



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

June 14, 2012

Mr. Ace Hoffman
P.O. Box 1936
Carlsbad, CA 92018

Dear Mr. Hoffman:

On behalf of the U.S. Nuclear Regulatory Commission (NRC), I am responding to your e-mail message to Chairman Gregory B. Jaczko, and the other Commissioners, dated May 8, 2012, in which you expressed your hope that the NRC will not allow the restart of the San Onofre Nuclear Generating Station (SONGS), Units 2 and 3.

As you know, both units are currently shut down due to excessive steam generator tube wear. The integrity of steam generator tubes is important because the tubes provide an additional barrier inside the containment building to prevent an inadvertent release of radioactivity. On January 31, 2012, control room operators shut down Unit 3 due to indications of a steam generator tube leak. Unit 3 had been operating for approximately one year following replacement of its steam generators. At the time, Unit 2 was shut down for a refueling outage, and Southern California Edison (SCE, the licensee) was performing routine inspections of the steam generator tubes after that unit's initial cycle of operation with its replacement steam generators.

Following the Unit 3 unplanned shutdown, SCE performed testing and inspection of that unit's steam generator tubes to gather additional information about their condition. The licensee identified eight tubes in one of the Unit 3 steam generators that failed pressure testing, including the leaking tube that prompted the plant shutdown. The test failures indicate a greater likelihood of failure of those tubes during certain plant events. On March 15, 2012, in response to the tube leak and subsequent pressure test failures, the NRC initiated an augmented inspection team (AIT) inspection at SONGS. The goals of the AIT are to promptly review the circumstances surrounding the tube leak, ensure that the NRC understands the cause(s) of the degraded steam generator tubes at SONGS, and take appropriate actions based on our assessment of the inspection results. The NRC team, comprised of experts from the NRC headquarters office in Rockville, Maryland, and the Region IV office in Arlington, Texas, has reviewed information associated with the design, construction, shipping, operation, and testing of the Unit 3 steam generators. Additionally, the AIT has reviewed the licensee's actions in response to greater than expected wear observed in some Unit 2 steam generator tubes, including additional inspections performed after the Unit 3 results were obtained. Through the AIT and related inspection activities, the NRC will continue to closely follow the licensee's evaluation of the root cause(s) of the steam generator tube problems, and the corrective actions taken to ensure that the units can be safely returned to power.

On March 27, 2012, the NRC issued a Confirmatory Action Letter (CAL) to SCE, identifying those specific actions the licensee has committed to take prior to returning Units 2 and 3, to power operation. A copy of the CAL is enclosed for your information. Under the terms of the CAL, each unit will remain shut down until the licensee provides its written evaluations and responses to the CAL items for that unit, and the NRC reviews that information and concludes

that the unit can be operated without undue risk to public health and safety, or the environment. The NRC will transmit its determinations to SCE regarding the restart of SONGS, Units 2 and 3, in writing.

The agency's response to the current steam generator issues at SONGS is part of the NRC's broader inspection program, which includes both routine and reactive inspections. Two full-time NRC resident inspectors are assigned to SONGS. Their daily inspection activities are supplemented through additional inspections performed by inspectors from our Region IV office and other NRC offices. The NRC continuously assesses the licensee's performance at SONGS through the agency's formal reactor oversight process, which includes analyzing the findings from all inspections and the performance indicator data reported by the licensee. The most recent NRC annual assessment of performance at SONGS, for calendar year 2011, was documented in a letter to the licensee dated March 5, 2012.

In your e-mail, you also discussed the March 2011 accident at the Fukushima-Dai-ichi plant in Japan. Since that time, the NRC staff has continued to evaluate and act on lessons learned from the accident to ensure that appropriate safety enhancements are implemented for U.S. reactors. The NRC established a senior level task force to conduct a methodical and systematic review of NRC processes and regulations to determine whether the agency should make additional improvements to our regulatory system. The task force submitted its report and recommendations to the Commission in July 2011. In that report, the task force concluded that a sequence of events like the Fukushima accident is unlikely to occur in the United States and that continued operation and continued licensing activities do not pose an imminent risk to public health and safety. However, the NRC is continuing its longer term review of information regarding the disaster at the Fukushima Dai-ichi plant to identify its applicability to U.S. reactors, identify lessons-learned, and determine if any changes to its regulatory requirements are necessary to continue to ensure the health and safety of the public and the environment. In October 2011, the staff provided its proposed plan of action and prioritization of the task force recommendations, which included additional recommendations beyond those identified in the task force report.

