UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	Docket Nos. 50-361-CAL & 50-362-CAL
SOUTHERN CALIFORNIA EDISON COMPANY	)	
	)	
(San Onofre Nuclear Generating Station, Units 2 and 3)	)	December 19, 2012

PETITIONER'S REPLY TO ANSWERS OF NRC STAFF AND SCE TO MOTION TO AMEND THE PROPOSED SCHEDULING ORDER AND CLARIFY SCOPE OF DISCLOSURE

I. BACKGROUND

On November 8, 2012, the Nuclear Regulatory Commission (NRC or "Commission") issued decision CLI-12-20 referring to the Atomic Safety and Licensing Board Panel a portion of Friends of the Earth's (FoE) June 18, 2012 intervention petition. FoE's petition related to a March 27, 2012 Confirmatory Action Letter (CAL) issued by the Commission to SCE. On December 3, 2012, the participants in this proceeding, Southern California Edison Company (SCE), FoE, and the NRC Staff, participated in a conference call with the Licensing Board established for this proceeding to discuss scheduling and management issues.

On December 7, 2012, the Licensing Board issued an Order that directed SCE to disclose to the Board and FoE the numerous proprietary documents "referred to in SCE's response to the CAL and . . . documents generated pursuant to the CAL in SCE's Restart Plan," contingent upon

agreement by FoE to a nondisclosure agreement.[1] The Board's Order also suggested a Proposed Scheduling Order, and invited the parties to negotiate an alternative schedule if the suggested schedule did not provide "adequate time to prepare thorough, high-quality briefs."[2]

Such negotiations having failed, on December 11, 2012, Petitioner Friends of the Earth (FoE) filed a motion with the Atomic Safety and Licensing Board ("Licensing Board" or "Board") to clarify the scope of disclosure of documents and establish a briefing schedule. SCE filed an Answer on December 13, 2012. NRC staff filed an Answer on December 14, 2012. This Reply responds to issues raised by the Answers of the other parties.

II. FOE'S IDENTIFICATION OF DOCUMENTS IS ASSISTING THE BOARD IN IMPLEMENTING ITS ORDER, NOT REQUESTING DISCOVERY

As described above, the Board's December 7, 2012 Order requires SCE to disclose proprietary versions of documents related to the CAL response and Restart Plan to help determine whether the CAL constitutes a *de facto* license amendment. Judge Hawkens described the documents to be disclosed as "documents that give meaning to the confirmation action letter that's material that the Board's needs and materials the parties must have access to in order to make their arguments to the Board."[3] FoE has provided a list of such documents in its December 11, 2012 motion to assist the Board in identifying the particular documents subsumed by its Order.

SCE insists erroneously that the rules related to discovery in Part 2, Subpart C of NRC's regulations apply to the documents indentified by Petitioner's in their motion,[4] and the NRC staff likewise incorrectly assert that the rules in Part 2, Subpart L govern disclosure of the requested

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[1] Order (Conference Call Summary and Directives Relating to Briefing) (Dec. 7, 2012) ("December 7 Order") (unpublished) at 4.
[2] December 7 Order at 5.
[3] Judge Hawkens, Transcript of teleconference among parties, Monday, December 3, 2012 at 32.
[4] SCE's Answer at 6.

proprietary versions of the documents here.[5] These statements reflect a fundamental misunderstanding: even if the cited procedures applied to discovery requests by the parties, they do not apply to an Order to disclose issued by the Atomic Safety and Licensing Board.

Even if the list of documents provided by the Petitioner to assist the Board were considered a discovery request, however, Subparts L and C would still not be apposite. Neither applies as a default, and the Board has not directed that either shall apply here. The presiding officer decides which procedures to invoke, guided by 10 C.F.R. § 2.310, and thus far the Board has declined to specify procedures beyond its Order to disclose certain documents and its proposed briefing schedule.

The documents identified in FoE's motion are necessary to address the Commission's first question of whether the CAL process is a *de facto* license amendment proceeding. The Commission's referral of that issue to the Board "admits" it to the proceeding. There is no need to establish a contention before the Board can consider the merits of the issue. SCE is therefore simply incorrect in claiming that the documents identified in FoE's motion relate to the admissibility of a contention.[6]

III. ATTEMPTS BY SCE AND THE NRC STAFF TO RESTRICT THE BOARD'S ACCESS TO RELEVANT PROPRIETARY DOCUMENTS SHOULD BE REJECTED

A. The Documents Identified in Footnotes 5 and 6 of the Board's December 7 Order Are Examples, Not a Complete List of the Board's Request.

SCE argues that the examples offered in the Board's Order (in footnotes 5 & 6 on page 4) are all they must disclose.[7] But this position is directly contrary to the Board's own statements about which documents are needed to adequately address the issue of whether the CAL process is a *de facto* license amendment proceeding. The Board's Order states plainly that

[5] Staff's Answer at 6.
[6] SCE answer at 6.

"...determining whether the assessments and tests authorized in the CAL, and the results of these assessments and tests, including any new or temporary operational limits for Units 2 and 3, constitute a de facto license amendment *will require consideration of documents and data that have been created incident to, and subsequent to, the CAL.*"[8] We have provided the Board with a list of documents our experts have determined meet this description.

B. Documents Created Pursuant to the CAL, Including the Restart Plan and Documents Clarifying the Restart Plan, Are Within the Scope of this Proceeding and Should be Disclosed.

