



Department of the Interior
US Geological Survey
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August 25, 2014

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington DC 20555

Subj: Revision to response to RAI dated June 19, 2014, regarding R-113 license amendment request (TAC No. ME9424)

Gentlemen:

The attached pages are submitted as a revision to our earlier RAI response dated July 10, 2014, which was submitted in response to your Request for Additional Information dated June 19, 2014. Please contact me if you need additional information.

Sincerely,

Tim DeBey
USGS Reactor Supervisor

I declare under penalty of perjury that the foregoing is true and correct.
Executed on 08/25/2014

Copy to:
Vito Nuccio, Reactor Administrator, MS 911
USGS Reactor Operations Committee

A020
ULR

Responses to RAI Questions

Revised Response to Question 3:

Question 3 of the RAI indicates that the NRC is assuming that we are requesting to irradiate 2 grams of SNM, but that assumption is not correct. We are simply asking to be allowed to possess up to 2 grams of SNM at the facility for use in reactor-based experiments, calibration of radiation detectors, and reference sources. It is not reasonable to base this possession decision on a worst case analysis for irradiation of 2 grams of SNM when that is not what we are proposing. It is highly unlikely that we will ever possess 2 grams of SNM under the proposed license provision, but we would like to have the operational flexibility that is provided by that limit. Our current reactor license allows us to possess up to 15 grams of HEU for unspecified purposes, which would include irradiation.

To illustrate a realistic irradiation scenario for this request, there is one existing GSTR Experiment Authorization that allows for the irradiation of high-enriched uranium (HEU). This Experiment Authorization has been reviewed and approved by the GSTR Reactor Operations Committee. It allows for irradiation of up to 10.5 mg of HEU for up to 5 hours at a neutron flux of 4×10^{12} , with a maximum production of 4 mCi of iodine isotopes and 0.2 nCi of Sr-90, so the approved experiment is well within the limits of T.S. I.9. This Authorization requires the sample to be sealed in a quartz ampoule which is then sealed in an airtight aluminum container, and it also specifies a minimum 12 hour decay time prior to unloading the sample from the reactor.

Any SNM irradiations that would be performed would need to have Experiment Authorizations that have been approved by the GSTR Reactor Operations Committee. The Committee approval would only be given after a detailed safety evaluation has been performed so that the Committee is assured that the irradiation can be done safely and within all applicable requirements. These evaluations are the responsibility of the Committee, in accordance with the facility license, and they are taken very seriously.

Approval of our license request simply allows the SNM to be possessed under the reactor license instead of the USGS broad scope license. It does not change the type, magnitude, or approval process of SNM experiments that will be performed.

Addendum to Response to Question 4:

Our proposed license condition 2.B (3) would allow the possession of 2 grams of SNM, but by itself it would not allow the irradiation of 2 grams of SNM. An experiment proposal would need to be evaluated and approved by the USGS reactor staff and the USGS Reactor Operations Committee before any irradiation of SNM could proceed.