



May 3, 2021

2021-0005

Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

FACILITY: Texas Engineering Experiment Station/Nuclear Science Center Reactor  
DOCKET #: 05000128

SUBJECT: License Amendment Request for Facility Operating License R-83; Revision of the License Conditions for Removal of the Expiration Date on Possession of the AGN-201M Reactor Fuel.

Pursuant to 10 CFR 50.90, The Texas Engineering Experiment Station (TEES), a part of the Texas A&M University System (TAMUS), is herein submitting a request to amend the Facility Operating License R-83. The proposed amendment requests the removal of the expiration date from three license conditions for the permission to store the AGN reactor (R-23) fuel and source materials on the NCSR TRIGA license (R-83) in Amendment 18 (ML16109A153), specifically parts B.2.d, B.2.e, and B.3.d. Each of those parts ends with a termination time of the condition as follows: "for up to 5 years from the date of issuance of License Amendment No. 18."

Approval of the proposed amendment is requested by 31 July 2021. This date is requested due to the aforementioned expiration date is 31 August 2021. Once approved, the amendment shall be implemented within 30 days.

We appreciate your timely review of this license amendment request. Should you have any questions, or require further information, please contact myself or Jere Jenkins at 979.845.7551, or via email at mcdeavitt@tamu and jere@tamu.edu.

I declare under penalty of perjury that the foregoing is true and correct. Executed on 24 April 2021.

Sincerely,

Sean M. McDeavitt  
Director, TEES Nuclear Science Center

Enclosure: Evaluation of the Proposed Change

Cc:

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## **ENCLOSURE**

### **Evaluation of the Proposed Change**

Subject: Application for License Amendment to Facility Operating License R-83; Modification of the License Conditions for Removal of the Expiration Date on Possession of the AGN-201M Reactor Fuel.

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## 1 Summary Description

This evaluation supports a request to amend Renewed Operating license No. R-83 for the Texas Engineering Experiment Station/Nuclear Science Center Reactor.

The proposed change would revise the Operating License to remove the time requirement—or “expiration date”—from the license conditions in Amendment 18 [ML16109A153, Ref. 1]. The amendment will need to be issued by 31 July 2021, and will be implemented by the Facility within 30 days of issue.

## 2 Detailed Description

The Texas Engineering Experiment Station (TEES) is requesting a license amendment for the TRIGA reactor at the Nuclear Engineering & Science Center (NESC). The amendment includes revising the license conditions in paragraphs 2.B.2.d, 2.B.2.e, and 2.B.3.d from Amendment 18 [Ref. 1] to the Renewed Facility Operating License No. R-83 (ML13030A410) [Ref. 2]. The referenced paragraphs set the conditions for storage of the AGN Reactor’s (R-23) fuel and startup source on Nuclear Science Center Reactor (NSCR) license (R-83). This action was necessitated as a result of the required relocation of the AGN reactor from its previous facility building. The desired change in this amendment request is the removal of the time requirement in each of the referenced items, which reads as follows: “...for up to 5 years from the date of issuance of License Amendment No. 18.” This arbitrary expiration date was suggested in the original License Amendment Request Letter (ML15287A148) [Ref. 3]; however, it was not part of the safety basis or the technical specifications. Please see Attachment 2 of this Enclosure for the indicated suggested markups of the Operating License.

There are no changes to the Safety Bases of the NSCR as a result of this amendment request. There are also no necessary changes to the Technical Specifications.

While the AGN material is being stored on the R-83 license, the ownership and responsibility remains unchanged, therefore there is no “transfer of license” under 10 CFR 50.80. Custody of the fuel, fueled control rods, and neutron startup source will remain on the R-83 license for temporary storage until the AGN reactor receives approval from the Regulator for installation in its new location.

## 3 Technical Evaluation

### 3.1 Facility Description

There are no changes to the storage facility as part of this license amendment request. The facility description was evaluated in the SER of Ref. 1.

### 3.2 Fuel Storage Location Details

The AGN fuel will continue to be stored in a criticality-safe configuration ( $k_{\text{eff}} < 0.8 \Delta k/k$ ) in two separate containers arranged at the opposite ends of the room, as described in the SER in Ref. 1.

### 3.3 Storage of the AGN-201M Fuel, Fuse, Neutron Source, and Control Rods

The storage configurations of the materials will not change, and will remain stored under the conditions evaluated in the SER of Ref. 1. Criticality-Safety, Radiological, and Security conditions will remain as required in Amendment 18 [Ref. 1].

