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

January 22, 2013

LICENSEE: Pacific Gas and Electric Company

FACILITY: Diablo Canyon Power Plant, Unit Nos. 1 and 2

SUBJECT: SUMMARY OF DECEMBER 18, 2012, MEETING WITH PACIFIC GAS AND ELECTRIC COMPANY RELATED TO EMERGENCY CORE COOLING SYSTEM EVALUATIONS (TAC NOS. MF0313 AND MF0315)

On December 18, 2012, a Category 1 public meeting was held between the U.S. Nuclear Regulatory Commission (NRC) and representatives of Pacific Gas and Electric Company (PG&E, the licensee) at NRC Headquarters, One White Flint North, 11555 Rockville Pike, Rockville, Maryland. The purpose of the meeting was to discuss Emergency Core Cooling System (ECCS) evaluations including leak-before-break (LBB) assumptions used in Section 50.46 of Title 10 of the *Code of Federal Regulations* (10 CFR) coolable geometry evaluation for Diablo Canyon Power Plant, Unit Nos. 1 and 2 (DCPP). The meeting notice and agenda, dated December 4, 2012, are available in the Agencywide Documents Access and Management (ADAMS) at Accession No. ML12338A076. The licensee's meeting slide presentation is available at ADAMS Accession No. ML12355A161. A list of attendees is provided in the Enclosure.

During the meeting, PG&E described an issue that it is in the process of addressing that was identified as part of the licensing basis verification project (LBVP) for DCPP. The LBVP is a program to verify the DCPP licensing basis and to identify and correct deficiencies. The issue that was identified as part of the LBVP relates to the way that the use of the LBB methodology was incorporated into the DCPP licensing basis. The current DCPP fuel assembly seismic and loss-of-coolant accident (LOCA) structural analysis is documented in a DCPP-specific report (WCAP-16946) that supported reactor vessel head replacements at the site in the 2010 time frame. This WCAP was not reviewed by the NRC staff. The methodology for the fuel structural analysis was based on NRC-approved methods found in WCAP-9401-P-A, "Verification and testing Analysis of the 17x17 Optimized Fuel Assembly," dated August 1981. The WCAP-9401-P-A methodology does not credit LBB.

There are two issues that PG&E is trying to resolve associated with WCAP-16946:

- PG&E did not perform a 10 CFR 50.59 review for a change when LBB methodology was implemented to exclude the dynamic effects of a break in the main loop piping in the fuel assembly structural analysis.
  - The results of the fuel assembly structural analyses are used in part to demonstrate compliance with the 10 CFR 50.46(b)(4) fuel coolable geometry requirements.

- It is not clear to PG&E at this point whether, in accordance with the 10 CFR 50.59 requirements, the change in LBB methodology required prior NRC approval before it was implemented. Key to PG&E's determination is whether or not the NRC staff has previously approved LBB methodology in the fuel assembly structural analyses used to demonstrate compliance with 10 CFR 50.46(b)(4) fuel coolable geometry requirements.

PG&E cited several documents associated with LBB that the NRC staff had reviewed and approved. However, the staff noted that none of the documents specifically requested approval by the NRC in this area. During the meeting the NRC staff provided the following preliminary observations and insights based on PG&E's presentation and discussion:

- It is not clear to the NRC staff if there is a restriction on fuel assemblies that have grid deformation that would prevent them from being used in control rod locations. If there was such a restriction it could address possible concerns with control rod insertion evaluations.

- The staff noted that WCAP-9401 used a vessel inlet break, after LBB assumptions were used a different break location was assumed. It is not clear to the staff how WCAP-9401 and LBB assumptions were combined in the fuel structural analysis area without needing prior approval from the NRC.

  - WCAP-9401 lists the break locations that could be used. In 1993 when LBB was approved (for Diablo Canyon), it appears that the break location was changed without requesting prior approval from the NRC for the impacts on fuel structural analysis. The logic for making changes to the break location for the fuel structural analysis without requesting prior approval from the staff is not clear to the staff.

- In the past the staff has accepted grid assembly deformation in the exterior portions of the reactor core, but interior assembly grid deformation is an additional concern when it occurs.

- The staff noted that it specifically approved the use of LBB for fuel structural analyses for other vendors. This approval does not appear to have been requested for Westinghouse plants.

- The staff noted that guidance in this area could be developed and placed in Standard Revision Plan 4.2, Fuel System Design," as part of the update that is currently in progress.

- It is not clear to the staff if it would be appropriate to use LBB for the control rod insertion analyses. Further if a licensee did use LBB for such an analysis it is not clear if NRC staff approval would be needed.

