March 26, 2020

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555

Serial No. 20-077
NAPS/RAP
Docket Nos. 50-338, 339
License Nos. NPF-4, NPF-7

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION ENERGY VIRGINIA)
NORTH ANNA POWER STATION UNITS 1 AND 2
SUMMARY OF FACILITY CHANGES, TESTS AND EXPERIMENTS

Pursuant to 10 CFR 50.59(d)(2), a report containing a brief description of any changes, tests, and experiments, including a summary of the evaluation of each, must be submitted to the NRC, at intervals not to exceed 24 months. Attachment 1 provides a summary description of Facility Changes, Tests and Experiments identified in 10 CFR 50.59 Evaluations performed at the North Anna Power Station during 2019.

If you have any questions, please contact Neil S. Turner at (540) 894-2100.

Very truly yours,

N. Larry Lane
Site Vice President

Attachments

1. 10 CFR 50.59 Summary Description of Facility Changes, Tests and Experiments
2. Commitment Change Evaluation Summary

cc: Regional Administrator
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IE47
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ATTACHMENT 1

10 CFR 50.59 SUMMARY DESCRIPTION OF FACILITY CHANGES, TESTS AND EXPERIMENTS

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

NORTH ANNA UNITS 1 AND 2

10 CFR 50.59 SUMMARY DESCRIPTION OF FACILITY CHANGES, TESTS AND EXPERIMENTS

10 CFR 50.59 EVALUATION: NAPS0-EVAL-2019-0002

Document Evaluated: ETE-NAF-2019-0006 Rev. 0

Brief Description: The activity being screened is the implementation of the updated Control Rod Ejection Accident analysis for North Anna Power Station (NAPS). The updated analysis was conducted to assess the impact of more limiting core physics parameter inputs such as Doppler Defect and Ejected Rod Worth on the End of Cycle (EOC) Rod Ejection cases.

Reason for Change: The rod ejection analysis for NAPS has been updated in calculation SM-1636 Rev. 1, Addendum A. The updated analysis is to support increased core physics parameter inputs for the End of Cycle cases. The analysis results are more limiting than those currently presented in the UFSAR. The updated analysis results still meet the acceptance criteria defined in the UFSAR.

Summary: The activity being evaluated is the implementation of an update to the Control Rod Ejection Accident analysis for NAPS. The reanalysis on the End of Cycle cases was performed to support increased core physics parameter inputs compared to the current Rod Ejection analysis. The results of the analysis are closer to the UFSAR specified acceptance criteria than the current analysis. All acceptance criteria specified in the NAPS UFSAR and Rod Ejection Topical Report, VEP-NFE-2-A, continue to be met.

The evaluation of this activity confirmed that the reanalysis of the control rod ejection safety analysis does not result in an increase in the frequency of occurrence of an accident previously evaluated in the SAR, malfunction of a SSC important to safety, increase in the consequences of an accident, a possibility for a malfucntion of a SSC important to safety with a different result, or an accident of a different type. The results of the revised analysis show no new failure modes, new malfunctions of SSCs importance to safety, or unanalyzed accidents being generated. Furthermore, the radiological consequences of the Control Rod Assembly Ejection accident are unchanged based upon the acceptance criteria for cladding embrittlement and fuel melt being met. All DBLFPBs associated with control rod ejection safety analysis were shown to be met and there was no change in the method of evaluation. Therefore, the update to the control rod ejection safety analysis may be implemented without NRC approval under the provisions of 10CFR50.59.

10 CFR 50.59 EVALUATION: NAPS0-EVAL-2018-0006

Document Evaluated: Surveillance Test Interval Evaluation STI-N12-2017-003

Brief Description: Surveillance Test Interval Evaluation STI-N12-2017-003 has evaluated and approved a change in the 31-day surveillance testing of the Station Emergency Diesel Generators to a 92-day frequency (or quarterly).

