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PG&E Letter DIL-10-003

ATTN: Document Control Desk
Director, Spent Fuel Project Office
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Materials License No. SNM-2511, Docket No. 72-26
Diablo Canyon Independent Spent Fuel Storage Installation
Changes to Technical Specification Bases and 10 CFR 72.48 Report of Changes, Tests, and Experiments for the Period of March 1, 2008, through February 28, 2010.

By letter dated March 22, 2004, the Nuclear Regulatory Commission (NRC) issued Materials License No. SNM-2511 authorizing Pacific Gas and Electric Company (PG&E) to receive, possess, store, and transfer spent fuel and associated radioactive materials resulting from the operation of Diablo Canyon Power Plant in the Diablo Canyon Independent Spent Fuel Storage Installation (ISFSI).

Diablo Canyon ISFSI Technical Specification (TS) 5.1.1, "Technical Specifications (TS) Bases Control Program," provides a means for processing changes to the Bases of the TS. TS 5.1.1.b states that changes to the TS Bases may be made without prior NRC approval in accordance with the criteria in 10 CFR 72.48. Further, TS 5.1.1.d requires that changes to the TS Bases implemented without prior NRC approval shall be provided to the NRC on a frequency consistent with 10 CFR 72.48 (d)(2). No changes have been made to the TS Bases during the period from March 1, 2008, through February 28, 2010.

Pursuant to 10 CFR 72.48, "Changes, Tests, and Experiments," PG&E is enclosing the 10 CFR 72.48 report for the Diablo Canyon ISFSI, for the period March 1, 2008, through February 28, 2010. In accordance with 10 CFR 72.48(d)(2), the report provides a summary of all 10 CFR 72.48 evaluations performed during this period.

Evaluations performed in accordance with 10 CFR 72.48 are performed as part of PG&E's licensing basis impact evaluation (LBIE) process. Since the LBIE process is used to perform reviews for compliance with regulations in addition to 10 CFR 72.48, some LBIEs do not include a 10 CFR 72.48 evaluation and, therefore, are not included in this report.

NMSS01

The Plant Staff Review Committee has reviewed the referenced LBIEs and has concurred that the changes do not require prior NRC approval or require changes to the Diablo Canyon ISFSI TS. Furthermore, PG&E makes no regulatory commitments as a part of this submittal.

If you have any questions regarding this submittal, please contact Mr. Thomas R. Baldwin at (805) 545-4720.

Sincerely,

James R. Becker
Site Vice President

Enclosure
cc: Diablo Distribution
cc/enc: Shana R. Helton, Senior Project Manager, Division of Spent Fuel Storage and Transportation
Michael S. Peck, DCPP NRC Senior Resident Inspector

10 CFR 72.48 Report of Changes, Tests, and Experiments for the Period March 1, 2008, through February 28, 2010

Pacific Gas and Electric Company
Diablo Canyon Independent Spent Fuel Storage Installation
Docket No. 72-26

LBIE 2008-013, Modifications to the Holtec HI-STORM Overpack	
Reference Document No.	DCP N-49773
Reference Document Title:	Dry Cask Storage System
Activity Description	
This design change implements the use of an anchored version of the Holtec HI-STORM 100SA Overpack with a Version B lid at the Diablo Canyon ISFSI facility. This Overpack will be used in conjunction with the shortened Holtec MPC-32.	
Summary of Evaluation	
The modifications to the HI-STORM Overpack do not affect criticality and confinement because the changes apply to the HI-STORM Overpack, which does not perform a criticality or confinement function. The modifications to the HI-STORM Overpack do affect shielding capability, thermal performance and structural integrity; however, as discussed in the attached evaluation for these changes, the effects of these changes are within the licensing basis acceptance criteria of the DC ISFSI licensed Overpack and none of the effects are considered adverse and are acceptable under 10 CFR 72.48 criteria. Therefore, the proposed change did not require prior NRC approval.	

LBIE 2008-014, Cask Transfer Facility (CTF) Modifications	
Reference Document No.	DCP N-49773
Reference Document Title:	Dry Cask Storage System
Activity Description	
This design change implements the use of the Cask Transfer Facility (CTF), which has been specifically modified for use at the Diablo Canyon ISFSI facility. The modifications involve the removal of the integral lifting system and a reconfiguration of the CTF. The lifting requirements for the CTF are now performed by the cask transporter.	
Summary of Evaluation	
The modifications to the CTF do not affect criticality, confinement, or shielding because the CTF does not perform any of these functions. The modifications to the CTF do affect thermal performance and structural integrity of the other components that are involved in the cask transfer process; however, as discussed in the attached evaluation for these changes, the effects are within the design limits of the DC ISFSI licensed HI-TRAC transfer cask, Multiple Purpose Canister (MPC) and the HI-STORM overpack; and none of the effects are considered adverse and are acceptable under 10 CFR 72.48 criteria. Therefore, the proposed change did not require prior NRC approval.	

