Pacific Gas and Electric Company®

Diablo Canyon Power Plant
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December 16, 2008

PG&E Letter DCL-08-106

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
Response to NRC Request for Additional Information Regarding License Amendment Request 08-02, "Revision to Technical Specifications 3.7.5, 'Auxiliary Feedwater System,' and 3.7.6, 'Condensate Storage Tank and Fire Water Storage Tank'"

References:

1. PG&E Letter DCL-08-023, "License Amendment Request 08-02, Revision to Technical Specifications 3.7.5, 'Auxiliary Feedwater System,' and 3.7.6, 'Condensate Storage Tank and Fire Water Storage Tank,'" dated April 3, 2008

2. PG&E Letter DCL-08-051, "Supplement to License Amendment Request 08-02, 'Revision to Technical Specifications 3.7.5, 'Auxiliary Feedwater System,' and 3.7.6, 'Condensate Storage Tank and Fire Water Storage Tank,'" dated June 20, 2008

3. PG&E Letter DCL-08-081, "Response to NRC Request for Additional Information Regarding License Amendment Request 08-02, 'Revision to Technical Specifications 3.7.5, 'Auxiliary Feedwater System,' and 3.7.6, 'Condensate Storage Tank and Fire Water Storage Tank,'" dated October 1, 2008

4. PG&E Letter DCL-08-093, "Response to NRC Request for Additional Information Regarding License Amendment Request 08-02, 'Revision to Technical Specifications 3.7.5, 'Auxiliary Feedwater System,' and 3.7.6, 'Condensate Storage Tank and Fire Water Storage Tank,'" dated November 6, 2008

Dear Commissioners and Staff:

In Reference 1, Pacific Gas and Electric Company (PG&E) submitted License Amendment Request (LAR) 08-02, which proposes to revise Technical Specification (TS) 3.7.5, "Auxiliary Feedwater (AFW) System," to remove Surveillance Requirement 3.7.5.6, and revise TS 3.7.6, "Condensate Storage Tank

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(CST) and Fire Water Storage Tank (FWST)," to remove the FWST level requirements, revise the CST level requirements, and revise TS 3.7.6 to be consistent with the Standard TS, NUREG-1431. In References 2, 3, and 4, PG&E submitted a supplement to LAR 08-02 and responses to requests for additional information to LAR 08-02, respectively.

On November 4, 2008, the NRC staff requested additional information required to complete the review of LAR 08-02. PG&E's response to the staff's question is provided in the Enclosure.

This information does not affect the results of the technical evaluation or the no significant hazards consideration determination previously transmitted in Reference 1.

PG&E makes no regulatory commitments (as defined by NEI 99-04) in this letter. This letter includes no revisions to existing regulatory commitments.

If you have any questions, or require additional information, please contact Stan Ketelsen at (805) 545-4720.

I state under penalty of perjury that the foregoing is true and correct.

Executed on December 16, 2008.

Sincerely,

James R. Becker
Site Vice President

kjse/4328 50043292
Enclosure
cc: Gary W. Butner, California Department of Public Health
Elmo E. Collins, NRC Region IV
Diablo Distribution
cc/enc: Alan B. Wang, NRC Project Manager
Michael S. Peck, NRC, Senior Resident Inspector

Pacific Gas and Electric Company (PG&E) Response to NRC Request for Additional Information Regarding License Amendment Request (LAR) 08-02, "Revision to Technical Specifications 3.7.5, 'Auxiliary Feedwater System,' and 3.7.6, 'Condensate Storage Tank and Fire Water Storage Tank'"

NRC Question 1:

In the supplemental letter provided from Westinghouse, dated June 16, 2008, it is stated that "the assumed level restoration [of the steam generator water level] was reduced from no load programmed level to the narrow range lower level tap." As depicted in Figure 5.5-4 of the Diablo Canyon Power Plant Updated Final Safety Analysis Report [UFSAR], "Westinghouse Delta 54 Replacement Steam Generator," the narrow range lower level tap is positioned below the top of the steam generator U-tubes. This restoration level was used as the basis for the requested Technical Specification (TS) limit of 200,000 gallons in the Condensate Storage Tank (CST).

It has been communicated that in the case of the limiting scenario (Loss-of-Offsite Power (LOOP) with natural circulation cooldown at reduced rate) the Emergency Operating Procedure would instruct operators to maintain steam generator water level between 20 percent and 65 percent, which is above the top of the U-tubes, during the entire cooldown. This is possible due to the fact that the CST upgrade was designed to provide approximately 222,600 gallons of seismically-qualified condensate as opposed to the minimum 200,000 gallons. However, after the requested change to the CST TS limit, it is possible for the licensee to legally operate with as little as 200,000 gallons available in the CST. While this volume is sufficient to meet the cooling requirements of the postulated event, it would not be enough to maintain steam generator water level between 20 percent and 65 percent for the entire duration of the event. This means that some portion of the steam generator U-tubes would become uncovered during the 8-hour cooldown.

