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

July 11, 2017

MEMORANDUM TO: Anthony H. Hsia, Deputy Director
Division of Spent Fuel Management
Office of Nuclear Material Safety
and Safeguards

FROM: Kristina L. Banovac, Project Manager **/RA/**
Renewals and Materials Branch
Division of Spent Fuel Management
Office of Nuclear Material Safety
and Safeguards

SUBJECT: SUMMARY OF JUNE 14, 2017, MEETING WITH VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION ENERGY) TO DISCUSS ITS PROPOSED RESPONSE TO THE SECOND REQUEST FOR ADDITIONAL INFORMATION ON THE APPLICATION FOR RENEWAL OF THE NORTH ANNA POWER STATION INDEPENDENT SPENT FUEL STORAGE INSTALLATION LICENSE (SNM-2507) (CAC NOS. L25121 AND L25205)

Background

On June 14, 2017, a meeting was held between representatives of Virginia Electric and Power Company (Dominion Energy) and the U.S. Nuclear Regulatory Commission (NRC) to discuss Dominion Energy's proposed response to the second request for additional information (RAI) on the application for renewal of the North Anna Power Station (NAPS) Independent Spent Fuel Storage Installation (ISFSI) license (SNM-2507). The list of meeting attendees is provided in Enclosure 1.

The meeting was noticed on May 23, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17143A261).

Discussion

The meeting discussion followed the meeting agenda, which is provided in Enclosure 2. There were no presentations. The NRC staff provided an overview of each RAI in the May 22, 2017, RAI letter (ADAMS Accession No. ML17116A131). Dominion Energy then discussed how it plans to address each RAI, and discussion between Dominion Energy and NRC representatives followed. The goal of the meeting was to reach a shared understanding of the RAIs and Dominion Energy's plan for responding to the RAIs, to help ensure that the RAI responses will provide the information the NRC staff needs to make a regulatory decision on issuance of a renewal without the need to ask additional RAIs.

For RAI 3-4 Follow-up, Dominion Energy noted that it will revise the TN-32 Dry Storage Cask Aging Management Program (AMP) and the NAPS ISFSI safety analysis report (SAR) supplement to specifically include loss of material and cracking in the table of aging effects.

For RAI 3-5 Follow-up, Dominion Energy noted that it will clarify in its RAI response that the neutron flux calculation included the contribution from all 32 fuel assemblies in a cask and that 6.38 MeV was not used as a cutoff energy in the neutron flux calculation.

There was a lengthy discussion on RAI 3-11 Follow-up. Dominion Energy reiterated details included in the renewal application and the first RAI response. Dominion Energy noted that the CR 39 chip (or equivalent) will be added to the thermoluminescent dosimeters (TLDs) to improve detection of the intermediate and fast neutron energy spectrum. The chip has a more level response to neutron energies in the 200 KeV to 6 MeV range, which is about 98% of the neutrons emitted from the cask. The NRC staff noted that Dominion Energy should explain in its RAI response the range of neutron energies and the TLD sensitivity and capability to detect the neutrons.

Dominion Energy discussed a change in the proposed annual neutron survey for each TN-32 cask, where the measurement location will be in between casks rather than at the centerline of each cask as originally proposed. Dominion Energy noted that this may increase the likelihood of detecting any potential neutron shield degradation, as a cask may shield the cask behind it. Two measurements will also be taken at each short end of the ISFSI pad.

The NRC staff recognized that a sampling approach for surveys or inspections is typically used and noted that Dominion Energy should discuss in its RAI response the sampling approach for the neutron survey and how it provides reasonable assurance that degradation of the neutron shield will be detected. Dominion Energy noted that the neutron shield would not instantaneously degrade: it would take years, which is why it will trend the dose rates to detect degradation as it may begin or occur.

Dominion Energy noted it would use a REM 500 meter for the neutron survey, which has a wide range and can detect neutron energies of 70 KeV to 20 MeV. It can detect a 0.5 mrem dose rate increase. A 1-1.5-minute measurement would be taken at each location, at an elevation that corresponds with the maximum neutron flux, which is approximately at the mid-height of the cask. Dominion Energy has also done studies on the capabilities of neutron instruments. The NRC staff noted that Dominion Energy should provide in its RAI response a discussion of the sensitivity of the detector with respect to the neutron energy spectrum and the distance of the measurement from the cask, for NRC staff to be able to review and determine if the survey is adequate.

