Pacific Gas and Electric Company

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PG&E Letter DCL-02-063

U.S. Nuclear Regulatory Commission
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Washington, DC 20555-0001

Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
60-Day Response to NRC Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity"

Dear Commissioners and Staff:

Enclosed is the Diablo Canyon Power Plant (DCPP) 60-day response to NRC Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity," dated March 18, 2002. NRC Bulletin 2002-01 requested information related to the integrity of the reactor coolant pressure boundary, including the reactor pressure vessel head, and the extent to which inspections have been performed to satisfy applicable regulatory requirements.

PG&E letter DCL-02-033, "Response to NRC Bulletin 2002-01, 'Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity'" dated April 1, 2002, provided the requested information about the integrity of the reactor pressure vessel head and the reactor vessel head inspection program. This 60-day response discusses how the DCPP boric acid inspection program provides reasonable assurance of compliance with the applicable regulatory requirements discussed in NRC Generic Letter 88-05, "Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary Components in PWR Plants" and Bulletin 2002-01 for the remainder of the reactor coolant pressure boundary.

If you have questions regarding this response, please contact Mr. Pat Nugent at (805) 545-4720.

Sincerely,

Lawrence F. Womack

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tcg
Enclosure
cc/enc: Edgar Bailey, DHS
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PG&E Letter DCL-02-063

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of PACIFIC GAS AND ELECTRIC COMPANY	)	Docket No. 50-275 Facility Operating License No. DPR-80
Diablo Canyon Power Plant Units 1 and 2	)	Docket No. 50-323 Facility Operating License No. DPR-82

AFFIDAVIT

Lawrence F. Womack, being of lawful age, first being duly sworn upon oath says that he is Vice President – Nuclear Services of Pacific Gas and Electric Company; that he has executed this response to NRC Bulletin 2002-01 on behalf of said company with full power and authority to do so; that he is familiar with the content thereof; and that the facts stated therein are true and correct to the best of his knowledge, information, and belief.

Lawrence F. Womack
Vice President – Nuclear Services

Subscribed and sworn to before me this 17th day of May, 2002.

Notary Public
County of San Luis Obispo
State of California

SANDRA L. RECTOR
Commission # 1339380
Notary Public - California
San Luis Obispo County
My Comm. Expires Jan 12, 2006

60-Day Response to NRC Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity"

NRC Requested Information

3. *Within 60 days of the date of this bulletin, all PWR addressees are required to submit to the NRC the following information related to the remainder of the reactor coolant pressure boundary:*

   A. *the basis for concluding that your boric acid inspection program is providing reasonable assurance of compliance with the applicable regulatory requirements discussed in Generic Letter 88-05 and this bulletin. If a documented basis does not exist, provide your plans, if any, for a review of your programs.*

PG&E Response:

The Diablo Canyon Power Plant (DCPP) boric acid inspection program is described in PG&E letter DCL-02-033, "Response to NRC Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity" dated April 1, 2002. PG&E's policy is to minimize boric acid induced corrosion by applying an administrative program that provides for: (1) early detection of boric acid leaks; (2) thorough inspection of the areas surrounding identified boric acid leakage; (3) proper evaluation of areas where leakage has occurred; and (4) prompt action to mitigate the leak, perform repairs, and avoid future damage.

The boric acid inspection program applies to all systems inside containment that contain boric acid where leakage could potentially affect the reactor coolant pressure boundary (RCPB). Boric acid leakage may be identified during program required walkdowns, the ASME Section XI system pressure test, and during periodic containment walkdowns by operations personnel.

The boric acid inspection program walkdowns are performed by in-service inspection, engineering and/or maintenance personnel. The objective is to identify boric acid leakage from any source inside containment to prevent boric acid corrosion of Class 1 low alloy/carbon steel RCPB components. A listing of RCPB piping and components that are potential sources, and piping, components, and supports that are potential targets of boric acid leakage, is maintained by engineering. The walkdowns are done each refueling outage, and during other outages, unless performed within the past 92 days.

The ASME Section XI system pressure test is performed at normal operating pressure following a refueling outage. As a minimum, the VT-2 visual inspection

during the system pressure test includes all joints that have been opened and closed since the last performance of the test. This inspection includes the reactor pressure vessel head with the insulation installed. The walkdown is conducted by qualified personnel from the in-service inspection group, and is witnessed or verified by the Authorized Nuclear Inservice Inspector (ANII). This inspection also includes a comprehensive inspection of accessible portions of the RCPB. As allowed by the ASME Code and approved code cases, insulation is not required to be removed during the system pressure test. However, if leakage from insulated components were found, the insulation would be removed if required to identify the leakage source.

In addition to the program walkdowns and inspections performed during system pressure tests, operations personnel perform visual inspections for leaks and boric acid crystals during periodic containment entries.

If leakage is identified during the program walkdowns, the ASME Section XI system pressure test, or the operations containment walkdowns, action is taken to correct the leakage, or an evaluation is done to ensure the leakage has no adverse impact on continued operation. The Technical Specifications dictate that no pressure boundary leakage (i.e., no non-isolable fault in a component body, pipe wall, or vessel wall) is allowed.

Typically RCPB leaks at DCPP are evidenced by a limited amount of dry boric acid crystals with no visible moisture, and no degradation of plant components. Corrective actions include cleaning, tightening flange bolting or valve packing, repacking, or component replacement. Dry boric acid residues are tracked by the system engineers. Action Requests (ARs) are initiated for all other leaks. The initiation of this type of AR requires the initiator to document the location of the leak, the leak rate and whether the leak is causing damage to other components. System engineers evaluate the effects of leaks in their system, including effects on source and target components and structures. Additional engineering evaluations are performed as necessary to assess acceptability of degradation discovered during corrective actions.

The DCPP operating experience review program evaluates boric acid corrosion experience at other plants. Where applicable, that experience is factored into the boric acid leakage program to prevent similar events from occurring at DCPP.

In implementing the boric acid leakage program, PG&E has taken steps to minimize the potential for boric acid corrosion and to improve the boric acid leakage identification process. For example, in 1991, PG&E found boric acid wastage in chemical and volume control system valve studs. A non-conformance report (NCR), the highest level of corrective action documentation, was initiated to address this condition. The root cause was determined to be low initial bolt torque, a low resiliency gasket and thermal cyclic fatigue. Corrective

actions from this NCR included replacement of grade B7 low alloy steel bolting with stainless steel bolting material for first and second off check valves and other valves connecting to the reactor coolant system. In 1999, during a Mode 3 forced outage, PG&E identified leakage from a fitting on the mechanical seal housing on reactor coolant pump (RCP) 1-3. The unit was depressurized to allow the fitting to be repaired. During the course of the evaluation of this leak, boric acid wastage was identified on the motor stand for RCP 1-3. The wastage was evaluated and it was determined not to affect the structural integrity or function of the RCP. The leaking fitting was not identified during the program walkdowns due to limited visibility of the RCP seal area, but was identified during the course of maintenance in the area. The walkdown procedure was revised to specify the RCP seal area as a location to be inspected.

Based on early detection of boric acid leaks, thorough inspection of the areas surrounding identified boric acid leakage, proper evaluation of areas where leakage has occurred, and prompt action to mitigate the leak, perform repairs, and avoid future damage, the DCPP boric acid inspection program provides assurance of compliance with the applicable regulatory requirements discussed in Generic Letter 88-05 and Bulletin 2002-01.