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

May 24, 2016

LICENSEE: Virginia Electric and Power Company

FACILITY: North Anna Power Station, Unit Nos. 1 and 2

SUBJECT: SUMMARY OF APRIL 26, 2016, PRE-APPLICATION TELECONFERENCE WITH VIRGINIA ELECTRIC AND POWER COMPANY FOR INCREASE IN MAXIMUM FUEL ENRICHMENT FOR NEW FUEL STORAGE RACKS AND SPENT FUEL POOL (CAC NOS. MF7432 AND MF7433)

On April 26, 2016, a Category 1 public meeting was held between the U.S. Nuclear Regulatory Commission (NRC) and representatives of Virginia Electric and Power Company (the licensee) at NRC Headquarters, One White Flint North, 11555 Rockville Pike, Rockville, Maryland. The purpose of the meeting was to discuss the proposed license amendment request (LAR) for the North Anna Power Station (North Anna) regarding an increase in maximum fuel enrichment for the new fuel storage racks and the spent fuel pool (SFP). The meeting notice and agenda, dated March 17, 2016, are available in the Agencywide Documents Access and Management System (ADAMS) at Accession No. ML16089A074. A list of attendees is enclosed.

The licensee presented a criticality analysis checklist to aid in the NRC's review (ADAMS Accession No. ML16104A387). The licensee also provided slides for this teleconference (ADAMS Accession No. ML16104A382). The slides were made available, along with the meeting notice, before the date of the meeting.

During the teleconference, the licensee first presented the following topics from the slides:

- current SFP configuration
- proposed changes
- analysis goals
- purpose of the criticality analysis checklist
- conservatism in the analysis
- submission timeline

The NRC made the following comments:

- To consider delaying the submittal until approval of the Nuclear Energy Institute (NEI) 12-16, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," guidance document. The NRC would be able to perform a more efficient LAR review.

- Incorporate lessons learned from the similar Millstone Power Station LAR submittal (e.g., requests for additional information regarding use of TRITON for depletion calculations).

The licensee stated that the LAR will be plant-specific. The criticality analysis checklist was developed per the draft NEI 12-16 guidance. The licensee stated that it will respond to the NRC regarding the 2-year review timeline.

The licensee stated that the criticality analysis checklist serves as a useful tool for the NRC to understand the licensee's criticality safety analysis approach. The following comments were provided by the staff:

- In Section 3.0, add "Schematics" (a drawing or similar with dimensions and tolerances).
- In Section 5.0, clarify the meaning of "New fuel rack: Storage geometries. 'NO'."
- In Section 5.0 (Justification/Explanation column), indicate what code/method is used for burnup credit and decay time credit.
- In Section 6.0, with regard to convergence checks, provide a clear discussion in the LAR of how convergence was attained and verified.
- In Section 7.0, clarify source distribution (consider adding an explanation for why 'NO' was chosen).
- Consider adding integral fuel burnable absorber/wet annular burnable absorber combinations and show they are bounded by burnable poison rod assembly.
- Provide sample calculations for low power at end of cycle only (not combined with other effects) to show the magnitude of the effect for comparison to the discussed NUREG 0.2 percent delta-k-effective estimated effect of power history variations.
- Provide sufficient justification to disposition the storage of older fuel containing Pyrex.
- In Section 9.0, move burnup worth and measured burnup to "Fuel content" section from "Fuel geometry" section.
- In Section 12, for the seismic event, provide justification that increasing the space between racks does not increase k-effective.
- Clarify the purpose of axial fuel position uncertainty in the new fuel storage analysis.
- Ensure discussion on grid growth and clad creep in Section 9.0 is "robust."

Two members of the public were in attendance via a teleconference line. Members had the opportunity to communicate with the NRC staff before the end of the meeting. A member of the public commented that increasing the uranium-235 (U-235) enrichment of the fresh fuel assemblies to 5 percent by weight (w/o) will affect the burnup requirements for North Anna and would need a new storage requirement. The NRC staff agrees that the burnup requirements for North Anna will be affected and will need to be evaluated as part of its future LAR submittal containing a new SFP criticality safety analysis. The NRC staff responded that the maximum licensable nominal U-235 enrichment of the fresh fuel is currently limited to 5 w/o. Also, since North Anna is increasing the U-235 enrichment of its fuel to 5 w/o, North Anna is necessarily proposing to increase the currently allowed 4.6 w/o U-235 enrichment to 5 w/o. This is necessary to ensure compliance with Title 10 of the *Code of Federal Regulations* Section 50.68

requirements, which require evaluation of the maximum fuel enrichment allowed for a given plant.

