PSEG Nuclear LLC
P.O. Box 236, Hancocks Bridge, NJ 08038-0236

PSEG
Nuclear LLC

10 CFR 50.90

LR-N18-0116
LAR S18-02

OCT 30 2018

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Salem Generating Station, Units 1 and 2
Renewed Facility Operating License Nos. DPR-70 and DPR-75
NRC Docket Nos. 50-272 and 50-311

Subject: Response to Request for Additional Information, Re: License Amendment Request: Inverter Allowed Outage Time (AOT) Extension

References:
1. PSEG letter to NRC, "License Amendment Request: Vital Instrument Bus Inverter Allowed Outage Time (AOT) Extension," dated May 16, 2018 (ADAMS Accession No. ML18136A866)
2. NRC email to PSEG, "Salem 1 and 2 - Final RAI from I&C Branch RE: Inverter AOT Extension," dated September 20, 2018 (ADAMS Accession No. ML18264A012)

In the Reference 1 letter, PSEG Nuclear LLC (PSEG) submitted a license amendment request for Salem Generating Station Unit 1 and Unit 2. The proposed amendment would increase the Vital Instrument Bus (VIB) Inverters allowed outage time (AOT) from 24 hours for the A, B and C inverters to 7 days and from 72 hours for the D inverter to 7 days. In Reference 2, the Nuclear Regulatory Commission (NRC) requested PSEG to provide additional information in order to evaluate the proposed License Amendment Request to revise Technical Specifications.

Attachment 1 to this letter provides a restatement of the RAI questions followed by our responses. PSEG has determined that the information provided in this submittal does not alter the conclusions reached in the 10 CFR 50.92 no significant hazards determination previously submitted. In addition, the information provided in this submittal does not affect the bases for concluding that neither an environmental impact statement nor an environmental assessment needs to be prepared in connection with the proposed amendment.

There are no regulatory commitments contained in this letter.

In accordance with 10 CFR 50.91, "Notice for public comment; State consultation," paragraph (b), PSEG is providing a copy of this response, with attachments, to the designated State of New Jersey Official.

Should you have any questions regarding this submittal, please contact Mr. Lee Marabella at 856-339-1208.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 10/30/18
(Date)

Sincerely,

Charles V. McFeaters
Site Vice President
Salem Generating Station

Attachments:
1. Response to Request for Additional Information - License Amendment Request to Revise Technical Specification 3.8.2.1 Regarding Alternating Current Inverters

cc: Administrator, Region I, NRC
Mr. J. Kim, Project Manager, NRC
NRC Senior Resident Inspector, Salem
Mr. P. Mulligan, Chief, NJBNE
Salem Commitment Tracking Coordinator
Corporate Commitment Tracking Coordinator

Attachment 1

Response to Request for Additional Information - License Amendment Request to Revise Technical Specification 3.8.2.1 Regarding Alternating Current Inverters

By letter dated May 16, 2018 (Agencywide Documents Access Management System (ADAMS) Accession No. ML18136A866), as supplemented by letter dated June 14, 2018 (ML18169A218), PSEG Nuclear LLC (PSEG), requested an amendment to Renewed Facility Operating License Nos. DPR-70 and DPR-75 for Salem Generating Station (Salem) Units 1 and 2. This license amendment request proposes changes to Technical Specification (TS) 3.8.2.1, "A.C. Distribution - Operating." The proposed change would increase the Vital Instrument Bus (VIB) Inverters allowed outage time (AOT) from 24 hours for the A, B and C inverters to 7 days and from 72 hours for the D inverter to 7 days. The NRC staff determined that additional information is required for the staff to complete its review. Below is a restatement of the questions followed by our responses.

Question 1 (EICB RAI–1)

In the plant configuration where a safety channel on the 1A vital instrument bus is in bypass for testing while the inverter for the 1B vital bus is in a planned or an unplanned AOT, a loss of offsite power could lead to failure of actuation of an ESF subsystem in a timely manner. This is possible because ESF actuation requires power for operation. Loss of offsite power should not disable a safety function during an AOT. Provide a description of the measures taken at Salem to avoid configurations that result in a system's loss of safety function. This information is requested to assess compliance to Salem UFSAR Criterion 19 - Engineered Safety Features Protection Systems.

Response:

In general, the loss of instrument power to the sensors, instruments, or logic devices in the ESF instrumentation places that channel in the trip mode. Exceptions are the containment spray initiating channels and the Unit 2 refueling water storage tank (RWST) low level logic signals for semi-automatic switchover initiation which require instrument power for actuation.

Containment spray operation is initiated by containment high-high pressure (TS Table 3.3-3 Functional Unit 2.c). The containment pressure is sensed by four independent pressure detectors which are combined in a two-out-of-four logic network. The output signal provides two independent channels for containment spray actuation via the two logic trains. Containment high-high pressure also actuates steam line isolation (TS Table 3.3-3 Functional Unit 3.b.3) and containment isolation Phase B (TS Table 3.3-3 Functional Unit 4.c).

The Unit 2 refueling water storage tank (RWST) low level logic signals for semi-automatic switchover initiation (TS Table 3.3-3 Functional Unit 9.a) are combined in a two-out-of-four logic.

Except for containment spray actuation and Unit 2 RWST low level logic, removal of one actuation channel for test is accomplished by placing that channel in a tripped mode, i.e., a two-out-of-three matrix logic becomes a one-out-of-two matrix logic. Therefore, for those channels, testing while an inverter supporting a redundant channel is inoperable would not result in a system's loss of safety function. Testing does not trip the system unless a trip condition occurs in a redundant channel.

Containment spray actuation channels (from containment pressure) are tested by removing the channel from service. Since two-out-of-four logic is used, two-out-of-three logic remains active during testing. A loss of offsite power coincident with a redundant containment spray actuation channel bypassed would not result in a loss of the ESF actuation function.

The Unit 2 RWST low level logic for semi-automatic switchover initiation is tested by removing the channel from service. Since two-out-of-four logic is used, two-out-of-three logic remains active during testing. A loss of offsite power coincident with a redundant RWST low level channel in test would not result in a loss of the ESF actuation function.

Question 2 (EICB RAI-2)

UFSAR Section 8.3.2.3 provides description of station battery monitoring for the batteries and the associated equipment. Please describe what type of monitoring and/or alarms are provided for the 115 V vital instrument buses. This information is requested to assess compliance to Salem UFSAR Criterion 12 – "Instrumentation and Control Systems": Instrumentation and controls shall be provided as required to monitor and maintain variables within prescribed operating ranges.

Response:

Each of the 4 vital instrument buses is continuously monitored for voltage. Listed below are the monitoring devices associated with each vital instrument bus. A brief description of the function of each device and its location is given.

- Undervoltage Alarm - Monitors each vital instrument bus and alarms in the Control Room when bus voltage drops below a preset value.
- UPS AC Output Voltmeter - Monitors UPS output voltage at each Vital Instrument Bus Regulator & Static Switch panel.
- UPS AC Output Frequency Meter - Monitors UPS output frequency at each Vital Instrument Bus Regulator & Static Switch panel.