

October 12, 2001

LICENSEE: Pacific Gas and Electric Company

FACILITIES: Diablo Canyon Power Plant, Units 1 and 2

SUBJECT: SUMMARY OF PACIFIC GAS & ELECTRIC (PG&E) MEETING TO DISCUSS TECHNICAL SPECIFICATION (TS) AMENDMENT SUBMITTAL OF FEBRUARY 20, 2001, ON ALTERNATE REPAIR CRITERIA FOR AXIAL PRIMARY WATER STRESS CORROSION CRACKING (PWSCC) AT DENTED INTERSECTIONS IN STEAM GENERATOR TUBING

A meeting with PG&E (the licensee) was conducted on June 28, 2001, at the U.S. Nuclear Regulatory Commission (NRC) to discuss their alternate repair criteria TS amendment request. The slides are available in ADAMS under accession number ML012620476. The list of meeting attendees is enclosed.

The initial TS amendment request was submitted on February 20, 2001. Subsequently, the licensee requested this meeting to discuss the TS amendment request as well as changes they were considering to make to the amendment request. The proposed changes are: (1) the way in which mixed mode indications are addressed, when identified, in terms of condition monitoring and operational assessment activities, and (2) the licensee's interest in making the TS amendment request permanent instead of limited to one-cycle.

Following the licensee's presentation, the staff provided the following feedback to the licensee:

*Mixed Mode Indications*

- The general proposal appears to potentially be viable and is worth submitting for formal review.
- The licensee should identify the most limiting combination of mixed mode indications and document the basis for determining the limiting combination.
- The licensee should document the rationale for the projection of inner diameter (ID) and outer diameter (OD) circumferential cracks over time in terms of both size and number of cracks.
- The licensee's preliminary estimates of the probability for mixed mode burst pressure reduction is quite low, and essentially is not expected to be identified during inspections. Therefore, the licensee needs to consider a regulatory default condition (e.g., do not continue to implement the alternate repair criteria) if interacting mixed mode indications which significantly reduce the tube burst pressure are identified.

- The staff understands that the leakage model the licensee intends to use for mixed mode flaws which will be submitted at a later date will depend on the "return to null" argument contained in the current WCAP. Therefore, the staff will proceed with reviewing the data supporting the eddy current "return to null" argument. The staff will not review any other data that has been submitted in support of the mixed mode indications until it has been revised and resubmitted by the licensee.
- The licensee stated that the leakage model (condition monitoring and operational assessment) would depend, in part, on the measured depth of the circumferential crack being less than 70 percent maximum depth. The staff indicated that the licensee should document the basis for this value as well as the associated eddy current uncertainties considered when developing this value.

#### *Permanent Alternate Repair Criteria*

During the meeting, the licensee identified other outstanding issues that could potentially affect the viability of a permanent amendment. The staff provided the following feedback:

- Issue 1: "Revise WCAP 15128, Revision 2 to include clarifications from March 2, 2000 TVA letter." The licensee indicated that these revisions had been made and were included in WCAP-15573, which is part of the current submittal.

The NRC staff stated that they would review WCAP-15573 to confirm.

- Issue 2: "Consider incorporating refinements into the OA [operational assessment] methodology to permit consideration of a more complete amount of growth rate data from the most recent operating cycle." The licensee indicated that they were not proposing any refinements to the OA methodology due to the impacts on the outage due to the critical path nature of this activity.

The staff understands the licensee's basic concerns, however, the staff feels it is necessary to better understand the critical path nature of this activity before reaching any conclusions on this issue. The staff proposed a future meeting or telecon be arranged to further discuss this issue.

- Issue 3: "Assess the operational assessment methodology performance in predicting flaw size distributions. Assess differences between predicted and actual flaw size distributions in terms of impact on limiting tube burst pressure and total SG [steam generator] accident leak rate."
- Issue 4: "Assess the early experience with number and size of indications not previously detected and the need for accounting for the appearance of such new indications in the operational assessment burst evaluation."

The staff's original intent with these issues was to gain additional information on the performance of the alternate repair criteria methodology before approving the amendment with no restrictions. The licensee proposed to document additional analysis on each of these issues

following each refueling outage, however, they were still interested in pursuing a permanent amendment. Following internal discussions on these issues, the staff indicated that there were two paths the licensee could consider: (1) request approval of the alternate repair criteria with a two-cycle limit, or (2) develop a bistable criteria, to be part of their license, which requires NRC approval to continue to implement the alternate repair criteria for more than one cycle following the outage during which the bistable criteria is exceeded/tripped.

