C-AD

Radiation

Safety

Committee

Issued: March 16, 2015

Minutes of BLIP RSC Target Review Subcommittee of March 4, 2015

Subject: New Thorium Target Array and Low energy irradiation of Scandium and Titanium

Present: S. Smith, D. Medvedev, L. Mausner, K. Yip, N. Contos, E. Lessard, R. Karol, D. Beavis, and C. Schaefer

The committee discussed having an index system for the target array so that they can be referenced unambiguously. It was decided that they will be given a number for the year followed by an increasing number for that year.

Tgt_15_01: 200 MeV Irradiation of Thorium foil in a copper holder array.
Tgt_15_02: Low Energy irradiation of Cu, Ti, and Sc.

This index number scheme will be continued unless members of the subcommittee have a more useful suggestion.

Approval of target irradiations requires the following two approvals:

1. The BLIP target committee must approve that the target has been reviewed and approved.
2. The QA group must have all acceptance paperwork completed and filed for materials, leak checks, etc before exposure can be allowed.

200 MeV Thorium Foil

This irradiation is essentially the same as one conducted last year in June/July. The canning record[1] was supplied by L. Mausner. The main change is that the target capsule and energy degraders are made of copper instead of Al. The change from Al to copper is expected to reduce the dose to BLIP staff. The Na^{24} created in the Al has a short half-life (15 hrs) and emits a 2.7 MeV gamma an contributes substantially to the dose of BLIP workers.

The committee asked that the charcoal filters be checked both before and after the processing of the target foil material to see if any noble gasses were trapped.

The committee asked that a measurement be conducted to verify the reduced exposure when using a copper capsule and degraders.

An analysis conducted by R. Karol will be filed in the committee records and the link is

[1] L. Mausner and D. Medvedev, "Irradiation of Th foil at 200 MeV, transport to TPL and shipment to ORNL".

provided in footnote [2] in the unlikely event there is a release of any gaseous Thorium products.

The target canning record was approved as complete and ready to allow irradiation.
All QA issues must be closed before the irradiation begins.

Low Energy Irradiation of Cu, Ti, and Sc

The canning record[3] was provided by D. Medvedev. The canning record needs to have the final drawing rather than the working drawing which are now provided on pages 18-19. Otherwise the canning record is complete and there are no outstanding safety concerns. The array will be approved for irradiation once the canning recorded is updated.

Also QA must approve that all acceptance items are complete including certificate of leak checking, target card etc.

The present exposure will be approximately one hour in duration. Larger targets and longer exposures are expected to be requested in the future.

[2] R. Karol, Thorium gas release.
[3] D. Medvedev, "Low Energy Irradiation of Copper, Titanium, and Scandium Foils Welded in a Copper Can".