Reason for Change: The basis for implementing STI-N12-2017-003 is improved Emergency Diesel Generator system reliability, improved station schedule flexibility, reduction in system unavailability, and reduction in station resources monthly.

Summary: Surveillance Test Interval Evaluation STI-N12-2017-003 has evaluated and approved a change in the 31-day surveillance testing of the Station Emergency Diesel Generators (EDGs) to a 92-day frequency (or quarterly). Based on review of historical emergency diesel generator testing and overall reliability of the Station diesel generators, adjustment of the 31-day surveillance test to a quarterly (92-day) test frequency is considered acceptable. The surveillance requirement for demonstrating the OPERABILITY of the EDGs are in accordance with the recommendations of Safety Guide 9, Regulatory Guide 1.108 (subsequently replaced by Regulatory Guide 1.9), and Regulatory Guide 1.137, as addressed in the UFSAR.

The evaluation was conservatively performed based on the potential for an adverse effect on the SAR described design function under 50.59 Screen Part III.1. However, implementation of quarterly testing of the Station EDGs does have the potential to increase mechanical wear of internal engine components, however mitigation strategies will be implemented to aid in preventing this increase in mechanical wear by performance of a 45 day +/-25% grace prelube and air roll of each EDG. This activity will ensure proper bearing and cylinder liner lubrication is present mitigating the potential for any increased mechanical wear ensuring the highest level of SSC reliability remains, to support design basis accident scenarios requiring actuation and subsequent loading of the Station EDGs.

The 31-day testing frequency of the Station EDGs is not explicitly defined in the UFSAR but is implicitly defined under reference to Regulatory Guides 1.9 "Selection of Diesel Generator Set Capacity for Standby Power Supplies," March 10, 1971, and 1.108 "Periodic Testing of Diesel Generator Units Used Onsite Electrical Power Systems at Nuclear Power Plants," Revision 1, August 1977. The requirements of Regulatory Guide 1.108 were subsequently replaced by Regulatory 1.9, Revision 3, July 1993. Regulatory Guide 1.9, Revision 3 was amended to the UFSAR in 2014 under NAPS-UCR-2014-028.

10 CFR 50.59 EVALUATION: NAPS0-EVAL-2019-0003

Document Evaluated: ETE-NAF-2019-0079 Rev. 0 and NAPS-UCR-2019-005

Brief Description: The activity being reviewed is the implementation of a revised North Anna UFSAR Section 15.2.1 Uncontrolled Rod Withdrawal from Subcritical (RWSC) analysis at North Anna Power Station. The revised analysis reduces the amount of Doppler reactivity and changes the treatment of the direct moderator heating assumed within the RETRAN analysis. This activity also requires an update to the NAPS UFSAR.

Reason for Change: The purpose of this Engineering Technical Evaluation [ETE] is to serve as the controlling document for configuration changes necessary to support the implementation of a revised safety analysis for the Uncontrolled Rod Withdrawal from Subcritical (RWSC), as described in the North Anna Power Station UFSAR, Section 15.2.1.

Summary: The activity being reviewed is the implementation of a revised North Anna Updated Final Safety Analysis Report Section 15.2.1 Uncontrolled Rod Withdrawal from Subcritical analysis at North Anna Power Station. The results of the revised analysis are closer to the UFSAR specified acceptance criteria than the previous analysis. All acceptance criteria specified in the North Anna UFSAR continue to be met.

The evaluation of this activity confirmed that the reanalysis of the Uncontrolled Rod Withdrawal from Subcritical analysis does not result in an increase in the frequency of occurrence of an accident previously evaluated in the SAR malfunction of a SSC important to safety, increase in the consequences of an accident, a possibility for a malfunction of a SSC important to safety with a different result, or an accident of a different type. The results of the revised analysis show no new failure modes, new malfunctions of SSCs important to safety, or unanalyzed accidents being generated. Furthermore, the Uncontrolled Rod Withdrawal from Subcritical meets its acceptance criteria, thus there is no radiological consequences associated with the event. All DBLFPBs associated with the Uncontrolled Rod Withdrawal from Subcritical safety analysis were shown to be met and there was no change in the method of evaluation. Therefore, the update to the Uncontrolled Rod Withdrawal from Subcritical safety analysis maybe implemented without NRC approval under the provisions of 10CFR50.59.