The Board was clear in the December 3, 2012 conference call and its December 7, 2012 Order that the Board must determine whether "the CAL and *its effect*" constitute a license amendment proceeding. As NRC staff concedes in its Answer to FoE's motion,[9] the Board has already ordered disclosure of the proprietary "documents referred to in SCE's response to the CAL [the October 3, 2012 Unit 2 Restart Plan] and the proprietary versions of the documents generated pursuant to the CAL in SCE's Restart Plan" as "necessary for the Board to determine...whether the CAL itself is a *de facto* license amendment..."[10] In light of the Board's Order, NRC staff's position, articulated in a footnote, that these documents are "not relevant to the narrow issue before the Board" is simply not tenable.[11]

No less than four times the Board and its members have stated that documents generated as part of the Restart Plan are to be provided to the Board and FoE:

1. "We believe that access to the proprietary versions of the documents referred to in SCE's response to the CAL and the proprietary versions of the documents generated pursuant to the CAL in SCE's 'Restart Plan' are necessary for the Board to

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[7] SCE Answer at 1.
[8] December 7 Order at 3 [emphasis supplied].
[9] NRC Staff's Answer to Petitioner's Motion to Amend the Proposed Scheduling Oreder and Calify the Scope of Disclosure (Dec. 14, 2012) ("Staff's Answer") at 4.
[10] December 7 Order at 4.

determine, *not whether the restart plan is adequate or appropriate,* but whether the CAL itself is a de facto license amendment that would be subject to a hearing opportunity under section 189a of the AEA."[12]

2. "One of the things this CAL process is attempting to determine is what is the power that you can operate safely at…"[13] SCE's restart plan centers on a proposal to operate Unit 2 at 70 percent power on an experimental basis for five months.
3. "In order to [determine whether or not a license amendment is required], we turn to 50.59 which then looks at the impact on safety of any proposed changes."[14] SCE's proposed changes to the operation of Unit 2 are outlined in the Restart Plan.
4. "…[I]in order to determine whether the confirmatory action letter constitutes a de facto license amendment. [sic] We need to determine and take into account the subsequent actions which were authorized by that letter."[15] The Restart Plan is SCE's justification to the NRC staff that SCE has met the requirements of the CAL.[16]

Given the Board's repeated statements with regard to these documents, it is remarkable that the NRC staff and SCE have seen fit to question the point.

C. Documents from the Augmented Inspection Team Process are Relevant to this Proceeding and Within its Scope

The documents generated by the Augmented Inspection Team (AIT) process have direct bearing on the determination of whether the CAL process is a *de facto* license amendment

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[11] *See* footnote 19 of the Staff's answer.
[12] December 7 Order at 4.
[13] Judge Arnold, Transcript of teleconference among parties, Monday, December 3, 2012 at 37.
[14] Judge Baratta, Transcript of teleconference among parties, Monday, December 3, 2012 at 11.
[15] Judge Hawkens, Transcript of teleconference among parties, Monday, December 3, 2012 at 16.
[16] Elmo E. Collins, Regional Administrator, Region IV, US NRC, letter to Peter T. Dietrich, Senior Vice President and Chief Nuclear Officer, Southern California Edison Company, Confirmatory Action Letter – San Onofre Nuclear Generating Station, Units 2 and 3, Commitments to Address Steam Generator Tube Degradation (Mar. 27, 2012) (ADAMS accession no. ML12087A323) at 2.

proceeding. A consideration of the scope of the AIT demonstrates the point. The scope includes:

i. "Review information to determine probable contributing causes to the event or degraded condition, where applicable: operational issues, equipment failures, human factor and procedural issues, quality assurance issues, safety culture component issues."[17]

ii. "Collect and assess differences in steam generator design and manufacturing between Units 2 and 3. Review all design and manufacturing changes to ensure they were properly reviewed and approved in accordance with procedures."[18]

iii. "[A]n inspection of SCE's actions taken to address the Confirmatory Action Letter actions."[19]

This Board is tasked with determining whether the CAL process is a *de facto* license amendment proceeding, which necessarily requires a review, under 10 C.F.R. § 50.59 "to identify possible changes that might affect the basis for licensing the facility so that any changes that might pose a safety concern are reviewed by NRC to confirm their safety before implementation."[20] The documents generated by the AIT inspection bear directly on the question whether SCE's proposed changes in response to the CAL adequately address the safety concerns presented by the design and installation of the defective replacement steam generators. Thus, the AIT documents identified by FoE are within the scope of the Board's Order and should be disclosed.

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[17] Memoradum from Gregory Werner, Chief, Plant Support Branch 2, Division of Reactor Safety to Elmo Collins, Regional Administrator, Region IV *Augmented Inspection Team Charter to Evaluate the Steam Generator Tube Integrity Issues at San Onofre Nuclear Generating Station Unit 3, Revision 1* (May 16, 2012) at 3.
[18] Id.
[19] Id. at 4-5.

D. SCE's Section 50.59 Analysis of the Restart Plan is Central to Understanding Whether the CAL Process is a *De Facto* License Amendment Proceeding

As noted above, 10 C.F.R. § 50.59 dictates whether a license amendment is necessary. At a December 7, 2012 public meeting, SCE admitted to performing a section 50.59 analysis of its Restart Plan. Presumably that analysis considers whether the changes proposed in the Restart Plan, such as temporary operation at 70 percent power, meet any of the criteria in section 50.59(c)(2). That section requires a licensee to obtain a license amendment if any one of the criteria is met.

