



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

January 25, 2011

LICENSEE: Pacific Gas and Electric Company
FACILITY: Diablo Canyon Nuclear Power Plant, Units 1 and 2
SUBJECT: SUMMARY OF TELEPHONE CONFERENCE CALL HELD ON
DECEMBER 16, 2010, BETWEEN THE U.S. NUCLEAR REGULATORY
COMMISSION AND PACIFIC GAS AND ELECTRIC COMPANY CONCERNING
REQUESTS FOR ADDITIONAL INFORMATION RELATED TO THE DIABLO
CANYON NUCLEAR POWER PLANT, UNITS 1 AND 2, LICENSE RENEWAL
APPLICATION (TAC NUMBERS ME2896 AND ME2897)

The U.S. Nuclear Regulatory Commission (NRC or the staff) and representatives of Pacific Gas and Electric Company (PG&E or the applicant) held a telephone conference call on December 16, 2010, to obtain clarification on the staff's draft requests for additional information (D-RAIs) regarding the Diablo Canyon Nuclear Power Plant license renewal application.

By emails dated November 29 and 30, 2010, the staff sent PG&E D-RAIs regarding aging management programs and TLAAs. The applicant reviewed the information contained therein, and requested a telephone conference call. The telephone conference call was useful in clarifying the intent of the staff's D-RAIs. Enclosure 1 provides a listing of the participants. Enclosure 2 provides discussions on the D-RAIs for which the applicant requested clarification. No changes to other D-RAIs were necessary as a result of this telephone conference call. Formal RAIs will be issued by a separate letter.

The applicant had an opportunity to comment on this summary.

A handwritten signature in black ink, appearing to read "N. Ferrer", written in a cursive style.

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

Docket Nos. 50-275 and 50-323

Enclosures:
As stated

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TELEPHONE CONFERENCE CALL
DIABLO CANYON NUCLEAR POWER PLANT, UNITS 1 AND 2
LICENSE RENEWAL APPLICATION
LIST OF PARTICIPANTS
DECEMBER 16, 2010

PARTICIPANTS:

Nate Ferrer
Jim Medoff
Yogen Garud
Terry Grebel
Michelle Albright
Dave Gerber
Kevin Braico
Brett Lynch
Ranjit Lovell
David Kunsemiller
Chalmer Myer

AFFILIATIONS:

U.S. Nuclear Regulatory Commission (NRC)
NRC
Argonne National Laboratory
Pacific Gas and Electric Company (PG&E)
PG&E
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Strategic Teaming And Resource Sharing (STARS)
STARS

DIABLO CANYON NUCLEAR POWER PLANT, UNITS 1 AND 2
LICENSE RENEWAL APPLICATION
REQUEST FOR ADDITIONAL INFORMATION
TIME-LIMITED AGING ANALYSIS

D-RAI 4.3-15

The applicant includes its environmentally-assisted metal fatigue analyses for specific reactor coolant pressure boundary (RCPB) components in LRA Section 4.3.4. The applicant includes the following seven components in its environmentally-assisted fatigue analysis calculations in conformance with the NUREG/CR-6260 recommendations:

1. RV shell to lower head juncture
2. RV inlet nozzles
3. RV outlet nozzles
4. Pressurizer surge lines (i.e., pressurizer surge line nozzle to the hot leg)
5. Charging line nozzles
6. Safety Injection nozzles
7. Residual Heat Removal (RHR) line tee

The locations selected by the applicant are consistent with the recommended locations for PWR designs in Table 5-98 of NUREG/CR-6260 for older vintage Westinghouse designed nuclear power plants, which is consistent with SRP-LR Sections 4.3.1.2 and 4.3.2.2.

In LRA Section 4.3.4, the applicant identifies that the F_{en} adjustment factors in LRA Tables 4.3-8 and 4.3-9 are based, in part, on assumed dissolved oxygen content for the reactor coolant system (RCS) coolant of less than 0.05 ppb dissolved oxygen contents. In LRA Section 4.3.4, the applicant also identifies that the F_{en} adjustment factors that were used for the recalculations of the environmental CUF values for the charging system nozzles, safety injection nozzles, and surge line nozzles in LRA Table 4.3-9 were based on the strain rate methodology in Materials Reliability Program (MRP) Report No. MRP-47, and that the revised F_{en} adjustment factors for these components were derived from the report using the actual stresses from the load pairs for the limiting design transients that were applicable to these nozzle components.

