



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

June 17, 2011

Mr. Barry S. Allen
Site Vice President
FirstEnergy Nuclear Operating Company
Davis-Besse Nuclear Power Station
Mail Stop A-DB-3080
5501 North State Route 2
Oak Harbor, OH 43449-9760

SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION, UNIT 1 – STEAM GENERATOR
TUBE INTEGRITY DURING A LARGE-BREAK LOSS-OF-COOLANT
ACCIDENT (TAC NO. ME6289)

Dear Mr. Allen:

On February 23, 2010, the U.S. Nuclear Regulatory Commission (NRC) staff conducted an audit at the Davis-Besse Nuclear Power Station, Unit No. 1 (DBNPS). The purpose of the audit was for the NRC staff to gain a better understanding of the approach taken by the FirstEnergy Nuclear Operating Company (FENOC, the licensee), for ensuring steam generator (SG) tube integrity following a large-break loss-of-coolant accident (LBLOCA) for DBNPS.

On May 19, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML101170196), the NRC staff issued a report summarizing the results of the audit. In that report, the NRC staff identified two potential inconsistencies between various licensee documents. FENOC's response to the audit report was provided in a letter dated July 16, 2010 (ADAMS Accession No. ML102020232).

One of the potential inconsistencies involves the need to perform full-length SG tube inspections to ensure compliance with License Condition 2.C(7)c, despite DBNPS Technical Specifications (TSs) not requiring full-length tube inspections. In the July 16, 2010, letter, FENOC committed to update the Davis-Besse Steam Generator Management Program Manual to explicitly state that portions of the tube excluded from inspection by DBNPS TS 5.5.8 were to be inspected to meet License Condition 2.C(7)c.

The NRC staff finds this action is acceptable given your plans to replace your SGs, at which time the NRC staff expects your TSs would be modified to once again explicitly require full-length tube inspections.

The other potential inconsistency identified in the NRC staff audit report involves the source term used in the DBNPS final safety analysis report (FSAR) for the maximum hypothetical accident and the source term used to satisfy License Condition 2.C(7)c. In particular, the NRC staff noted that the dose consequence analysis supporting License Condition 2.C(7)c is based on a gap release source term, which is not consistent with Title 10 of the *Code of Federal Regulations* (10 CFR) Section 100.11.

The NRC staff notes that the dose criteria in 10 CFR 100.11 are based on a postulated major accident scenario resulting in a source term that is representative of a substantial core melt. This source term description is provided in the footnote to the regulation. As such, it is the expectation of the NRC staff that the licensee's LBLOCA dose consequence analysis performed to show compliance with License Condition 2.C(7)c should be based on a source term that is consistent with that for which the regulatory acceptance criteria was established.

Alternatively, if a licensee's calculations use a best estimate source term, based on a small percentage of the fuel melt source term, the dose criteria of 10 CFR 100.11 must be proportionally reduced to show compliance with the regulation.

The NRC staff notes that application of the criteria in 10 CFR 100.11 or 10 CFR 50.67, based on a source term that is representative of a substantial core melt, is consistent with the NRC staff expectations which were provided in a letter dated July 8, 2008 (ADAMS Accession No. ML081070092), from the NRC to the Pressurized Water Reactor Owner's Group concerning Topical Report BAW-2374, Revision 2, "A Risk-Informed Assessment of Once-Through Steam Generator Tube Thermal Loads Due To Breaks In Reactor Coolant System Upper Hot Leg Large-Bore Piping." This NRC staff position was also reiterated in the May 19, 2010, audit report.

The NRC staff concluded in the audit report that the total maximum hypothetical accident dose is below the limits of 10 CFR 100.11. In addition, the NRC staff noted that plant procedures are in place and operator training has been performed to limit the potential for a release of radioactive material following a LBLOCA event. Specifically, the DBNPS SG tube rupture procedure includes actions to control and track secondary side isolation if SG tubes rupture is suspected.

Given the low likelihood of the LBLOCA event, the compensatory measures implemented to reduce the potential for release of radioactive materials following a LBLOCA event, and the planned replacement of the existing DBNPS once-through SGs, the NRC staff determined that the inconsistency does not create any safety issues in the short term (i.e., until the time the SGs are replaced, or approximately 5 years).

B. Allen

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However, following the replacement of the SGs at DBNPS, the NRC staff expects that the dose analysis for the LBLOCA event will be consistent with the regulations and the NRC staff expectations discussed above.

If you have any questions, please contact me at 301-415-3867 or by e-mail at Michael.Mahoney@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Mahoney", with a long, sweeping flourish extending to the right.

Michael Mahoney, Project Manager
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-346

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B. Allen

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If you have any questions, please contact me at 301-415-3867 or by e-mail at Michael.Mahoney@nrc.gov.

Sincerely,

/RA/

Michael Mahoney, Project Manager
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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