



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

May 10, 2013

Mr. Thomas Joyce
President and Chief Nuclear Officer
PSEG Nuclear LLC
P.O. Box 236, N09
Hancocks Bridge, NJ 08038

SUBJECT: SALEM NUCLEAR GENERATING STATION, UNIT NO. 1 - CORRECTION TO
ISSUANCE OF AMENDMENT NO. 303 (TAC NO. ME8578)

Dear Mr. Joyce:

On March 28, 2013,¹ the U.S. Nuclear Regulatory Commission (NRC) issued Amendment No. 303 to Renewed Facility Operating License No. DPR-70 for the Salem Nuclear Generating Station Unit No. 1 (Salem 1). The amendment consists of changes to the Technical Specifications for Salem 1 in response to your application dated May 8, 2012.²

Following receipt of Amendment No. 303, your staff verbally informed the NRC staff of an error in the Safety Evaluation (SE) which was enclosed with the amendment. In order to correctly reflect the current licensing basis for Salem 1, the NRC staff has revised the SE as follows:

Section 3.2.1.5.1, "BET Considerations," on page 13 of the SE stated, in part, that:

These measurements showed that seven tubes in SG A had a maximum BET measurement of greater than one inch and were subsequently removed from service by plugging during RFO14 (Reference 1).

The above statement is incorrect. Section 3.2.1.5.1 has been revised to state, in part, that:

These measurements showed that none of the SG tubes at Salem Unit 1 had a maximum BET measurement of greater than one inch and no SG tubes were required to be removed from service (Reference 1).

A copy of revised page 13, of the SE for Amendment No. 303 is enclosed. The change is indicated by a marginal bar. The NRC staff has determined that the corrections to the original SE do not change our previous conclusions regarding the acceptability of the changes approved in Amendment No. 303 to Facility Operating License No. DPR-70.

¹ Agencywide Documents Access and Management System (ADAMS) Accession No. ML13072A105.

² ADAMS Accession No. ML12130A169.

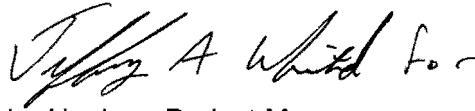
T. Joyce

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We apologize for any inconvenience this may have caused.

If you have any questions please contact me at 301-415-3204.

Sincerely,

A handwritten signature in black ink, appearing to read "John A. Hughey".

John Hughey, Project Manager
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-311

Enclosure:
Corrected page

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ENCLOSURE

REVISED SAFETY EVALUATION PAGE 13 FOR AMENDMENT NO. 303

DATED MARCH 28, 2013

the reference 3-D FEA analysis. This adjustment is no longer necessary, as discussed in Section 3.2.1.2, since the temperature distributions throughout the tubesheet were calculated directly in the revised 3-D FEA supporting the current request for a permanent H* amendment.

4. Steps 1 through 3 yield a so-called "mean" estimate of H*, which is deterministically based. Step 4 involves a probabilistic analysis of the potential variability of H*, relative to the mean estimate, associated with the potential variability of key input parameters for the H* analyses. This leads to a "probabilistic" estimate of H*, which includes the mean estimate. The NRC staff's evaluation of the probabilistic analysis is provided in Sections 3.2.1.6 and 3.2.1.7 of this SE.
5. Add a crevice pressure adjustment to the probabilistic estimate of H* to account for the crevice pressure distribution which results from the tube being severed at the final H* value, rather than at the bottom of the tubesheet. This step is discussed and evaluated in Section 3.2.1.5.2 of this SE.
6. A new step, step 6, was added to the H* calculation process since the Reference 3 analysis was performed to support the subject permanent amendment request. This step involves adding an additional adjustment to the probabilistic estimate of H* to account for the Poisson contraction of the tube radius due to the axial end cap load acting on each tube. This step is discussed and evaluated in Section 3.2.1.5.3 of this SE.

3.2.1.5.1 BET Considerations

The diameter of each tube transitions from its fully expanded value to its unexpanded value near the top of the tubesheet (TTS). The BET region is located a short distance below the top of tubesheet so as to avoid any potential for over-expanding the tube above the TTS. In the reference H* analysis (Reference 3), a 0.3-inch adjustment was added to the mean H* estimate to account for the BET location being below the TTS, based on an earlier survey of BET distances conducted by Westinghouse. This adjustment was necessary since the reference analysis did not explicitly account for the lack of contact between the tube and tubesheet over the BET distance.

BET measurements, based on eddy current testing, have subsequently been performed for all tubes at Salem Unit 1. These measurements showed that none of the SG tubes at Salem Unit 1 had a maximum BET measurement of greater than one inch and no SG tubes were required to be removed from service (Reference 1).

However, the most recent H* analyses using the square cell T/TS interaction model (Reference 5) has made the need for a BET adjustment unnecessary, as the square cell model shows a loss of contact pressure at the TTS that is greater than the possible variation in the BET location. The loss of contact pressure at the TTS shown in the square cell model (which is unrelated to BET location) is compensated for by a steeper contact pressure gradient than was shown previously in the thick shell model H* analysis. Based on these findings, the NRC staff concludes that the proposed H* value adequately accounts for the range of BET values at Salem Unit 1.

T. Joyce

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Sincerely,

/ra/(JWhited for)

John Hughey, Project Manager
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-311

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