

Subject: Re: T2 target and protect adjustment

From: Isaac Earle <iearle@triumf.ca>

Date: 05/04/2017 4:25 PM

To: Roman Ruegg <romanruegg@shaw.ca>, Yi-Nong Rao <raoyn@triumf.ca>, Yuri Bylinski <bylinsky@triumf.ca>

CC: rick baartman <baartman@lin12.triumf.ca>

According to drawing E-30149 it is 0.787" (20.0mm) at the entrance, and 1.181" (30.0mm) at the exit.

Isaac

On 05/04/2017 4:23 PM, Roman Ruegg wrote:

I believe the Collimator A entrance aperture is 20 mm....it maybe 38 mm at the exit.

Thanks Roman

Sent from my Samsung device

----- Original message -----

From: Yi-Nong Rao <raoyn@triumf.ca>

Date: 2017-04-05 15:43 (GMT-08:00)

To: Yuri Bylinski <bylinsky@triumf.ca>, Isaac Earle <iearle@triumf.ca>, Roman Ruegg <romanruegg@shaw.ca>

Cc: rick baartman <baartman@lin12.triumf.ca>

Subject: Re: T2 target and protect adjustment

Below is my summary on today's decision made and the reasoning.

There were evidences showing that the beam was angling downward onto the T2 target. This angle was roughly 7 to 10\,mrad. This angle could explain the 2 measurements consistently: one was that the beam spot was seen to be higher at the target entrance window than at the exit window; the other was that when the beam was made balanced up and down on the protect monitor, it was seen to be centered on the target entrance window. But remember that the protect monitor is at ~30cm upstream from the target centre-line.

When the beam was angling onto the target, the TNF neutron flux could

hardly reach 800 counts level, no matter it was centred on the target entrance window or shifted downward. The downward shift produced even less (significantly less!) neutron counts.

Since we have no real-time measurements of the position and incident angle of beam passing through the target, and remember that the beam just wanted to be higher on the protect monitor to produce >800 neutron counts, we've decided to elevate both the protect monitor and the target by 3mm from where they are. Specifically, they shall be set to the following elevations:

- > T2 Protect Monitor centre-line: 1833.5mm w.r.t. the T2 target flange.
- > T2 target centre-line: 1836.5mm w.r.t. the T2 target flange.
- > The T2 profile monitor shall be set to the same elevation as the T2 target centre-line.
- > The current elevation of collimator A is 1834.7mm w.r.t the T2 target flange.

We'll try with these new settings to get the neutron flux back to >800 counts from TNF.

Even if OPS can tune the beamline to get, by chance, the beam more parallel through the target section and the collimator A, that would be even easier for the beam to pass through the collimator A, because the collimator A has a full aperture of 38.6mm at minimum which is way larger than the new offset of 1.2mm vertically between the collimator A and the T2 Protect Monitor.

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Yi-Nong