

TRIUMF



TO: Niki Martin, for Jens Dilling

DATE: 2008/10/14

FILE:

FROM: Colin Morton

CC

RE: ISAC Science Forum, October 8, 2008.

A first test of a uranium oxide (UO_2) production target was carried out between August 29 and September 20, 2008. The test was carried out in two stages, per the Safety Analysis Report (SAR) submitted to the CNSC early this year. In the first stage, over the Labour Day long weekend, an integrated proton current of $100 \mu\text{A}\cdot\text{hrs}$ was put on target but no beam was extracted; the goal was to produce a source of radioactivity (*i.e.* the target) and study the potential migration of activity through the downstream and backing vacuum systems. Joe Mildenerger described the first results from this stage at the last Science Forum on September 10.

Following Stage 1, additional radiation safety measurements were carried out. Representatives from the CNSC visited TRIUMF on September 8 and 9 to review the findings and check that the systems and procedures described in the SAR were in place. We had concluded that we could safely proceed to the second stage of the test, a further $200 \mu\text{A}\cdot\text{hrs}$ of irradiation with yield measurements; the CNSC gave their concurrence prior to leaving on September 9.

Stage 2 was carried out between September 10 and September 20. An additional $195 \mu\text{A}\cdot\text{hrs}$ of integrated current was put on target, during which we measured Na, K, Rb, Cs and Fr yields at $1 \mu\text{A}$, and Rb, Cs and Fr yields at 1.5 and $1.9 \mu\text{A}$. We stopped at a total integrated current of $295 \mu\text{A}\cdot\text{hrs}$ rather than 300 to ensure that the radiation safety measurements that were to be carried out at the end of the run would be carried out during daytime hours. Since then, the target module has been disconnected and moved to the hot cell; the test won't be truly complete until the target is dismantled and put into long-term storage over the next few weeks.

A report to the CNSC on the outcomes of the test is being prepared, pending the results of the last radiation safety measurements from the hot cell.