

April 14, 2011

Mr. James R. Becker
Site Vice President and Station Director
Diablo Canyon Power Plant
Mail Code 104/5/502
P.O. Box 56
Avila Beach, CA 93424

SUBJECT: DIABLO CANYON INDEPENDENT SPENT FUEL STORAGE INSTALLATION
MATERIALS LICENSE NO. SNM-2511, AMENDMENT REQUEST NO. 2 –
ACCEPTANCE REVIEW (TAC NO. L24515)

Dear Mr. Becker:

By letter dated January 31, 2011, 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 application requested that Materials License No. SNM-2511 be amended to provide:

1. Changes to Technical Specifications (TS):

- a. TS 1.1, "Definitions," is revised to include terms in support of high burnup fuel (HBF) selection criteria and the addition of neutron source assemblies (NSAs), and instrument tube tie rods (ITTRs).
- b. TS 2.0, "Approved Contents," is revised in Tables 2.1-1 through 2.1-10 in support of HBF selection criteria and the addition of NSAs, and ITTRs.
- c. TS 2.0, "Approved Contents," is revised to add new TS 2.3 and associated Table 2.3-1 to provide alternative calculations for burnup limits for fuel assemblies in a Multi-Purpose Canister (MPC)-32 to allow selection of HBF.
- d. TS 3.1.1, "Multi-Purpose Canister (MPC)," is revised to eliminate the vacuum drying option, which is not allowed for HBF, and to add a reference temperature of 70°F for the MPC Helium backfill pressure range.
- e. TS 3.1.2, "Spent Fuel Storage Cask (SFSC) Heat Removal System," is modified to allow the HI-STORM to be considered operable with up to 50 percent vent blockage (although removal of any blockage is still required on discovery).
- f. TS 3.1.4, "Supplemental Cooling System," is added to provide the conditions and criteria for the supplemental cooling system (SCS). This change requires an exemption from the requirements of 10 CFR 72.236(f).

- g. TS 4.1.2b, "Design Features Important to Criticality Control," is revised to change the B4C content in METAMIC to 33.0 wt%.
 - h. TS 5.1.3b, "MPC and SFSC Loading, Unloading, and Preparation Program," is revised to delete the requirement for maintaining the annulus full during vacuum drying and to restore the requirement for maintaining the annulus full during reflood (unloading).
2. Revision of the licensing basis as documented in the DC ISFSI Final Safety Analysis Report Update (FSARU) to:
- a. upgrade the thermal analysis methodology to a three dimensional (3D) Computational Fluid Dynamics (CFD) model,
 - b. remove the requirement for 100% fuel failure coincident with 100% vent blockage,
 - c. change of some allowed component temperatures in the thermal evaluation (peak cladding, concrete, overpack metal, transfer cask lid neutron shielding),
 - d. reduce the required torque criteria for the MPC lift cleats, and
 - e. addition of design criteria for the SCS including a new accident for loss of SCS.
3. An exemption from the requirements of 10 CFR 72.236(f) to allow use of a nonpassive SCS.

The staff performed an acceptance review of your application to determine if the application contains sufficient technical information in scope and depth to allow the staff to complete the detailed technical review. The letter acknowledges acceptance of your application. The application appears to contain the information needed for our technical review. However the staff included observations that may be asked at a later date. Responses to observations are not required for the staff to begin a detailed technical review. Observations are not the result of a detailed technical review and may be resolved once the staff begins a detailed review.

OBSERVATIONS

1. Please refer to "DOSE EVALUATION FOR THE ISFSI AT DIABLO CANYON POWER STATION" (HI-2002563)
 - a. Provide an explanation for difference between offsite dose rates for the normal and off-normal condition when comparing the 10 CFR 72.104 (a) limit for 32,500 MWD/MTU and high burnup (69,000 MWD/MTU) fuel. (Table P.4 and the table on pg. 27 of the main report).
 - b. Provide the basis for using 2,080 hours per year for calculating dose at the site boundary versus 8,760 hours (full year).

For the 32,500 MDD/MTU case the dose rate (from release or Total) is based on 8,760 hr/year and direct dose based on 2,080 hr/year, but in Table P.4 for high burnup the dose rate is based on 2,080 hr/year, and direct dose rate is based on 8,760 hr/year.

This information is needed in order for the staff to determine if the DC ISFSI meets the criteria for radioactive materials in effluents and direct radiation from an ISFSI of 10 CFR 72.104.

2. Please refer to Holtec Report HI-2104625. It is not clear if computational fluid dynamics (CFD) best practice guidelines (BPG) were used to perform the thermal evaluation of the HI-STORM in the Cask Transfer Facility configuration for design basis heat load and ambient conditions and to obtain the discretization error. It is not clear that the thermal analysis results provided in Table B.5.9 of Holtec Report HI-2104625 include adequate margins. In order to facilitate the review, the analysis results should include an estimate of the numerical uncertainty, grid convergence, and sensitivity of the performed CFD analyses. To assist in the technical review, please provide an estimate of the numerical uncertainty and provide a response to the following questions:
 - a. Has a sensitivity analysis been performed concerning turbulence modeling, boundary conditions, grid independence and grid convergence?
 - b. Was grid convergence index (GCI) used to assess uncertainty of the predicted results?

Provide results such as percentage of the calculation discretization error and analysis files used to obtain the GCI. The applicant may consult the following documents for further information on CFD BPG: (1) Best Practice Guidelines for the use of CFD in Nuclear Reactor Safety Applications, NEA/CSNI/R(2007)5, (ADAMS accession number ML071581053); and(2) Policy of Journal of Fluid Engineering of ASME about CFD analyses.

This information is necessary to verify the requirements of 10 CFR 72.122 and 72.128.

We have established a schedule for the review. The schedule allows for the staff to issue a Request for Information (RAI) in June 2011 and a License Amendment in November 2011, based on an acceptable RAI response in July 2011. This information was discussed with Mr. Philippe Soenen of your staff on April 11, 2011. Please reference Docket No. 72-26 and TAC No. L24515 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.: L24515

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Sincerely,

/RA/

John Goshen, P.E., Project Manager
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 Division of Spent Fuel Storage and Transportation
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Docket No.: 72-26

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