

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

August 30, 2010

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Serial No. 10-122A
NL&OS/ETS R0
Docket Nos. 50-338/339
License Nos. NPF-4/7

VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)
NORTH ANNA POWER STATION UNITS 1 AND 2
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
PROPOSED LICENSE AMENDMENT REQUEST REGARDING RISK-INFORMED
JUSTIFICATION FOR THE RELOCATION OF SPECIFIC SURVEILLANCE
FREQUENCY REQUIREMENTS TO A LICENSEE CONTROLLED PROGRAM
(ADOPTION OF TSTF-425, REVISION 3)

In a March 30, 2010 letter (Serial No. 10-050), Dominion requested amendments, in the form of changes to the Technical Specifications (TS) to Facility Operating License Numbers NPF-4 and NPF-7, for North Anna Power Station Units 1 and 2, respectively. The proposed amendments would modify North Anna TS by relocating specific surveillance frequencies to a licensee-controlled program with the implementation of Nuclear Energy Institute (NEI) 04-10, "Risk-Informed Technical Specifications Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies." In an August 6, 2010 e-mail from Dr. V. Sreenivas, the NRC requested additional information to complete the review of the license amendment request. The attachment to this letter provides the information requested in the August 6, 2010 e-mail.

The information provided in this letter does not affect the conclusion of the significant hazards consideration discussion provided in Dominion letter dated March 30, 2010 (Serial No. 10-050) for North Anna.

Dominion continues to request approval of the proposed license amendments by April 1, 2011, with the amendments being implemented within 120 days.

In accordance with 10 CFR 50.91, "Notice for Public Comment; State Consultation," a copy of this response, with attachments, is being provided to the designated State Officials.

If you have any questions or require additional information, please contact Mr. Thomas Shaub at (804) 273-2763.

Sincerely,

Leslie N. Hartz
Vice President – Nuclear Support Services

Attachments:

1. Response To Request For Additional Information – PRA Quality Concerns
2. Response To Request For Additional Information – Revised Insert for TS Bases Changes

Commitments made in this letter: Dominion will assess the PRA model gaps for each surveillance frequency change until the PRA model of record is updated.

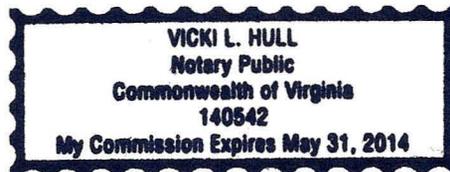
COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Leslie N. Hartz, who is Vice President – Nuclear Support Services, of Virginia Electric and Power Company. She has affirmed before me that she is duly authorized to execute and file the foregoing document in behalf of that Company, and that the statements in the document are true to the best of her knowledge and belief.

Acknowledged before me this 30TH day of August, 2010.

My Commission Expires: May 31, 2014.

Notary Public



cc: U.S. Nuclear Regulatory Commission
Region II
Marquis One Tower
245 Peachtree Center Avenue, NE
Suite 1200
Atlanta, Georgia 30303-1257

Mr. J. E. Reasor, Jr.
Old Dominion Electric Cooperative
Innsbrook Corporate Center
4201 Dominion Blvd.
Suite 300
Glen Allen, Virginia 23060

State Health Commissioner
Virginia Department of Health
James Madison Building - 7th floor
109 Governor Street
Suite 730
Richmond, Virginia 23219

NRC Senior Resident Inspector
North Anna Power Station

Ms. K. R. Cotton
NRC Project Manager
U. S. Nuclear Regulatory Commission
One White Flint North
Mail Stop O8 G9A
11555 Rockville Pike
Rockville, Maryland 20852

Dr. V. Sreenivas
NRC Project Manager
U. S. Nuclear Regulatory Commission
One White Flint North
Mail Stop O8 G9A
11555 Rockville Pike
Rockville, Maryland 20852