The section 50.59 criteria are used to determine whether a proposed change, test, or experiment will result in, or create a possibility for, exceeding the scope of the safety issues evaluated in the final safety analysis report (as updated) for the facility. If so, the license must be amended.

Thus, SCE's section 50.59 analysis of its Restart Plan, an action required by the CAL, goes directly to the question of whether a license amendment is required for the changes proposed by SCE in its Restart Plan. The analysis should be made available to the parties to enable complete and adequate briefing on the issue and thus aid the Board in its determination of whether the CAL process is a *de facto* license amendment proceeding.

SCE asserts that FoE should not have access to SCE's section 50.59 analysis of the Restart Plan and that FoE should perform its own evaluation of whether the Restart Plan requires a license amendment. This is an absurd position: the question is whether the licensee's 50.59 analysis indicates the need for a license amendment. An outside citizens' organization's analysis has no bearing on this question.

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[20] Changes, Tests, Experiments (Final Rule)1999 WL 958452 (N.R.C.) (September 20, 1999) at 5.

IV. THE STAFF AND SCE CANNOT CONCEAL FROM THE BOARD SCE'S ANSWERS TO STAFF QUESTIONS DIRECTLY RELEVANT TO THE BOARD'S INQUIRY BY ESTABLISHING AN OSTENSIBLY SEPARATE PROCEEDING TO REVIEW SCE'S RESTART PLAN

In its Answer to FoE's motion, the staff took the position that the "Restart Plan is not relevant to deciding the issue before the Board, i.e., whether the CAL issued to SCE is a *de facto* license amendment."[21] Consistent with this position, the staff also announced that it "is separately reviewing whether the licensee's Restart Plan, if adopted, would result in a proceeding for the granting, suspending, revoking, or amending of any license."[22] The Board has, however, clearly indicated it does not agree with the staff's position as to the relevance of the Restart Plan, and regards the Restart Plan as highly relevant to answering the question before the Board.

It has come to Petitioner's attention that the staff has issued a series of questions to SCE under its self-described "separate review" of the Restart Plan that are highly relevant to the issue before this Board. The questions were sent in the form of two letters sent on November 30, 2012 and December 10, 2012. While these questions were ultimately placed in the NRC's ADAMS document system, they were not served on the Board or the parties to this proceeding, nor were posted on the publicly accessible ADAMs database until December 7, 2012 and December 11, 2012, respectively. FoE only became aware of them on December 17. The questions are appended to this Reply.

As the Board will see from examining the questions, SCE's responses will bear directly on the answer to whether the changes proposed in SCE's response to the CAL and restart plan affect the safety of Unit 2 in such a way as to trigger the need for a license amendment. For example, question 11 directs SCE to, "Please submit an operational impact assessment for

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[21] Staff Answer at 7.
[22] Id.

operation at 70% power."[23] The Board has clearly recognized that SCE's justification for operating at reduced power has significant bearing on the current proceeding. During the scheduling conference call, Judge Arnold said of the 70 percent operating limit,

"It's putting a tighter control on operations than specified in the technical specifications. And I would think that we'd have to consider whether that, if it's temporary modification, is in fact the type of thing that requires a license amendment."[24]

In effect, the staff has embarked on an effort to create a separate information stream from the applicant to the staff for information relevant to determining whether the CAL process is a license amendment, concealed from the Board and the parties by the staff's claim that the Restart Plan is a separate proceeding that is irrelevant to the questions before the Board. We urge the Board to address this attempt to evade its Order by requiring that the proprietary versions of the answers, and supporting documentation, be posted to the non-public docket as they become available, so that the Board, FoE, and its experts may be fully informed about the issues the Board has determined are central to this proceeding.

V. GRANTING FOE'S MOTION WITH REGARD TO A BRIEFING SCHEDULE WILL NOT RESULT IN DELAY

FoE has identified a number of relevant documents to ensure that the parties and Board have a complete record on which to base a determination on the issue of whether the CAL process is a *de facto* license amendment proceeding. FoE has provided a detailed description of each document and indicated how it is relevant and probative on the issue before the Board thereby undermining SCE's cries of "fishing expedition," which amount to little more than hand waving.

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[23] Letter from Randy Hall, NRC to Ryan Treadway, SCE *Draft Request for Additional Information on SCE's Response to NRC's Confirmatory Action Letter for San Onofre Nuclear Generating Station Unit 2 (ME9727)* (Nov. 30, 2012) at 3.

[24] Judge Arnold, Transcript of teleconference among parties, Monday, December 3, 2012 at 37.

Disclosure of these documents identified by FoE will not delay the restart of Unit 2. The NRC's published timetable for considering SCE's restart request shows that any decision on restart is not expected until March.[25] If the Board accepts FoE's proposed briefing schedule, the ASLB proceeding could be completed by the time a restart decision is made. Thus, FoE's request does not in any way impede SCE's hope of a spring restart.

VI. SCE INCORRECTLY APPLIES THE "GOOD CAUSE" STANDARD TO FOE'S PROPOSED BRIEFING SCHEDULE

SCE argues errantly that FoE has not met the "good cause" standard for extensions of scheduling.[26] This misconceives FoE's motion, which asks the Board to establish a briefing schedule, not amend on already in existence. The Board has not yet set a briefing schedule. The Board's Order merely suggested a proposed schedule.[27] Thus, the "good cause" standard for an extension does not apply.

