



November 23, 2009

PG&E Letter DIL-09-009

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U.S. Nuclear Regulatory Commission  
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Materials License No. SNM-2511, Docket No. 72-26  
Diablo Canyon Independent Spent Fuel Storage Installation  
Response to NRC Request for Information Pertaining to Diablo Canyon  
Independent Spent Fuel Storage Installation (ISFSI) License Amendment  
Request 08-001

- References:
1. PG&E Letter DIL-08-002, "License Amendment Request 08-001, Revision to Technical Specifications 3.1.1, 3.1.4, 3.2.1, 4.1, 4.3, and 5.1.3," dated April 7, 2008
  2. PG&E Letter DIL-09-006, "Proprietary and Nonproprietary Response to NRC Request for Additional Information Pertaining to Diablo Canyon Independent Spent Fuel Storage Installation (ISFSI) License Amendment Request 08-001," dated September 1, 2009

Dear Commissioners and Staff:

In Reference 1, Pacific Gas and Electric Company (PG&E) submitted License Amendment Request (LAR) 08-001 to the Nuclear Regulatory Commission (NRC), which proposed to revise Technical Specification (TS) 3.1.1, "Multi-purpose Canister (MPC)," TS 3.1.4, "Spent Fuel Storage Cask (SFSC) Time Limitation in Cask Transfer Facility (CTF)," TS 3.2.1, "Dissolved Boron Concentration," TS 4.1, "Design Features Significant to Safety," TS 4.3, "Cask Handling/Cask Transfer Facility," and TS 5.1.3, "MPC and SFSC Loading, Unloading, and Preparation Program."

On February 13, 2009, the NRC staff requested additional information required to complete its review of LAR 08-001. In Reference 2, PG&E submitted its response to the February 13, 2009, NRC request for additional information.

On November 5, 2009, the NRC staff requested additional information required to complete its review of LAR 08-001.

Enclosed is PG&E's response to the November 5, 2009, NRC request for additional information.



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

If you have any questions regarding this response, please contact Mr. L. Jearl Strickland at (805) 545-6080.

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

Executed on November 23, 2009.

Sincerely,



James R. Becker  
*Site Vice President*

gwh

Enclosure

cc: Diablo Distribution

cc/enc: John Goshen, NRC Project Manager, Division of Spent Fuel  
Storage and Transportation  
Kelly Kozink, Holtec International Project Manager  
Michael S. Peck, NRC Senior Resident Inspector

**PG&E Response to November 5, 2009 Request for Additional Information For  
Diablo Canyon Independent Spent Fuel Storage Installation (ISFSI)  
License Amendment Request 08-001**

Question 4.1

*Clarify if the modified FLUENT analysis referenced in Appendix C (Alternate Blocked Duct Transient Evaluation) of HI-2053376 is consistent with the thermal modeling approach in HI-STORM 100 amendment 5 including the internal and external assumed flow characteristics and fuel resistance parameters.*

*The license amendment references several HI-STORM 100 amendments. The HI-STORM 100 Final Safety Analysis Report generically changed these parameters in the thermal methodology that may result in the higher cladding temperature prediction. The realistic initial temperature predictions are needed to determine the maximum pressure of the multi-purpose canister during accident conditions.*

*This information is required by the staff to access compliance with 10 CFR 72.24(d), 72.122(h)(1), 72.128(a)(4), and 72.236(f).*

PG&E Response to Question 4.1

The analyses presented in Appendix C of Holtec Report HI-2053376 (referred to in this response as Appendix C) are not performed consistent with the thermal modeling approach in Holtec's HI-STORM 100 CoC Amendment 5 (referred to in this response as Amendment 5). The analyses in Appendix C are intended to provide an alternate calculation to address NRC's February 13, 2009 RAI Question 3 and to provide confirmation that the licensing basis evaluation results are acceptable, but are not intended to replace the evaluation of the blocked duct accident described in the main body of HI-2053376, which remains the licensing basis. As the intent of the Appendix C analyses is to confirm the licensing basis evaluations, it was desirable to change only those aspects of the methodology necessary to meet this intent (i.e., to perform a transient evaluation at the current Diablo Canyon cask design basis maximum decay heat load with thermosiphon enabled throughout the event duration).

The thermal modeling approach employed in Amendment 5 contains numerous differences compared to earlier thermal analyses, all necessitated by the substantially increased (approximately 20 percent higher) decay heat loads of Amendment 5. A few of the differences are:

- Amendment 5 decouples the 100 percent fuel rods rupture accident and the 100 percent inlet vent blockage accident.
- Amendment 5 uses 3-D models, while earlier analyses used 2-D axisymmetric models.

- Amendment 5 uses different turbulence and radiation heat transfer models than those benchmarked for and used in earlier analyses.
- Amendment 5 uses a CFD-based methodology for computing fuel assembly hydraulic resistances, while earlier analyses used an analytic methodology.
- Amendment 5 uses different physical properties for several materials, notably stainless steel emissivity, than were used in earlier analyses.

As a result of these and many other differences introduced in Amendment 5, it was not possible to use an Amendment 5 consistent methodology for the Appendix C analyses and still allow a fair comparison with the licensing basis analyses.

The Diablo Canyon ISFSI is governed by a site-specific Special Nuclear Materials License (SNM-2511) and not by Holtec's HI-STORM 100 CoC. The thermal analysis that supports SNM-2511, incorporated by reference in the Diablo Canyon ISFSI FSAR Update, is Holtec's License Amendment Request 1014-1 (Attachment 2 to Holtec Document 5014442, Reference D in HI-2053376), which formed the basis for Holtec's HI-STORM 100 CoC Amendment 1, and is therefore consistent with Amendment 1. The Diablo Canyon cask design analyzed in HI-2053376 was implemented in accordance with the 10 CFR 72.48 process, so the analysis methodologies used to qualify it had to remain consistent with the existing approved licensing basis for SNM-2511.

The boundary conditions applied for determining the initial steady-state temperature field that precedes the vent blockage are the same as those used in Amendment 1, and are therefore appropriate for these analyses.