

January 22, 2013

Edward D. Halpin  
Senior Vice President and Chief  
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Pacific Gas and Electric Company  
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SUBJECT: DIABLO CANYON INDEPENDENT SPENT FUEL STORAGE INSTALLATION  
MATERIALS LICENSE NO. SNM-2511, AMENDMENT REQUEST NO. 3 –  
FIRST REQUEST FOR ADDITIONAL INFORMATION (TAC NO.  
L24675)

Dear Mr. Halpin:

By letter dated July 31, 2012, Pacific Gas and Electric Company (PG&E) submitted an application to the United States Nuclear Regulatory Commission (NRC) to amend Materials License No. SNM-2511 for the Diablo Canyon Independent Spent Fuel Storage Installation in accordance with Title 10 of the *Code of Federal Regulations* 72.56, "Application for amendment of license."

The NRC staff has reviewed your application and has determined that a request for additional information is required to complete its detailed technical review. We request that you provide this information by February 19, 2013, to support completion of our evaluation. Inform us at your earliest convenience, but no later than February 5, 2013, if you are not able to provide the information by that date. To assist us in re-scheduling your review, you should include a new proposed submittal date and the reasons for the delay.

Please reference Docket No. 72-26 and TAC No. L24675 in future correspondence related to this licensing action. If you have any questions, please contact me at (301) 492-3325.

Sincerely,

**/RA/**

John Goshen, P.E., Project Manager  
Licensing Branch  
Division of Spent Fuel Storage and Transportation  
Office of Nuclear Material Safety  
and Safeguards

Docket No.: 72-26  
TAC No.: L24675

Enclosure: As stated

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SUBJECT: DIABLO CANYON INDEPENDENT SPENT FUEL STORAGE INSTALLATION  
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FIRST REQUEST FOR ADDITIONAL INFORMATION (TAC NO.  
L24675)

Dear Mr. Halpin:

By letter dated July 31, 2012, Pacific Gas and Electric Company (PG&E) submitted an application to the United States Nuclear Regulatory Commission (NRC) to amend Materials License No. SNM-2511 for the Diablo Canyon Independent Spent Fuel Storage Installation in accordance with Title 10 of the *Code of Federal Regulations* 72.56, "Application for amendment of license."

The NRC staff has reviewed your application and has determined that a request for additional information is required to complete its detailed technical review. We request that you provide this information by February 19, 2013, to support completion of our evaluation. Inform us at your earliest convenience, but no later than February 5, 2013, if you are not able to provide the information by that date. To assist us in re-scheduling your review, you should include a new proposed submittal date and the reasons for the delay.

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Sincerely,

**/RA/**

John Goshen, P.E., Project Manager  
Licensing Branch  
Division of Spent Fuel Storage and Transportation  
Office of Nuclear Material Safety  
and Safeguards

Docket No.: 72-26  
TAC No.: L24675

Enclosure: As stated

cc: Service List

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DIABLO CANYON INDEPENDENT SPENT FUEL STORAGE INSTALLATION

DOCKET NO. 72-26

LICENSE AMENDMENT REQUEST NO. 3

FIRST REQUEST FOR ADDITIONAL INFORMATION

By letter dated July 31, 2012, Pacific Gas and Electric Company (PG&E) submitted an application to the United States Nuclear Regulatory Commission (NRC) to amend Materials License No. SNM-2511 for the Diablo Canyon Independent Spent Fuel Storage Installation (ISFSI) in accordance with Title 10 of the *Code of Federal Regulations* 72.56, "Application for amendment of license." The NRC staff (staff) has reviewed your application and has determined that a request for additional information is required to complete its detailed technical review.

**6.0 Thermal Evaluation**

- 6-1 In addition to unloading a multi-purpose canister (MPC) containing high burn-up fuel that was loaded under Amendment No. 2, state what other specific situations may require the use of a supplemental cooling system (SCS) in the transfer cask.

Safety Analysis Report (SAR) page 3.3-3 states that heat transfer from the transfer cask may be augmented by the SCS to reduce MPC temperatures for operational handling reasons. However, no specific situation is mentioned.

This information is needed to determine compliance with 10 CFR 72.122 and 10 CFR 72.128.

- 6-2 Include in the technical specifications (TS) the ambient temperature for the cases when the MPC and HI-STORM overpack are in the ISFSI pad, the cask transfer facility, and the transport configuration.

SAR page 4.2-23 states that as part of the new analysis two normal ambient temperatures were used based on the system configuration. As an operating parameter like the MPC backfill pressure, total decay heat per fuel assembly etc, the ambient temperature should be included in the TS because it supports the conclusions from the thermal evaluation.

This information is needed to determine compliance with 10 CFR 72.122 and 10 CFR 72.128.

- 6-3 Clarify why the SCS may be necessary to lower the MPC temperatures for transfer operations.

The application states that the SCS is only needed for unloading operations since based on the thermal analysis; the temperatures are below allowable limits for transfer operations for high burnup fuel. It is not clear to the staff why the applicant needs to lower MPC temperatures by using a SCS.

Enclosure

This information is needed to determine compliance with 10 CFR 72.122 and 10 CFR 72.128.

- 6-4 Obtain the grid convergence index (GCI) for the cases when the MPC is in the HI-STORM, the Cask Transfer Facility (CTF), and transfer configuration using at least four grids.

Appendix E to Holtec Report HI-2125191 provides the GCI calculation based on a three-grid solution. However, ASME V&V 20-2009 states that a minimum of four grids is required to demonstrate that the observed order  $p$  is constant for a simulation series.

This information is needed to determine compliance with 10 CFR 72.122 and 10 CFR 72.128.

- 6-5 Calculate the GCI based on an apparent order  $p$  equal to 1.0 for the CTF and transfer configuration.

Appendix E to Holtec Report HI-2125191 provides the GCI calculation for these configurations. However, the calculated apparent order is more than twice the theoretical value used in the analysis model (second order) provided by the applicant.

This information is needed to determine compliance with 10 CFR 72.122 and 10 CFR 72.128.

- 6-6 Perform the thermal analysis for the HI-STORM, CTF, and transfer configurations to identify the uncertainties in the model and quantify the peak cladding temperature (PCT) difference contributed by each of the following modeling errors:

- a) The representation of water density using Boussinesq approximation. Real fluid property as function of temperature and pressure should be implemented for the running fluids to assess any approximation such as Boussinesq on the final Computational Fluid Dynamics (CFD) results.
- b) The representation of fuel rods using porous media and effective thermal conductivity. In the porous media approximation, fuel rods were approximated hydraulically by using frictional and inertial resistance. Also effective thermal conductivity was used to model radiation and conduction heat transfer in the assembly instead of using the real geometry.

Effective thermal conductivity was also used in the air gap between the MPC and the transfer cask. Calculations should be performed to assess the sensitivity on the final results (i.e., peak cladding temperature) to possible changes in frictional losses, inertial losses, and use of effective thermal conductivity.

This information is needed to determine compliance with 10 CFR 72.122 and 10 CFR 72.128.