LBIE 2008-015, Mods to the Holtec HI-TRAC 125D Transfer Cask	
Reference Document No.	DCP N-49773
Reference Document Title:	Dry Cask Storage System
Activity Description	
Holtec has modified its HI-TRAC 125D transfer cask for use at the Diablo Canyon Power Plant and ISFSI facility. The modifications involve shortening the cask to allow vertical handling throughout the loading or unloading and transport processes. The overall height of the HI-TRAC has been reduced by approximately 9 inches. The bottom flange and the flange gussets of the transfer cask have been modified in order to meet Diablo Canyon's site-specific requirements. The lift lugs and some the attachment points that could be used to restrain the transfer cask have been eliminated. The original DC ISFSI design used these attachment points for the bumpers during the horizontal movement of the transfer cask, which is no longer the process at DCPP. As a result, these attachment points are no longer required on the DC ISFSI transfer cask.	
Summary of Evaluation	
The modifications to the HI-TRAC transfer cask do not affect criticality or confinement because the transfer cask does not perform a criticality or confinement function. The modifications do affect shielding capability, thermal performance, and structural integrity. However, as discussed in the attached evaluation for these changes, the effects of these changes are within the design limits of the DCPP and DC ISFSI licensed HI-STORM 100 system and none of the effects are considered adverse and are acceptable under 10 CFR 50.59 and 10 CFR 72.48 criteria. Therefore, the proposed change did not require prior NRC approval.	

LBIE 2008-016, Holtec Multiple Purpose Canister (MPC) Mods	
Reference Document No.	DCP N-49773
Reference Document Title:	Dry Cask Storage System
Activity Description	
The Holtec MPC-32 has been modified for use at the Diablo Canyon Power Plant and ISFSI facility. The modifications involve shortening the MPC for use in the shortened HI-TRAC transfer cask to allow vertical handling throughout the loading and transport processes.	
Summary of Evaluation	
The changes to the MPC affect criticality, confinement, shielding capability, thermal performance, and structural integrity and required further review in this LBIE. As a result of that review and as discussed in the attached evaluation for these changes, the effects of these changes are within the design limits of the DC ISFSI licensed HI-STORM 100 system and none of the effects are considered adverse and are acceptable under both 10 CFR 50.59 and 10 CFR 72.48 criteria. Therefore, the proposed change did not require prior NRC approval.	

LBIE 2008-017, Holtec Vertical Cask Transporter	
Reference Document No.	DCP N-49773
Reference Document Title:	Dry Cask Storage System

Activity Description

This design change implements the use of the Holtec Vertical Cask Transporter (VCT) which has been designed for use at the Diablo Canyon Power Plant and ISFSI facility. The VCT is designed to transport, in a vertical orientation, a loaded or unloaded HI-TRAC transfer cask or HI-STORM overpack on site. The VCT will provide for all lifting and transport requirements associated with movement of a loaded transfer cask from just outside the fuel handling building (FHB) to the cask transfer facility (CTF) and a loaded overpack from the CTF to the ISFSI pad. The VCT also performs the lifting requirements for the transfer of a loaded Multiple Purpose Canister (MPC) between the transfer cask and the overpack at the CTF.

The VCT is designed to be capable to transport a loaded HI-TRAC up a 10 percent grade. In Holtec Calc HI-2012768 R3 and PG&E Calc OQE-014, the VCT is evaluated for seismic stability and sliding during a design basis earthquake while carrying a loaded HI-TRAC. Based on the modeling methodology used in these calculations the change in the center of gravity from carrying the cask vertically or horizontally does not affect the results of the calculations and the results are bounding for both configurations.

The VCT was always designed to be capable of vertical and horizontal carry. In addition, the VCT has always been capable of lifting the maximum load of a loaded HI-STORM overpack; however, previously it was not the primary lifting mechanism at the CTF as there was a CTF jackscrew system that performed this action. This jackscrew system has been eliminated in the current design.