VII. CONCLUSION

Petitioner respectfully urges the Board to require SCE and the NRC staff to make available the relevant proprietary documents indentified in the appendices to FoE's petition as well as any documents generated from the staff's review of SCE's restart plan, such as, for example, answers to questions appended to this Reply. In addition, FoE asks the Board approve FoE's proposed briefing schedule.

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[25] Special NRC Oversight at San Onofre Nuclear Generating Station: Steam Generator Tube Degradation: Southern California Edison Response to NRC's Confirmatory Action Letter and Return to Service Plan for Unit 2, http://www.nrc.gov/info-finder/reactor/songs/tube-degradation.html

[26] SCE Answer at 11.

[27] *See* email correspondence from Onika Williams, law clerk, ASLB to the parties (December 18, 2012 3:56:37 PM EST).

Signed (electronically) by Richard Ayres
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Counsel for Friends of the Earth

Dated in Washington, D.C.
this 19th day of December 2012

ATTACHMENT

Lent, Susan

From:	Hall, Randy
Sent:	Friday, November 30, 2012 3:50 PM
To:	Ryan.Treadway@sce.com
Cc:	joseph.bashore@sce.com; John.Brabec@sce.com; Broaddus, Doug; Jackson, Christopher; Kulesa, Gloria; Elliott, Robert; Pelton, David; Paige, Jason; Murphy, Emmett; Karwoski, Kenneth; Thurston, Carl; Hoxie, Chris; Williamson, Edward; Smith, Maxwell; Grover, Ravinder; Beaulieu, David; Parks, Benjamin; Clifford, Paul; Kanatas, Catherine
Subject:	Draft Request for Additional Information on SCE's Response to NRC's Confirmatory Action Letter for San Onofre Nuclear Generating Station Unit 2 (ME9727)
Attachments:	SONGS Draft RAI Nov 30.docx

November 30, 2012

Mr. Ryan Treadway
Manager, Nuclear Regulatory Affairs
San Onofre Nuclear Generating Station
Southern California Edison Company

Ryan:

By letter dated October 3, 2012, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML122850320) Southern California Edison (SCE) submitted its response to the NRC Confirmatory Action Letter (CAL) dated March 27, 2012, for San Onofre Nuclear Generating Station (SONGS), Unit 2. The NRC staff has begun its detailed review of SCE's CAL response and Return to Service report for SONGS Unit 2 and has determined that additional information is needed in order to complete our evaluation. The NRC staff's initial draft request for additional information (RAI) regarding the CAL response is attached. The staff is currently developing additional questions and will transmit those to SCE as they become available.

The NRC staff would like to have a conference call with SCE later next week to clarify any questions your staff might have regarding this request for additional information. In addition, we would like to hold a public meeting with SCE here at NRC headquarters on December 18th to discuss the RAIs and SCE's plans and schedule for its response. I will be contacting you separately to discuss arrangements for the teleconference and the meeting.

Sincerely,

Randy Hall, Senior Project Manager
San Onofre Special Projects Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation
USNRC
(301) 415-4032
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OFFICE OF NUCLEAR REACTOR REGULATION
REQUEST FOR ADDITIONAL INFORMATION
SOUTHERN CALIFORNIA EDISON
SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 2
RESPONSE TO MARCH 27, 2012, NRC CONFIRMATORY ACTION LETTER
DOCKET NO. 50-361
TAC NO. ME9727

By letter dated October 3, 2012, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML122850320, Reference 1) Southern California Edison (SCE) submitted its response to the NRC Confirmatory Action Letter (CAL) dated March 27, 2012, for San Onofre Nuclear Generating Station (SONGS), Unit 2. The NRC staff has begun its detailed review of SCE's CAL response for SONGS Unit 2 and has determined that additional information is needed in order to complete our evaluation. The NRC staff's initial draft request for additional information (RAI) regarding the CAL response is provided below.

1. The Operational Assessment (OA) in Attachment 6, Appendix A (Reference 2), reports the 3 times normal operating pressure differential as being 4290 psi for 100% power conditions. This is the same value assumed in the Condition Monitoring Assessment provided in Attachment 2. This value is significantly higher than the values ranging from 3972-3975 psi for 100% power reported in Attachment 6, Appendices B, C, and D (References 3-5). Describe the reason for the differences.

2. The Operational Assessment in Attachment 6, Appendix C (Reference 4), pages 3-2 and 4-12, appears to state that tube-to-tube wear (TTW) growth rates are based on the maximum TTW depths observed in Unit 3 at EOC 16 divided by the first Unit 3 operating period (0.926 years at power). Provide justification for the conservatism of this assumption. This justification should address the following:

    a. Reference 4, page 3-2 defines "wear index" for a degraded tube and states that the existence of TTW and distribution of TTW depths are strongly correlated to the wear index. This is pictured in Figures 4-4 in terms of TTW initiation. This figure shows that TTW is not expected to have initiated until a threshold value of wear index is reached. This threshold value varies from tube to tube according to a cumulative probability distribution shown in the figure. This figure illustrates that TTW is not expected to have initiated until sometime after BOC 16. This suggests that the observed TTW depth at EOC 16 developed over a smaller time interval than the 0.926 years assumed in the analysis.

    b. An independent analysis in Reference 3 also indicates an extremely low probability of instability onset at BOC 16 as illustrated in Figure 8-3. Reference

3, page 106 interprets this figure as indicating that the probability of instability only reaches 0.22 after 3 months and only becoming "high" after 4 months.

c. Reference 3 also considered a variety of different wear rate models to estimate how long it took to develop the observed TTW depths at Unit 3 after instability occurred. These analyses are documented in Appendix A of Reference 3 and produced estimates in the range of 2.5 to 11 months.

