

February 1, 2018

Materials Licensing Branch
U.S. Nuclear Regulatory Commission, Region III
2443 Warrenville Road
Suite 210
Lisle, Illinois 60532-4352

Dear Sir/Madam:

Purdue University (PU) requests an amendment to the PU Broad Scope License No. 13-02812-04. Specifically, PU requests authorization to acquire, possess and use irradiated and unirradiated fuel samples from Idaho National Laboratory (INL) for the purpose of mounting these samples for further irradiation at Argonne National Laboratory (ANL).

Rationale and Basis

To further the understanding of the behavior of nuclear fuel, it is necessary to study the microstructure of fuel and the relation to mechanical properties. This can only be done with advanced techniques such as electron microscopy and x-ray diffraction. A researcher at Purdue requires that samples will be obtained from INL and then mounted so the samples can receive further analysis with synchrotron radiation at ANL. Neither ANL nor INL has the personnel expertise to mount these samples. This process would likely be completed within a week at PU and the samples would be shipped to ANL. No radioactive waste will be generated from these procedures and the samples will not be returned to Purdue.

Most importantly, the researcher has beam time scheduled for February 26 and the shipment from INL must be scheduled next week. If this window is missed it is likely that the next available beam time may be a year from now. For that reason, we request an expedited review of this amendment request. We will further evaluate future licensing needs and submit an additional amendment to accommodate those needs in the next few months.

Amendment

Please amend Section 6 of the PU Broad Scope License No. 13-02812-04 to include:

Special Nuclear Material	Chemical and/or Physical Form	Maximum Possession Amount
Uranium-235	Samples up to 40% enrichment	1 gram
Plutonium-242	Any	1 millicurie

Please note that Purdue University is licensed to possess the other byproduct and special nuclear material in these samples so no request is made for those radionuclides. The material characterization of the samples to be used are in the attached spreadsheet.

If you should have any question regarding this request please contact me at 765-494-2350. Thank you for your prompt attention to this matter.

Sincerely,

A handwritten signature in cursive script, appearing to read "James F. Schweitzer".

James F. Schweitzer
Radiation Safety Officer

Purdue University Samples

Element	Atomic Mass Number	Half-Life (y)	Specific Activity (Ci g ⁻¹)	Mass (g)	Total Activity (nCi)
Np	237	2.14E+06	0.0007130	2.30E-08	0.0164
Pu	238	87.7	17.3241474	2.30E-10	3.9846
Pu	239	2.41E+04	0.0627789	3.00E-07	18.8337
Pu	240	6.56E+03	0.2296748	9.00E-08	20.6707
Pu	241	14.29	104.9975464	2.00E-09	209.9951
Pu	242	3.75E+05	0.0039846	5.00E-10	0.0020
Am	241	432.70	3.4675640	2.00E-10	0.6935
Cm	242	0.4460274	3350.0517798	3.00E-19	0.0000
U	235	7.04E+08	0.0000022	3.00E-06	0.0066

$$SA = \frac{1600}{T} \times \frac{226}{A} \text{Ci g}^{-1}$$

Song, Taehoon

From: Pelke, Patricia
Sent: Friday, February 01, 2019 2:57 PM
To: Song, Taehoon; Pavon, Sandy
Cc: Tran, Frank; Tomczak, Tammy; Frazier, Cassandra
Subject: FW: Amendment Request
Attachments: Purdue Amendment 2119.pdf

Importance: High

Please process the attached letter into ADAMS and then as an amendment to the subject license. It's an expedite that I will assign to Frank – thanks.

From: Schweitzer, Jim F [mailto:jfschweitzer@purdue.edu]
Sent: Friday, February 01, 2019 2:36 PM
To: Pelke, Patricia <Patricia.Pelke@nrc.gov>
Subject: [External_Sender] Amendment Request

Patty

Thanks for your assistance in expediting this amendment request. Please let me know if you have any questions. Have a good weekend.

Regards

Jim

James F. Schweitzer, Director
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