Lent, Susan

From:	Hall, Randy
Sent:	Friday, March 15, 2013 1:41 PM
To:	Ryan.Treadway@sce.com
Cc:	joseph.bashore@sce.com; John.Brabec@sce.com; Mark.Morgan@sce.com; Lee.Kelly@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; Andersen, James; Lund, Louise
Subject:	Draft Request for Additional Information on SCE's Response to NRC's Confirmatory Action Letter for San Onofre Nuclear Generating Station Unit 2 RAIs 68-72 (ME9727)
Attachments:	RAIs 68 to 72.docx

March 15, 2013

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. In support of that response, SCE submitted proprietary versions of several reports by letter dated November 28, 2012 (ADAMS Accession No. ML12348A287).

The CAL specifies SCE's commitments to provide to NRC the results of your assessment of the replacement steam generator tube wear identified at SONGS, the actions taken to prevent loss of tube integrity in Unit 2, and the basis for SCE's conclusion that there is reasonable assurance that the unit can be operated safely. The CAL further stipulates that it will remain in effect until the NRC has reviewed SCE's response to the actions specified therein, including responses to staff's questions and the results of your evaluations; and the NRC staff communicates to SCE in writing that it has concluded that Unit 2 can be operated without undue risk to public health and safety, and the environment.

The NRC staff is continuing its detailed review of the information provided by SCE in support of your conclusion that SG tube integrity will be maintained, and that there is reasonable assurance, as required by NRC regulations, that Unit 2 will operate safely. To complete our review, the staff has determined that additional information is needed regarding the operational assessments discussed in your CAL response. The staff's latest request for additional information (RAI) is attached. The NRC staff previously transmitted an RAI to SCE in the form of 32 initial questions, which were sent by letter dated December 26, 2012 (ADAMS Accession No. ML12361A065). The additional NRC questions below address your responses to the staff's RAI questions 2 and 3, submitted by SCE on February 25, 2013 (ADAMS Accession No. ML13058A026). In order to continue our review, we request your prompt response to the enclosed questions.

The NRC staff may develop additional questions, which we will transmit to SCE as they become available. Please let me know if you have any questions.

Sincerely,

Randy Hall, Senior Project Manager
San Onofre Special Projects Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation
USNRC
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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

On March 27, 2012, the NRC issued a Confirmatory Action Letter (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12087A323) to Southern California Edison (SCE) for the San Onofre Nuclear Generating Station (SONGS), Units 2 and 3. The Confirmatory Action Letter (CAL) confirmed the commitments made in SCE's March 23, 2012, letter entitled, "Steam Generator Return-to-Service Action Plan" (RTS Action Plan; ADAMS Accession No. ML12086A182). Commitment 2 of the RTS Action Plan states in part that SCE will determine the cause(s) of the tube-to-tube interactions that resulted in steam generator (SG) 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. Commitment 3 of the RTS Action Plan states in part that, prior to entry of Unit 2 into Mode 2, SCE will provide to the NRC the results of SCE's assessment of Unit 2 steam generators, and the basis for SCE 's conclusion that there is reasonable assurance, as required by NRC regulations, that Unit 2 will operate safely.

By letter dated October 3, 2012 (ADAMS Accession No. ML122850320), SCE submitted its response to the NRC Confirmatory Action Letter (CAL), for SONGS Unit 2. By letter dated November 28, 2012 (ADAMS Accession No. ML12348A287), SCE submitted proprietary versions of several reports enclosed with the October 3, 2012 CAL response, along with affidavits supporting SCE's request for withholding the proprietary information under 10 CFR 2.390.

Steam generator tubes are an integral part of the reactor coolant pressure boundary and are relied on to maintain primary system pressure and inventory. The operating licenses for SONGS Units 2 and 3 require SCE to conduct a Steam Generator Program (Technical Specification (TS) 5.5.2.11), to ensure that steam generator tube integrity is maintained. TS 5.5.2.11 specifies performance criteria for maintaining SG tube integrity. The processes used to meet the SG performance criteria are defined by NEI 97-06, "Steam Generator Program Guidelines." These processes include performing detailed technical evaluations, called operational assessments, to demonstrate that tube structural integrity will be maintained under normal and accident conditions for the proposed operating cycle.