Issue 1: LRA Table 4.3-3, for RV components, and LRA Table 4.3-6, for Class 1 pressurizer components, the applicant reported that some of the RV and pressurizer components had either 40-year design basis CUFs or 60-year projected CUFs that were greater than those used for the corresponding pressurizer or RV locations selected in the applicant environmentally-assisted fatigue analysis evaluation:

- Pressurizer spray nozzles – Unit 1 is the limiting unit with a 50-year design basis CUF value of 0.947 and a 60-year projected CUF of 1.136 for its spray nozzles
- Pressurizer heat penetration nozzles – unit 1 is the limiting unit 50-year design basis CUF value of 2.964 and a updated 60-year projected CUF of 0.940
- RV bottom mounted instrumentation nozzles, which are nickel alloy RCPB component locations – with a with a 50-year design basis CUF value of 0.378 and a 60-year projected CUF of 0.454

However, the staff noted that the applicant did not include these component locations in the environmentally-assisted fatigue calculations.

The staff is concerned whether additional components (beyond those of NUREG/CR-6260) needed to be considered for environmental effects of reactor water on the CUF, consistent with the SRP and GALL guidance to consider environmental effects for the NUREG/CR-6260 locations "at a minimum" (see SRP-LR Sections 4.3.2.2 & 4.3.3.2 and Item 5 of GALL Section X.M1).

Request 1: Clarify whether any additional RCPB components were considered for inclusion in the environmentally-assisted fatigue analyses beyond those assessed in LRA Tables 4.3-8 and 4.3-9.

If there were other components considered, justify why these additional RCPB components were not included within the scope of those components that were selected for environmentally-assisted fatigue analyses.

If other components were not considered, justify why additional RCPB components, beyond those in NUREG/CR-6260, were not considered for environmental effects of reactor water on the CUF, consistent with the recommendations in the GALL Report and SRP-LR, based on the magnitude of the design basis or 60-year projected CUF when compared to those locations selected for the environmentally-assisted fatigue analysis in LRA Tables 4.3-8 and 4.3-9.

Issue 2: LRA Tables 4.3-8 and 4.3-9 indicate that the applicant's environmentally-assisted metal fatigue analysis locations include both low alloy steel components (the topic of NUREG/CR-6583) and stainless steel components (the topic of NUREG/CR-5704). The applicant discusses the assumed dissolved oxygen (DO) content of less than 0.05 ppm DO for the derivation of F_{en} factors for stainless steel reactor coolant pressure boundary (RCPB) components; however, the staff is unclear regarding the assumed DO content for the derivation of F_{en} factors for the low alloy steel components.

Request 2: Discuss and provide justification for the assumed DO concentration used in the derivation of F_{en} factors for the low alloy steel RCPB components that were evaluated for environmentally-assisted fatigue effects. Justify why a F_{en} factor of 2.46 is considered to be conservative for these low alloy steel component locations.

Issue 3: In LRA Section 4.3.4, the applicant identified that the F_{en} factors for the stainless steel safety injection (SI) nozzles, charging nozzles, and hot leg surge nozzle safe ends were recalculated using the strain rate methodology in Materials Reliability Program (MRP) Report No. MRP-47. According to the results reported in LRA Table 4.3-9, application of this methodology resulted in the following changes to the F_{en} -adjusted CUF values for these components:

- Reduced the F_{en} -adjusted CUF value for the SI nozzles from 48.54 to 0.76
- Reduced the F_{en} -adjusted CUF value for the charging nozzles from 1.18 to 0.44
- Reduced the F_{en} -adjusted CUF value for the hot leg surge nozzle safe ends from 6.49 to 3.22

The MRP-47 report is not currently endorsed by the NRC for application to environmentally-assisted metal fatigue calculations.

Request 3: Explain the changes that were made to the assumptions for the updated F_{en} -adjusted CUF calculations for these components. Provide your basis why the application of the MRP-47 methodology is considered capable of yielding sufficiently conservative F_{en} -adjusted CUF values for these component locations and why the updated 60-year F_{en} -adjusted CUF values for these components are considered the representative values for the assessments.

Request: Provide your basis for dispositioning the TLAA for the RV bottom heat to shell junction, RV inlet nozzle, and the residual heat removal line tee in accordance with 10 CFR 54.21(c)(1)(i).

Discussion:

The applicant stated that it had addressed the final request in letter dated September 22, 2010. The staff confirmed this and will remove the final request from the formal RAI.

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/RA/

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DATE	01/11/2011	01/18/2011	01/19/2011	01/25/2011

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Letter to Pacific Gas and Electric Company from Nathaniel B. Ferrer dated January 25, 2011

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