10 CFR 50.59 EVALUATION: NAPS1-EVAL-2019-0004

Document Evaluated: 0-OP-4.10 Rev 42 – OTO1

Brief Description: This One Time Only (OTO) revision is to perform a hook-to-hook transfer of a fuel assembly from 1-FH-CRN-13 to a 3-ton chain fall and lower the remaining exposed portion of the assembly into the rack.

Reason for Change: On 8/20/19, CR1129258 reported that the 1-FH-CRN-13 Hoist #2 stopped moving. The hoist was holding a fuel assembly partially inserted into a fuel rack at the time. The new OTO of 0-OP-4.10 being evaluated will transfer the fuel assembly load from Hoist #2 on 1-FH-CRN-13 to a 3-ton chain fall and associated rigging. Once the load is transferred, the chain fall will be utilized to lower the rest of fuel assembly into the fuel rack. An evaluation is required due to the temporary rigging not being designed to the same standards as 1-FH-CRN-13 while handling a single fuel assembly. Use of temporary rigging to move a single fuel assembly requires further evaluation.

Summary: Background – same as Reason for Change.

Addressing Design Requirements
The requirements for cranes and hoists used to lift spent fuel have a limited maximum lift height so that the minimum required depth of water shielding is maintained. In this procedure this requirement will be established by the physical configuration of the rigging such that the chain hoist will be lower than the upper limit of Hoist #2. 1-FH-CRN-13 has a maximum hook height of 313'10". There are maximum travel elevations marked on the fuel handling tool that will be monitored to ensure the fuel assembly complies with the minimum depth requirement. During use of the temporary rigging, the maximum travel elevations marked on the fuel handling tool shall not be exceeded.

The design of the temporary rigging includes the following additional provisions to ensure the safe handling of the fuel elements will be accomplished in the following ways to satisfy the 7 design requirements of 1-FH-CRN-13 listed below:

1) While holding the fuel assembly the temporary rigging will only be operated in the Z axis (vertical) only. The chain fall has a 3-ton capacity. All slings and associated hardware to be used in the rigging plan for this evolution will be verified to have 3-ton or greater load capacity. The assembly weighs 1467 lbs and the fuel handling tool weighs 330 lbs for a combined weight of 1797 lbs (Reference 0-OP-4.8). There is no RCCA in this assembly, 51N, therefore the additional weight of an RCCA is not considered.
2) An unobstructed view of the assembly will be maintained by virtue of its current location which will not be moved in the X or Y axis.
3) The bridge and trolley will not be operated while transferring the fuel assembly to the temporary rigging and are incapable of movement during tagout. Therefore no interlocks are required.

4) The highest and lowest position of the long handling tool will be controlled visually. The maximum allowable fuel assembly elevation is marked on the fuel handling tool. The lowest point is with the fuel assembly fully inserted into the fuel rack with no tension in the chain fall.
5) Same as 4 immediately above. The upper limit marked on the fuel handling tool will not be exceeded.
6) Same as 4 immediately above. The lowest point is with the fuel assembly fully inserted into the fuel rack with no tension in the chain fall. The lower limit switch will not be in use therefore, it cannot fail.
7) The requirement for a load limiting feaure is to prevent damaging the assembly when lifting it from a spent fuel pit storage location. The intent of this design function will be met by a load cell in the rigging configuration providing weight indication while the assembly is lowered. Additionally, slack in the rigging line would also provide inidcation. As an added precaution a fuel handling supervisor will oversee this activity during the entire evolution. There are maximum travel elevations marked on the fuel handling tool that will be monitored to ensure the fuel asembly complies with the 7' minimum insertion depth (UFSAR 9.1.4.6.4). Spotters will be poistioned around the SFP to monitor the assembly during movement in order to ensure freedom of movement.