### 3.4 Technical Basis for the License Condition Modification

As the inclusion of the expiration date was arbitrary for administrative reasons, not technical or regulatory, no further technical analyses are warranted. TEES is continuing the effort to have a new location licensed for installation and restart of the AGN-201M reactor, and will work with the Regulator to obtain the necessary approvals and license amendments.

### 3.5 Proposed Changes to License Conditions

TEES is not requesting any changes to the Technical Specifications. TEES is requesting changes to the license conditions. The requested changes are presented as a marked-up version in Attachment 2, and a final suggested version (without mark-up) in Attachment 3.

## **4 Regulatory Evaluation**

### 4.1 Regulatory Requirements

The regulations in 10 CFR Part 20, "Standards for Protection Against Radiation," establish standards for protection against ionizing radiation resulting from activities conducted under licenses issued by the NRC. Section 20.1801, "Security of stored material," states, "[t]he licensee shall secure from unauthorized removal or access license materials that are stored in controlled or unrestricted areas." The proposed change does not include any changes to the storage requirements or configurations, or the security thereof. The present security arrangements established with Amendment 18 and conditions for the storage of the AGN fuel will continue.

The regulations in 10 CFR Part 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material," provide, in part, the regulatory requirements for transfer and storage of byproduct material. The proposed change does not include any changes to the storage requirements or configurations, nor transfer of the material. The present storage requirements and configurations established with Amendment 18 will be continued, and no transfer of the material will be executed.

The regulations in 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," provide the regulatory requirements for licensing of non-power reactors. The regulations in 10 CFR 50.92, "Issuance of amendment," paragraph(a), state, in part, that "[i]n determining whether an amendment to a license [...] will be issued to the applicant, the Commission will be guided by the considerations which govern the issuance of initial licenses [...] to the extent applicable and appropriate." As shown in the next section, TEES has evaluated that there are no significant hazards associated with the proposed change.

The regulations in 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," provide regulatory requirements for the protection

of the environment. Based on the evaluation that there are no significant hazards associated with the proposed change, there is no risk to the environment as a result of this amendment.

The regulations in 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material," provide regulatory requirements for the handling and security of SNM. The proposed change does not include any changes to the storage requirements or configurations, or the security thereof. The present security arrangements and conditions established for the storage of the AGN material with Amendment 18 will continue.

The regulations in 10 CFR 70.24, "Criticality accident requirements," paragraph (a), require, in part, for "[e]ach licensee authorized to possess special nuclear material in a quantity exceeding 700 grams of contained uranium-235 ... [to] maintain in each area in which such SNM is handled, used, or stored, a monitoring system meeting the requirements of either paragraph (a)(1) or (a)(2) ... ." Section 70.24(a)(2) requires, a monitoring system capable of detecting a criticality with an alarm set at no more than 20 millirems per hour at no more than 120 feet from the material being stored. The present monitoring for criticality established with Amendment 18 will continue.

The regulations in 10 CFR 73.40, "Physical protection: General requirements at fixed sites," provide regulatory requirements for physical protection of special nuclear material. The required physical protection of the AGN materials established with Amendment 18 will continue.

The regulations in 10 CFR 73.67, "Licensee fixed site and in-transit requirements for the physical protection of special nuclear material of moderate and low strategic significance" provide regulatory requirements to minimize the possibility and detection of unauthorized removal of SNM. The required physical protection of the AGN materials established with Amendment 18 will continue.

The Atomic Energy Act of 1954, as amended, Section 182a, requires applicants for utilization facilities to include Technical Specifications (TS) as a part of the license. The regulatory requirements related to the content of the TSs are in 10 CFR 50.36, "Technical specifications." Section 50.36 requires that TSs include the following categories: (1) safety limits, limiting safety systems settings and limiting control settings, (2) limiting conditions for operation, (3) surveillance requirements, (4) design features, and (5) administrative controls. All Technical Specification requirements established with Amendment 18 will continue.

