

## DiabloCanyonNPEm Resource

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**From:** Ferrer, Nathaniel  
**Sent:** Monday, September 27, 2010 12:34 PM  
**To:** Grebel, Terence; Soenen, Philippe R  
**Cc:** DiabloCanyonNPEm Resource  
**Subject:** RAI letter dated September 23, 2010  
**Attachments:** RAI Related to the Review of the DCPD LRA - (Set 25) Time Limited Aging Analyses.pdf

Terry and Philippe,

Attached is an electronic copy of RAI letter dated September 23, 2010. A formal copy is being sent via mail.

Nathaniel Ferrer  
Project Manager  
Division of License Renewal  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
(301)415-1045

**Hearing Identifier:** DiabloCanyon\_LicenseRenewal\_NonPublic  
**Email Number:** 1250

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**Subject:** RAI letter dated September 23, 2010  
**Sent Date:** 9/27/2010 12:33:50 PM  
**Received Date:** 9/27/2010 12:33:55 PM  
**From:** Ferrer, Nathaniel

**Created By:** Nathaniel.Ferrer@nrc.gov

**Recipients:**

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Tracking Status: None  
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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

September 23, 2010

Mr. John Conway  
Senior Vice President  
Generation and Chief Nuclear Officer  
Pacific Gas and Electric Company  
77 Beale Street, MC B32  
San Francisco, CA 94105

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION RELATED TO THE REVIEW OF THE DIABLO CANYON NUCLEAR POWER PLANT, UNITS 1 AND 2, LICENSE RENEWAL APPLICATION (TAC NOS. ME2896 AND ME2897) – TIME LIMITED AGING ANALYSES

Dear Mr. Conway:

By letter dated November 23, 2009, Pacific Gas & Electric Company submitted an application pursuant to Title 10 of the *Code of Federal Regulations* Part 54, to renew the operating licenses for Diablo Canyon Nuclear Power Plant, Units 1 and 2, for review by the U.S. Nuclear Regulatory Commission (NRC or the staff). The staff is reviewing the information contained in the license renewal application and has identified, in the enclosure, areas where additional information is needed to complete the review.

The request for additional information was discussed with Mr. Terry Grebel, and a mutually agreeable date for the response is within 30 days from the date of this letter. If you have any questions, please contact me at 301-415-1045 or by e-mail at [nathaniel.ferrer@nrc.gov](mailto:nathaniel.ferrer@nrc.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "N. Ferrer", written over a horizontal line.

Nathaniel Ferrer, Project Manager  
Projects Branch 2  
Division of License Renewal  
Office of Nuclear Reactor Regulation

Docket Nos. 50-275 and 50-323

Enclosure:  
As stated

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Diablo Canyon Nuclear Power Plant, Units 1 and 2  
License Renewal Application  
Request for Additional Information Set 25  
Time Limited Aging Analyses

**RAI 4.1-3**

License Renewal Application (LRA) Section 4.3.2.5 states that the cumulative usage factor (CUF) calculations for the steam generator (SG) tubes do not need to be identified as a time limited aging analysis (TLAA) because the applicant is required to perform inservice inspections (ISI) of the SG tubes to comply with Technical Specification, and that as a result of this activity, the CUF calculations for the SG tubes do not serve a relevant safety basis.

The staff noted that the safety basis for performing the ISIs of the SG tubes is based on 10 CFR 50.55(a) and Technical Specification ISI requirements. In contrast, the safety basis for performing the CUF calculation for the SG tubes is based on ASME Section III requirements. FSAR Table 5.2-2 indicates that ASME Section III 1965 inclusive of Winter 1965 Addenda are the applicable design codes. Therefore the applicant is required to comply with 10 CFR 50.55a requirements in accordance with ASME Section III.

Provide and justify a basis for concluding that the CUF calculation for the SG tubes does not serve a safety basis and does not need to be identified as a TLAA when considering that this analysis was performed to comply with ASME Section III design requirements for the SG tubes.

**RAI 4.1-4**

**Background:** LRA Section 4.3.2.10 states that the reactor coolant pumps (RCPSs) are Westinghouse Model 93A fabricated from SA351 CF8 cast stainless steel. The applicant further stated that the casings are required to be inspected per ASME Section XI, Table IWB-2500-1. The applicant further indicated that ASME Code Case N-481 allows the replacement of the volumetric examination of the primary loop pump casing with a fracture mechanics based integrity evaluation supplemented by specific visual inspections. The applicant stated that the generic faulted screening loads in WCAP-13045 were not bounding. The applicant further stated that a plant-specific Westinghouse analysis, WCAP-13895, re-performed portions of the WCAP-13045 that were not bounding for the applicant's design. The applicant stated that this analysis is not a TLAA because (1) the referenced material was fully aged with fracture toughness properties at the saturation levels and (2) fatigue crack growth analysis was not considered in the WCAP-13895 because Code Case N-481 does not require a fatigue crack growth analysis.