3. Regarding Reference 4, describe the sensitivity of the results in Figure 5-4 to the definition of "wear index." If alternate definitions significantly affect the results, what is the justification for the definition being used?

4. Regarding Reference 4, does the definition of "wear index" include summing the depths of 2-sided wear flaws at a given AVB intersection? If not, explain why SCE's approach is conservative.

5. Regarding Reference 4, third paragraph from the bottom of page 4-3, why is non-detected wear only assigned to no degradation detected (NDD) tubes and not to NDD tube/AVB intersections in tubes with detected wear at other intersections?

6. Regarding Reference 4, page 4-5, it seems that depths of undetected flaws are assumed to be associated with probability of detection (POD) ≤ 0.05. Why is this conservative? Is there a possibility that some undetected flaws may be associated with higher values of POD?

7. Regarding Reference 4, page 4-5, what is meant by the words, "each active wear location" in the 1350 NDD tubes? How are the "active wear" locations determined?

8. It is stated in Reference 4, page 4-6, second paragraph that, "It has been observed that the number of AVB supports that develop wear in the second cycle of operation can increase dependant on the number of worn AVB indications at the beginning of the second cycle. These data were used in the OA to add AVB locations at the start of Cycle 17 from a statistical representation of this data." Provide a more complete description of the model used to add AVB locations that will develop wear during the second cycle. Confirm that this model applies to both the 560 tubes with existing tube support wear and the 1350 NDD tubes.

9. It is stated in Reference 4, at the top of page 4-9 that the simulation results of the bench marking process are shown in Figure 4-6. Provide additional detail on what Figure 4-6 is showing and how it relates to the benchmarking process. As part of this additional detail, explain the meaning of the ordinate label "number of observations" in the figure.

10. Technical Specification (TS) 3.4.13.d allows 150 gallons per day primary to secondary leakage. The Return to Service Report (Enclosure 2 of Reference 1), Section 9.4.1

states, "The plant operating procedure for responding to a reactor coolant leak has been modified to require plant Operators to commence a reactor shutdown upon a valid indication of a primary-to-secondary SG tube leak at a level less than allowed by the plant's TSs. This procedure change requires earlier initiation of operator actions in response to a potential SG tube leak." Does this mean that a reactor shutdown would be commenced upon <u>any</u> valid indication of primary to secondary leakage? Provide a description of the action levels in the procedure. Discuss any additional actions, planned or taken, such as simulator testing, operator training, and/or any evaluations to assess potential impacts of the revised procedure.

11. Please submit an operational impact assessment for operation at 70% power. The assessment should focus on the cycle safety analysis and establish whether operation at 70% power is within the scope of SCE's safety analysis methodology, and that analyses and evaluations have been performed to conclude operation at 70% power for an extended period of time is safe. The evaluation should also demonstrate that the existing Technical Specifications, including limiting conditions for operation and surveillance requirements, are applicable for extended operation at 70% power.

12. Operation at a lower power level could introduce additional uncertainty in measuring reactor coolant flow. Please provide a detailed evaluation of RCS flow uncertainty, identify how RCS flow uncertainty is affected by operation at 70% power, and discuss the overall treatment of the RCS flow uncertainty, actual and indicated, in the context of the remaining safety analyses. Provide similar information for secondary flow uncertainty, as well.

13. The installation of new steam generators involved changes to the steam generator heat transfer characteristics, which could affect the performance of the plant under postulated loss of coolant accident conditions. Please explain how the existing ECCS analysis accounts for these changes, and how considerable steam generator tube plugging has been addressed in the ECCS evaluation. Provide the ECCS evaluation that will apply to the planned operating cycle.

14. Provide a summary disposition of the U2C17 calculations relative to the planned reduced-power operation.

<u>REFERENCES</u>

1. Letter from Peter T. Dietrich, SCE, to Elmo E. Collins, USNRC, "Docket No. 50-361, Confirmatory Action Letter – Actions to Address Steam Generator Tube Degradation, San Onofre Nuclear Generating Station, Unit 2," October 3, 2012. (ADAMS Accession No. ML122850320)

2. Enclosure 2 to Reference 1: San Onofre Nuclear Generating Station Unit 2 Return to Service Report, Attachment 6 – SONGS U2C17 Steam Generator Operational Assessment, Appendix A, Revision 2, "SONGS U2C17 Outage - Steam Generator Operational Assessment," prepared by Areva NP Inc. Document No. 51-9182833-002 (NP), Revision 2), October 2012.

3. Enclosure 2 to Reference 1: San Onofre Nuclear Generating Station Unit 2 Return to Service Report, Attachment 6 – SONGS U2C17 Steam Generator Operational Assessment, Appendix B, Revision 0, "SONGS U2C17 Steam Generator Operational Assessment for Tube-to-Tube Wear," prepared by Areva NP Inc. Document No. 51-9187230-000 (NP), Revision 0), October 2012.

