

April 19, 2011

MEMORANDUM TO: Harold K. Chernoff, Chief
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

FROM: Richard B. Ennis, Senior Project Manager */ra/*
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

SUBJECT: SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2,
DRAFT REQUEST FOR ADDITIONAL INFORMATION
(TAC NOS. ME4861 AND ME4862)

The attached draft request for information (RAI) was transmitted on April 19, 2011, to Mr. Paul Duke of PSEG Nuclear LLC (PSEG, the licensee). This information was transmitted to facilitate an upcoming conference call in order to clarify the licensee's relief requests for Salem Nuclear Generating Station (Salem), Unit Nos. 1 and 2, dated October 12, 2010. The proposed relief requests would allow PSEG to use an alternative examination for buried piping in the service water system in lieu of pressure tests required by American Society of Mechanical Engineers (ASME) *Boiler and Pressure Vessel Code* (Code), Section XI, IWA-5244(b).

This memorandum and the attachment do not convey or represent an NRC staff position regarding the licensee's request.

Docket Nos. 50-272 and 50-311

Attachment: Draft RAI

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JWallace, NRR/DCI/CPNB

ACCESSION NO.: ML111091118

OFFICE	LPL1-2/PM
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DATE	4/19/11

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DRAFT REQUEST FOR ADDITIONAL INFORMATION

REGARDING RELIEF REQUESTS S1-I4R-102 AND S2-I3R-104

SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-272 AND 50-311

By letter dated October 12, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML102920464), PSEG Nuclear LLC (PSEG, the licensee), submitted relief requests S1-I4R-102 and S2-I3R-104 for Salem Nuclear Generating Station (Salem), Unit Nos. 1 and 2. The proposed relief requests would allow PSEG to use an alternative examination for buried piping in the service water system in lieu of pressure tests required by American Society of Mechanical Engineers (ASME) *Boiler and Pressure Vessel Code* (Code), Section XI, IWA-5244(b).

The Nuclear Regulatory Commission (NRC) staff has reviewed the information the licensee provided that supports the proposed relief requests and would like to discuss the following issues to clarify the submittal.

1. Provide the following details about the buried service water prestressed concrete cylinder pipe (PCCP):
 - a. Diameter and length
 - b. Design and operating pressures
 - c. Installation year
 - d. Pipe fabrication standard (e.g., AWWA C301-84)
 - e. Manufacturer
 - f. PCCP type - embedded-cylinder (EC-PCCP) or lined-cylinder (LC-PCCP)
2. Discuss the history of failures or degradation, if any, of the Salem, Unit Nos. 1 and 2, buried PCCP service water piping.
3. Concerning internal visual inspection:
 - a. What fraction of the length can be internally inspected using the crawler?
 - b. Will the pipe be cleaned prior to internal visual inspection?
 - c. What are the acceptance criteria for visual inspection?
4. Discuss any corrosion controls (e.g., cathodic protection) or soil corrosivity evaluations (e.g., soil resistivity, pH, chloride, sulfate measurements) that have been performed to ensure the integrity of the subject piping.

5. A dominant PCCP failure mode is corrosion of the prestressing wires outside of the metal cylinder, resulting in fracture of the prestressing wires and catastrophic pipe rupture with little prior leakage (see References 1 - 3).
 - a. Explain how a visual examination of the pipe inside diameter can detect the degradation of the wires and ensure structural integrity of the pipe for the length of a period of the 10-year inservice inspection interval.
 - b. Other examination and monitoring techniques, such as remote field eddy current/transformer coupling (RFEC/TC) and acoustic emission monitoring (AE), have been used to identify wire breaking before catastrophic failure occurs. Justify the adequacy of visual examination of the inside diameter of the pipe to detect wire degradation prior to the point that structural integrity of the pipe is challenged.

References

1. Failure of Prestressed Concrete Cylinder Pipe, A. E. Romer, D. Ellison, G.E.C. Bell, B. Clark, AWWA Research Foundation (2008)
2. Inspecting systems for leaks, pits, and corrosion, J. M.Makar, N. Chagnon, Journal American Water Works Association, 91, 7, pp. 36-46 (1999)
3. Condition assessment of prestressed concrete cylindrical water pipes, R . Al Wardany, 60th Annual WCWWA Conference and Trade Show, Regina, SK. September 23- 26, pp. 1-9 (2008)