- If it is determined that there is an issue with WCAP 9401, the staff would prefer a generic approach for resolving the issue (e.g., NRC staff approval of a revision to WCAP 9401 to specifically credit LBB in the fuel structural analysis). A generic

approach to resolving the issue would appear to be the most efficient use of NRC and licensee resources.

- The NRC staff indicated that there does not appear to be an immediate safety concern and that there is time to develop a resolution plan, if needed, to resolve the issue.

No decisions were made during the meeting as to whether or not prior NRC approval is needed for such a change. The following actions were identified:

- PG&E will make a determination as to whether or not prior approval from the NRC is required when the LBB methodology was implemented to exclude the dynamic effects of a break in the main loop piping in the fuel assembly structural analysis. The decision will be documented in the DCPP corrective action program.

- The NRC staff will review the corrective action program documentation and follow the appropriate regulatory process for addressing any concerns that the NRC staff may have related to PG&E's documentation. This will include any issues associated with PG&E not reviewing WCAP-16946 changes in accordance with the 10 CFR 50.59 process in the 2010 time frame and PG&E's pending decision related to whether or not prior NRC approval is needed for such a change. If PG&E decides that prior approval from the NRC is not needed, the staff will document its review of PG&E's decision using the inspection process and document the results of its review, if appropriate, in an NRC inspection report. If PG&E decides that prior approval from the NRC is needed, then the staff expects that a license amendment request will be submitted to the NRC and reviewed by the staff in accordance with the established process. In either case, if the NRC staff believes that there is a potential issue that could affect more than DCPP, the staff will place the issue in the appropriate generic resolution process.

Please direct any inquiries to me at 301-415-1132 or at Joseph.Sebrosky@nrc.gov.

Joseph M. Sebrosky, Senior Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-275 and 50-323

Enclosures:
List of Attendees

cc w/encl: Distribution via Listserv

LIST OF ATTENDEES

DECEMBER 18, 2012, MEETING WITH PACIFIC GAS AND ELECTRIC COMPANY

REGARDING DIABLO CANYON POWER PLANT, UNITS 1 AND 2

EMERGENCY CORE COOLING SYSTEM EVALUATIONS

DOCKET NOS. 50-275 AND 50-323

NAME	ORGANIZATION
Jeff Summy	Pacific Gas and Electric
Kenneth Schrader	Pacific Gas and Electric
Mark Sharp	Pacific Gas and Electric
Jim Gresham	Westinghouse
David Fink	Westinghouse
Kyler Gates*	Westinghouse
Mitch Nissley*	Westinghouse
Ann Marie DiLullo*	Westinghouse
Ali Fakhri*	Westinghouse
Sean Halfhill*	Westinghouse
Eric Benaquista*	Westinghouse
Mike Tronosky*	Westinghouse
Jane Jiang*	Westinghouse
Jim Andrachek*	Westinghouse
Dewey Olinski*	Westinghouse
Dave Dunsavage*	Westinghouse
Dave Sklarsky*	Westinghouse
Bill Ruland	U.S. Nuclear Regulatory Commission
Chris Jackson	U.S. Nuclear Regulatory Commission
Paul Clifford	U.S. Nuclear Regulatory Commission
Ben Parks*	U.S. Nuclear Regulatory Commission
Andrew Proffitt	U.S. Nuclear Regulatory Commission
Neil O'Keefe*	U.S. Nuclear Regulatory Commission (Region IV)
Louise Lund	U.S. Nuclear Regulatory Commission
Michael Markley	U.S. Nuclear Regulatory Commission
Jonathan Rowley	U.S. Nuclear Regulatory Commission
Joe Sebrosky	U.S. Nuclear Regulatory Commission
Leonard Willoughby*	U.S. Nuclear Regulatory Commission (Region IV)
John Butler	Nuclear Energy Institute
J.A. Savage*	California Current

* participated via telephone

Enclosure

Please direct any inquiries to me at 301-415-1132 or at Joseph.Sebrosky@nrc.gov.

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ADAMS Accession Nos. Meeting Notice ML12338A076; Meeting Summary ML12355A150; Slides ML12355A161 *via email

OFFICE	NRR/DORL/LPL4/PM	NRR/DORL/LPL4/LA	NRR/DSS	NRR/DSS/SRXB	NRR/DORL/LPL4/BC	NRR/DORL/LPL4/PM
NAME	JSebrosky	JBurkhardt	PClifford	BParks*	MMarkley	JSebrosky
DATE	1/17/13	1/4/13	1/17/13	1/16/13	1/22/13	1/22/13

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