

March 23, 2012

Elmo E. Collins, Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
1600 East Lamar Blvd.
Arlington, Texas 76011-4511

**Subject: Docket Nos. 50-361 and 50-362
Steam Generator Return-to-Service Action Plan
San Onofre Nuclear Generating Station**

Dear Mr. Collins:

The purpose of this letter is to describe the actions Southern California Edison (SCE) is taking with respect to steam generator tube issues at the San Onofre Nuclear Generating Station (SONGS). As you know, SONGS Units 2 and 3 are currently shutdown as we inspect and analyze the causes of steam generator tube wear issues. Our top priority is to protect the health and safety of the public by understanding the causes of these issues and taking corrective actions to address those causes.

As part of the normal end-of-cycle steam generator tube inspections performed following the first cycle of operation, all of the tubes in both Unit 2 steam generators were inspected using eddy current inspection technology. More detailed eddy current inspections of tubes were performed in areas exhibiting signs of wear in accordance with SCE's Steam Generator Program Requirements (SGPR) which are consistent with Electric Power Research Institute (EPRI) guidelines. Unanticipated wear was identified in a number of tubes adjacent to steam generator retainer bars, and this wear was determined to be the result of retainer bar contact with the tubes. The tube with the most significant wear indication in the Unit 2 steam generators was pressure tested in accordance with the SGPR. The results demonstrated that the tube met the steam generator leakage and structural performance criteria as required by Technical Specifications. No tubes on Unit 2 were found to have failed these criteria.

With respect to Unit 3, a leaking steam generator tube was identified by SCE on January 31, 2012, and the unit was promptly shut down before Technical Specification leakage limits were exceeded, with no public health or safety consequences. All of the tubes in both Unit 3 steam generators were inspected using eddy current inspection technology. Indications of the same type of wear adjacent to the retainer bars found in Unit 2 were identified in Unit 3. In addition, subsequent inspections and testing in Unit 3 identified a number of steam generator tubes that did not meet the leakage and structural performance criteria as required by Technical Specifications. SCE has identified the wear mechanism that caused the tube leak as tube-to-tube interaction, and further testing, analysis, and corrective actions to address this wear mechanism are underway.

Inspections of the Unit 2 steam generator tubes have not shown the wear associated with tube-to-tube interaction seen in the Unit 3 steam generators. We will continue to assess the data obtained from Unit 3 for applicability to Unit 2 and will take necessary corrective actions.

SCE commits to complete the following actions as indicated for each unit:

Actions for Unit 2

1. The mechanisms causing steam generator tube wear in Unit 2 have been identified, and all tubes for which testing indicated wear in excess of SGPR and EPRI guidelines have been plugged. SCE also plugged all tubes adjacent to the retainer bars, whether worn or not, as a preventive measure. SCE has documented these issues in its Corrective Action Program (CAP) for analysis and resolution.
2. 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 in accordance with the CAP to prevent loss of integrity due to these causes in the Unit 2 steam generator tubes. Once these actions have been determined, SCE will establish a protocol of inspections and/or operational limits for Unit 2, including plans for a mid-cycle shutdown for further inspections.
3. Prior to entry of Unit 2 into Mode 2, SCE will, in a joint meeting, provide the NRC the results of our 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.
4. Both prior to and after entry of Unit 2 into Mode 2, the protocol and inspection time frames described in Action 2 above will be adjusted, as necessary, to account for the results of ongoing inspections and analyses of the causes of tube-to-tube interactions in the Unit 3 steam generators. NRC will be notified of any proposed changes to this protocol.

Actions for Unit 3

5. SCE will complete in-situ pressure testing of tubes with potentially significant wear indications in accordance with the EPRI Steam Generator In-Situ Pressure Test Guidelines and will plug tubes in accordance with those guidelines.
6. SCE will plug all tubes with wear indications in excess of 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.
7. SCE will determine the causes of tube-to-tube interaction and implement actions in accordance with the Corrective Action Program to prevent recurrence of loss of integrity in the Unit 3 steam generator tubes while operating.
8. 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 to not meet leakage and structural strength test criteria.

