 2).

Targets will be placed in an air gap in the C line in the Switchyard Cave. They will be 4" dia. 2-4" long Lead or Tungsten cylinders. Foils will be placed between them and retrieved after each run.

Scaling up a 1/2 mrem/hr by 10,000 says that levels by the target, after a run during foil changes, should be 5 rem/hr. Tongs would be used. Irradiated targets would be stored for some period in the Switchyard cave for cooldown.

Tungsten targets would be wrapped in .8 mill Aluminum foil to contain spalling pieces. Target heating is also "a consideration at perhaps 10^{12} protons per second", so intensity would be limited to 10^{11} .

Several "cave trained" teams would be used to limit individual exposure.

Comments by the Committee included:

The Committee is particularly concerned with the possibility of the Tungsten target "flaking" and requires the assumption of contamination after each run until a smear can be counted. HP coverage will be required for entry.

A Radiation Work Permit will be required, including: Installation dose, Dose rate during the run, and Removal dose.

C Flood will help with the "Activation Request" required by the ES&H Standards for interdepartmental transfer of the activated foils.

The expected levels outside the cave at the trench under the target needs checking.

M Zucker must present quantitative information on: The temperature rise in the targets; and what the "burst limit" for protons would be to prevent explosive fracturing of the targets.

It is required that all switchyard radiation interlocks will be functional.

P Ingrassia will follow up on what OPM procedures will be needed for the run.

Due to the lack of information, the Committee could not make a final recommendation. A sub-committee, including Glenn and Lessard, will follow up on this experiment. If the above questions are resolved, this matter need not be brought back to the full committee and the sub-committee can develop a checklist and approve running.

Outstanding Items:

A sub-committee including Glenn and Lessard to follow the 1 GeV irradiation experiment.

Action Item:

ACT_ITM44 - Develop an acceptable system to be able to use NMC's to limit exposure to people - AGS Rep. W Sims, RSC Rep. E Lessard.

Check List Items:

- (C8CK1) Two NMC's installed in the C8 line.
 - (C8CK2) Fencing complete in the NW corner of the area.
 - (C8CK3) EAG procedure in place to control polarity of C6D1&2.
 - (C8CK4) Beam iris downstream of D2.
 - (C8CK5) D1&2 current comparitor installed and setup.
 - (C8CK6) Chipmunk installed outside the fence.
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Attachments (file only):

- #1 - Woodle to Glenn, Jul 1, '93.
- #2 - Zucker to Glenn, Jul 1, '93.

Distribution: Radiation Safety Committee and guests
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