NUREG-1537, Part 1, "Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors, Format and Content," (Ref. 11) provides guidance for development of TSs in Appendix 14.1, "Format and Content of Technical Specification for Non-Power Reactors." Appendix 14.1 states that the NRC accepts the guidance of the American Nuclear Standards Institute, Incorporated/American Nuclear Society (ANSI/ANS) Standard 15.1" 1990. The Development of Technical Specifications for Research Reactors," as modified by Appendix 14.1. NUREG-1537, Part 1, Chapter 14, Appendix 14.1, Section 5, "Design Features," states "The NRC accepts the guidance in this section of ANSI/ANS 15.1." ANSI/ANS 15.1-1990, Section 5.4, "Fissionable Material Storage," states that fuel shall be stored in a physical array where the maximum effective multiplication factor ( $k_{\text{eff}}$ ) is no greater than 0.90  $\Delta k/k$  for all conditions of moderation and reflection. All Technical Specification requirements for storage of fissionable materials established with Amendment 18 will continue.

NUREG-1537, Part 2, "Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors: Standard Review Plan and Acceptance Criteria," (Ref. 12), provides guidance to NRC staff on the conduct reviews of non-power reactor license applications. Chapters referenced in the conduct of this review include: Auxiliary Systems (Chapter (Ch.) 9), specifically Section 9.2, "Handling and Storage of Reactor Fuel," and Ch. 14, "Technical Specifications." All Technical Specification requirements for storage of reactor fuels established with Amendment 18 will continue.

#### 4.2 No Significant Hazards Consideration Determination

The Texas Engineering Experiment Station has evaluated whether or not a significant hazards consideration is involved with the proposed change by focusing on the three standards set forth in 10 CFR 50.92, as discussed below:

- 1) Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

This amendment is an administrative change only. The proposed change does not involve any modifications of storage configuration or material being stored, therefore there are no changes to the consequences of previously evaluated accidents.

- 2) Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

This amendment is an administrative change only. The proposed change does not involve any modifications of storage configuration or material being stored, therefore the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

- 3) Does the proposed change involve a significant reduction in margin of safety?

Response: No

This amendment is an administrative change only. The proposed change does not involve any modifications of storage configuration or material being stored, therefore the proposed change does not involve a significant reduction in the margin of safety.

Based on the above, TEES concludes that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c)

## 5 Environmental Consideration

A review has determined that the proposed amendment would change the time requirement for continued storage of the AGN fueled materials on the NSCR license, R-83, in the license conditions only. The proposed amendment does not involve (i) a significant hazards consideration [see Section 4.2], (ii) a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment

meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

## **6 References**

- [1] U.S. Nuclear Regulatory Commission, "Texas Engineering Experiment Station/Texas A&M University System—Issuance of Amendment No. 18 to Renewed Facility Operating License No. R-83 for the Receipt and Possession of the AGN-201M Reactor Fuel," August 31, 2016 (ADAMS Accession No. ML16109A153)
- [2] U.S. Nuclear Regulatory Commission, "Texas Engineering Experiment Station/Texas A&M University System - Issuance of Renewed Facility Operating License No. R-83 (TAC No. ME1584)," October 1, 2015 (ADAMS Accession No. ML13030A410)
- [3] Texas A&M University System, "Texas A&M University - Request for Amendment to License No. R-83 and Technical Specification Associated With Receiving and Storing Special Nuclear Material Currently Located in the TAMU AGN-201M Reactor," October 14, 2015 (ADAMS Accession No. ML15287A148).

1 **ENCLOSURE**

2 **Attachment 1: List of Regulatory Commitments**

3 The following table identifies the regulatory commitments in this document. Any other  
4 statements in this submittal represent intended or planned actions. They are provided for  
5 information purposes only and are not considered to be regulatory commitments.

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COMMITMENT	TYPE		SCHEDULED COMPLETION DATE
	One-Time	Continuing Compliance	
Secure storage of the material in compliance with 10 CFR 20.1801.		X	NA <sup>1</sup>
Storage of byproduct material in compliance with 10 CFR 30.		X	NA
Storage of the material in a criticality-safe geometry and location per 10 CFR 70.24.		X	NA
Appropriate storage in accordance with SNM handling in accordance with 10 CFR 70, 10 CFR 73.40, and 10 CFR 73.67.		X	NA
All surveillances and record-keeping necessitated by the above requirements.		X	NA

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<sup>1</sup> The commitments in this table will continue until license amendments are received for the AGN-201M reactor—license number R-23—that will allow placement and restart of the AGN. The timing of these amendments will be based on the submission of the revised SAR and other required documentation. TEES is committed to submitting those documents in calendar year 2021. The time requirements of review by the regulatory authority are not known at this time.

