



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

September 1, 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) – AGING  
MANAGEMENT PROGRAMS

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

cc w/encl: Distribution via Listserv

Diablo Canyon Nuclear Power Plant, Units 1 and 2  
License Renewal Application  
Request for Additional Information Set 22  
Aging Management Programs – Clarification on Responses

Based on the staff's review of Pacific Gas and Electric Company's (PG&E) responses dated July 7, 2010, and July 19, 2010, and as discussed in telephone conferences held on August 12, 2010, and August 18, 2010, please provide responses to the following:

**RAI B2.1.19-2 (Follow-up)**

**Background:**

By letter dated June 14, 2010, the staff issued request for additional information (RAI) B2.1.19-2 requesting that the applicant either justify the use of One-Time Inspection of ASME Code Class 1 Small-Bore Piping Program, or provide a plant-specific aging management program (AMP) for managing aging during the period of extended operation.

The applicant provided its response in a letter dated July 7, 2010. The staff finds that the applicant's response did not adequately address why the One-Time Inspection program is still applicable given the fact that it has experienced multiple failures in Class 1 socket welds. Additionally, the response did not provide information regarding socket weld sample selection.

**Issue:**

GALL AMP XI.M35, "One-Time Inspection of ASME Code Class 1 Small-Bore Piping," recommends the use of the AMP only for those plants that have not experienced cracking of ASME Code Class 1 small-bore piping resulting from stress corrosion or thermal and mechanical loading. It further states that for those plants that have experienced cracking, it recommends periodic inspection of the subject piping to be managed by a plant-specific AMP.

GALL AMP XI.M35 also specifies that, "This inspection should be performed at a sufficient number of locations to ensure an adequate sample. This number, or sample size, is based on susceptibility, inspectability, dose considerations, operating experience, and limiting locations of the total population of ASME Code Class 1 small-bore piping locations."

**Request:**

- 1) Discuss all failures in Class 1 small bore piping. Justify the use of One-Time Inspection of ASME Code Class 1 Small-Bore Piping Program, or provide a plant-specific AMP for managing aging during the period of extended operation.
- 2) Provide information regarding the number of socket welds selected for inspection and the sampling methodology. Provide the technical basis for why the sampling is statistically significant and adequate.

ENCLOSURE

**RAI B2.1.28-1 (Follow-up)**

**Background:**

By letter dated July 19, 2010, the applicant responded to RAI B2.1.28-1 regarding the three tier acceptance criteria which was developed for acceptance for Diablo Canyon Nuclear Power Plant containments concrete surface conditions. In the response, the applicant states that procedure NDE VT 3C-1, which originally contained a three tier acceptance criteria has been revised as to clarify exactly when a corrective action document is required to be written. In addition, the applicant states that the third-tier criterion is based on an engineering evaluation performed in PG&E Calculation No. 2305C, Revision 2, for determining threshold levels (acceptable for continued operability).

**Issues:**

- 1) Revision 3 of procedure NDE VT 3C-1 now has two tier acceptance criteria. For all degradations that are in excess of Tier 1 criteria, the procedure recommends that the responsible engineer's review is required.
- 2) Calculation No. 2305C, Revision 2, has an engineering evaluation for determining threshold levels for three tiers. The evaluation in the calculation does not distinguish between operability and long term operation of the plant.
- 3) Section 3.0 of the calculation allows a crack width of 0.025 inch instead of the 0.015 inch listed in ACI 349.3R. The justification for increasing the crack width limit is not clearly explained in the calculation. Revision 3 of procedure NDE VT 3C-1 also uses a crack width limit of 0.025 inch for Tier 1.

**Requests:**

- 1) Explain the reason for the inconsistency between Calculation No. 2305C, Revision 2, and Revision 3 of Procedure NDE VT 3C-1 regarding the use of different tiers. This is significant because Section 3.0 of Calculation No. 2305C states that the acceptance criteria defined in the calculation will be documented in Procedure NDE VT 3C-1.
- 2) Explain why Calculation No. 2305C does not have separate concrete surface examination acceptance criteria for operability and long term operation of the plant.
- 3) Provide justification for use of crack width limit of 0.025 inch for Tier 1 criteria.

**RAI B2.1.32-1 (Follow-up)**

By letter dated July 19, 2010, the applicant responded to RAI B2.1.32-1 regarding the Structures Monitoring Program acceptance criteria categories. In the response, the applicant provides a description of structural concrete condition classifications. However, the descriptions are qualitative and make no mention of quantitative criteria. The category descriptions leave much of the deficiency rating to the judgment of the responsible engineer.

