



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

May 14, 2015

Mr. Robert Braun  
President and Chief Nuclear Officer  
PSEG Nuclear  
P.O. Box 236, N09  
Hancocks Bridge, NJ 08038

**SUBJECT: SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2 –  
SUPPLEMENTAL INFORMATION NEEDED FOR ACCEPTANCE OF  
REQUESTED LICENSING ACTION RE: AMENDMENT REQUEST  
REGARDING REPLACEMENT OF SOURCE RANGE AND INTERMEDIATE  
RANGE NEUTRON MONITORING SYSTEMS (TAC NOS. MF6065 AND  
MF6066)**

Dear Mr. Braun:

By letter dated April 3, 2015 (Agencywide Document Access and Management System Accession No. ML15093A291), PSEG Nuclear LLC (PSEG) submitted a license amendment request for Salem Nuclear Generating Station (Salem), Unit Nos. 1 and 2. The proposed amendment would revise technical specification (TS) 3/4.3.1, "Reactor Trip System Instrumentation," to support planned plant modifications to replace the existing source range (SR) and intermediate range (IR) nuclear instrumentation with Thermo Scientific Neutron Flux Monitoring Systems. Specifically, the changes would modify the SR and IR neutron flux reactor trip Allowable Values and the permissive P-6 reset value, and would add two new footnotes to the Channel Functional Test and Channel Calibration in TS 3/4.3.1, Table 4.3-1.

The purpose of this letter is to provide the results of the U.S. Nuclear Regulatory Commission (NRC) staff's acceptance review of this amendment request. The acceptance review was performed to determine if there is sufficient technical information in scope and depth to allow the NRC staff to complete its detailed technical review. The acceptance review is also intended to identify whether the application has any readily apparent information insufficiencies in its characterization of the regulatory requirements or the licensing basis of the plant.

Consistent with Section 50.90 of Title 10 of the *Code of Federal Regulations* (10 CFR), an amendment to the license (including the technical specifications) must fully describe the changes requested, and following as far as applicable, the form prescribed for original applications. Section 50.34 of 10 CFR addresses the content of technical information required. This section stipulates that the submittal address the design and operating characteristics, unusual or novel design features, and principal safety considerations.

The NRC staff has reviewed your application and concluded that the information delineated in the enclosure to this letter is necessary to enable the staff to make an independent assessment regarding the acceptability of the proposed amendment in terms of regulatory requirements and the protection of public health and safety and the environment. In order to make the application complete, the NRC staff requests that PSEG supplement the application to address the information requested in the enclosure within 13 business days of the date of this letter. This

R. Braun

- 2 -

will enable the NRC staff to begin its detailed technical review. If the response to the NRC staff's request is not received by the above date, the application will not be accepted for review pursuant to 10 CFR 2.101, and the NRC will cease its review activities associated with the application. If the application is subsequently accepted for review, you will be advised of any further information needed to support the staff's detailed technical review by separate correspondence.

The information requested and associated time frame in this letter were discussed with Mr. Paul Duke of your staff on May, 14, 2015.

If you have any questions, please contact me at (301) 415-1603.

Sincerely,

A handwritten signature in black ink, appearing to read "Carleen J. Parker". The signature is fluid and cursive, with the first name "Carleen" and last name "Parker" clearly distinguishable.

Carleen J. Parker, Project Manager  
Plant Licensing Branch I-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-272 and 50-311

Enclosure:  
As stated

cc w/encl: Distribution via Listserv

SUPPLEMENTAL INFORMATION NEEDED

AMENDMENT REQUEST

PSEG NUCLEAR LLC

SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-272 AND 50-311

By letter dated April 3, 2015 (Agencywide Document Access and Management System (ADAMS) Accession No. ML15093A291), PSEG Nuclear LLC (PSEG) submitted a license amendment request for Salem Nuclear Generating Station (Salem), Unit Nos. 1 and 2. The proposed amendment would revise technical specification (TS) 3/4.3.1, "Reactor Trip System Instrumentation," to support planned plant modifications to replace the existing source range (SR) and intermediate range (IR) nuclear instrumentation with Thermo Scientific Neutron Flux Monitoring Systems. Specifically, the changes would modify the SR and IR neutron flux reactor trip Allowable Values and the permissive P-6 reset value, and would add two new footnotes to the Channel Functional Test and Channel Calibration in TS 3/4.3.1, Table 4.3-1. The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed your application and concluded that the information delineated below is necessary to enable the staff to make an independent assessment regarding the acceptability of the proposed amendment.

1. Provide the equipment qualification information for the detectors, amplifiers, and the control room electronics for harsh and mild environments.
  - a) For equipment in harsh environments, provide the qualification information that meet the guidance of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50.49, "Environmental qualification of electric equipment important to safety for nuclear power plants."
  - b) For equipment in non-harsh environments, provide the qualification information that protects the detectors, amplifiers, and the control room electronics, for example, by meeting the guidance of Regulatory Guide (RG) 1.209, "Guidelines for Environmental Qualification of Safety-Related Computer-Based Instrumentation and Control Systems in Nuclear Power Plants." (ADAMS Accession No. ML070190294)

If generic qualification documentation is used, explain how the generic qualification meets the site-specific qualification requirements for the applicable location of the equipment.