The NRC staff is continuing its detailed review of the information provided by SCE in support of SCE's conclusion that SG tube integrity will be maintained, and that there is reasonable assurance, as required by NRC regulations, that Unit 2 will operate safely. To complete this review, the staff has determined that additional information is needed regarding the operational assessments discussed in your CAL response.

The staff's latest request for additional information (RAI) is attached. The NRC staff previously provided an RAI regarding the CAL response to SCE in the form of 32 initial questions, which were sent by letter dated December 26, 2012 (ADAMS Accession No. ML12361A065). SCE responded to those 32 questions in multiple letters. The additional NRC questions below address SCE's responses to RAI questions 2 and 3, submitted on February 25, 2013 (ADAMS Accession No. ML13058A026).

The staff also transmitted additional RAIs via electronic mail to SCE on February 1, 2013 (5 questions), February 20, 2013 (15 questions), and February 21, 2013 (15 questions). For continuity, the numbering scheme for the additional questions below begins where the NRC's previous RAI questions ended.

68. Reference 1, Response to RAI 2 – Provide wear depth distributions for the following, for both Unit 3 SGs:

    - Anti-vibration bar (AVB) wear depth distributions for the group of AVBs, B03 through B10, for tubes without tube-to-tube wear (TTW)
    - AVB wear depth distributions for the group of AVBs, B03 through B10, for tubes with TTW
    - AVB wear depth distribution for the group of AVBs, B01, B02, B11, B12, for tubes without TTW
    - AVB wear depth distribution for the group of AVBs, B01, B02, B11, B12, for tubes with TTW
    - Tube support plate (TSP) wear depth distribution (top TSP only) for tubes without TTW
    - TSP wear depth distribution (top TSP only) for tubes with TTW

69. Reference 1, Response to RAI 2 – There is a statement in the middle of page 3 of 18, "The initiation-time model for TTW uses a wear index based only on tube to AVB wear in the upper supports (B03 through B10)." It is further stated on the same page (in item 3), "Thus the increase in AVB wear index after TTW is mainly due to the increase in locations with AVB wear, including wear locations at the lower supports (B01, B02, B11, and B12)." The second sentence appears inconsistent with the first (i.e., new wear index definition doesn't include wear from lower supports, yet wear at lower supports is causing wear index to increase). Please clarify the apparent inconsistency.

70. Reference 1, Response to RAI 2 – It is unclear to the staff how TTW initiation times were calculated (see description on pages 4 and 5 (of 18)). Describe each individual step, in sequential order, to calculating TTW initiation time for a given tube, for a given trial. Provide (or reference) in figure form all distributions that were sampled.

71. Reference 1, Response to RAI 2 – It is stated on page 4 of 18 that a median value of initiation time was selected for each tube based on 1000 trials. For purposes of evaluating a conservative probability estimate that one or more tubes do not meet the

3 delta P criterion, why is it conservative to consider a median value of initiation time for each tube, rather than sampling from the distribution of initiation times developed for each tube during a given Monte Carlo trial of the tube population? Would sampling the distribution of initiation times for each tube be a more conservative approach, as it would be expected to stretch out the tails of the resulting overall probability distribution for not meeting the 3 delta P criterion? For a probabilistic assessment such as this, what is the justification for not considering a potentially large source of uncertainty associated with a key input parameter?

72. Reference 1, Response to RAI 3 – This response did not fully address RAI question 3. What is the sensitivity of the results in Figure 5-4 of Reference 4 to the different formulations of wear index in Equations 1 through 5?

REFERENCE

1. Letter from Richard J. St. Onge, SCE, to Document Control Desk, USNRC, "Response to Request for Additional Information (RAIs 2, 3, and 4) Regarding Confirmatory Action Letter Response," February 25, 2013 (ADAMS Accession No. ML13058A026).