

November 2, 2015

Dr. Sean McDeavitt, Director
Nuclear Science Center
Texas A&M University
Texas Engineering Experiment Station
1095 Nuclear Science Road, MS 3575
College Station, Texas 77843

SUBJECT: TEXAS ENGINEERING EXPERIMENT STATION/TEXAS A&M UNIVERSITY
SYSTEM - REQUEST FOR ADDITIONAL INFORMATION REGARDING LICENSE
AMENDMENT REQUEST RELATED TO RECEIPT OF SPECIAL NUCLEAR
MATERIAL FROM THE AGN-201M REACTOR

Dear Dr. McDeavitt:

The U.S. Nuclear Regulatory Commission (NRC) is reviewing your application to amend Facility Operating License No. R-83, dated October 14, 2015, available on the NRC's public Web site at www.nrc.gov under Agencywide Documents Access and Management System (ADAMS) Accession No. ML15287A148, for the Texas Engineering Experiment Station/Texas A&M University System, Nuclear Science Center, Training, Research, and Isotope production, General Atomics reactor. During our review, questions have arisen for which additional information is needed. The enclosed request for additional information (RAI) identifies the information needed to continue our review. We request that you provide responses to the enclosed RAI within 30 days from the date of this letter. A timely and complete response to these questions is required to support the expedited review requested by Dr. Banks, of Texas A&M University, in a letter dated October 26, 2015 (ADAMS Accession No. ML15301A242).

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.30(b), "Oath or affirmation," you must execute your response in a signed original document under oath or affirmation. Your response must be submitted in accordance with 10 CFR 50.4, "Written communications." Information included in your response that is considered sensitive or proprietary, that you seek to have withheld from the public, must be marked in accordance with 10 CFR 2.390, "Public inspections, exemptions, requests for withholding." Any information related to security should be submitted in accordance with 10 CFR 73.21, "Protection of Safeguards Information: Performance Requirements." Following receipt of the additional information, we will continue our evaluation of your amendment request.

S. McDeavitt

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If you have any questions, or need additional time to respond to this request, please contact me at (301) 415-3936, or by electronic mail at Patrick.Boyle@nrc.gov.

Sincerely,

/RA/

Patrick G. Boyle, Project Manager
Research and Test Reactors Licensing Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Docket No. 50-128

Enclosure:
Request for Additional Information

cc: See next page

S. McDeavitt

- 2 -

If you have any questions, or need additional time to respond to this request, please contact me at (301) 415-3936, or by electronic mail at Patrick.Boyle@nrc.gov.

Sincerely,

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Division of Policy and Rulemaking
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Docket No. 50-128

Enclosure:
Request for Additional Information

cc: See next page

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ADAMS Accession No.: ML15302A018

***concurrence via e-mail**

NRR-106

OFFICE	NRR/DPR/PRLB*	NRR/DPR/PRLB	NRR/DPR/PRLB	NRR/DPR/PRLB
NAME	PBoyle	NParker	AAdams	PBoyle
DATE	10/30/2015	10/28/2015	11/ 2 /2015	11/ 2 /2015

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Texas A&M University

Docket No. 50-128

cc:

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Test, Research and Training
Reactor Newsletter
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OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST FOR ADDITIONAL INFORMATION

RELATED TO AMENDMENT REQUEST FOR FACILITY OPERATING LICENSE NO. R-83

THE TEXAS ENGINEERING EXPERIMENT STATION/TEXAS A&M UNIVERSITY SYSTEM

NUCLEAR SCIENCE CENTER, TRIGA REACTOR

DOCKET NO. 50-128

The U.S. Nuclear Regulatory Commission (NRC) has begun its review of your application for the amendment of Facility Operating License No. R-83, dated October 14, 2015, available on the NRC's public Web site at www.nrc.gov under Agencywide Documents Access and Management System (ADAMS) Accession No. ML15287A148, for the Texas Engineering Experiment Station/Texas A&M University System, Nuclear Science Center (NSC), Training, Research, and Isotope production, General Atomics (TRIGA) reactor. During our review, the following questions have arisen for which additional information is needed. Provide responses to these questions within 30 days from the date of this letter.

According to Title 10 of the *Code of Federal Regulations*, Section 50.90, "Application for amendment of license, construction permit, or early site permit," whenever the holder of a license desires to amend the license the application must fully describe the changes desired, and following as far as applicable, the form prescribed for original applications." NUREG-1537 "Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors," provides guidance for license requests for non-power reactors.

1. NUREG-1537, Section 9.2, "Handling and Storage of Reactor Fuel," provides guidance for the margin to criticality in a fuel storage location. The existing Safety Analysis Report for the NSC TRIGA reactor contains an analysis, for the storage vault, indicating a maximum k_{eff} of 0.45526 for the LEU 30/20 fuel in flooded conditions and a k_{eff} of 0.12994 in air. In your amendment request Section 4.0, "Storage," the following assertion is made regarding the safety analysis of the fuel storage vault:

... these 4 storage tubes were modeled as containing up to 2.39 kilograms of ^{235}U in low-enriched NSC reactor fuel [i.e., a 4-element bundle], or approximately 3.5 times the quantity of AGN-201M fissile material to be stored.

The Uranium-235 (U-235) contained in the AGN fuel is in a different chemical form and physical geometry than the TRIGA fuel as only about 0.7 kilograms (kg) of U-235 is required to obtain criticality for the AGN fuel versus the nearly 8.8 kg of U-235 required for the TRIGA fuel to achieve criticality. The 30/20 TRIGA fuel also contains Erbium, a burnable poison, which is not present in the AGN fuel and further reduces the k_{eff} of the fuel in the storage location. Provide an analysis for this storage location specific to the AGN fuel type or provide a justification, considering the differences in material design, that this is not required. The analysis needs to include optimal moderation effects for flooding in the room

Enclosure

and the storage of fuel or other materials near the AGN fuel, as allowed, unless otherwise restricted.

2. In your amendment request, Enclosure 1a, "Proposed License Change for the NSC Facility," suggests a new Section B.5, to receive and possess, but not use the U-235 contained in the Aerojet General Nucleonics (AGN) fuel and the plutonium-239 (Pu-239) in the form of a Pu-239/Beryllium source. However, since the AGN fuel contains U-238 and has been operated for many years some Pu-239 will be present in the AGN fuel. Propose revised wording for Section B.5, license condition to address the presence of the Pu-239 in the AGN fuel or provide justification for why this is not necessary.
3. In your amendment request, Enclosure 2a, "Proposed Technical Specification Change," the terms "AGN-201M fuel" and "neutron start-up source" are not defined. Propose wording for the definition section of the technical specification (TS), propose wording that adds a material description to Section 5.6 TS, or explain why this is not required.