

## **NRR-DMPSPeM Resource**

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**From:** Kim, James  
**Sent:** Wednesday, June 20, 2018 1:35 PM  
**To:** Duke, Paul R.; Thomas, Brian J.  
**Subject:** Salem 1 and 2 - Final RAI RE: Revise TS to Adopt TSTF-411 and 418  
**Attachments:** Salem\_411and418\_Final RAIs.docx

By letter dated December 18, 2017 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML17352A502), as supplemented by letter dated February 9, 2018 (ADAMS Accession No. ML18040A319), Public Service Enterprise Group Nuclear, LLC (PSEG or the licensee) requested amendments to the facility operating license for Salem Generating Station Units 1 and 2. The proposed amendments would revise Technical Specification (TS) 3/4.3.1, "Reactor Trip System Instrumentation," and TS 3/4.3.2, "Engineered Safety Feature Actuation System Instrumentation," to increase the completion times and bypass test times. The proposed changes are consistent with NRC-approved Technical Specifications Task Force (TSTF) Travelers TSTF-411, Revision 1, "Surveillance Test Interval Extensions for Components of the Reactor Protection System (WCAP-15376-P)," and TSTF-418, Revision 2, "RPS [Reactor Protection System] and ESFAS [Engineered Safety Feature Actuation System] Test Times and Completion Times (WCAP-14333)," or are supported by plant-specific analysis.

The NRC staff has determined that the additional information is required for the staff to complete its review. On June 15, 2018, the NRC staff sent PSEG the draft Request for Additional Information (RAI). This RAI relates to the licensee's request to implement WCAP-14333 and WCAP-15376, Reactor Trip System Instrumentation and Engineered Safety Feature Actuation System Instrumentation Test Times and Completion Times.

On June 20, 2018, the NRC staff and the licensee held a conference call to clarify the request. A publicly available version of this final RAI (attached) will be placed in the NRC's ADAMS. Subsequently, the licensee agreed to respond to this request within 30 days of the date of this email (i.e., by July 20, 2018).

Jim Kim  
Project Manager – Salem Generating Station  
NRR/DORL/LPL1  
301-415-4125

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**From:** Kim, James

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**Recipients:**

"Duke, Paul R." <Paul.Duke@pseg.com>  
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"Thomas, Brian J." <Brian.Thomas@pseg.com>  
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## REQUEST FOR ADDITIONAL INFORMATION (RAI)

### REQUEST FOR IMPLEMENTATION OF WCAP-14333 AND WCAP-15376 REACTOR TRIP

#### SYSTEM INSTRUMENTATION AND ENGINEERED SAFETY FEATURE ACTUATION

#### SYSTEM INSTRUMENTATION TEST TIMES AND COMPLETION TIMES

#### SALEM GENERATING STATION, UNITS 1 AND 2, DOCKET NOS. 50-272 AND 50-311

By letter dated December 18, 2017 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML17352A502), as supplemented by letter dated February 9, 2018 (ADAMS Accession No. ML18040A319), Public Service Enterprise Group Nuclear, LLC (PSEG) submitted a risk-informed license amendment request to revise Technical Specification (TS) 3/4.3.1, "Reactor Trip System Instrumentation" and TS 3/4.3.2, "Engineered Safety Feature Actuation System Instrumentation" to implement the allowed surveillance test intervals (STIs), completion times (CT), and bypass test times at Salem Generating Station (Salem) Units 1 and 2. In order to complete its review, the U.S. Nuclear Regulatory Commission (NRC) staff requests a response to the questions below.

#### **Request for Additional Information (RAI) 01 – Deviations to WCAP-14333 and 15376**

Insert 5 of Technical Specification Task Force (TSTF) 411, Revision 1 (ADAMS Accession No. ML022470164), states, "In order to apply the WCAP-10271, as supplemented, and WCAP-15376 TS relaxations to plant specific Functions not evaluated generically, licensees must submit plant specific evaluations for NRC review and approval." Insert 4 of TSTF-418, Revision 2 (ADAMS Accession No. ML012530049), states, "In order to apply the various relaxations justified in WCAP-10271, WCAP-14333-P-A and WCAP-15376 to plant specific Functions not evaluated generically, a plant specific evaluation of those Functions must be performed."

In TS Table 3.3-1 of the LAR, Reactor Trip System (RTS) Function 20 (Reactor Coolant Pump Breaker Position Trip (above P-7)) was not generically evaluated as described above. In TS Table 3.3-3 of the LAR, the following Engineered Safety Feature Actuation System (ESFAS) functions were not generically evaluated as described above: Function 3.c.2 (Containment Ventilation Isolation, Automatic Actuation Logic), Function 6 (Safeguards Equipment Control System), Function 7.a (Vital Bus Undervoltage, Loss of Voltage), Function 7.b (Vital Bus Undervoltage, Sustained Degraded Voltage), Function 9.a (Semiautomatic Transfer to Recirculation, RWST Level Low), and Function 9.b (Semiautomatic Transfer to Recirculation, Automatic Isolation Logic). The LAR provides a plant-specific evaluation for RTS Function 20 to justify an extended completion time. The LAR also provides a plant-specific evaluation for ESFAS Functions 7a, 7b, 9a, and 9b that justifies an allowed outage time and test bypass extension. However, it is unclear to NRC staff how the unavailabilities (UA) listed in Table 4-22 of the LAR were calculated for Functions 3.c.2 and 6. For the plant-specific evaluation for ESFAS Functions 3.c.2 and 6, describe how UA values provided in Table 4-22 of the LAR were calculated.

