



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

April 5, 2011

Mr. John T. Conway
Senior Vice President – Energy Supply
and Chief Nuclear Officer
Pacific Gas and Electric Company
Diablo Canyon Power Plant
77 Beale Street, Mail Code B32
San Francisco, CA 94105

SUBJECT: DIABLO CANYON POWER PLANT, UNIT NO. 2 - EVALUATION REGARDING
THE 2009 STEAM GENERATOR TUBE INSPECTIONS (TAC NO. ME3995)

Dear Mr. Conway:

By letter dated May 5, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML101330269), Pacific Gas and Electric Company (the licensee), submitted information summarizing the results of the 2009 steam generator (SG) tube inspections performed at Diablo Canyon Power Plant (DCPP), Unit No. 2. These inspections were performed during the fifteenth refueling outage (2R15). In addition to these reports, the U.S. Nuclear Regulatory Commission (NRC) staff summarized additional information concerning the 2009 SG tube inspections at DCPP, Unit No. 2, provided by the licensee in a letter dated November 24, 2010 (ADAMS Accession No. ML103300051).

The NRC staff has completed its review of these reports and concludes that the licensee provided the information required by the DCPP, Unit No. 2, technical specifications. No additional follow-up is required at this time. That staff's review of this report is enclosed.

If you have any questions regarding this matter, please contact me at (301) 415-1445.

Sincerely,

A handwritten signature in cursive script that reads "Alan Wang".

Alan B. Wang, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-323

Enclosure:
As stated

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SUMMARY OF U.S. NUCLEAR REGULATORY COMMISSION STAFF'S REVIEW

2009 STEAM GENERATOR TUBE INSPECTIONS

PACIFIC GAS AND ELECTRIC COMPANY

DIABLO CANYON POWER PLANT, UNIT NO. 2

DOCKET NO. 50-323

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DCPP, Unit No. 2, has four Westinghouse Model D54 SGs, each of which contains 4,444 thermally-treated Alloy 690 tubes. Each tube has a nominal outside diameter of 0.75 inches. During SG fabrication, the tubes were hydraulically expanded over the full depth of the tubesheet. The end of each tube is tack-expanded using a urethane plug expansion process. The tubes are arranged on a triangular pitch with 1.144-inch spacing. The tubes in rows 1 through 16 were full-length stress relieved following bending. Eight Type 405 stainless steel support plates, which have broached trefoil-shaped holes, support the vertical section of tubes. In the U-bend section, there are three sets of "V" shaped, rectangular stainless steel (Type 405) anti-vibration bars.

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 (i.e., tube plugging) taken in response to the inspection findings.

After reviewing the information provided by the licensee, the NRC staff has the following comments or observations:

- There are 12 tubes with proximity indication signals in the U-bend region. The signals were attributed to the proximity of a given tube to another tube. The licensee conducted +Point probe inspections on the 12 tubes and no tube-to-tube contact or wear was associated with these proximity signals. These signals were observed during both the preservice inspection and the 2009 inspections. A potential cause of these signals is manufacturing tolerances on a tube-to-tube basis (e.g., tolerances on U-bend profile and overall tube height). A tolerance stack-up indicates a reduced gap may occur, but tube-to-tube contact is not possible. Similar conditions have occurred at other plants.
- During fabrication, 12 tubes were reported to be visibly damaged by a grinding tool. Of these 12 tubes, 3 were plugged with welded plugs at the factory. The

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remaining nine tubes remain inservice and have no indication of degradation, but eight of the nine tubes have ding signals at the visibly damaged area.

Based on a review of the information provided, the NRC staff concludes that the licensee provided the information required by the DCP, Unit No. 2, technical specifications. In addition, the NRC staff concludes that there are no technical issues that warrant follow-up actions at this time since the inspections appear to be consistent with the objective of detecting potential tube degradation and the inspection results appear to be consistent with industry operating experience at similarly designed and operated units.

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/RA/

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*Memo dated

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