



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

December 21, 2010

Vice President, Operations
Entergy Operations, Inc.
Waterford Steam Electric Station, Unit 3
17265 River Road
Killona, LA 70057-3093

SUBJECT: WATERFORD STEAM ELECTRIC STATION, UNIT 3 – REVIEW OF THE 2009
STEAM GENERATOR TUBE INSERVICE INSPECTION REPORT (TAC
NO. ME4017)

Dear Sir or Madam:

By letter dated May 13, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML101370228), Entergy Operations, Inc. (the licensee), submitted information pertaining to the steam generator (SG) tube inspections performed during refueling outage 16 (fall 2009) at the Waterford Steam Electric Station, Unit 3. In addition to this report, the U.S. Nuclear Regulatory Commission (NRC) staff summarized two conference calls held with the licensee, concerning the 2009 SG tube inspections, in a letter dated January 7, 2010 (ADAMS Accession No. ML100050664). The licensee provided information in support of these calls in an e-mail dated November 12, 2009 (ADAMS Accession No. ML093210496).

The NRC staff has completed its review of these reports and concludes that the licensee provided the information required by its technical specifications and that no additional follow-up is required. The staff's review of the reports is enclosed.

If you have any questions, please contact me at (301) 415-1480 or by e-mail at kaly.kalyanam@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "N. Kalyanam" with a stylized flourish at the end. To the right of the signature, the word "FOR" is written in a smaller, less stylized font.

N. Kalyanam, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-382

Enclosure:
As stated

cc w/encl: Distribution via Listserv

REVIEW OF THE 2009 STEAM GENERATOR TUBE
INSERVICE INSPECTION REPORT FOR
WATERFORD STEAM ELECTRIC STATION, UNIT 3
DOCKET NO. 50-382

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Waterford 3 has two Model 70 SGs designed and fabricated by Combustion Engineering. The mill-annealed Alloy 600 SG tubes have an outside diameter of 0.750 inches and a nominal wall thickness of 0.048 inches. Each SG contains 9,350 tubes. The tubes are explosively expanded for the full depth of the tubesheet at each end and are supported by a number of carbon steel lattice-grid (i.e., eggcrate) tube supports, diagonal bars (also referred to as batwings), and vertical straps. The tubes in rows 1 through 18 are U-bends and the tubes in rows 19 through 147 are square bends. The upper end of the batwings are connected by a double-sided weld to a wrap around bar located in the periphery of the tube bundle. The center region of the tube bundle contains no tubes and is referred to as the stay-cavity region.

The licensee provided the scope, extent, methods, and results of its SG tube inspections in the documents referenced above. In addition, the licensee described corrective actions (e.g., tube plugging) taken in response to the inspection findings.

Degradation of the batwings in the stay cavity region was first observed in 2005 in one of the steam generators. This degradation is summarized in the NRC Information Notice 2005-29, "Steam Generator Tube and Support Configuration." Additional batwing degradation has been detected in subsequent outages. The degradation of the batwings led to several corrective actions including stabilizing and plugging many tubes, additional analyses, and enhanced inspections in this region. Additional details regarding the extent of batwing degradation during the 2009 outage is contained in the information provided by the licensee. The SGs at Waterford 3 are scheduled for replacement during their next refueling outage (scheduled for spring 2011). As a result, the 2009 inspections were the last planned inspections for these SGs.

The NRC staff has completed its review of these reports and concludes that the licensee provided the information required by its technical specifications and that no additional follow-up is required.

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Sincerely,
/RA by Lynnea Wilkins for/
N. Kalyanam, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-382

Enclosure:

As stated

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KKarworski, NRR/DCI/CSGB

AJohnson, NRR/DCI/CSGB

ADAMS Accession No. ML103430309

*SE Input from CSGB

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