ASME Code Case N-481 is endorsed in Regulatory Guide 1.147, as referenced for acceptability in 10 CFR 50.55(a). The staff noted that to use the alternative inspection criteria provision (d) of the Code Case, an applicant would need to perform an evaluation of their RCP casing that addresses all following technical considerations:

- (1) evaluates material properties, including fracture toughness values;
- (2) performs a stress analysis of the pump casing;

ENCLOSURE

- (3) includes a review of the operating history of the pump casing;
- (4) selects locations for postulating flaws;
- (5) postulates the occurrence of a one-quarter thickness flaw with an aspect ratio of 6:1;
- (6) establishes the stability of the selected flaw under governing stress conditions; and
- (7) considers thermal aging embrittlement and any other processes that may degrade the properties of the pump casings during service.

The staff noted that provision (e) of the Code Case mandated that a report of the evaluation be submitted to the NRC for review.

Issue: The staff has confirmed that the plant-specific analysis, WCAP-13895, does not include a fatigue flaw growth analysis of the pump casings. The staff noted that the lack of a plant-specific fatigue flaw growth analysis in WCAP-13895 does not invalidate the applicability of the generic fatigue flaw analysis in WCAP-13045 to the applicant's current licensing basis (CLB) because the scope of WCAP-13895 identified that generic portions of WCAP-13045 which were not replaced by the plant-specific report were still applicable. Therefore, the lack of a plant-specific fatigue flaw growth analysis in WCAP-13895 does not constitute a valid basis for concluding that there are not any TLAA's associated with the use of Code Case N-481 because the generic fatigue flaw growth analysis in WCAP-13045 may still be applicable to the applicant's CLB and may need to be identified as a TLAA for the LRA.

Request: Justify your basis for not identifying the generic fatigue flaw growth analysis in Chapter 9.0 of WCAP-13045 as a TLAA.

#### **RAI 4.1-5**

Background: 10 CFR 54.21(c)(2) requires an applicant to provide a list of all exemptions that have been granted pursuant to 10 CFR 50.12 and that are based on a TLAA. LRA Section 4.8 provides the applicant's list of exemptions that need to be identified in accordance with 10 CFR 54.21(c)(2). The applicant identified leak-before-break (LBB) as the only exemption that was granted based on a TLAA.

By letter dated May 3, 1999, the staff issued Pacific Gas and Electric Company (PG&E) an exemption under 10 CFR 50.12 granting PG&E the right to apply ASME Code Case N-514 as the basis for establishing the low temperature over-pressurization protection (LTOP) system pressure lift and arming temperature setpoints for the credited power operated relief valves (PORVs). It also granted the use of the Code Case as a basis for setting the LTOP system pressure lift set points for the relief valves to a pressure value that is equivalent to 110 percent of the limiting pressure established in the approved P-T limits curve for the system's temperature enable setpoint. The staff noted that the exemption granting the use of the Code Case also permitted the applicant to set the arming temperature for the LTOP system in accordance with the Code Case N-514 arming temperature setpoint methodology.

LRA Section 4.2.3 identifies that the P-T limits for Units 1 and 2 are TLAA's for the LRA. The staff noted that the LTOP system setpoints and P-T limits are currently updated according to NRC-approved Pressure Temperature Limits Report (PTLR) and that the current version is PTLR-1, Revision 9.

Issue: The staff noted that granting this exemption and the establishment of the LTOP system pressure setpoint was a function of the limiting pressure value established in the P-T limit curves for the LTOP system enable temperature. The staff's position is that, if this exemption remains in effect for the CLB, the exemption may need to be identified as an exemption for the LRA that meets the requirements in 10 CFR 54.21(c)(2) because granting the exemption under 10 CFR 50.12 was based on a value in the approved P-T limits and the P-T limits for the facilities have been identified as a TLAA's for the LRA.

Request: Clarify whether the exemption on Code Case N-514 remains in effect for the CLB. If the exemption on Code Case N-514 is still in effect, provide your basis for not identifying this exemption in accordance with 10 CFR 54.21(c)(2).

September 23, 2010

John Conway  
Senior Vice President  
Generation and Chief Nuclear Officer  
Pacific Gas and Electric Company  
77 Beale Street, MC B32  
San Francisco, CA 94105

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Sincerely,  
*IRA*

Nathaniel Ferrer, Safety Project Manager  
Projects Branch 2  
Division of License Renewal  
Office of Nuclear Reactor Regulation

Docket Nos. 50-275 and 50-323

Enclosure:  
As stated

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Letter to John Conway from Nathaniel Ferrer dated September 23, 2010.

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