#### **RAI 02 – Emergency Diesel Generator (EDG) Mission Time**

The combined American Society of Mechanical Engineers (ASME)/American Nuclear Society (ANS) probabilistic risk assessment (PRA) standard (ASME/ANS RA-Sa-2009) defines mission

time as the time period that system or component is required to operate in order to successfully perform its function. Regulatory Guide (RG) 1.200, Revision 2, states that licensees are to ensure mission times and their requirements are adequately discussed and documented per the ASME PRA Standard. The ASME PRA standard states, “use a minimum mission time of 24 hr. Mission times for individual SSCs [systems, structures, and components] that function during the accident sequence may be less than 24 hr, as long as an appropriate set of SSCs and operator actions are modeled to support the full sequence mission time.”

In Tables 4-9 and 4-11 of the LAR, the EDG mission time used by the licensee is 6.2 hours in the disposition of Facts and Observations (F&Os) AS-A8, AS-B7, SY-B11. The justification for using 6.2 hours instead of 24 hours is provided in the Salem PRA Data Notebook SA-PRA-010, and the discussion of resolution for these F&Os is insufficient for the NRC staff to conclude that an appropriate set of SSCs and operator actions are modeled to justify using an EDG mission time of 6.2 hours instead of 24 hours. For F&O AS-B7, the licensee states, “SBO scenarios are relatively insignificant risk contributors within the context of this risk evaluation.” The disposition of F&O AS-B7 is insufficient for the NRC staff to conclude that SBO scenarios are insignificant to risk using a 6.2 hour mission time instead of 24 hours.

Provide one of the following to address using 6.2 hours for EDG mission time:

- a. Provide the justification documented in Section 10.0 of Salem PRA Data Notebook SA-PRA-010 that allows using 6.2 hours for F&Os AS-A8 and SY-B11, and provide justification that “SBO scenarios are relatively insignificant risk contributors within the context of this risk evaluation” given that a 6.2 hour mission time was used for the EDGs instead of 24 hours, **OR**;
- b. Perform a sensitivity analysis using the 24 hour mission time discussed in the ASME PRA Standard and provide updated risk metrics for using the 24 hour mission time. Justify these updated risk metrics meet the guidance in RG 1.174, Revision 2, and RG 1.177, Revision 1.

### **RAI 03 – Common Cause Failure Data**

According to the ASME PRA Standard, the High Level Requirement for Systems Analysis requires the systems analysis to provide a reasonably complete treatment of common cause failures (CCF) and intersystem and intra-system dependencies.

In Table 4-11 of the LAR, the licensee’s disposition of F&O SY-B3 states, “A few CCF events were determined using sources other than the NRC/INL data.” The licensee does not provide additional information as to what the source of the CCF is or why it was used. In order for the NRC staff to conclude the licensee’s treatment of CCF is reasonable, provide which CCF events used data sources other than NRC/INL data, and provide justification as to why this data is reasonable to treat CCF at Salem Units 1 and 2.

### **RAI 04 – Data Analysis**

The supporting requirement DA-C5 for HLR-DA-C in the ASME PRA standard states, “Count repeated plant-specific component failures occurring within a short time interval as a single failure if there is a single, repetitive problem that causes the failures.”

In Table 4-13 of the LAR, for the disposition of F&O DA-C5, the licensee states, "the Data notebook was updated to clarify failures occurring within a short time interval can be excluded so as not to skew the data for any one SSC modeled in the PRA." Based on the ASME PRA standard, the disposition of F&O DA-C5 by the licensee is different than the requirements in the ASME PRA Standard, in that failures occurring within a short time interval should not be excluded, but rather counted as a single failure.

Provide justification for this discrepancy. Alternatively, perform a sensitivity evaluation using a single failure instead of excluding the failure, and provide and justify the updated risk metrics meet the guidance in RG 1.174, Revision 2, and RG 1.177, Revision 1.

### **RAI 05 – External Hazards**

When a licensee requests an amendment to its license that involves a risk-informed change to technical specifications, RG 1.177, Revision 1, states that when the risk associated with a particular hazard group or operating mode would affect the decision being made, it is the Commission's policy that, if a staff-endorsed PRA standard exists for that hazard group or operating mode, then the risk will be assessed using a PRA that meets that standard. Regulatory Guide 1.174, Revision 2, adds that a qualitative treatment of the missing modes and hazard groups may be sufficient when the licensee can demonstrate that those risk contributions will not affect the decision; that is, they do not alter the results of the comparison with the acceptance guidelines.

According to the LAR and the LAR supplement, hazards applicable to Salem Units 1 and 2 include internal events, internal fires, external floods, and seismic events. For internal events and external floods, the licensee provides separate change in risk values for each operating unit, as there are differences between the two units. In the LAR supplement, the qualitative bounding assessment for internal fires and seismic events provides change in risk values, but does not specify to which operating unit(s) the change in risk values are applicable. For the change in risk due to internal fires and seismic events, provide the follow information:

- a. Clarify to which operating unit(s) the change in risk is applicable;
- b. If the change in risk is only applicable to one operating unit, provide the change in risk for internal fires and seismic events for the other unit.