4. Enclosure 2 to Reference 1: San Onofre Nuclear Generating Station Unit 2 Return to Service Report, Attachment 6 – SONGS U2C17 Steam Generator Operational Assessment, Appendix C, "Operational Assessment for SONGS Unit 2 SG for Upper Bundle Tube-to-Tube Wear Degradation at End of Cycle 16," prepared by Intertek APTECH for Areva, Report No. AES 12068150-2Q-1, Revision 0, September 2012.

5. Enclosure 2 to Reference 1: San Onofre Nuclear Generating Station Unit 2 Return to Service Report, Attachment 6 – SONGS U2C17 Steam Generator Operational Assessment, Appendix D, "Operational Assessment of Wear Indications In the U-Bend Region of San Onofre Unit 2 Replacement Steam Generators," prepared by Westinghouse Electric Company LLC, Report No. SG-SGMP-12-10, Revision 3, October 2012.

Lent, Susan

From:	Hall, Randy
Sent:	Monday, December 10, 2012 2:28 PM
To:	Ryan.Treadway@sce.com
Cc:	joseph.bashore@sce.com; John.Brabec@sce.com; Broaddus, Doug; Jackson, Christopher; Kulesa, Gloria; Elliott, Robert; Pelton, David; Paige, Jason; Murphy, Emmett; Karwoski, Kenneth; Thurston, Carl; Hoxie, Chris; Grover, Ravinder; Beaulieu, David; Parks, Benjamin; Clifford, Paul; Schulten, Carl; Lantz, Ryan; Werner, Greg; Taylor, Nick; Rahn, David; Thorp, John; Benney, Brian
Subject:	Draft Request for Additional Information on SCE's Response to NRC's Confirmatory Action Letter for San Onofre Nuclear Generating Station Unit 2 (ME9727) - Resent w/ Attachment
Attachments:	SONGS Draft RAI Dec 10.docx

December 10, 2012

Mr. Ryan Treadway
Manager, Nuclear Regulatory Affairs
San Onofre Nuclear Generating Station
Southern California Edison Company

Ryan:

By letter dated October 3, 2012, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML122850320) Southern California Edison (SCE) submitted its response to the NRC Confirmatory Action Letter (CAL) dated March 27, 2012, for San Onofre Nuclear Generating Station (SONGS), Unit 2. The NRC staff is continuing its detailed review of SCE's CAL response and Return to Service report for SONGS Unit 2 and has determined that further additional information is needed in order to complete our evaluation. The NRC staff's initial draft request for additional information (RAI) regarding the CAL response was transmitted to you on November 30, 2012. The staff's latest RAI is attached. The staff may develop additional questions, which we will transmit to SCE as they become available.

The NRC staff will hold a public meeting with SCE at NRC headquarters on December 18th to discuss the previous RAIs, these additional RAIs, and SCE's plans and schedule for response. Please contact me if you have any questions.

Sincerely,

Randy Hall, Senior Project Manager
San Onofre Special Projects Branch
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OFFICE OF NUCLEAR REACTOR REGULATION
REQUEST FOR ADDITIONAL INFORMATION
SOUTHERN CALIFORNIA EDISON
SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 2
RESPONSE TO MARCH 27, 2012, NRC CONFIRMATORY ACTION LETTER
DOCKET NO. 50-361
TAC NO. ME9727

By letter dated October 3, 2012, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12285A263; ADAMS Package No. ML122850320), Southern California Edison (SCE) submitted its response to the NRC Confirmatory Action Letter (CAL) dated March 27, 2012, for San Onofre Nuclear Generating Station (SONGS), Unit 2. The NRC staff is continuing its detailed review of SCE's CAL response for SONGS Unit 2 and has determined that additional information is needed in order to complete our evaluation. The staff's additional questions are stated in this draft request for additional information (RAI) below. The staff previously issued a set of RAI questions on this subject on November 30, 2012 (ADAMS Accession No. ML12338A110). For continuity, the numbering scheme for these additional questions begins where the prior RAI questions ended.

15. In Reference 1, Section 8.3.2, page 48 – How will the continued integrity of the non-stabilized, preventively-plugged tubes adjacent to the retainer bars be ensured? "Integrity" in this context refers to the tubes remaining intact and unable to cause damage to adjacent tubes.

16. Reference 1, Section 9.3, page 50 – Provide additional information concerning the "Operational Decision Making" process and describe how it would be applied if the proposed criterion is exceeded. Provide the procedural action statement.

17. Reference 1, Section 9.4.1, page 50 – Provide the procedural action levels/statements.

18. Reference 1, Section 11.1, page 52 – SCE proposes to upgrade the vibration and loose parts monitoring system (VLPMS) as a defense-in-depth measure to enhance plant monitoring capability to facilitate early detection of a steam generator tube leak and ensure immediate and appropriate plant operator and management response.

    Fluid Elastic Instability (FEI) was identified as a main cause of the tube wear for both the Unit 2 and 3 steam generators. The FEI experienced is due to a combination of the conditions of steam quality, secondary side fluid velocity in the vicinity of the tube bundle, and steam void fraction, and the degree of such fluid elastic instability is related to the damping provided by internal support structures. According to your report, "steam quality directly affects the fluid density outside the tube, affecting the level of

hydrodynamic pressure that provides the motive force for tube vibration. When the energy imparted to the tube from hydrodynamic pressure (density times velocity squared, or ρv^2) is greater than the energy dissipated through damping, FEI will occur." However, the proposed plant VLPMS enhancement does not appear to directly monitor steam quality, secondary side fluid velocity, or steam void fraction.