The VCT has also been fitted with a cable winch used to pull the Low Profile Transporter (LPT) with a loaded transfer cask out of the FHB. The LPT is pulled along rails that allow it to exit the FHB and moved to a position within the VCT footprint where the VCT will capture the transfer cask and carry it to the CTF. The VCT has been designed to support this function during any associated design basis accident.

The VCT has a licensing basis limit of 50 gallons of fuel on board based on an engulfing fire for the HI-STORM system. The licensing basis for the DC ISFSI provides that the 50 gallons must not be capable of entering the CTF during use of the VCT. The NRC safety evaluation report indicates that this may be performed by the use of a removable fuel tank that will be moved away from the CTF during VCT use. In the licensing submittals for the DC ISFSI, PG&E provided the use of the removable fuel tank as an example of possible solutions to this issue. It was not provided as the actual solution. The actual VCT design provides for an on board 45 gallon diesel fuel tank and a catch pan that is designed to catch and divert any leakage away from the CTF through a hose connection on the pan. This design

meets the requirements of the license in that it will ensure that any fuel leakage can not reach the CTF.

The VCT operates between just outside of the Unit 2 fuel handling building up to and at the CTF; and between the CTF and the ISFSI pads. The VCT does not enter any 10 CFR 50 structures, however, its route does move within the 10 CFR 50 protected areas. As a result, the 10 CFR 50 licensed facilities have been reviewed for effects of the VCT.

Summary of Evaluation

The design of the VCT does not affect criticality, confinement, shielding capability, or thermal performance of the HI-STORM 100 system. The transporter has been designed to applicable codes and standards to ensure its structural integrity. The change in the primary function of the VCT to perform all the lifting at the CTF required further review in this LBIE. In addition, the use of the onboard catch pan for the diesel fuel tank also needed further review.

As a result of that review, the effects of these changes are within the design limits of the licensed DC ISFSI facility and the VCT remains capable of performing all design and licensing basis functions, and all operational requirements. None of the VCT changes are considered adverse and are acceptable under 10 CFR 72.48 and 10 CFR 50.59 criteria.

Therefore, the proposed change did not require prior NRC approval.

LBIE 2008-018, Low Profile Transporter (LPT) Modifications	
Reference Document No.	DCP N-49773
Reference Document Title:	Dry Cask Storage System

Activity Description

This design change implements the use of a new Low Profile Transporter (LPT) to move the transfer cask into and out of the fuel handling building/auxiliary building (FHB/AB) in a vertical orientation. The LPT will only be used within the Unit 2 FHB/AB because all movement of fuel to the ISFSI will commence on the Unit 2 side of the FHB/AB. There is no LPT for Unit 1. The LPT replaces the licensed transport frame, which was provided to down-end the transfer cask to a horizontal configuration and to move the transfer cask to a position outside of the FBH/AB to allow the cask transporter to move the transfer cask to the CTF. The use of the LPT eliminates the need for the horizontal orientation of the transfer cask in this process and eliminates the need for impact limiters.

Summary of Evaluation

The use of the LPT does not affect criticality and confinement because the LPT does not perform a criticality or confinement function. The change to a vertical orientation has been demonstrated to preclude tipover and impacts with safety significant components based on the data presented in Holtec Report HI-2053390 Rev 4. Thermal performance of the system is improved in the vertical configuration due to

the continued operation of the Thermal Siphon effects within the MPC. Therefore, the proposed change did not require prior NRC approval.

LBIE 2008-019, Revision of Diablo Canyon ISFSI FSAR Update	
Reference Document No.	NA
Reference Document Title:	ISFSI FSAR Update
Activity Description	
This LBIE describes and evaluates changes included in Revision 2 of the DC ISFSI FSARU that are not addressed in DC-specific cask component LBIEs. Closely related is a separate design change package and LBIE for use of the new single failure proof crane in the fuel handling building for cask handling and fuel loading or unloading.	
Summary of Evaluation	
The changes to the FSARU addressed in this LBIE support activities involving interface and use of the DC-specific cask components and supplement those contained in the LBIEs for the individual cask components. The changes are grouped into hardware changes, evaluation / analysis changes, and other. The hardware changes include the elimination of five items no longer needed and the addition of two new items needed for cask loading, unloading, and transport. Four evaluation items are included; these are discussed in the attached safety assessment. Ten other miscellaneous changes are addressed. The changes addressed in this LBIE affect the design and use of the DC-specific HI-STORM 100 system, but do not affect the design basis limits of the system and are considered acceptable under 10 CFR 72.48 criteria. Therefore, the proposed change did not require prior NRC approval.	