On March 12, 2012, based on lessons learned from the nuclear accident at the Fukushima Dai-ichi plant, the NRC issued three Orders requiring nuclear power plants to implement safety enhancements related to (1) mitigation strategies to respond to extreme natural events resulting in the loss of electric power at plants, (2) ensuring reliable hardened containment vents (applicable only to boiling-water reactors with Mark 1 or Mark 2 containments), and (3) enhancing spent fuel pool instrumentation. All operating nuclear power plants are required to begin implementation of the safety enhancements and to complete implementation within two refueling outages, or by December 31, 2016, whichever comes first. In addition, the NRC issued a formal request for information, requesting all operating reactor licensees to reevaluate seismic and flooding hazards (including tsunami hazards) at their sites using applicable current methods and information, to conduct walkdowns of their facilities to ensure protection against the hazards in their current design basis, and to reevaluate their emergency communications systems and staffing levels. The NRC will evaluate the responses to the request for information in determining the need for plant modifications or further enhancements to address seismic and flooding hazards as well as emergency communications.

A. Hoffman

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You can find additional information on NRC actions in response to the events in Japan on the NRC's public Web site at <http://www.nrc.gov/reactors/operating/ops-experience/japan-info.html>.

Thank you for your interest in these matters.

Sincerely,

A handwritten signature in black ink, appearing to read "E. J. Leeds". The signature is fluid and cursive, with a large, sweeping "L" and "D" at the end.

Eric J. Leeds, Director
Office of Nuclear Reactor Regulation

Docket Nos. 50-361 and 50-362

Enclosure:
As stated

ENCLOSURE

**NRC Confirmatory Action Letter
dated March 27, 2012**

**Agencywide Documents Access and Management
System (ADAMS) Accession No. ML12087A323**



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BLVD
ARLINGTON, TEXAS 76011-4511

March 27, 2012

CAL 4-12-001

Mr. Peter Dietrich
Senior Vice President and
Chief Nuclear Officer
Southern California Edison Company
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, CA 92674-0128

SUBJECT: CONFIRMATORY ACTION LETTER – SAN ONOFRE NUCLEAR GENERATING
STATION, UNITS 2 AND 3, COMMITMENTS TO ADDRESS STEAM
GENERATOR TUBE DEGRADATION

Dear Mr. Dietrich:

On January 31, 2012, your staff at San Onofre Nuclear Generating Station (SONGS) Unit 3 performed a rapid shutdown because of indications of a steam generator tube leak on the 3E88 steam generator. Following extensive testing of 100 percent of the steam generator tubes in both Unit 3 steam generators, your staff identified unexpected wear caused by steam generator tubes rubbing against each other, as well as against retainer bars. Additional in-situ pressure testing of 129 steam generator tubes was performed for the tubes that exhibited the most wear. Your staff identified that eight steam generator tubes in the Unit 3 3E88 steam generator had failed the pressure test. Failure of the in-situ pressure test is an indication that, for certain design basis events, such as a main steam line break, these steam generator tubes may not be able to maintain design structural integrity. You are continuing to evaluate these results to develop corrective actions for the Unit 3 steam generators.

SONGS Unit 2 was shutdown at the time of this event for a regularly scheduled refueling outage, and planned testing of 100 percent of the steam generator tubes was already in progress. Testing results on Unit 2 showed unexpected wear at retainer bars similar to the Unit 3 results, but did not show any wear from tubes rubbing against each other. Based on these results, your staff identified 6 tubes requiring plugging, and 186 additional tubes that were plugged as a precautionary measure. Evaluation for additional plugging or other corrective actions is continuing for Unit 2, based on ongoing evaluations of Unit 3 testing results.

For both Units 2 and 3, this was the first cycle of operation with new replacement steam generators. Unit 2 replaced its steam generators in January 2010, and Unit 3 in January 2011. Each steam generator has 9,727 steam generator tubes.

