

August 6, 2003

Mr. Harold Ray
Executive Vice President
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San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, CA 92674-0128

SUBJECT: SAN ONOFRE NUCLEAR GENERATING STATION (SONGS), UNIT 2 -
EVALUATION OF STEAM GENERATOR TUBE INSPECTION REPORT FROM
2002 OUTAGE (TAC NO. MB6564)

Dear Mr. Ray:

By letter dated June 14, 2002, as supplemented by letter dated June 19, 2002, Southern California Edison submitted to the Nuclear Regulatory Commission its special report summarizing the steam generator (SG) tube inspections for SONGS, Unit 2, completed in June 2002.

Enclosed is the NRC staff's evaluation of the SG tube inspection report. The staff did not identify any issues warranting additional plant-specific follow-up at this time.

Please contact me at (301) 415-8450 if you have any questions on this issue.

Sincerely,

/RA by B. Benney for/

Bo M. Pham, Project Manager, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-361

Enclosure: Safety Evaluation

cc: See next page

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***Memo from EMCB**

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San Onofre Nuclear Generating Station, Unit 2

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SPECIAL REPORT: IN SERVICE INSPECTION OF STEAM GENERATOR TUBES, CYCLE 12
SOUTHERN CALIFORNIA EDISON COMPANY
SAN ONOFRE NUCLEAR GENERATING STATION (SONGS), UNIT 2
DOCKET NO. 50-361

By letters dated June 14 and 19, 2002, Southern California Edison (SCE) submitted its steam generator (SG) tube in service inspection report pursuant to Section 5.7.2.c of the technical specifications for SONGS, Unit 2. Subsequently, the NRC staff held a number of conference calls with the licensee, as summarized in NRC letter dated September 23, 2002, to discuss the results of SCE's findings.

SONGS, Unit 2 has two Combustion Engineering Model 3410 SGs, E-088 and E-089. Each SG has 9350 tubes (designed) which are fabricated with mill-annealed Alloy 600. The tubes in the tubesheet are installed with a full depth explosive expansion joint. The SONGS, Unit 2 SGs were inspected during Cycle 12 refueling outage in May and June 2002.

For SG E-088, SCE plugged 49 tubes and sleeved 75 tubes. The licensee detected inside and outside diameter axial indications at the eggcrate support intersections, inside and outside diameter circumferential indications at the top of tubesheet, inside diameter axial and circumferential indications below the top of tubesheet, and wear indications at the tube support intersections. The licensee also detected a limited number of outside diameter axial indications at the freespan region and outside diameter axial indications in the sludge pile at the top of the tubesheet.

For SG E-089, SCE plugged 52 tubes and sleeved 43 tubes. The licensee detected degradation in the same areas with the same mechanisms as in SG E-088. However, this SG has fewer number of indications in some degraded areas as compared to SG E-088, e.g., at the tubesheet and support intersections. The licensee also identified two volumetric indications at the top of tubesheet in E-089.

SCE performed in-situ pressure tests on a total of three indications. Two indications were outside diameter axial indications located at the eggcrate support intersections and one indication was tested for data quality issues in the U-bend region of a low row tube. All three indications satisfied the structural performance criteria without any leakage.

SCE has improved the secondary side chemistry to reduce the potential of SG tube degradation. The licensee has performed chemical cleaning of the tube bundle, added chemicals to inhibit stress corrosion cracking and to control the pH level of the coolant, added boric acid to reduce tube denting, and reduced the reactor coolant temperature at the SG inlet.

Based on our review of the licensee's special report on the SG inspection at SONGS, Unit 2, the NRC staff concludes that the information required to be submitted per the technical specifications was adequately provided and that no additional follow-up is required at this time.

Principal Contributor: J. Tsao

Date: August 6, 2003