



# NRC NEWS

## U.S. NUCLEAR REGULATORY COMMISSION

Office of Public Affairs Region IV

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March 27, 2012

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### **NRC ISSUES CONFIRMATORY ACTION LETTER FOR SAN ONOFRE NUCLEAR GENERATING STATION RESTART PREPARATIONS**

The U.S. Nuclear Regulatory Commission has issued a Confirmatory Action Letter documenting actions that Southern California Edison Co. (SCE) officials have agreed to take related to unusual wear on steam generator tubes prior to restarting both units of the San Onofre Nuclear Generating Station. SCE operates the plant, located near San Clemente, Calif.

“This Confirmatory Action Letter formalizes commitments that Southern California Edison has made to ensure that the cause of the tube wear in both steam generators is understood and appropriately addressed in order to ensure safe operation,” NRC Region IV Administrator Elmo E. Collins said. “Until we are satisfied that has been done, the plant will not be permitted to restart.”

On Jan. 31, operators performed a rapid shutdown of the Unit 3 reactor after indications of a steam generator tube leak. Unit 2 has been shut down since Jan. 9 for a planned refueling and maintenance outage. Subsequent inspections at both units have identified unusual wear in many tubes of the steam generators, which were replaced in January 2010 at Unit 2 and January 2011 in Unit 3.

SCE has identified two causes of the unusual wear: tubes are vibrating and rubbing against adjacent tubes and against support structures inside the steam generators. They are still working to determine why this is occurring.

Only one tube required pressure testing on Unit 2. However, six other tubes required plugging, and 186 additional tubes were plugged as a precautionary measure. Eight tubes failed pressure testing at Unit 3, indicating that these tubes could have failed under some accident conditions. Evaluation for additional plugging or other corrective actions are continuing for Unit 2, based on ongoing evaluations of Unit 3 test results.

As a result, SCE has committed to take the following actions prior to restart of each unit:

- SCE will plug all tubes in Units 2 and 3 for which testing indicated wear in excess of industry guidelines, as well as all tubes susceptible to this wear because of their location.
- SCE will determine the causes of the tube-to-tube degradation and establish a protocol of inspections and or operational limits for Unit 2 and 3, including plans for mid-cycle shut down for further inspections. The protocol is intended to minimize the progression of tube wear, and ensure that any tube wear does not progress to the point where it compromises tube integrity.

Copies of the Confirmatory Action Letter are attached:

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UNITED STATES  
**NUCLEAR REGULATORY COMMISSION**  
REGION IV  
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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.

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

Sincerely,

**/RA/**

Elmo E. Collins  
Regional Administrator

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