

**From:** [Sean M. McDeavitt](#)  
**To:** [Boyle, Patrick](#); [Newhouse, Jerry E](#)  
**Cc:** [rich@renuke.com](mailto:rich@renuke.com); [Adams, Alexander](#)  
**Subject:** [External\_Sender] RE: proposed TS wording - NRC Staff changes  
**Date:** Wednesday, August 24, 2016 5:50:45 PM

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Hi Patrick,  
I heartily concur with the proposed changes to the license conditions and technical specifications.  
Sean

Sent from my Verizon Wireless 4G LTE smartphone

----- Original message -----

**From:** "Boyle, Patrick"  
**Date:** 08/24/2016 3:09 PM (GMT-06:00)  
**To:** "Sean M. McDeavitt" , "Newhouse, Jerry E"  
**Cc:** rich@renuke.com, "Adams, Alexander"  
**Subject:** proposed TS wording - NRC Staff changes

Sean,

Review and let me know if you agree to the following NRC staff proposed changes to the license conditions and technical specifications that TAMUS had proposed for the license amendment to the NSC/TRIGA license.

In both license conditions, I am removing the proposed expiration date of the license condition, but I am allowing the 5 year expiration from the amendment to remain in place as proposed. Here is the final wording for the proposed license conditions:

- 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 <sup>235</sup>U 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 <sup>239</sup>Pu as a <sup>239</sup>PuBe 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.

I am also proposing a modification to the definition of the AGN fuel to provide clarification of the core thermal fuse as follows:

#### **Fuel – AGN-201M**

UO<sub>2</sub> enriched to < 20% <sup>235</sup>U mixed with polyethylene and pressed into cylindrical discs and fueled control rod ends, and a core thermal fuse consisting of 0.4 grams of <sup>235</sup>U mixed with polystyrene.

I am also proposing the following changes to TS 5.6 "Fuel Storage" to address the cooling requirements and limits on k-eff

#### **5.6 Fuel Storage**

##### Applicability

This specification applies to the following:

1. Storage of Fuel Element (TRIGA) and fueled devices at times when it is not in the reactor core.
2. Storage of Fuel - AGN-201M and AGN-201M Neutron Start Up source.

##### Objective

The objective is to ensure that fuel that is being stored will not become critical and will not reach an unsafe temperature.

##### Specifications

1. All fuel elements (TRIGA), fueled devices, and Fuel - AGN - 201M shall be stored in a geometrical array for which the k-effective is less than 0.8 for all

conditions of moderation and reflection.

2. Irradiated Fuel Elements (TRIGA) and fueled devices shall have sufficient natural convection cooling by water or air such that the fuel element temperature will not exceed design values.
3. While the Fuel – AGN-201M and AGN-201M Neutron Start Up Source are being stored in the fuel storage room, additional special nuclear material shall not be brought into the room.

Basis

The limits imposed by specifications 5.6.1, 5.6.2, and 5.6.3 are conservative and ensure safe storage.

I utilized the terms as you had proposed in your TS 1.3 definition section in TS 5.6 and changed specification 2 to apply exclusively to the TRIGA fuel and fueled devices, instead of creating a specification to negate another specification.

Provide your concurrence by responding to this email or state alternatives if those are preferred.

Sincerely,

Patrick G. Boyle

Nuclear Engineer

NRR/DPR/PRLB

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