LBIE 2009-012, Holtec Vertical Cask Transporter	
Reference Document No.	NA
Reference Document Title:	ISFSI FSAR Update
Activity Description	
This LBIE replaces LBIE 2008-017 and implements the use of the Holtec Vertical Cask Transporter (VCT) which has been designed for use at the Diablo Canyon Power Plant and ISFSI facility. Changes from LBIE 2008-017 make the method of complying with the 22-hour limit in the CTF more generic to avoid invalidating this LBIE should the method of compliance be changed in the future. The contingency provided in LBIE 2008-017 is currently in the FSAR; this LBIE removes the specific requirements and states that the contingency plan will be provided in the FSAR. Also, reference to LPT "rails" has been changed to the current design of LPT "tracks." The VCT is designed to transport vertical a loaded or unloaded HI-TRAC transfer cask or HI-STORM overpack on site. The VCT will provide for all lifting and transport	

requirements associated with movement of a loaded transfer cask from just outside the fuel handling building (FHB) to the cask transfer facility (CTF) and a loaded overpack from the CTF to the ISFSI pad. The VCT also performs the lifting requirements for the transfer of a loaded Multiple Purpose Canister (MPC) between the transfer cask and the overpack at the CTF.

The VCT is designed to be capable to transport a loaded HI-TRAC up a 10 percent grade. In Holtec Calc HI-2012768 R3 and PG&E Calc OQE-014, the VCT is evaluated for seismic stability and sliding during a design basis earthquake while carrying a loaded HI-TRAC. Based on the modeling methodology used in these calculations the change in the center of gravity from carrying the cask vertically or horizontally does not affect the results of the calculations and the results are bounding for both configurations.

The VCT was always designed to be capable of vertical and horizontal carry. In addition, the VCT has always been capable of lifting the maximum load of a loaded HI-STORM overpack; however, previously it was not the primary lifting mechanism at the CTF as there was a CTF jackscrew system that performed this action. This jackscrew system has been eliminated in the current design.

The VCT has also been fitted with a cable winch used to pull the Low Profile Transporter (LPT) with a loaded transfer cask out of the FHB. The LPT is pulled along tracks that allow it to exit the FHB and moved to a position within the VCT footprint where the VCT will capture the transfer cask and carry it to the CTF. The VCT has been designed to support this function during any associated design basis accident.

The VCT has a licensing basis limit of 50 gallons of fuel on board based on an engulfing fire for the HI-STORM system. The licensing basis for the DC ISFSI provides that the 50 gallons must not be capable of entering the CTF during use of the VCT. The NRC safety evaluation report indicates that this may be performed by the use of a removable fuel tank that will be moved away from the CTF during VCT use. In the licensing submittals for the DC ISFSI, PG&E provided the use of the removable fuel tank as an example of possible solutions to this issue. It was not provided as the actual solution. The actual VCT design provides for an on board 45 gallon diesel fuel tank and a catch pan that is designed to catch and divert any leakage away from the CTF through a hose connection on the pan. This design meets the requirements of the license in that it will ensure that any fuel leakage can not reach the CTF.

The VCT operates between just outside of the Unit 2 fuel handling building up to and at the CTF; and between the CTF and the ISFSI pads. The VCT does not enter any 10 CFR 50 structures, however, its route does move within the 10 CFR 50 protected areas. As a result, the 10 CFR 50 licensed facilities have been reviewed for effects of the VCT.

Summary of Evaluation
The design of the VCT does not affect criticality, confinement, shielding capability, or thermal performance of the HI-STORM 100 system. The transporter has been designed to applicable codes and standards to ensure its structural integrity. The change in the primary function of the VCT to perform all the lifting at the CTF required further review in this LBIE. In addition, the use of the onboard catch pan for the diesel fuel tank also needed further review. As a result of that review, the effects of these changes are within the design limits of the licensed DC ISFSI facility and the VCT remains capable of performing all design and licensing basis functions, and all operational requirements. None of the VCT changes are considered adverse and are acceptable under 10 CFR 72.48 and10 CFR 50.59 criteria. Therefore, the proposed change did not require prior NRC approval.