ATTACHMENT 1

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

**PROPOSED LICENSE AMENDMENT REQUEST REGARDING RISK-INFORMED
JUSTIFICATION FOR THE RELOCATION OF SPECIFIC SURVEILLANCE
FREQUENCY REQUIREMENTS TO A LICENSEE CONTROLLED PROGRAM**

PRA QUALITY CONCERNS

NRC Question 1 and 2

Table 1 of Attachment 2 has been updated to address the NRC's Request for Additional Information. Specifically, questions 1 and 2:

1. In Table 1 of Attachment 2 of the submittal, the importance of each gap to this application in many instances is dispositioned simply by referring to the Nuclear Energy Institute (NEI) 04-10 requirement to assess deficiencies with sensitivity analyses. This statement alone is insufficient for the staff to find the probabilistic risk assessment (PRA) model adequate to support the application. The licensee is requested to provide its assessment of the significance of each gap to the calculation of risk increases associated with changes to surveillance frequency. This is requested for the following items in Table 1: #1, #2, #3(1), #4(1), #5, #7, #9, #10, and #17.
2. In Table 1 of Attachment 2 of the submittal, several gaps (#3, #4(1), #5, #7, #9) identify missing logic in the PRA model (inadequate scope). It is not clear to the staff how missing scope in a PRA can be addressed by sensitivity analyses. The licensee is requested to discuss how it would conduct such analyses for this application. This is requested for the following items in Table 1: #3, #4(1), #5, #7, and #9.

Dominion Response

Table 1 has been revised to address the above RAIs. The revisions are included in column titled, *Importance to Application*. Specifically, the responses to question #1 start off with "Significance" and the responses to question #2 begin with "Inadequate Scope."

For each surveillance test interval change, missing logic gaps (inadequate scope) will be addressed via the use of sensitivity studies. The model used for the sensitivity study will account for the specific logic gaps as shown in Table 1. In addition, the PRA input to the expert panel will include a documented discussion on each of the aforementioned gaps. The use of gap sensitivity studies will no longer be required once the gaps have been incorporated into the NAPS PRA model of record. The Dominion PRA models are usually updated around every 3 to 5 years

Table 1 Status of identified Gaps to NEI 00-02 and Capability Category II of the ASME PRA Standard				
Title	Description	NEI Element / ASME SR	Current Status / Comment	Importance to Application
Gap #1	ATWS modeling of potentially dominate <u>dominant</u> sequences and data traceability	AS-9, QU-11, ST-13	ATWS Failure Relief Probability is conservatively modeled based on a UET (<u>Unfavorable Exposure Time</u>) of 27%.	<p>Conservative modeling of the ATWS Failure Probabilities will be addressed by sensitivities per NEI 04-10, Revision 1 if applicable to the specific STI evaluation.</p> <p>Significance: The NAPS ATWS model uses a conservative simplification that assumes that pressure relief is always insufficient whenever the unit is in the UET period, which is assumed to be 27%. This is a conservative bias since there is a probability that pressure relief is successful given the availability of the pressurizer PORVs, safeties and AFW. The sensitivity studies will include an ATWS assessment in accordance with WCAP-15831, <u>WOG Risk-Informed ATWS Assessment and Licensing Implementation Process</u>, using the generic methodology and values.</p>
Gap #2	For initiating event fault-tree modeling, capture all relevant combinations of events involving the annual frequency of one component failure combined with the unavailability of other components	IE-C8	The current NAPS system-level initiating event fault trees uses a 365*Capacity Factor multiplier in all of the initiating event fault trees, which needs to be replaced with the new methodology described in EPRI TR-1013490, "Support System Initiating Events: Identification and Quantification Guideline", EPRI, December 2006.	<p>Support system-level initiating event fault trees will be addressed by sensitivities per NEI 04-10, Revision 1 if applicable to the specific STI evaluation.</p> <p>Significance: This issue is important for any potential <u>Surveillance Test Interval (STI) change impacting support system initiating events</u>. Therefore, the system-level initiating events will be revised using the methodology in EPRI TR-1013490 methodology.</p>