Please provide the following information to address the effectiveness of the enhanced VLPMS:

a. Describe the specific purpose of using the enhanced VLPMS equipment for monitoring steam generator performance. For example, is it to be used for monitoring acoustic noise indicative of flow velocity, steam quality, and void fraction, or for the measurement of metallic noise indicative of vibration of tubes against each other or against tube support structures? Exactly how will this be done? What is the theory of operation? If it will be used to monitor an increase in ρv^2 leading to the onset of FEI, provide a description of the correlation of the velocity of steam voids through the secondary side of the steam generator and the relative changes in characteristics of the signal output from the various VLPMS accelerometers. If it is to be used for detecting actual tube vibration, provide a description of the process that will be used for discerning actual tube vibration noise from background noise, and the required threshold identification criteria that will be applied to reach the conclusion that tube vibration is occurring.

b. Identify the ranges of amplitudes and frequencies of the acoustic noise signals from each accelerometer that are indicative of an approach to the conditions leading to FEI or actual tube vibration, and the reasons for selection of the more sensitive accelerometers. Also, discuss the required response time of the signal processing equipment needed to detect and continuously monitor either fluid velocities within the steam generator or tube impact noise, depending on the intended use of the enhanced VLPMS, and the actual response time capabilities of the equipment, from sensor through processed signal output, that is being proposed for use.

c. Discuss the acceptance criteria (e.g., magnitude of signal, plant power level, etc.) that will be used to establish the setpoints for the alarms described in Section 11 of your report: "The signals from these sensors are compared with preset alarm setpoints." Provide a description of how the alarm setpoints were established, and at what point during the start-up of Unit 2 will these alarm setpoints be calibrated into the VLPMS. If the setpoints have not yet been determined, provide a description of your plan for determining and implementing these settings.

d. Describe the planned operator actions and any changes to the procedures for responding to alarms or signals potentially indicative of tube-to-tube contact, including time limits for analyzing the signals and taking any necessary action including plant shutdown. Describe the lessons learned that have been drawn from the signals of potential metal-to-metal contact experienced in Unit 3 and how these lessons have been factored into current procedures.

e. A description of how you determined that acoustic noise monitoring and predictive signal processing was the best method for monitoring either the onset of FEI or actual tube vibration, including a list of other methods (e.g., time domain reflectivity probes calibrated for steam void propagation monitoring) that had been considered for enhancing steam generator tube monitoring during start-up of Unit 2, and the reasons for their rejection.

19. Reference 1, Section 11.2, page 52 – Provide additional details on how the GE Smart Signal System will be used in the context of tube-to-tube wear and/or the circumstances associated with tube-to-tube wear. What information/data will the system be evaluating? For what purpose?

20. Reference 3, page 17 of 129, refers to tube-to-support design clearance of 2 mils diametral. Confirm that this is the nominal diametral clearance under ambient conditions, or clarify the statement otherwise.

21. Reference 3, page 44 of 129, states that the plugged tubes have an effect on local thermal/hydraulic conditions upon returning to power and have been included in the stability ratio calculations. The staff interprets this to mean the effect of the plugged tubes on the calculated thermal/hydraulic conditions were considered in the stability ratio calculations and that the stability ratio calculations included the plugged (and stabilized) tubes. Is this correct? Clarify, if not.

22. Reference 3, page 57 of 129, first full paragraph beginning with the words "Figure 6-1" – The third sentence states, "... it is not practical to use an individual run of the quarter model as a single Monte Carlo trial for contact forces." However, the staff was unable to ascertain from the subsequent discussion exactly what was done as an alternative? Nor was the staff able to discern this from Reference 6, Appendix 9. Provide or cite by reference a more complete description of how the cumulative distributions of contact forces were determined. For example, what is a "run?" What does it mean to "combine runs?" How were zones employed in order to provide a more practical approach? Are all tubes in a given zone assumed to have the same initial clearances, final clearances, and contact forces? Do all AVB #5 in a zone have the same cumulative distribution of contact forces? Is a Monte Carlo performed for each zone?

23. Reference 3 – Provide figures similar to Figures 6-19 and 6-20 for Unit 3, SG E-088, and Unit 2, SG E-088.

24. Reference 3, page 59 of 129, last paragraph – The sentence, "AVBs 2, 3, 11 and 10 near row 27 have sporadic dents in the vicinity of the noses of AVBs 1, 4, 9 and 12" does not appear to make sense. Provide further clarification relative to the discussion of Figure 6-20.

25. Reference 3, page 59 of 129 – There is a statement in the last paragraph that reads, "Patterns of dents and associated high contact forces are in good agreement with the final quarter model calculations." Provide or show this comparison.

26. Reference 3, page 107 of 129, second to last paragraph – Provide additional details of the wear growth model at the tube supports. Were cumulative probability functions of observed wear rates constructed and randomly sampled when developing the contact force probability distributions at each intersection? Was total gap at each intersection (prior to applying temperature and allowing the model to settle, leading to the development of contact forces) assumed to be the sum of the manufacturing gap and the maximum wear depth?