Dominion Energy also discussed its Corrective Actions Program (CAP). It noted that an increasing trend in the neutron dose would trigger the acceptance criteria of the AMP and be entered into the CAP. Dominion Energy would conduct further evaluation to determine what corrective actions are needed. The actions could involve more frequent surveys or additional detailed surveys around each cask. Other actions could include installing temporary shielding, restrictions on personnel access, and ultimately, taking a cask out of service, if needed.

Dominion Energy stated that it will utilize the ISFSI Aging Management Institute of Nuclear Power Operations Database (ISFSI AMID), as well as the recommendations contained in NEI 14-03, “Format, Content and Implementation Guidance for Dry Cask Storage Operations-Based Aging Management,” in the review and sharing of operating experience. Dominion

Energy noted that it will review plant-specific and industry-wide operating experience and assess the effectiveness of the TN-32 Dry Storage Cask AMP on a five-year frequency. In the event of any operating experience showing degradation of polymer neutron shields that affect the intended function, Dominion Energy will take necessary corrective actions, which may include enhancement of its dose rate survey program to include more frequent surveys with additional coverage around the casks to ensure detection of any degradation of the neutron shields in a timely manner.

Dominion Energy also noted that it conducts surveys before any work or maintenance is done at the ISFSI per its radiation protection program, and workers wear neutron dosimetry while conducting work at the ISFSI. Dominion Energy has done these surveys historically, and it reviewed the survey results to prepare the renewal application and the response to the first RAI. NRC noted that it would be helpful for Dominion Energy to include this discussion in the RAI response.

There was also a lengthy discussion on RAI 3-15. Dominion Energy noted that it will use AREVA Calculation 19885-0215 (TN-32B High Burnup Basket Accident Analysis), which was part of the November 19, 2015, submittal supporting the high-burnup fuel (HBF) license amendment request for the NAPS ISFSI (ADAMS Accession No. ML15331A132), in its response to this RAI. The calculation considered the elevated fuel basket temperatures and the resulting decrease in yield strength properties of the aluminum basket plates, in the cask tip-over and bottom-end drop structural analyses. These analyses will be summarized and referenced in the NAPS ISFSI SAR.

There was discussion on the details of the analysis. TN Americas (consultant to Dominion Energy) representatives noted that the analysis focuses on the center of the basket where the temperature is highest. TN Americas noted that the LS-DYNA analyses used to address bottom-end drop and cask tip-over scenarios automatically include the dynamic load force, so it doesn't need to be accounted for separately. The NRC staff noted that it is looking for an analysis that accounts for the combined effects of the decrease in aluminum strength and increase in concrete hardness during storage. TN Americas noted that it will look into the details of the calculation to see how the concrete hardness was addressed. NRC staff also noted that the genesis of some of the values used in the analysis were not clear (including concrete modeling in LS-DYNA), and that Dominion Energy should justify the values or use site-specific values representative of the NAPS ISFSI site.

Dominion Energy noted that it will provide the revised AMPs (provided in Appendix A of the application) and the revised NAPS ISFSI SAR supplement (provided in Appendix C of the application), as revised through the responses to the first and second RAIs. Dominion Energy will provide a redline-strikeout version of the revised AMPs and SAR supplement, highlighting the changes made since the original submittal, and a clean version of the revised AMPs and SAR supplement.

Dominion Energy and NRC staff discussed the schedule. Dominion Energy noted that it will continue to try to meet the June 30 date for response to the RAIs. However, additional time may be needed to respond to RAI 3-15. Dominion Energy noted that it will follow-up with the NRC staff after the meeting on the dates for RAI responses. The NRC staff discussed its review schedule for the renewal. It noted that it needs to await completion of the NRC staff's review of the NAPS ISFSI HBF license amendment request before it could send the draft environmental assessment on the license renewal to the State for comment. Assuming a completion date of

late July 2017 for the completion of the HBF license amendment review, the staff estimates making a decision on the license renewal by the end of November 2017.