Table 1 Status of identified Gaps to NEI 00-02 and Capability Category II of the ASME PRA Standard				
Title	Description	NEI Element / ASME SR	Current Status / Comment	Importance to Application
Gap #3	For key safety functions (e.g., power restoration) identify operator actions to achieve the defined success criteria.	AS-A4	SR is NOT MET until: 1) an HEP is added to the SBO nodes for restoring the ECCS functions; and 2) <u>text in section 2.3.3.1 is the accident sequence documentation needs to be revised to clarify the need for operator action to restart ECCS functions.</u>	<p>1-) HEP for restoring of ECCS during SBO will be addressed by sensitivities per NEI 04-10, Revision 1 if applicable to the specific STI evaluation.</p> <p>Significance: <u>Non-consideration of this operator action results in a small non-conservatism in the Station Black-Out (SBO) accident sequences results. The overall impact on the results is small.</u></p> <p>Inadequate Scope: <u>An Human Error Probability (HEP) will be added to the sensitivity PRA model when quantifying the effect of a proposed individual STI revision for comparison to acceptance criteria in NEI 04-10, Revision 1.</u></p> <p>2) None. This is judged to be a documentation consideration only and does not affect the technical adequacy of the PRA model.</p>

Table 1 Status of identified Gaps to NEI 00-02 and Capability Category II of the ASME PRA Standard				
Title	Description	NEI Element / ASME SR	Current Status / Comment	Importance to Application
Gap #4	Delineate accident sequence (e.g., Loss of RCP seal cooling) for each initiating event (e.g., transients).	AS-A7	SR is NOT MET until: 1) inclusion of consequential loss of RCP seal cooling for transients, and 2) documentation enhancement of the U1-RCPSL nodes.	<p>1) Consequential loss of RCP seal cooling for transients will be addressed by sensitivities per NEI 04-10, Revision 1 if applicable to the specific STI evaluation.</p> <p>Significance: Consequential loss of RCP seal cooling is not specifically considered in the event trees, as both the CC and CH systems would need to fail within the 24 hours of an initiating event. The model does include consequential pressurizer PORV failing to reclose, which is transferred to the small LOCA event tree. The consequential PORV LOCA has a relatively low risk importance. The consequential loss of RCP seal cooling is expected to have a comparable or lower risk impact.</p> <p>Inadequate Scope: A consequential loss of RCP seal cooling for transients will be addressed in sensitivity studies when quantifying the effect of a proposed individual STI revision for comparison to acceptance criteria in NEI 04-10, Revision 1.</p> <p>2) None. This is judged to be a documentation consideration only and does not affect the technical adequacy of the PRA model.</p>

Table 1 Status of identified Gaps to NEI 00-02 and Capability Category II of the ASME PRA Standard				
Title	Description	NEI Element / ASME SR	Current Status / Comment	Importance to Application
Gap #5	Define and model plant configurations and alignments that reflect dependencies.	AS-B5a	Cross-tie unavailability due to outages is accounted for with the exception of electrical buses where the unavailability during at power operation is essentially 0 versus one or two days during refueling outages.	<p>Cross-tie electrical bus unavailability due to refueling outages will be addressed by sensitivities per NEI 04-10, Revision 1 if applicable to the specific STI evaluation.</p> <p>Significance: Significance will be addressed by modeling electrical bus cross-tie unavailability for each sensitivity study.</p> <p>Inadequate Scope: The sensitivity studies will address the electrical bus cross-tie unavailability before quantifying the effect of a proposed individual STI revision for comparison to acceptance criteria in NEI 04-10, Revision 1.</p>
Gap #6	Include a discussion of operator actions assumed as part of the success criteria development, and how those actions are consistent with plant procedures and practices	SC-A6	Some of the success criteria discussion includes general operator actions, but the discussion does not include procedures and not all event tree sections contain the discussion	None. This is judged to be a documentation consideration only and does not affect the technical adequacy of the PRA model.