Conclusion

Given that 0-OP-4.10 Rev 42-OTO1 will provied administrative controls to ensure that the use of temporary rigging and the fuel handling tool meets the same requirements for handling a single fuel assembly as 1-FH-CRN-13, the proposed change has been demonstrated to satisfy 10 CFR 50.59 criteria 1 through 7 (criteria 8 is not applicable). Therefore, prior NRC review and approval of the proposed activity is not required.

10 CFR 50.59 EVALUATION: NAPS1-EVAL-2019-0005

Document Evaluated: 0-OP-4.10 Rev 42 – OTO1

Brief Description: This One Time Only (OTO) revision is to perform a hook-to-hook transfer of a fuel assembly from 1-FH-CRN-13 to a 3-ton chain fall and lower the remaining exposed portion of the assembly into the rack.

Reason for Change: On 9/15/19, CR1130989 reported that the 1-FH-CRN-13 Hoist #2 stopped moving while performing benchmark video inspections following core offload. The hoist was holding a fuel assembly that had been fully withdrawn from SFP rack location D41, and was partially resting on top of the fuel storage rack. OTO1 of 0-OP-4.10 being evaluated here will transfer the fuel assembly load from Hoist #2 on 1-FH-CRN-13 to a 3-ton chain fall and associated rigging. Once the load is transferred, the chain fall will be utilized to lower the fuel assembly back into storage location D41. An evaluation is required due to the temporary rigging not being designed to the same standards as 1-FH-CRN-13 while handling a single fuel assembly. Use of temporary rigging to move a single fuel assembly requires further evaluation.

Summary: Background – same as Reason for Change.

Addressing Design Requirements
The requirements for cranes and hoists used to lift spent fuel have a limited maximum lift height so that the minimum required depth of water shielding is maintained. In this procedure this requirement will be established by the physical configuration of the rigging such that the chain hoist will be lower than the upper limit of Hoist #2. 1-FH-CRN-13 has a maximum hook height of 313'10". There are maximum travel elevations marked on the fuel handling tool that will be monitored to ensure the fuel assembly complies with the minimum depth requirement. During use of the temporary rigging, the maximum travel elevations marked on the fuel handling tool shall not be exceeded.

The design of the temporary rigging includes the following additional provisions to ensure the safe handling of the fuel elements will be accomplished in the following ways to satisfy the 7 design requirements of 1-FH-CRN-13 listed below:

1) While holding the fuel assembly the temporary rigging will only be operated in the Z axis (vertical) only. The chain fall has a 3-ton capacity. All slings and associated hardware to be used in the rigging plan for this evolution will be verified to have 3-ton or greater load capacity. The assembly weighs 1467 lbs and the fuel handling tool weighs 330 lbs for a combined weight of 1797 lbs (Reference 0-OP-4.8). There is no RCCA in this assembly, 50F, therefore the additional weight of an RCCA is not considered.
2) An unobstructed view of the assembly will be maintained by virtue of its current location which will not be moved in the X or Y axis.
3) The bridge and trolley will not be operated while transferring the fuel assembly to the temporary rigging and are incapable of movement during tagout. Therefore no interlocks are required.