On March 23, 2012, you sent NRC a letter describing the actions you were committing to take prior to returning Units 2 and 3 to power operation (Agencywide Documents Access and Management System (ADAMS) Accession Number ML12086A182). In a phone conversation on March 26, 2012, I confirmed with you the commitments as described in your letter. This Confirmatory Action Letter (CAL) confirms that SONGS Unit 2 will not enter Mode 2, and SONGS Unit 3 will not enter Mode 4 (as defined in the technical specifications), until the NRC has completed its review of your actions listed below. The permission to resume power operations will be formally communicated to you in written correspondence.

Actions for Unit 2

1. Southern California Edison Company (SCE) will determine the causes of the tube-to-tube interactions that resulted in steam generator tube wear in Unit 3, and will implement actions to prevent loss of integrity due to these causes in the Unit 2 steam generator tubes. SCE will establish a protocol of inspections and/or operational limits for Unit 2, including plans for a mid-cycle shutdown for further inspections.
2. Prior to entry of Unit 2 into Mode 2, SCE will submit to the NRC in writing the results of your assessment of Unit 2 steam generators, the protocol of inspections and/or operational limits, including schedule dates for a mid-cycle shutdown for further inspections, and the basis for SCE's conclusion that there is reasonable assurance, as required by NRC regulations, that the unit will operate safely.

Actions for Unit 3

3. SCE will complete in-situ pressure testing of tubes with potentially significant wear indications in accordance with the Electric Power Research Institute (EPRI) Steam Generator In-situ Pressure Test Guidelines and will plug tubes in accordance with those guidelines.
4. SCE will plug all tubes with wear indications in excess of your Steam Generator Program Requirements (SGPR) and EPRI guidelines as well as perform preventive plugging or take other corrective actions to address retainer bar-related tube wear in Unit 3.
5. SCE will determine the causes of tube-to-tube interaction and implement actions to prevent recurrence of loss of integrity in the Unit 3 steam generator tubes while operating.
6. SCE will establish a protocol of inspections and/or operational limits for Unit 3, including plans for a mid-cycle shutdown for inspections. The protocol is intended to minimize the progression of tube wear, and ensure that tube wear will not progress to the point of degradation that could cause tubes not to meet leakage and structural strength test criteria.

7. Prior to entry of Unit 3 into Mode 4, SCE will submit to the NRC in writing the results of your assessment of Unit 3 steam generators, the protocol of inspections and/or operational limits, including schedule dates for a mid-cycle shutdown for further inspections, and the basis for SCE's conclusion that there is a reasonable assurance, as required by NRC regulations, that the unit will operate safely.

This CAL will remain in effect until the NRC has (1) reviewed your response to the actions above, including responses to staff's questions and the results of your evaluations, and (2) the staff communicates to you in written correspondence that it has concluded that SONGS Units 2 and 3 can be operated without undue risk to public health and safety, and the environment.

Issuance of this CAL does not preclude the issuance of an order formalizing the above commitments or requiring other actions on the part of SCE; nor does it preclude the NRC from taking enforcement actions for violations of NRC requirements that may have prompted the issuance of this letter. Failure to take the actions as described in this CAL may also result in an order if the NRC determines that failure to meet that action would result in a loss of reasonable assurance of the protection of public health and safety, and the environment.

Pursuant to Section 182 of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2232), you are required to:

- (1) Notify me immediately if your understanding differs from that set forth above;
- (2) Notify me if for any reason you cannot complete the actions and your proposed alternatives; and
- (3) Notify me in writing when you have completed the actions addressed in this Confirmatory Action Letter.

In accordance with 10 CFR 2.390 of the NRC's regulations a copy of this letter, and any response will be made available electronically for public inspection in the NRC Public Document Room or from the ADAMS, accessible from the NRC Web site at <http://www.nrc.gov/readingrm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

P. Dietrich

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Please contact Ryan Lantz at (817) 200-1173 if you have any questions concerning this letter.

Sincerely,

/RA/

Elmo E. Collins
Regional Administrator

Docket No.: 50-361, 50-362
License No.: NPF-10, NPF-15

cc: Electronic Distribution

A. Hoffman

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You can find additional information on NRC actions in response to the events in Japan on the NRC's public Web site at <http://www.nrc.gov/reactors/operating/ops-experience/japan-info.html>.

Thank you for your interest in these matters.

Sincerely,

/RA/

Eric J. Leeds, Director
Office of Nuclear Reactor Regulation

Docket Nos. 50-361 and 50-362

Enclosure:
As stated

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