LBIE 2009-016, Dent in HI-TRAC	
Reference Document No.	NA
Reference Document Title:	ISFSI FSAR Update, Tables 7.3-2 & -3
Activity Description	
The Diablo Canyon HI-TRAC (Serial Number 1025-006) has a 24-inch high by 18-inches wide dent on the outer surface of the water jacket. At the worst point, the dent is roughly 1-inch deep. The estimated center of the dent is 5 ft-8 inches from the bottom of the HI-TRAC bottom flange. The dent was caused by contact with the driver side bumper of the vertical cask transporter. In Supplier Manufacturing Deviation Report 1693, Holtec recommends that removal of the dent is not warranted and that the HI-TRAC should be accepted "as-is". PG&E has independently evaluated the impact of the dent on the ISFSI licensing basis in this LBIE. The physical dimension of the dent is as reported in Holtec LBIE included in SMDR-1073-1693 RO.	
Summary of Evaluation	
The HI-TRAC water jacket is used to provide neutron shielding around the side of the cask after the water is drained from the MPC. The maximum indentation of 1inch to the side of the HI-TRAC will reduce the thickness of water in the jacket at the location of the dent for neutron shielding purposes. As a result of the localized reduction in water thickness, it is estimated that the neutron contribution to the total dose rate in the area of the dent will increase by approximately 80 percent and the gamma contribution will increase by approximately 40 percent. These increases are based on Monte Carlo N-Particle (MCNP) studies to determine the change in dose rate as a function of material thickness. Holtec Report HI-2002563 analyzes the Diablo Canyon HI-TRAC 125D uniformly loaded with fuel assemblies with a burnup and cooling time combination of 55,000 MWD/MTU and 12 years. The maximum	

calculated dose rate on the side of the cask (MCNP surface 825, segment 19 -page J-6) is 177 mrem/hr. This dose rate is also included in Table 7.3-2 of the ISFSI FSARU. The neutron contribution is approximately 88 mrem/hr and the gamma contribution is approximately 26 mrem/hr. The remaining contributions are mainly from n-gamma, which will not vary significantly due to the reduction in the water thickness.

Tables 7.3-2 and 7.3-3 of the ISFSI FSARU have been revised to reflect the increased surface dose rate at the dent location and to describe the nature of the values as nominal. As shown in Table 7.5-3, dose rates at the site boundary from overpack loading operations use values that bound the values calculated due to the dent. Table 7.3-2 was also revised to refer to the complete loss of water in the transfer cask water jacket accident that describes bounding analytical values (Section 8.2.11.3 of the ISFSI FSARU). The analysis of this event states that doses to onsite personnel will be monitored after the loss-of neutron shielding event and temporary shielding may be employed at the discretion of the DCPP radiation protection department. Similar monitoring will be performed in the vicinity of the dent during transfer cask handling activities. The FSARU change request is attached to this LBIE.

As a result of the 1inch reduction in water thickness, the calculated neutron contribution is increased by 80 percent to approximately 158 mrem/hr and the gamma contribution is increased by 40 percent to approximately 36 mrem/hr. This results in a calculated dose rate of approximately 260 mrem/hr (includes n-gamma contribution), which is an approximate increase of 50 percent over the calculated value of 177 mrem/hr for the full thickness water jacket.

The increase in dose rate is localized around the area of the dent and will not result in a significant increase in dose to operations personnel. Dose rate measurements at the surface of the HI-TRAC in accordance with Radiation Protection Instruction RP-UFSP-RPI-5 following drainage of the water from the loaded MPC will provide dose rate information needed to ensure that operations personnel do not receive excessive doses. Based on Holtec experience at other ISFSI facilities, the measured dose rates have always been significantly less than the calculated dose rates because of conservatisms built into the dose calculations. Therefore, the combination of a localized dose rate increase and calculation conservatisms should result in a negligible increase in dose to operations personnel compared with that expected for an undented water jacket. Any increases will be controlled through Radiation Protection practices (ALARA) based on actual dose rates in order to meet 10 CFR 20 requirements.

With regard to potential impact of the dent on structural integrity of the HI-TRAC, the dent is located approximately 5 ft above the bottom flange and is between vertical support ribs. There is no indication of surface damage (i.e., surface cracks in the panel); other than discoloration, the only evidence of the dent is the local

deformation. When the water jacket is filled, the internal pressure state of stress will act to flatten the dent. Using the most conservative assumptions to compute the stress, the total bending stress remains less than the allowable primary bending stress. Based on the stress being less than the primary bending stress, there is no structural reason why any effort to remove the dent is warranted. Therefore, based on dose rate and structural considerations, it may be concluded that the dented HI-TRAC should be accepted for use "as-is". Therefore, the proposed change did not require prior NRC approval.