A lack of quantitative criteria for condition classification and acceptance can lead to differences in classification by different responsible engineers. The GALL Report states that acceptance criteria should be commensurate with industry standards and offers ACI 349.3R as an

acceptable basis for developing acceptance criteria. ACI 349.3R, Chapter 5 provides detailed quantitative acceptance criteria. In addition, the GALL Report states that the plant-specific Structures Monitoring Program is to contain sufficient detail on acceptance criteria to conclude that this program attribute is satisfied.

Explain how quantitative guidelines are incorporated into the Structures Monitoring Program acceptance criteria. Discuss any relevant references or guidance documents which contain the acceptance criteria.

**RAI B2.1.32-2 (Follow-up)**

By letter dated July 19, 2010, the applicant responded to RAI B2.1.32-2 regarding the Structures Monitoring Program inspection interval. In the response, the applicant stated that inspections are scheduled such that the accessible areas of both units are inspected over a maximum ten year interval, except water control structures, for which all accessible areas of both units are inspected at a frequency of no more than five years. The applicant states that the established frequencies provide assurance that any age-related degradation is detected at an early stage and that appropriate corrective actions can be taken.

The applicant did not include structures exposed to a natural environment or structures inside primary containment within the five year inspection interval as recommended in ACI 349.3R, Table 6.1. Due to environmental factors, such as winds, temperature fluctuations, humidity, radiation, chloride exposure, etc., the staff disagrees that a ten year inspection interval is appropriate for structures exposed to a natural environment or inside primary containment.

Explain how the Structures Monitoring Program inspection interval is aligned with the guidance in ACI 349.3R, or provide a detailed technical justification for a longer inspection interval for structures inside primary containment or exposed to a natural environment. An adequate explanation needs to address all environmental factors to which a structure may be exposed, as well as relevant operating experience supporting the adequacy of a longer inspection interval (e.g., humidity, high winds, temperature fluctuations, radiation, etc.).

**RAI B2.1.32-4 (Follow-up)**

By letter dated July 19, 2010, the applicant responded to RAI B2.1.32-4 regarding Units 1 and 2 spent fuel pool leakage.

In its response, the applicant stated that Unit 1 experiences occasional minor leakage within the leak chases during refueling outages, and Unit 2 experiences a slight increase of leakage within the leak chases during outages.

Explain why there is spent fuel pool leakage at Unit 1 only during outages, and why the leakage increases during outages at Unit 2.

**RAI B2.1.33-1 (Follow-up)**

By letter dated July 19, 2010, the applicant responded to RAIs B2.1.33-1, B2.1.33-2, and B2.1.33-3 regarding water control structures. The responses discussed past inspections of the intake structure, discharge structure, and discharge conduits.

It is unclear from the response that the structures have been inspected on a five year interval, as recommended by the GALL AMP XI.S7, "Water-Control Structures." It is also unclear if different inspection frequencies will be used for different structures, or portions of structures.

Identify the inspection frequency that will be used for the Water-Control Structures Program during the period of extended operation. If different frequencies will be used for different structures, or portions of structures, clearly identify each 'structure – inspection frequency' combination. Explain whether the inspection frequency during the period of extended operation requires an 'enhancement' to the existing program.

**RAI B2.1.33-3 (Follow-up)**

By letter dated July 19, 2010, the applicant responded to RAI B2.1.33-3 regarding the circulating water discharge conduits. The response explained that portions of the discharge conduits are inaccessible for inspection due to marine growth. The response also discussed inspections in 2001 (Unit 2) and 2002 (Unit 1), with the next inspection scheduled for 2011 (Unit 2) and 2012 (Unit 1). The response stated that these inspections will require removal of marine growth.

It is unclear from the response which portions of the discharge structures are inaccessible for inspection due to marine growth. It is also unclear how frequently the marine growth is removed, and when it is removed, what portion of the inaccessible area is made accessible.

Quantify the portion of discharge conduit that is inaccessible due to marine growth. Explain how the inaccessible portions will be inspected during the period of extended operation. Include frequencies for removing the marine growth, and if the marine growth is removed on a sampling basis explain how the sample size and location will be determined.

September 1, 2010

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Senior Vice President  
Generation and Chief Nuclear Officer  
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Sincerely,

/RA/

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 B. Ferrer dated September 1, 2010

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