Table 1 Status of identified Gaps to NEI 00-02 and Capability Category II of the ASME PRA Standard				
Title	Description	NEI Element / ASME SR	Current Status / Comment	Importance to Application
Gap #7	Incorporate the effect of variable success criteria (i.e., success criteria that change as a function of plant status) into the system modeling. Include consideration of all failure modes, consistent with available data and model level of detail	SY-A11 SY-A13	The current NAPS PRA does not include inadvertent SI Actuation. <u>Inadvertent Safety Injection (SI) Actuation has been included in the NAPS PRA model of record, N009Aa.</u>	<p>Inadvertent SI Actuation will be addressed by sensitivities per NEI-04-10, Revision 1 if applicable to the specific STI evaluation.</p> <p>Significance: <u>The NAPS PRA model, N009A, has been updated since the RITS 5b submittal and before receiving the Request for Additional Information. The latest NAPS PRA model, N009Aa, includes Inadvertent SI Actuation. Significance has been addressed by incorporating the issue into the PRA model of record, N009Aa.</u></p> <p>Inadequate Scope: <u>As stated above, Inadvertent SI Actuation was integrated into the latest NAPS PRA model, N009Aa.</u></p>
Gap #8	Use results of plant walkdowns and plant personnel interviews (system engineers and operators) as a source of information for modeling the as-built, as-operated plant.	SY-A2 SY-A4 SY-B8 SY-C1	The Dominion PRA staff has performed many system walkdowns during the development and maintenance of the models. In addition, Dominion PRA staff works closely with North Anna system engineers and operators on nearly a daily basis while supporting the various risk informed programs. However, no formal documentation exists at this time to allow closure of these SRs. It is NOT anticipated that not meeting this requirement will have a significant impact on the model.	Not Significant. This is judged to be a documentation consideration only and does not affect the technical adequacy of the PRA model.

Table 1 Status of identified Gaps to NEI 00-02 and Capability Category II of the ASME PRA Standard				
Title	Description	NEI Element / ASME SR	Current Status / Comment	Importance to Application
Gap #9	Identify SSCs that may be required to operate in conditions beyond their environmental qualifications.	SY-B15	Currently, the NAPS PRA model does not distinguish between PZR PORVs failing to reclose on water relief and steam	<p>PZR PORVs failing to reclose on water relief will be addressed by sensitivities per NEI 04-10, Revision 1 if applicable to the specific STI evaluation.</p> <p>Significance: <u>Currently, the NAPS PRA model does not distinguish between PZR PORVs failing to reclose on steam or water relief. EPRI TR-1011047 'Probability of Safety Valve Failure-to-Reseat Following Steam and Liquid Relief' provides guidance for evaluating the increase in failure probability associated with passing water. Significance will be addressed by incorporating the issue into the sensitivity study model.</u></p> <p>Inadequate Scope: <u>Probability of PZR PORV failing to reclose on water relief will be addressed in the sensitivity PRA model when quantifying the effect of a proposed individual STI revision for comparison to acceptance criteria in NEI 04-10, Revision 1.</u></p>
Gap #10	Base the time available to complete actions on appropriate realistic generic thermal-hydraulic analyses, or simulation from similar plants	HR-G4	Time windows for successful completion of actions in some instances may need to be updated (for example, those that are based on estimates made for the IPE)	<p>Several HEP MAAP runs need to be updated and, therefore, these will be addressed by sensitivities per NEI 04-10, Revision 1 if applicable to the specific STI evaluation. Note not all necessary MAAP runs were updated for N009A model.</p> <p>Significance: <u>This gap is not considered significant since most of the NAPS time windows are similar to the Surry Power Station (SPS) time windows, which are based on updated MAAP runs. NAPS and SPS systems are similar enough that the timings aren't expected to be significantly different. For those HEPs that don't have NAPS-specific MAAP analyses (which is most of them), the HEP probabilities will be increased by factor of 2.</u></p>