A member of public asked for a copy of the presented slides. NRC staff directed the member to the NRC meeting public notice website, indicating that the meeting notice had a copy of the slides attached. Public meeting feedback forms were made available to the public. No public meeting feedback forms were received. No regulatory decisions were made during this meeting.

Please direct any inquiries to me at 301-415-2597 or v.sreenivas@nrc.gov.

Karen Cotton for

V. Sreenivas, Project Manager
Plant Licensing Branch LPL 2-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-338 and 50-339

Enclosure:
List of Attendees

cc w/enclosure: Distribution via Listserv

LIST OF ATTENDEES

APRIL 26, 2016, PRE-APPLICATION TELECONFERENCE

WITH VIRGINIA ELECTRIC AND POWER COMPANY

REGARDING NORTH ANNA POWER STATION

SPENT FUEL POOL CRITICALITY ANALYSIS

| NAME | ORGANIZATION |
|---|---|
| | **U.S. NUCLEAR REGULATORY COMMISSION** |
| V. Sreenivas | NRC/NRR/DORL/LPL2-1[1] |
| Kent Wood | NRC/NRR/DSS/SNPB[2] |
| Amrit Patel | NRC/NRR/DSS/SNPB[2] |
| Michael Markley | NRC/NRR/DORL/LPL2-1[1] |
| Eric Oesterle | NRC/NRR/DSS/SRXB[3] |
| Karen Cotton | NRC/NRR/DORL/LPL2-1[1] |
| | |
| | **VIRGINIA ELECTRIC AND POWER COMPANY** |
| Diane Aitken | Dominion |
| Craig Sly | Dominion |
| Robert Hall | Dominion |
| Tom Schleicher | Dominion |
| Kasey Kennett | Dominion |
| David Livingston | Dominion |
| Mike Lico | Dominion |
| Dale Lancaster | Vendor |
| | |
| | **MEMBERS OF THE PUBLIC** |
| Erica Gray | Virginia |
| David Martin | Virginia |
| Kristopher Cummings | Nuclear Energy Institute |

[1] Office of Nuclear Reactor Regulation, Division of Operating Reactor Licensing, LPL2-1

[2] Office of Nuclear Reactor Regulation, Division of Safety Systems, Reactor Systems Branch

[3] Office of Nuclear Reactor Regulation, Division of Safety Systems, Nuclear Performance and Code Review Branch

Enclosure

requirements, which require evaluation of the maximum fuel enrichment allowed for a given plant.

A member of public asked for a copy of the presented slides. NRC staff directed the member to the NRC meeting public notice website, indicating that the meeting notice had a copy of the slides attached. Public meeting feedback forms were made available to the public. No public meeting feedback forms were received. No regulatory decisions were made during this meeting.

Please direct any inquiries to me at 301-415-2597 or v.sreenivas@nrc.gov.

***/RA by KCotton for/***

V. Sreenivas, Project Manager
Plant Licensing Branch LPL 2-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-338 and 50-339

Enclosure:
List of Attendees

cc w/enclosure: Distribution via Listserv

DISTRIBUTION:
PUBLIC
LPL2-1 R/F
RidsACRS_MailCTR Resource
RidsNrrDorlLpl2-1 Resource
KCotton, NRR
RidsNrrLALRonewicz Resource
RidsRgn2MailCenter Resource
RidsNrrDssSnpb Resource
RidsNrrPMNorthAnna Resource
RidsNrrDssSrxb
JBowen, OEDO
APatel, NRR
KWood, NRR

**ADAMS Accession No.: ML16138A075** **Meeting Notice ML16089A074** *by e-mail

| OFFICE | NRR/DORL/LPL2-1/PM | NRR/DORL/LPL2-1/LA | NRR/DSS/SRXB/BC(A)* | NRR/DSS/SNPB |
|---|---|---|---|---|
| NAME | VSreenivas | LRonewicz | EOesterle | KALWood |
| DATE | 05/18/2016 | 05/17/2016 | 05/12/2016 | 05/12/2016 |
| OFFICE | NRR/DSS/SNPB/BC* | NRR/DORL/LPL2-1/BC | NRR/DORL/LPL2-1/PM | |
| NAME | JDean | MMarkley | VSreenivas (KCotton for) | |
| DATE | 05/12/2016 | 05/19/2016 | 05/24/2016 | |

**OFFICIAL RECORD COPY**