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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

February 7, 2022

Dr. Donna Lybecker  
Vice President for Research  
Idaho State University  
921 South 8th Avenue, Stop 8130  
Pocatello, ID 83209-8130

SUBJECT: IDAHO STATE UNIVERSITY – REQUEST FOR ADDITIONAL INFORMATION  
REGARDING RENEWAL OF SPECIAL NUCLEAR MATERIALS LICENSE 1373  
(ENTERPRISE PROJECT IDENTIFICATION NUMBER L-2021-NFR-0000)

Dear Dr. Lybecker:

This is in regard to your submittal dated December 6, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession Number ML21351A166), requesting the renewal of Idaho State University's Special Nuclear Material License Number 1373 (SNM-1373). Our review of your application has identified that additional information is needed before final action can be taken.

The additional information, specified in the enclosures to this letter should be provided within 30 days from the date of this letter. Enclosure 1 (publicly available) provides requests for additional information regarding material control and accountability, nuclear criticality safety, and decommissioning of the ISU facilities where licensed activities are conducted. Enclosure 2 (non-public) provides an RAI regarding physical security.

Pending your response, we anticipate completing our review by early August 2022. This date could change depending on the findings of our technical review, urgent assignments, or other factors. We will promptly communicate any significant changes to this schedule.

In accordance with Title 10 of the *Code of Federal Regulations*, Section 2.390 of the Nuclear Regulatory Commission's (NRC) "Agency Rules of Practice and Procedure," a copy of this letter and Enclosure 1, will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of the NRC's ADAMS. Enclosure 2 will be withheld from public disclosure since it contains Security-Related information. ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Enclosure 2 to this letter contains **Security-Related Information**. When separated from Enclosure 2, this letter and Enclosure 1 are decontrolled.

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If you have any questions regarding this communication, please contact me at 301-415-7827, or via e-mail to [Osiris.Siurano-Perez@nrc.gov](mailto:Osiris.Siurano-Perez@nrc.gov).

Sincerely,

Osiris Siurano-Pérez, Project Manager  
Fuel Facility Licensing Branch  
Division of Fuel Management  
Office of Nuclear Material Safety  
and Safeguards

Docket No.: 07001374  
License No.: SNM-1373

Enclosures:

1. Request for Additional Information: Material Control and Accountability, Nuclear Criticality Safety, and Decommissioning Requirements (Public)
2. Request for Additional Information: Physical Security Requirements (Non-Public)

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**REQUEST FOR ADDITIONAL INFORMATION  
MATERIAL CONTROL AND ACCOUNTABILITY, NUCLEAR CRITICALITY SAFETY, AND  
DECOMMISSIONING REQUIREMENTS**

**I. MATERIAL CONTROL AND ACCOUNTABILITY (MC&A)**

**MC&A Request for additional information (RAI) 1:**

In Section 12, “Physical Security Plan” of the renewal application, Idaho State University states that the emergency plan contains the emergency procedures including the response to thefts of special nuclear material (SNM) to meet the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) 73.67(f)(4). However, there is no mention in the application regarding loss, theft, or diversion of SNM with respect to meeting the 10 CFR Part 74 MC&A reporting requirements.

**NRC Request:** Provide a description of the MC&A activities that are performed, or the measures in place, to clarify how the requirements of 10 CFR 74.11 are met.

**Applicable Requirements:** The requirements in 10 CFR 74.11 state, in part, that each licensee who possesses 1 gram or more of contained uranium-235, uranium-233 or plutonium shall notify the Nuclear Regulatory Commission (NRC) Operations Center within 1 hour of discovery of any loss or theft or other unlawful diversion of SNM which the licensee is licensed to possess, or any incident in which an attempt has been made to commit a theft or unlawful diversion of SNM.

**MC&A RAI 2:**

In Section 8.4, “Radiation Safety Records,” of the application, ISU states that radiation safety records are maintained in accordance with the Radiation Safety Manual. However, there is no mention of records relating to MC&A or how MC&A records are maintained and retained.

**NRC Request:** Provide a description of the MC&A activities that are performed, or the measures in place to clarify how the recordkeeping requirements of 10 CFR 74.19(a) are met.

**Applicable Requirements:** The regulations in 10 CFR 74.19(a) require that each licensee shall keep records showing the receipt, inventory (including location and unique identity), acquisition, transfer, and disposal of all SNM in its possession regardless of its origin or method of acquisition. Each record relating to material control or material accounting must be maintained and retained for the period specified by the appropriate regulation or license condition. Each record of receipt, acquisition, or physical inventory of SNM must be retained as long as the licensee retains possession of the material and for 3 years following transfer or disposal of the material. Each record of transfer of SNM to other persons must be retained by the licensee who transferred the material until the Commission terminates the license authorizing the licensee’s possession of the material.

**MC&A RAI 3:**

In Section 9.1, “Material Inventory & Transfer,” ISU states that physical inventories of all SNM associated with subcritical assembly are performed on an annual basis. However, there is no mention of how physical inventory records are generated and maintained.

Enclosure 1

**NRC Request:** Provide a description of the MC&A activities that are performed, or the measures in place to clarify how the physical inventory requirements of 10 CFR 74.19(c) are met.