The NRC staff requests confirmation that the radiological release due to the postulated LOOP with natural circulation cooldown at a reduced rate remains bounded by more severe accident analyses. This confirmation should assume maximum allowable primary activity levels for normal operation and maximum allowable primary to secondary leakage for normal operation, and assume a leakage point at or near the top of the U-tube bundle.

PG&E Response:

The radiological release due to a postulated LOOP with natural circulation cooldown at a reduced rate is bounded by more severe accident analyses and is much less significant than the steam generator tube rupture (SGTR) event. A comparison of the limiting assumptions and reactor coolant system mass releases between a postulated LOOP with natural circulation cooldown at a reduced rate and a SGTR event is contained in Tables 1 and 2. For the comparison, limiting assumptions are

assumed for a postulated LOOP with natural circulation cooldown event including the maximum allowable primary activity levels for normal operation, maximum allowable primary to secondary leakage for normal operation, and leak location at the top of the steam generator (SG) U-tube bundle.

The input assumptions for important input parameters for the SGTR event are either based on or are more conservative than applicable TS limits for the parameter. Even though the SG tubes are covered following a SGTR event, the radiological release analysis for the SGTR event does not credit iodine scrubbing, and assumes iodine in the flashed break-flow is released directly to the atmosphere (iodine partition coefficient of one). Due to the conservative assumptions made in the radiological release analysis for the SGTR event, the radiological consequences per pound mass of release of primary to secondary leakage during a LOOP with natural circulation cooldown with uncovered SG U-tubes will not be more severe than for the currently analyzed SGTR event.

The event durations for the LOOP with natural circulation cooldown event (nine hours), and the SGTR event (eight hours), are comparable and, therefore, the secondary system mass releases to remove core decay heat during the events are comparable. The significant difference between the LOOP with natural circulation cooldown event, and the SGTR event, is the primary to secondary flow that occurs during the events. As shown in Table 2, for the LOOP with natural circulation cooldown event with an assumed primary to secondary leakage rate equal to the TS 3.4.13, "RCS Operational LEAKAGE," leakage limit, the total primary to secondary leakage during the SGTR event is over 100 times the total for the LOOP with natural circulation cooldown event. Making a very conservative assumption that all the primary to secondary leakage during the LOOP with natural circulation cooldown event flashed to steam, the flashed break-flow in the ruptured SG during the SGTR event is over ten times the assumed flashed-flow total for the LOOP with natural circulation cooldown event. Since the offsite and control room radiological consequences are directly proportional to primary to secondary flow, the offsite and control room radiological consequences for the LOOP with natural circulation cooldown event are much less significant than for the analyzed SGTR event.

Table 1

Input Parameter	LOOP With Natural Circulation Cooldown	SGTR	Reference/Notes
Event Duration	9 Hours (1 hour at hot standby, 8 hour cooldown)	8 Hours	UFSAR Table 15.4-14 (SGTR)
Primary Coolant Activity	1 microCurie per gram (µCi/g) Dose Equivalent I-131 651 µCi/g Dose Equivalent Xe-133	1 µCi/g Dose Equivalent I-131 651 µCi/g Dose Equivalent Xe-133	UFSAR Section 5.5.20.1 (SGTR) TS 3.4.16 maximum limit is 600 µCi/g Dose Equivalent Xe-133
Secondary Coolant Activity	0.1 µCi/g Dose Equivalent I-131	0.1 µCi/g Dose Equivalent I-131	UFSAR Table 15.5-64 (SGTR) and TS 3.7.18
Primary to Secondary Leakage Prior to Event	1 gallon per minute (gpm)	1 gpm	UFSAR Table 15.5-64 (SGTR) TS 3.4.13 limit is 150 gallons per day per SG
Primary to Secondary Leakage After Event at Top of Tubes	150 gallons per day per SG	Calculated (Ruptured SG) 1 gpm (3 Intact SGs)	TS 3.4.13 (LOOP), conservatively assuming primary to secondary differential pressure after event same as prior to event UFSAR Table 15.5-64 (SGTR)
Iodine Scrubbing Efficiency	Zero	Zero, Not Modeled	UFSAR Table 15.5-64 (SGTR)
Iodine Partition Coefficient, Flashed-Flow	1.0	1.0	UFSAR Table 15.5-64 (SGTR)

Table 2

Results	LOOP With Natural Circulation Cooldown	Steam Generator Tube Rupture (SGTR)	Reference/Notes
Primary to Secondary Flow During Event	1800 pounds mass (lbm)	272,300 lbm (Rupture SG) 3,850 lbm (3 Intact SGs)	9 hours of 150 gallons per day per SG flow with assumed density of 60 lbm mass per foot cubed (lbm/ft^3) (LOOP) UFSAR Table 15.4-14 (SGTR, Ruptured SG) 8 hours of 1 gpm flow with assumed density of 60 lbm/ft^3 (SGTR, 3 Intact SGs)
Flashed-Flow During Event	1800 lbm	18,150 lbm	Assume conservatively all primary to secondary flow flashes (LOOP) UFSAR Table 15.4-14 (SGTR)