

August 11, 2016

David A. Heacock  
President and Chief Nuclear Officer  
Virginia Electric and Power Company  
Innsbrook Technical Center  
5000 Dominion Boulevard  
Glen Allen, VA 23060

SUBJECT: SECOND REQUEST FOR ADDITIONAL INFORMATION RELATED TO THE  
PROPOSED AMENDMENT TO SPECIAL NUCLEAR MATERIALS LICENSE  
NO. 2507

Dear Mr. Heacock:

By letter dated August 24, 2015, as supplemented October 8, November 18, November 19, December 1, and December 28, 2015; January 14, March 22, March 23, April 21, May 13, June 15, and June 21, 2016, Virginia Electric and Power Company submitted to the U.S. Nuclear Regulatory Commission (NRC) an amendment request to the Special Nuclear Materials (SNM) license number SNM-2507 technical specifications for the North Anna Independent Spent Fuel Storage Installation. The proposed changes would allow storage of spent fuel in a modified TN-32B bolted lid cask as part of the High Burn-up Dry Storage Cask Research and Development Project sponsored by the Department of Energy and the Electric Power Research Institute.

The NRC staff has determined that additional information is required to complete its technical review of your application. The request for additional information is identified in the enclosure to this letter. We request that you provide the information by September 30, 2016.

If you have any questions regarding this matter, please contact me at (301) 415-6877.

Sincerely,

/RA/

Chris Allen, Project Manager  
Spent Fuel Licensing Branch  
Division of Spent Fuel Management  
Office of Nuclear Material Safety  
and Safeguards

Docket No.: 72-16  
License No.: SNM-2507

CAC No.: L25047

Enclosure: Request for Additional Information

cc: North Anna Service List

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<b>OFC:</b>	SFM	SFM	SFM	SFM
<b>NAME:</b>	WAllen	WWheatley	EGoldfiez via e-mail	JSmith for MRahimi
<b>DATE:</b>	8/8/16	8/9/16	8/10/16	8/11/16
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<b>DATE:</b>	8/11/16			

**OFFICIAL RECORD COPY**

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Request for Additional Information  
Virginia Electric and Power Company  
Docket No. 72-16  
Proposed Amendment to Special Nuclear Materials License No. SNM-2507

By letter dated August 24, 2015, as supplemented October 8, November 18, November 19, December 1, and December 28, 2015; January 14, March 22, March 23, April 21, May 13, June 15, and June 21, 2016, Virginia Electric and Power Company submitted to the NRC an amendment request to license number SNM-2507 technical specifications for the North Anna Independent Spent Fuel Storage Installation. The proposed changes would allow storage of spent fuel in a modified TN-32B bolted lid cask as part of the High Burn-up Dry Storage Cask Research and Development Project sponsored by the Department of Energy and the Electric Power Research Institute.

**Shielding**

1. Perform shielding analyses, consistent with the neutron shield material performance, to demonstrate that the North Anna Power Station ISFSI can still meet the regulatory dose limit of 10 CFR 72.104(a) for the duration of the storage of the TN-32B HBU cask.

In their response to RAI-8 (Chapter 6 "Thermal Evaluation"), the applicant referenced Appendix 9A of the TN-32 FSAR, Rev. 6 to indicate that the neutron shield does not exhibit significant performance degradation at a temperature of 311 °F. However, the staff notes that Figure 9A-1 shows there is a 1.5% to 2% material loss after 100 days at 311 °F.

In addition, based on the conference call on August 2, 2016 between the applicant and the NRC staff, the maximum calculated temperatures of the radial neutron shield in the TN-32B HBU cask were defined to be about [ ] on the inner side and [ ] on outer side, respectively. As such, the bulk of the radial neutron shield appears to be working at a temperature significantly above the allowable temperature limit (300 °F). Therefore, NRC staff is concerned that the elevated working temperature may result in accelerated degradation of the neutron shield and impair its ability to perform its intended safety function. Since the radial neutron shield experiences a greater temperature than was analyzed in the FSAR, there may be a greater material loss resulting in a higher site boundary dose that may challenge the limit of 10 CFR 72.104(a).

Staff needs this information to determine if the TN-32B HBU cask meets the regulatory requirements of 10 CFR 72.104(a).