**Applicable Requirements:** The regulations in 10 CFR 74.19(c) require certain licensees who are authorized to possess SNM in a quantity greater than 350 grams of contained uranium-235, uranium-233, or plutonium, to conduct a physical inventory of all SNM in its possession under license at intervals not to exceed 12 months. The results of these physical inventories shall be retained in records by the licensee until the Commission terminates the license authorizing the possession of the material.

## **II. NUCLEAR CRITICALITY SAFETY (NCS)**

### **NCS RAI 1:**

In Section 8.6 of the renewal application ISU states that inadvertent criticality is prevented by restricting or prohibiting the use of heavy moderator and reflector materials (e.g., beryllium, beryllium oxide, heavy water, graphite etc.) in the subcritical assembly (SCA) room, and that additional graphite will not be allowed within 4 feet of the SCA or the thermal column without: (1) prior approval of the reactor administrator, and (2) an analysis of the intended use and its potential effect on the reactivity of the most reactive system. However, no details are provided as to how such an analysis would be conducted.

### **NRC Request:**

- a. Provide information as to how an analysis to support placing graphite (or any other heavy moderator or reflector material) within 4 feet of the SCA or thermal column would be conducted, including:
  1. A description of the method (e.g., SCALE, MCNP, etc.) used to estimate  $k_{eff}$  and its associated cross-section data (e.g., ENDF/B-VII, etc.);
  2. The upper subcritical limit (i.e.,  $k_{eff}$  limit) associated with the analysis and a justification thereof, as well as a description of any other penalties applied to  $k_{eff}$ ;
  3. A description of the method used to determine subcritical limits for nuclear criticality safety parameters, as well as a description of any other practices that provide safety margin or subcritical margin;
  4. A description of the method used to ensure adherence to the double contingency principle; and
  5. A description of the method used to ensure subcriticality under normal and all credible abnormal conditions.
- b. State whether the method used to estimate  $k_{eff}$  and its associated cross-section data will be validated. If applicable, describe the method used to validate the method and its associated cross-section data, including whether the validation will be performed in accordance with ANSI/ANS-8.24, "Validation of Neutron Transport Methods for Nuclear Criticality Safety."

**Applicable Requirements:** Paragraph 70.22(a)(8) of 10 CFR states, in part, that each application for a license shall contain the proposed procedures to protect health and minimize danger to life or property (such as procedures to avoid accidental criticality, procedures for personnel monitoring and waste disposal, post-criticality accident emergency procedures, etc.).

Section 5.3.A.1 of NUREG-1520, "Standard Review Plan for Fuel Cycle Facilities License Applications," Revision 2, states that NRC staff reviews should include the sections of the license application describing the licensee's commitments with respect to the nuclear criticality safety program, which includes methodologies and technical practices.

### **III. DECOMMISSIONING**

#### **Decommissioning RAI 1:**

In the license renewal application, ISU did not address its plans for decommissioning the facility. Additional information is needed to determine compliance with decommissioning requirements in 10 CFR Paragraphs 70.25(g)(1)-(2); 70.38(k)(2); and 70.51(a).

**NRC Request:** Please revise the application to provide the following information:

- a) Describe whether any residual radioactive contamination will be present at the time of facility decommissioning, by neutron activation or other processes, and what reasonable effort will be made to eliminate residual radioactive contamination after the fuel plates, the fission counter, and foils have been returned to the Department of Energy. [10 CFR 70.38(k)(2)]
- b) Describe the records, and the records retention process, for records that are important to the decommissioning of the facility and that are retained in an identified location until the facility is released for unrestricted use. [10 CFR 70.25(g)(1)-(2) and 10 CFR 70.51(a)]

As described in NUREG-1520, Revision 2, Section 10.1, at the time of license renewal, the purpose of the NRC staff's review of the licensee's plan for decommissioning is to determine, with reasonable assurance, that the licensee will be able to safely decommission the facility in accordance with NRC requirements. At the time of license renewal, the licensee should:

- (1) discuss its conceptual approach for meeting the NRC's decommissioning requirements, and
- (2) discuss its plans for meeting the decommissioning recordkeeping requirements.

Additional guidance on NRC's decommissioning recordkeeping regulations is provided in NUREG-1757, "Consolidated Decommissioning Guidance," Volume 3, Revision 1, Section 3.1, "Recordkeeping Requirements During Licensed Operations," and Section 3.3, "Record Disposition Requirements at License Termination or Transfer."

**Applicable Requirements:** The regulations in 10 CFR 70.38(k)(2) require, in part, that specific licenses, including expired licenses, will be terminated by written notice to the licensee when the Commission determines that reasonable effort has been made to eliminate residual radioactive contamination, if present. The regulations in 10 CFR 70.25(g) require, in part, that licensees shall keep records of information important to the decommissioning of a facility in an identified location until the site is released for unrestricted use. If records important to the decommissioning of a facility are kept for other purposes, reference to these records and their locations may be used. The regulations in 10 CFR 70.25(g)(1)-(2) describe the information that

the Commission considers important to decommissioning. The regulations in 10 CFR 70.51(a) provide the records that licensees shall forward to the appropriate NRC Regional Office before license termination.