Table 1 Status of identified Gaps to NEI 00-02 and Capability Category II of the ASME PRA Standard				
Title	Description	NEI Element / ASME SR	Current Status / Comment	Importance to Application
Gap #11	Base the required time to complete actions for significant HFEs on action time measurements in either walkthroughs or talk-throughs of the procedures or simulator observations.	HR-G5	No formal documentation currently exists and this SR will remain NOT MET. As a footnote the timings are not expected to change significantly as they are based on comparisons with similar actions at Surry.	Not Significant. This is judged to be a documentation consideration only and does not affect the technical adequacy of the PRA model.
Gap #12	Check the consistency of post-initiator HEPs.	HR-G6	Document a review of the HFEs and their final HEPs relative to each other to confirm their reasonableness given the scenario context, plant history, procedures, operational practices, and experience	Not Significant. This is judged to be a documentation consideration only and does not affect the technical adequacy of the PRA model.
Gap #13	When using expert judgment document the rationale behind the choice of parameter values.	DA-D2	Documentation needs to be enhanced for the several cases where expert opinion is used. The expert opinion is reasonable and should not change.	Not Significant. This is judged to be a documentation consideration only and does not affect the technical adequacy of the PRA model
Gap #14	Identify method-specific limitations and features that could impact the results and applications.	QU-B1 QU-F5	Although key assumptions are documented, these do not include limitations of the quantification method or features that impact results (aside from references to code limitations, guidance documents and procedures).	Not Significant. This is judged to be a documentation consideration only and does not affect the technical adequacy of the PRA model.
Gap #15	Identify key sources of model uncertainty.	QU-E1	Each PRA element notebook (IE, AS, SC, SY, DA, HR, LE) has identified potential sources of model uncertainty. A characterization of those sources of uncertainty and evaluation of the generic sources of uncertainty has not yet been completed however.	Not Significant. The PRA documentation has identified potential sources of modeling uncertainty. The potential sources of uncertainty will be addressed by sensitivities per NEI 04-10, Revision 1 if applicable to the specific STI evaluation.

Table 1 Status of identified Gaps to NEI 00-02 and Capability Category II of the ASME PRA Standard				
Title	Description	NEI Element / ASME SR	Current Status / Comment	Importance to Application
Gap #16	Provide a detailed description of significant accident sequences or functional failure groups.	QU-F3	Significant contributors (based on F-V and RAW) have been identified and evaluated. A detailed description has been provided for the top 5 accident sequences, but not for all significant accident sequences or functional failure groups.	Not Significant. This is judged to be a documentation consideration only and does not affect the technical adequacy of the PRA model.
Gap #17	Perform realistic secondary side isolation capability analysis for the significant accident progression sequences caused by SG tube release.	LE-D4	Secondary side isolation during a SGTR should also consider the additional number of demands on the relief valves in the progression to core damage.	<p>The effect of additional relief valve demands will be addressed by sensitivity studies per NEI 04-10, revision 1, if applicable to the specific STI evaluation.</p> <p>Significance: <u>This is a Level 2 issue involving the progression of core damage. The model currently does not consider the additional steam generator relief valve demands associated with SGTR resulting in core damage. The water relief PORV issue will be addressed in the sensitivity studies by evaluating the impact on the proposed surveillance test interval change. Therefore, significance will be addressed by incorporating the issue into the sensitivity study model.</u></p>

NRC Question 3

In Attachment 1, Section 2.2, Item 3 identified a deviation from Technical Specification Task Force-425 associated with the proposed Bases. Subsequent to the submittal, the U. S. Nuclear Regulatory Commission issued additional guidance on acceptable Bases (ADAMSML100990099) which addressed the specific issue.

“The insert provided in TSF-425 to replace text in the TS Bases describing the basis for each frequency relocated to the SFCP has been revised from, ‘The Surveillance Frequency (SF) is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program,’ to read ‘The Frequency may be based on factors such as operating experience, equipment reliability, or plant risk, and is controlled under the Surveillance Frequency Control Program.’ This deviation is necessary to reflect the NAPS basis for frequencies which do not, in all cases, base frequency on operating experience, equipment reliability and plant risk.”