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**ENCLOSURE**

11 **Attachment 2: Operating License Page Markups**

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21 The following page contains the the marked-up text of the present operating license showing  
22 requested changes.

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- c. to receive, possess, and use, but not separate, in connection with the operation of the facility, such special nuclear material as may be produced by the operation of the facility.
  - d. To receive, possess, but not use up to 0.7 kilograms of contained Uranium-235 <20% enriched 235U Fuel – AGN-201M, and any special nuclear materials produced by the operation of the AGN-201M reactor, ~~for up to 5 years from the date of issuance of License Amendment No. 18.~~
  - e. To receive, possess, but not use up to 0.020 kilograms of 239Pu as a 239PuBe AGN-201M Neutron Start Up Source in connection with storage of the AGN-201M reactor ~~for up to 5 years from the date of issuance of License Amendment No. 18.~~
3. Pursuant to the Act and 10 CFR Part 30, the following activities are included:
- a. to receive, possess, and use, in connection with the operation of the facility, a sealed antimony-beryllium neutron startup source,
  - b. to receive, possess, and use, in connection with the operation of the facility, a sealed 2.5-curie americium-beryllium neutron source; and,
  - c. to receive, possess, and use, in connection with operation of the facility, such byproduct material as may be produced by operation of the reactor, which cannot be separated except for byproduct material produced in reactor experiments.
  - d. to receive, possess, but not use, byproduct materials including contaminated or activated Fuel - AGN-201M and AGN-201M Neutron Start Up Source ~~for up to 5 years from the date of issuance of License Amendment No. 18.~~
4. Pursuant to the Act and 10 CFR Part 40, "Domestic Licensing of Source Material," to receive, possess, and use in connection with operation of the facility, not more than 6.8 kilograms of source material.
- C. This license shall be deemed to contain, and is subject to the conditions specified 10 CFR Parts 20, 30, 40, 50, 51, 55, 70, and 73 of the Commission's regulations; is subject to all provisions of the Act, and to the rules, regulations and orders of the Commission now or hereafter in effect, and is subject to the additional conditions specified or incorporated below:
1. Maximum Power Level  
The licensee is authorized to operate the reactor at a steady-state power level up to a maximum of 1000 kilowatts (thermal) and to pulse the reactor in accordance with the limitations in the Technical Specifications.

1 **ENCLOSURE**

2 **Attachment 3: Retyped Operating License Pages**

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The following page contains the suggested text for the amended operating license.

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- c. to receive, possess, and use, but not separate, in connection with the operation of the facility, such special nuclear material as may be produced by the operation of the facility.
  - d. To receive, possess, but not use up to 0.7 kilograms of contained Uranium-235 <20% enriched 235U Fuel – AGN-201M, and any special nuclear materials produced by the operation of the AGN-201M reactor.
  - e. To receive, possess, but not use up to 0.020 kilograms of 239Pu as a 239PuBe AGN-201M Neutron Start Up Source in connection with storage of the AGN-201M reactor.
3. Pursuant to the Act and 10 CFR Part 30, the following activities are included:
- a. to receive, possess, and use, in connection with the operation of the facility, a sealed antimony-beryllium neutron startup source,
  - b. to receive, possess, and use, in connection with the operation of the facility, a sealed 2.5-curie americium-beryllium neutron source; and,
  - c. to receive, possess, and use, in connection with operation of the facility, such byproduct material as may be produced by operation of the reactor, which cannot be separated except for byproduct material produced in reactor experiments.
  - d. to receive, possess, but not use, byproduct materials including contaminated or activated Fuel - AGN-201M and AGN-201M Neutron Start Up Source.
4. Pursuant to the Act and 10 CFR Part 40, "Domestic Licensing of Source Material," to receive, possess, and use in connection with operation of the facility, not more than 6.8 kilograms of source material.
- D. This license shall be deemed to contain, and is subject to the conditions specified 10 CFR Parts 20, 30, 40, 50, 51, 55, 70, and 73 of the Commission's regulations; is subject to all provisions of the Act, and to the rules, regulations and orders of the Commission now or hereafter in effect, and is subject to the additional conditions specified or incorporated below:
- 1. Maximum Power Level  
The licensee is authorized to operate the reactor at a steady-state power level up to a maximum of 1000 kilowatts (thermal) and to pulse the reactor in accordance with the limitations in the Technical Specifications.