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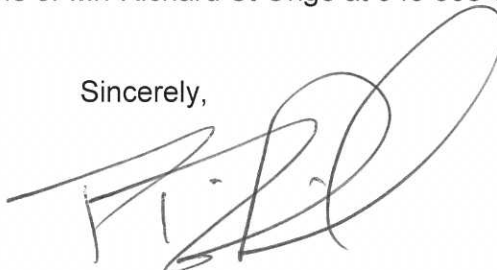
9. Prior to entry of Unit 3 into Mode 4, SCE will, in a joint meeting, provide the NRC the results of our assessment of Unit 3 steam generators, the protocol of inspections and/or operational limits including schedule dates for a mid-cycle shutdown for further inspections, and the basis for SCE's conclusion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

We will proceed deliberately and conservatively to implement these steps, always bearing in mind that safety is our first priority. We will also keep the NRC informed of our progress and of the results of our tests and analyses.

Attachment 1, "Commitment List" contains the commitments made in this letter.

Please do not hesitate to contact me or Mr. Richard St Onge at 949 368-6240 should you require any further information.

Sincerely,

A handwritten signature in black ink, appearing to read 'E. Collins', with a large, sweeping flourish extending to the right.

Attachments: As stated.

cc: NRC Document Control Desk
R. Hall, NRC Project Manager, San Onofre Units 2 and 3
G. G. Warnick, NRC Senior Resident Inspector, San Onofre Units 2 and 3

ATTACHMENT 1

COMMITMENT LIST

Steam Generator Return-to-Service Action Plan

The following list identifies those actions committed to by Southern California Edison (SCE) for the San Onofre Nuclear Generating Station (SONGS) in this document. Any other actions discussed in the submittal are described only for information and are not regulatory commitments.

No.	Commitment	Due Date
<u>Actions for Unit 2</u>		
1	The mechanisms causing steam generator tube wear in Unit 2 have been identified, and all tubes for which testing indicated wear in excess of SGPR and EPRI guidelines have been plugged. SCE also plugged all tubes adjacent to the retainer bars, whether worn or not, as a preventive measure. SCE has documented these issues in its Corrective Action Program (CAP) for analysis and resolution.	Complete
2	SCE will determine the cause(s) of the tube-to-tube interactions that resulted in steam generator tube wear in Unit 3, and will implement actions in accordance with the CAP to prevent loss of integrity due to these potential causes in the Unit 2 steam generator tubes. Once these actions have been determined, SCE will establish a protocol of inspections and/or operational limits for Unit 2, including plans for a mid-cycle shutdown for further inspections.	Prior to entry of Unit 2 into Mode 2
3	Prior to entry of Unit 2 into Mode 2, SCE will, in a joint meeting, provide the NRC the results of our 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.	Prior to entry of Unit 2 into Mode 2
4	Both prior to and after entry of Unit 2 into Mode 2, the protocol and inspection time frames described in Action 2 above will be adjusted, as necessary, to account for the results of ongoing inspections and analyses of the causes of tube-to-tube interactions in the Unit 3 steam generators. NRC will be notified of any proposed changes to this protocol.	Ongoing
<u>Actions for Unit 3</u>		
5	SCE will complete in-situ pressure testing of tubes with potentially significant wear indications in accordance with the EPRI Steam Generator In-Situ Pressure Test Guidelines and will plug tubes in accordance with those guidelines.	Prior to entry of Unit 3 into Mode 4

No.	Commitment	Due Date
6	SCE will plug all tubes with wear indications in excess of 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.	Prior to entry of Unit 3 into Mode 4
7	SCE will determine the cause(s) of tube-to-tube interaction and implement actions in accordance with the Corrective Action Program to prevent recurrence of loss of integrity in the Unit 3 steam generator tubes while operating.	Prior to entry of Unit 3 into Mode 4
8	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 to not meet leakage and structural strength test criteria.	Prior to entry of Unit 3 into Mode 4
9	Prior to entry of Unit 3 into Mode 4, SCE will, in a joint meeting, provide the NRC the results of our 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 reasonable assurance, as required by NRC regulations, that the unit will operate safely.	Prior to entry of Unit 3 into Mode 4