2. Please document how the equipment meets the guidance of RG 1.180, "Guidelines for Evaluating Electromagnetic and Radio-Frequency Interference in Safety-Related Instrumentation and Control Systems," (ADAMS Accession No. ML003740218) for

Enclosure

electromagnetic and radio-frequency interference, or provide justification for meeting an alternative.

3. Please state whether or not equipment uses software or embedded electronic components with software. If such components are used, then document how the equipment meets the software common cause failure guidance in Branch Technical Position (BTP) 7-19, "Guidance for Evaluation of Diversity and Defense-in-Depth in Digital Computer-Based Instrumentation and Control Systems," (ADAMS Accession No. ML070380094) or provide justification for meeting an alternative.
4. Please provide the setpoint calculation or the following additional information pertaining to the setpoint calculation:
  - a) Limiting trip setpoint for Source Range (SR) and Intermediate Range (IR).
  - b) Drift over the calibration period and the length of the calibration interval.
  - c) Please provide the basis for changing the allowable values for intermediate range neutron flux from  $\leq 30\%$  to  $\leq 38.5\%$  of rated thermal power and for the source range neutron flux allowable value from  $\leq 1.3 \times 10^5$  to  $\leq 1.44 \times 10^5$  counts per second.
5. Item B on top of page 5 of attachment 1 to the license amendment request states, "Due to the changes in the IR detector output and units, an assessment was completed to verify adequate coordination between the P-6 setpoint and the SR neutron flux reactor trip setpoint for the Thermo Scientific instrumentation." Please provide a summary of this assessment for NRC staff review.
6. The license amendment request does not include all the Applicable Regulatory Requirements/Criteria. Please address the requirements and criteria listed below. Salem Updated Final Safety Analysis (UFSAR) Section 3.1.1, "Conformance with AEC [Atomic Energy Commission] General Design Criteria (July 1971)," states that the Salem Plant design conforms with the intent of the General Design Criteria (GDC) for nuclear power plants with the exceptions listed
  - a) Please address how Salem meets the intent of GDC 1, GDC 4 (with exceptions listed in UFSAR Section 3.1.1), GDC 13, and GDC 19, as it applies to this change request.
  - b) Please address 10 CFR 50.36, "Technical Specifications," and 10 CFR 50.49.
  - c) In addition, RG 1.105, RG 1.180, and BTP 7-19, should be addressed, as applicable.

7. Page 3 of Attachment 1 indicated that “No credit is taken for the reactor trips associated with either the SR or IR channels in the accident analyses described in Chapter 15 of the Salem UFSAR.” However, SR readings and/or its associated reactor trip signals are credited for some accident analysis at some plants. Please provide information addressing why UFSAR Chapter 15 analysis for each of the events (including a Boron dilution event) will not be affected by the proposed TS changes. A list of reactor trips credited for each event confirming that the SR and IR instrumentation have no role in the transient analyses would help address this.

R. Braun

- 2 -

will enable the NRC staff to begin its detailed technical review. If the response to the NRC staff's request is not received by the above date, the application will not be accepted for review pursuant to 10 CFR 2.101, and the NRC will cease its review activities associated with the application. If the application is subsequently accepted for review, you will be advised of any further information needed to support the staff's detailed technical review by separate correspondence.

The information requested and associated time frame in this letter were discussed with Mr. Paul Duke of your staff on May, 14, 2015.

If you have any questions, please contact me at (301) 415-1603.

Sincerely,

/RA/

Carleen J. Parker, Project Manager  
Plant Licensing Branch I-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-272 and 50-311

Enclosure:  
As stated

cc w/encl: Distribution via Listserv

DISTRIBUTION:

PUBLIC  
Branch Reading File  
RidsAcrsAcnw\_MailCTR Resource  
RidsNrrDeEicb Resource  
RidsNrrDssStsb Resource  
RidsNrrDorl Resource  
RidsNrrDorlDpr Resource  
RidsNrrDorlLpl1-2 Resource  
RidsNrrLAABaxter Resource  
RidsNrrPMSalem Resource  
RidsRgn1MailCenter Resource

MChernoff, NRR  
GSingh, NRR

ADAMS Accession No.: ML15127A287

\*via e-mail

OFFICE	NRR/DORL/LPL1-2/PM	NRR/DORL/LPL1-2/LA	NRR/DE/EICB	NRR/DSS/SRXB
NAME	CParker	ABaxter *	JThorpe KSturzebecher for	CJackson
DATE	05/14/15	05/14/15	05/14/2015	05/14/2015
OFFICE	NRR/DORL/LPL1-2/BC	NRR/DORL/LPL1-2/PM		
NAME	DBroaddus	CParker		
DATE	05/14/2015	05/14/2015		

OFFICIAL RECORD COPY