4) The highest and lowest position of the long handling tool will be controlled visually. The maximum allowable fuel assembly elevation is marked on the fuel handling tool. The lowest point is with the fuel assembly fully inserted into the fuel rack with no tension in the chain fall.
5) Same as 4 immediately above. The upper limit marked on the fuel handling tool will not be exceeded.
6) Same as 4 immediately above. The lowest point is with the fuel assembly fully inserted into the fuel rack with no tension in the chain fall. The lower limit switch will not be in use therefore, it cannot fail.
7) The design criterion for a load limiting feaure is to prevent damaging the assembly when lifting. Specifically, 1-FH-CRN-13 is provided with a load readout device and a load-limiting feature that stops the hoist if a preset weight is exceeded. Fuel assembly 50F is above the SFP storage rack and therefore cannot encounter an obstruction that would require a load limiting feature. The assembly will be returned (lowered) back into the SFP location from which it came. Fuel Assembly 50F was lowered into D41 during core offload, and was subsequently lifted from this location and evaluated during benchmark video inspections. There was no obstruction or resistance encountered when lowering and subsequently lifting this assembly from D41 previously; therefore, no obstruction will be encountered within the envelope of the SFP rack when replacing the assembly with a chain fall. To ensure no obstruction is encountered while lowering the bottom nozzle into the top of the SFP rack, a spotter will use an underwater camera to ensure the bottom nozzle enters the storage location smoothly and freely. Additionally, the chain hoist operator will be able to feel a load decrease while lowering the assembly and will monitor for freedom of movement and slack in the chain. Proven height indication asociated with the long handling tool will be used to identify when the assembly reaches the bottom of the SFP rack and can be unlatched. There are maximum travel elevations marked on the fuel handling tool that will be monitored to ensure the fuel asembly complies with the 7' minimum insertion depth (UFSAR 9.1.4.6.4). Additionally, the configuration of the rigging is such that the fuel assembly physically cannot be raised higher than the 7' minimum depth.

Conclusion

Given that 0-OP-4.10 Rev 42-OTO1 will provied administrative controls to ensure that the use of temporary rigging and the fuel handling tool meets the same requirements for handling a single fuel assembly as 1-FH-CRN-13, the proposed change has been demonstrated to satisfy 10 CFR 50.59 criteria 1 through 7 (criteria 8 is not applicable). Therefore, prior NRC review and approval of the proposed activity is not required.

ATTACHMENT 2

Commitment Change Evaluation Summary

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

Commitment Change Evaluation Summaries

Original Commitment Description:

The 31-day surveillance frequency of the Station Emergency Diesel Generators (EDG), the associated Fuel Transfer Pumps, and the Air Start Flow Path are performed in accordance with Technical Specification Surveillances SR 3.8.1.2, SR 3.8.1.3, SR 3.8.1.4, SR 3.8.3.1, SR 3.8.2.1, and Bases 3.8.1. The SR for demonstrating the OPERABILITY of the EDGs are in accordance with the recommendations of Regulatory Guides 1.9 "Selection of Diesel Generator Set Capacity for Standby Power Supplies," March 10, 1971, and 1.108 "Periodic Testing of Diesel Generator Units Used Onsite Electrical Power Systems at Nuclear Power Plants," Revision 1, August 1977.

Regulatory Guide 1.108 provides the criteria for determining valid test and failures of EDGs. Regulatory Position C.2.e of Regulatory Guide 1.108 were subsequently replaced by Regulatory Guide 1.9, Revision 3, July 1993. Regulatory Guide 1.9, Revision 3 Position C2.3.2.1 Monthly Testing:
After completion of the EDG unit reliability demonstration during pre-operational testing, periodic testing of EDG units during normal plant operation should be performed. Each EDG should be started as described in Regulatory Position 2.2.1 and loaded as described in Regulatory Position 2.2.2 at least once in 31 days (with maximum allowed extension not to exceed 25 percent of the surveillance interval).

Revised Commitment Description:

The revised commitment is to allow the surveillance testing to occur on a 92 day frequency.

Justification for the Commitment Change:

Surveillance Test Interval Evaluation STI-N12-2017-003 evaluated extending the frequency of performing TS SRs 3.8.1.2, 3.8.1.3, 3.8.1.4, and 3.8.3.1, associated with 31-day surveillance testing to a 92-day frequency in accordance with the Surveillance Frequency Control Program. The change to the surveillance frequency was, both quantitatively and qualitatively, determined to have no impact on system, health, EDG design function, or continued safe operation of the plant. This is associated with NAPS0-EVAL-2018-0006 in Attachment 1.