TSTF-425, Revision 3, “Relocate Surveillance Frequencies to Licensee Control-RITSTF Initiative 5b,” (ADAMS Accession Nos. ML090850627, ML090850630, ML090850638, and ML090850640) was approved by Notice of Availability published in the *Federal Register* on July 6, 2009. TSTF-425, Rev. 3 involves the relocation of most time-based surveillance frequencies to a licensee controlled program, called the Surveillance Frequency Control Program (SFCP), and adds the SFCP to the administrative controls section of TS. The SFCP does not include surveillance frequencies that are event driven, controlled by an existing program, or are condition-based.

Part of the TSTF-425 change to NUREGs 1430–1434 (Standard Technical Specifications) provides an optional insert (INSERT 2) to the existing Technical Specification (TS) Bases to facilitate adoption of the TSTF while retaining the existing NUREG TS Surveillance Frequency TS Bases for licensees not choosing to adopt TSTF-425. The TSTF-425 TS Bases INSERT 2 states:

“The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.”

Several licensees requesting license amendments to adopt TSTF-425 have identified a need to deviate from this statement because it only applies to frequencies that have been changed in accordance with the Surveillance Frequency Control Program (SFCP) and does not apply to frequencies that are relocated but not changed.

The NRC staff agrees that the TSTF-425 TS Bases insert applies only to relocated SFs that are subsequently evaluated and changed in accordance with the SFCP, and that the current insert does not apply to SFs relocated to the SFCP but remain unchanged. For SFs relocated to the SFCP but not subsequently changed in accordance with the program, the existing TS Bases description remains a valid Bases for these SFs.

One option to address this concern for those instances where the licensee used TSTF-425 Insert 2, is to modify the wording used in the application as follows:

“The Surveillance Frequency is controlled under the Surveillance Frequency Control Program”

In addition, the following statement should be included regarding SF Bases relocated to the SFCP:

“The existing Bases information describing the basis for the Surveillance Frequency will be relocated to the licensee-controlled Surveillance Frequency Control Program.”

It should be noted that only the Bases for the Surveillance Frequency can be relocated to the SFCP. The Bases for the TS Surveillance will remain in the TS Bases and should not be relocated to the SFCP. The licensee is requested to provide a revision to its proposed Bases changes consistent with this guidance.

VEPCO's application dated March 30, 2010, included the aforementioned deviations from the proposed language in TSTF-425, Revision 3. The NRC staff has reviewed the proposed deviation from TSTF-425 and requests that the licensee modify the application, as described above, or develop an alternate resolution to the issue with Insert 2 as described in item 3, and including appropriate justifications.

Dominion Response

Dominion was aware of the NRC guidance provided in the April 2010 letter. In addition, to the letter, several discussions have taken place between the NRC and Technical Specification Task Force (TSTF) to develop the appropriate wording of the Bases. Dominion has reviewed this additional guidance and is providing a revision to its proposed Bases changes consistent the latest guidance from the NRC and TSTF.

The following Bases words will be used to discuss the basis for surveillance frequencies consistent with the NRC guidance:

“The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.”

A corrected Insert 1 for the Bases changes is included. Please use the revised Insert 1 to complete the review of the proposed March 30, 2010 LAR Bases changes.

After NRC approval of the LAR and as part of the LAR implementation, the existing North Anna Bases information describing the basis for the relocated Surveillance Frequencies will also be relocated to the North Anna Surveillance Frequency Control Program.

ATTACHMENT 2

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

**PROPOSED LICENSE AMENDMENT REQUEST REGARDING RISK-INFORMED
JUSTIFICATION FOR THE RELOCATION OF SPECIFIC SURVEILLANCE
FREQUENCY REQUIREMENTS TO A LICENSEE CONTROLLED PROGRAM**

REVISED INSERT FOR TS BASES CHANGES

**VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)
NORTH ANNA POWER STATION UNITS 1 AND 2**

REVISED INSERT FOR TECHNICAL SPECIFICATIONS BASES

INSERT 1

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.