- Issue 5: "Consider refinements to the accident leakage model such that the leak test regression calibration of the deterministic model includes a calibration of the model to predict pop-through of crack ligaments. In addition, refinements to the breakthrough model should be incorporated to ensure that all significant ligaments are included in the leakage assessment." The licensee stated that the refinements would result in a less conservative leakage model and did not intend to incorporate any refinements at this time.

The staff stated that they would revisit this issue and provide feedback to the licensee at a later date regarding their position.

/RA/

Girija S. Shukla, Project Manager, Section 2  
Project Directorate IV  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket Nos. 50-275  
and 50-323

Enclosure: Attendance List

cc w/encl: See next page

Diablo Canyon Power Plant, Units 1 and 2

cc:

NRC Resident Inspector  
Diablo Canyon Nuclear Power Plant  
c/o U.S. Nuclear Regulatory Commission  
P.O. Box 369  
Avila Beach, CA 93424

Dr. Richard Ferguson, Energy Chair  
Sierra Club California  
1100 11<sup>th</sup> Street, Suite 311  
Sacramento, CA 95814

Ms. Nancy Culver  
San Luis Obispo  
Mothers for Peace  
P.O. Box 164  
Pismo Beach, CA 93448

Chairman  
San Luis Obispo County Board of  
Supervisors  
Room 370  
County Government Center  
San Luis Obispo, CA 93408

Mr. Truman Burns  
Mr. Robert Kinosian  
California Public Utilities Commission  
505 Van Ness, Room 4102  
San Francisco, CA 94102

Mr. Steve Hsu  
Radiologic Health Branch  
State Department of Health Services  
P.O. Box 942732  
Sacramento, CA 94327-7320

Diablo Canyon Independent Safety  
Committee  
ATTN: Robert R. Wellington, Esq.  
Legal Counsel  
857 Cass Street, Suite D  
Monterey, CA 93940

Regional Administrator, Region IV  
U.S. Nuclear Regulatory Commission  
Harris Tower & Pavilion  
611 Ryan Plaza Drive, Suite 400  
Arlington, TX 76011-8064

Christopher J. Warner, Esq.  
Pacific Gas & Electric Company  
Post Office Box 7442  
San Francisco, CA 94120

Mr. David H. Oatley, Vice President  
Diablo Canyon Operations and  
Plant Manager  
Diablo Canyon Nuclear Power Plant  
P.O. Box 3  
Avila Beach, CA 93424

Telegram-Tribune  
ATTN: Managing Editor  
1321 Johnson Avenue  
P.O. Box 112  
San Luis Obispo, CA 93406

Mr. Ed Bailey, Radiation Program Director  
Radiologic Health Branch  
State Department of Health Services  
P.O. Box 942732 (MS 178)  
Sacramento, CA 94327-7320

Mr. Robert A. Laurie, Commissioner  
California Energy Commission  
1516 Ninth Street (MS 31)  
Sacramento, CA 95814

Mr. Gregory M. Rueger  
Senior Vice President, Generation and  
Chief Nuclear Officer  
Pacific Gas and Electric Company  
Diablo Canyon Nuclear Power Plant  
P. O. Box 3  
Avila Beach, CA 94177

following each refueling outage, however, they were still interested in pursuing a permanent amendment. Following internal discussions on these issues, the staff indicated that there were two paths the licensee could consider: (1) request approval of the alternate repair criteria with a two-cycle limit, or (2) develop a bistable criteria, to be part of their license, which requires NRC approval to continue to implement the alternate repair criteria for more than one cycle following the outage during which the bistable criteria is exceeded/tripped.

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 Project Directorate IV  
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 Office of Nuclear Reactor Regulation

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cc w/encl: See next page

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**ATTENDANCE LIST**

**MEETING WITH PACIFIC GAS & ELECTRIC COMPANY**

**STEAM GENERATOR ALTERNATE REPAIR CRITERIA FOR DIABLO CANYON**

**JUNE 28, 2001**

**PACIFIC GAS & ELECTRIC COMPANY**

T. Grozan  
J. Avnor  
B. Exner  
L. Womack

**OTHER**

D. Kupperman, Argonne National Lab  
S. Bakhtiari, Argonne National Lab  
B. Keating, Westinghouse  
T. Pitterle, CDI  
P. Rush, MPR

**NRC**

T. Sullivan  
E. Murphy  
L. Lund  
C. Khan  
J. Muscara  
N. Dudley  
A. Wang