After Dominion Energy and NRC representatives completed their discussion, the public was given the opportunity to make comments or ask questions of the NRC. Donna Gilmore noted that Japan is no longer using aluminum baskets in their spent fuel storage casks and asked whether NRC considered 2011 information on Japanese aluminum baskets. The NRC staff noted that the structural components of North Anna's TN-32 baskets are largely constructed of stainless steel. The staff noted that different dry storage systems and designs use aluminum in different ways.

Action Items/Next Steps

Dominion Energy noted that it will follow-up with the NRC staff after the meeting on the dates for RAI responses. Following the meeting, Dominion Energy notified the NRC staff that it plans to respond to the majority of the RAIs by July 10, 2017, and to RAI 3-15 by August 18, 2017.

Docket No. 72-16
CAC Nos. L25121 and L25205

Enclosures:
1. Meeting Attendees
2. Agenda

SUMMARY OF JUNE 14, 2017, MEETING WITH VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION ENERGY) TO DISCUSS ITS PROPOSED RESPONSE TO THE SECOND REQUEST FOR ADDITIONAL INFORMATION ON THE APPLICATION FOR RENEWAL OF THE NORTH ANNA POWER STATION INDEPENDENT SPENT FUEL STORAGE INSTALLATION LICENSE (SNM-2507) (CAC NOS. L25121 AND L25205)
DOCUMENT DATE: JULY 11, 2017

DISTRIBUTION:

NMSS/DSFM R/F	TAhn	JWise	DTang	ARigato
YDiaz-Sanabria	ZLi	TTate	WCAllen	JMcKirgan
JTrefethen	DDiaz-Toro	CRoman-Cuevas	RHall	
SWalker/RII	RCarrion/RII	GEatmon/RII	GCroon/RII	

G:\SFST\North Anna\License Renewal\6-14-17 Public Meeting\6-14-17 North Anna meeting summary.docx
ADAMS Accession No.: ML17193A292

OFC	NMSS/DSFM	NMSS/DSFM	NMSS/DSFM
NAME	KBanovac	WWheatley	MRahimi
DATE	7 / 10 / 17	7 / 11 / 17	7 / 11 / 17

OFFICIAL RECORD COPY

MEETING ATTENDEES

Public Meeting with Dominion Energy to discuss its proposed response to the second request for additional information on the application for renewal of the North Anna Power Station Independent Spent Fuel Storage Installation license (SNM-2507)

June 14, 2017, 8:30 – 10:30 a.m.

Kristina Banovac	NRC/NMSS/DSFM/RMB
John Wise	NRC/NMSS/DSFM/RMB
Tae Ahn	NRC/NMSS/DSFM/RMB
Meraj Rahimi	NRC/NMSS/DSFM/RMB
David Tang	NRC/NMSS/DSFM/CSTB
Antonio Rigato	NRC/NMSS/DSFM/CSTB
Zhian Li	NRC/NMSS/DSFM/CSRAB
Tony Banks	Dominion Energy
James Williams	Dominion Energy
Brian Wakeman	Dominion Energy
Diane Aitken (via teleconference)	Dominion Energy
Tom Pastor (via teleconference)	Dominion Energy
Raheel Haroon	TN Americas LLC
Tom Edwards	TN Americas LLC
Donna Gilmore (via teleconference)	Public
Carlyn Greene (via teleconference)	UxC

MEETING AGENDA

Meeting with Virginia Electric and Power Company (Dominion Energy)

June 14, 2017
8:30 – 10:30 a.m. (Eastern Daylight Time)

One White Flint North Building, O-11B4

Purpose: Meeting with Dominion Energy to discuss its proposed response to the second request for additional information on the application for renewal of the North Anna Power Station Independent Spent Fuel Storage Installation license (SNM-2507).

Agenda:

- Welcome, introductions, and meeting objectives
- Dominion Energy and NRC discussion of second request for additional information and Dominion Energy's proposed response
- Public questions or comments
- Wrap-up and closing remarks
- Meeting adjourned