27. Reference 6, Appendix 8, "SG Tube Flowering Analysis", page 8-2 (307 of 474) – MHI concludes, in part, that the tube-to-AVB gaps in the center columns increase due to hydrodynamic pressure by [ ] when the manufacturing tolerance dispersion is not taken into account. MHI also concludes that the gap increase due to hydrodynamic pressure is small when the manufacturing tolerance dispersion is taken into account. Discuss whether this latter finding may simply reflect the hydrodynamic pressures acting to relieve the tube-to-AVB contact forces caused by the manufacturing tolerance dispersion, such that the gaps are relatively unchanged relative to the case were the hydrodynamic pressure is not considered. Reference 6, Appendix 9, "Simulation of Manufacturing Dispersion for Unit-2/3," does not seem to make specific mention of whether the calculated tube-to-AVB contact forces directly considered the effect of the hydrodynamic effect on tube-to-tube contact forces, but the staff understands that they did not. If the staff's understanding is correct, explain how the resulting contact forces are conservative.

28. Reference 5, Section 2.6.1 – What is the estimated growth rate of the tube-to-tube wear in steam generator 3E0-88, tube R106C78? Describe how it was determined.

29. Reference 5, Figures 2-12 and 2-13 – Provide similar figures for Case 78 (all AVBs missing).

30. Reference 1, Figure 8-2 – Provide similar figure for maximum interstitial velocities.

31. In References 7 and 8 (specifically, in Section 7.2 of Reference 7 and in Section 8.0 of Reference 8), AREVA used Revision 3 of the Electric Power Research Institute "Steam Generator Management Program: Steam Generator Integrity Assessment Guidelines," in part, to assess the most limiting structural integrity performance criteria (e.g., the more limiting structural limit determined from (a) the three times the normal operating differential pressure criterion or (b) the safety factor of 1.2 on combined primary loads and 1.0 on axial secondary load criterion). In some cases, it appears that the limits in the Integrity Assessment Guidelines may have been based on specific tests and plant data. Please discuss whether you have confirmed the applicability of the limits in the Integrity Assessment Guidelines (in particular, those related to when non-pressure loads need to be considered) to the SONGS replacement steam generators.

REFERENCES

1. Letter from Peter T. Dietrich, SCE, to Elmo E. Collins, USNRC, "Docket No. 50-361, Confirmatory Action Letter – Actions to Address Steam Generator Tube Degradation, San Onofre Nuclear Generating Station, Unit 2," October 3, 2012 (ADAMS Package No. ML122850320); Enclosure 2, "San Onofre Nuclear Generating Station Unit 2 Return to Service Report, Revision 0." (ADAMS Accession No. ML12285A263)

2. Attachment 6 to Reference 1, "SONGS U2C17 Steam Generator Operational Assessment," Appendix A, Revision 2, "SONGS U2C17 Outage - Steam Generator Operational Assessment," prepared by Areva NP Inc. Document No. 51-9182833-002 (NP), Revision 2), October 2012. (ADAMS Accession No. ML12285A267)

3. Attachment 6 to Reference 1, "SONGS U2C17 Steam Generator Operational Assessment," Appendix B, Revision 0, "SONGS U2C17 Steam Generator Operational Assessment for Tube-to-Tube Wear," prepared by Areva NP Inc. Document No. 51-9187230-000 (NP), Revision 0), October 2012. (ADAMS Accession Nos. ML12285A267, ML12285A268, and ML12285A269)

4. Attachment 6 to Reference 1, "SONGS U2C17 Steam Generator Operational Assessment," Appendix C, "Operational Assessment for SONGS Unit 2 SG for Upper Bundle Tube-to-Tube Wear Degradation at End of Cycle 16," prepared by Intertek APTECH for Areva, Report No. AES 12068150-2Q-1, Revision 0, September 2012. (ADAMS Accession No. ML12285A269)

5. Attachment 6 to Reference 1, "SONGS U2C17 Steam Generator Operational Assessment," Appendix D, "Operational Assessment of Wear Indications In the U-Bend Region of San Onofre Unit 2 Replacement Steam Generators," prepared by Westinghouse Electric Company LLC, Report No. SG-SGMP-12-10, Revision 3, October 2012. (ADAMS Accession No. ML12285A269)

6. Attachment 4 to Reference 1, "MHI Document L5-04GA564, Tube Wear of Unit-3 RSG - Technical Evaluation Report," Revision 9, October 2012, prepared by Mitsubishi Heavy Industries, LTD. (ADAMS Accession Nos. ML12285A265, ML12285A266, and ML12285A267)

7. Attachment 2 to Reference 1, AREVA NP Inc., Engineering Information Record, Document No. 51-9182368 – 003 (NP), "SONGS 2C17 Steam Generator Condition Monitoring Report." (ADAMS Accession No. ML12285A263)

8. Attachment 3 to Reference 1, AREVA NP Inc., Engineering Information Record, Document No. 51-9180143 – 001 (NP), "SONGS Unit 3 February 2012 Leaker Outage - Steam Generator Condition Monitoring Report." (ADAMS Accession No. ML12285A264)

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	Docket Nos. 50-361-CAL & 50-362-CAL
SOUTHERN CALIFORNIA EDISON COMPANY	)	
	)	
(San Onofre Nuclear Generating Station, Units 2 and 3)	)	December 19, 2012

CERTIFICATE OF SERVICE

I hereby certify that, on this date, a copy of "Petitioner's reply to NRC staff's and SCE's answers to motion to amend the proposed scheduling order and clarify scope of disclosure" was filed through the E-Filing system.

Signed (electronically) by Richard Ayres
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