



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

May 8, 2014

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 1 – LICENSE RENEWAL  
COMMITMENT IMPLEMENTATION TO RENEWED FACILITY OPERATING  
LICENSE CONDITION 2.C.21 (TAC NO. MF3334)

Dear Mr. Joyce:

By letter dated November 12, 2013, (Agencywide Documents Access and Management System Accession No. ML13317B684) Public Service Enterprise Group Nuclear LLC (PSEG or licensee) submitted a document in accordance with the renewed facility operating license condition 2.C.21 for Salem Nuclear Generating Station (Salem), Unit 1.

Renewed facility operating license condition 2.C.21, states:

PSEG Nuclear LLC shall take one core sample in the Unit 1 spent fuel pool west wall, by the end of 2013, and one core sample in the east wall where there have been indications of borated water ingress through the concrete, by the end of 2015. The core samples (east and west walls) will expose the rebar, which will be examined for signs of corrosion. Any sample showing signs of concrete degradation and/or rebar corrosion will be entered into the licensee's corrective action program for further evaluation. PSEG Nuclear LLC shall submit a report in accordance with 10 CFR 50.4 no later than three months after each sample is taken on the results, recommendations, and any additional planned actions.

In its letter dated November 12, 2013, PSEG outlined the results of compressive strength tests and petrographic examination findings from the west wall concrete core bore, as well as findings from visual examinations of the reinforcement for corrosion. PSEG obtained a 26-inch long core bore approximately 20 inches below a construction joint, and constructed samples for two compressive strength tests and three petrographic examinations. The compressive strength tests were performed in accordance with the American Society for Testing Materials (ASTM) C39 and ASTM C42. One test specimen was from the end facing the sump room; the other closest to the spent fuel pool (SFP). The sample closest to the SFP, because of its radioactivity, was examined in a specialized setting. Both tests yielded concrete compressive strengths in excess of the specified design strength. The petrographic examinations were visual and in accordance with ASTM C856. The samples obtained from the top, bottom, and middle sections of the core bore, demonstrated that the extracted concrete was in good condition and the cement paste was unaffected by chemical attacks, showing no signs of discoloration, softening, degradation, or dissolution. In addition to these tests, the licensee excavated a small area of the west wall in the vicinity of the lateral construction joint to expose and assess the condition of a portion of the reinforcing steel. PSEG stated that the only visible corrosion of the

T. Joyce

-2-

rebar was a minor surface corrosion attributed, possibly, to the original construction or to its recent exposure to the atmosphere during measures taken to repair the area following this inspection. The licensee summarized the findings for concrete and rebar examination by stating, in part, that, "[t]he removal and examination of the core sample in the Unit 1 spent fuel pool west wall did not show any indications of concrete degradation due to borated water ingress through the concrete. Also, the exposed rebar did not show signs of aging-related corrosion."

The U.S. Nuclear Regulatory Commission (NRC) staff reviewed the licensee's letter dated November 12, 2013, documenting its 2013 actions and results related to renewed facility operating license condition 2.C.21. The NRC staff noted that for assessment of concrete degradation both compressive test cylinders yielded concrete compressive strength results well above the design compressive strength of concrete for the Fuel Handling Building, which is indicative that in the area of examination, concrete exceeds the specified design compressive strength for the structure. The NRC staff also noted that the petrographic examinations of the concrete showed that it is in good condition with no signs of chemical attacks, discoloration, softening, degradation, or dissolution, which is indicative that the concrete in the core bored area is unaffected by the environment. The NRC staff further noted that the licensee's visual examination of the exposed reinforcing bar did not show signs of corrosion affecting its thickness, and hence the rebar cross sectional area required by design.

Based on its review above, the NRC staff concludes that the licensee has provided the required information and completed the actions required by renewed facility operating license condition 2.C.21 for 2013.

This completes the NRC staff review under TAC No. MF3334.

If you have any questions concerning this matter, please contact me at (301) 415-3100 or via e-mail at [John.Lamb@nrc.gov](mailto:John.Lamb@nrc.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "John G. Lamb". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

John G. Lamb, Senior Project Manager  
Plant Licensing Branch I-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-272

cc: Distribution via Listserv

T. Joyce

-2-

rebar was a minor surface corrosion attributed, possibly, to the original construction or to its recent exposure to the atmosphere during measures taken to repair the area following this inspection. The licensee summarized the findings for concrete and rebar examination by stating, in part, that, "[t]he removal and examination of the core sample in the Unit 1 spent fuel pool west wall did not show any indications of concrete degradation due to borated water ingress through the concrete. Also, the exposed rebar did not show signs of aging-related corrosion."

The U.S. Nuclear Regulatory Commission (NRC) staff reviewed the licensee's letter dated November 12, 2013, documenting its 2013 actions and results related to renewed facility operating license condition 2.C.21. The NRC staff noted that for assessment of concrete degradation, both compressive test cylinders yielded concrete compressive strength results well above the design compressive strength of concrete for the Fuel Handling Building, which is indicative that in the area of examination, concrete exceeds the specified design compressive strength for the structure. The NRC staff also noted that the petrographic examinations of the concrete showed that it is in good condition with no signs of chemical attacks, discoloration, softening, degradation, or dissolution, which is indicative that the concrete in the core bored area is unaffected by the environment. The NRC staff further noted that the licensee's visual examination of the exposed reinforcing bar did not show signs of corrosion affecting its thickness, and hence the rebar cross sectional area required by design.

Based on its review above, the NRC staff concludes that the licensee has provided the required information and completed the actions required by renewed facility operating license condition 2.C.21 for 2013. This completes the NRC staff review under TAC No. MF3334.

If you have any questions concerning this matter, please contact me at (301) 415-3100 or via e-mail at [John.Lamb@nrc.gov](mailto:John.Lamb@nrc.gov).

Sincerely,  
*/RA/*  
John G. Lamb, Senior Project Manager  
Plant Licensing Branch I-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-272  
cc: Distribution via Listserv

DISTRIBUTION:  
PUBLIC  
LPL1-2 R/F  
RidsNrrDorLp1-2 Resource  
RidsNrrLAABaxter Resource

JNick, EDO Region I  
RidsAcrcAcnw\_MailCTR Resource  
RidsRgn1MailCenter Resource  
MMarshal, NRR

**ADAMS Accession No.: ML14100A180**

\*via email

OFFICE	LPL1-2/PM	LPL1-2/LA	RASB/BC*	LPL1-2/BC	LPL1-2/PM
NAME	JLamb	ABaxter	MMarshal	MKhanna	JLamb
DATE	05/07/2014	04/30/2014	04/10/2014	05/07/2014	05/08/2014

**OFFICIAL RECORD COPY**