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PG&E Letter HBL-06-007

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

Docket No. 50-133, OL-DPR-7  
Humboldt Bay Power Plant, Unit 3  
10 CFR 50.59 Report of Changes, Tests, and Experiments for the Reporting Interval of  
January 1, 2004, through December 31, 2005

Dear Commissioners and Staff:

Pursuant to 10 CFR 50.59, the enclosure to this letter contains the Report of Changes, Tests, and Experiments for Humboldt Bay Power Plant (HBPP) Unit 3, for the reporting interval of January 1, 2004, through December 31, 2005. The report contains two changes made during the reporting interval.

Changes in the Facility as Described in the Defueled Safety Analysis Report (DSAR)

No changes were made to the facility as described in the DSAR during the reporting period.

Changes in Procedures as Described in the DSAR

The enclosed report provides a summary of the evaluation of procedure changes in accordance with 10 CFR 50.59. The changes were reviewed and accepted by the Plant Staff Review Committee (PSRC). The PSRC determined that the changes did not require NRC approval or require a change to the HBPP Technical Specifications. However, as explained in the enclosed report, requests were submitted to the NRC for approval.

Tests and Experiments Not Described in the DSAR

No tests or experiments were performed during the reporting period that are not described in the DSAR.

Sincerely,

  
John S. Keenan

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**10 CFR 50.59 REPORT OF CHANGES, TESTS, AND EXPERIMENTS  
JANUARY 1, 2004, THROUGH DECEMBER 31, 2005**

**HUMBOLDT BAY POWER PLANT, UNIT 3  
DOCKET NO. 50-133**

**PROCEDURE CHANGES MADE FROM JANUARY 1, 2004, THROUGH  
DECEMBER 31, 2005**

Described below are the changes made to Humboldt Bay Power Plant, Unit 3 (HBPP) procedures during the period from January 1, 2004, through December 31, 2005, including brief descriptions of the changes and summaries of the 10 CFR 50.59 evaluations. The HBPP Plant Staff Review Committee has reviewed a more complete record of these changes, and determined the changes do not require NRC approval and do not require a change to the HBPP Technical Specifications (TS). However, as described below, requests were submitted to the NRC for approval.

**1. L-3 Defueled Safety Analysis Report (DSAR)  
(SE No. 2004-01)**

**Activity Description:**

The purpose of this DSAR change was to allow spent fuel to be transferred from the spent fuel pool (SFP) to a cask placed in the SFP that will eventually be transferred to an Independent Spent Fuel Storage Installation (ISFSI). The cask is a heavy load, and the DSAR heavy load accident analysis stated that heavy loads are not permitted over the SFP. The DSAR did not describe cask handling activities necessary for transfer of spent fuel from the SFP to the ISFSI. The DSAR only described SAFSTOR activities, and in fact specifically mentioned that spent fuel transfer is a decommissioning (DECON) activity.

This DSAR change also revised the fuel handling accident consequences based on a ground-based release. For flexibility in performing the spent fuel transfer from the SFP to the cask, HBPP personnel would like to continue this operation even if the refueling building ventilation system (RFBVS) becomes non-operational. DSAR section 5.3.1 required the RFBVS to be operational when fuel is being moved. The fuel handling accident analysis assumed the RFBVS was operational and therefore assumed offsite doses were released via the plant ventilation stack. In order to justify not using the RFBVS during fuel movement, the fuel handling accident analysis consequences (DSAR Appendix A, section 1.2.1) was revised to reflect a ground-based release. Also, DSAR section 5.3.1 was revised to no longer require the RFBVS to be operational during fuel movement, but indicates that the RFBVS should be operated for as low as reasonably achievable (ALARA) purposes.

Summary of Evaluation:

There are three potential issues:

- (1) Placing the cask into the SFP introduces a new system and component in the plant.
- (2) Introducing the cask into the SFP is a heavy load that could result in a more than minimal increase in the probability of the occurrence of an accident.
- (3) Using a ground-based release instead of a ventilation stack release for the fuel handling accident could result in a more than minimal increase in the consequences of an accident because HBPP will no longer take credit for RFBVS operation.

The above three potential issues are mitigated by using a specially designed davit crane meeting NUREG-0612 requirements to minimize the potential for any load drops. The potential issues are also bounded by acceptable consequences of a SFP breach. The consequences of a heavy load drop accident in DSAR Appendix A, 1.2.3 are bounding for a load drop during transfer of spent fuel from the SFP to the ISFSI cask.

There are no required mitigating measures for the ground-based release. Although the calculated dose increased for a ground-based release, this calculated increase results in less than a minimal increase in consequences for using a ground-based release.

Although this change did not require NRC approval, because the activities are unique to HBPP and had no previous NRC review, PG&E submitted a License Amendment Request (LAR) on July 9, 2004, as a prudent action. The NRC approved the request and issued a License Amendment on December 15, 2005.

**2. L-3 DSAR and Technical Basis Document (TBD)-305  
(SE No. 2004-02)**

Activity Description:

Fuel fragments and special nuclear material (SNM) waste (referred to as fuel debris in SE No. 2004-02) have been found in the HBPP SFP. Fuel fragments were not accounted for in PG&E Calculation N-265, Rev. 0, "Humboldt Bay Spent Fuel Pool Criticality Analysis Report," and were not addressed in the DSAR.

The DSAR Change acknowledges and addresses fuel fragments in the SFP. One of the purposes of TBD-305, "Spent Fuel Pool Fuel Fragment, SNM

Waste, Boral Can Holes and Ion Chambers Evaluation," is to evaluate fuel fragments and SNM waste in the SFP for their impact on PG&E Calculation N-265, Rev. 0. The evaluation provides the guidance necessary to develop changes to SFP work procedures to allow spent fuel outside of poisoned cans to be moved. The existence of fuel fragments and SNM waste in the SFP does not increase the number of assemblies in the SFP. However, relative to the criticality analysis, the fuel fragments and SNM waste in aggregate can be considered an uncanned fuel assembly. This assumption makes the current SFP criticality analysis (PG&E Calculation N-265, Rev. 0) bounding relative to fuel fragments and SNM waste since this analysis allows for two fuel assemblies to be outside of poisoned cans (in addition to damaged fuel assembly UD-6N, which is housed in an unpoisoned container).

**Summary of Evaluation:**

There are three potential issues:

- (1) Fuel fragments and SNM waste potentially increase inventory to greater than 390 assemblies. HBPP TS 4.2.2 specifies that the number of fuel assemblies stored in the SFP shall not exceed 390.
- (2) Fuel fragments and SNM waste potentially increase the reactivity in the SFP.
- (3) Fuel fragments and SNM waste are not identified in licensing basis documents.

The potential issues are mitigated as follows:

- (1) While fuel fragments and SNM waste are fissile material that should be evaluated for potential impact on the criticality analysis, they are not considered to contribute to the allowed fuel assembly inventory as defined in the HBPP TS. The intent of the 390 fuel assembly limit is to assure that HBPP does not accept fuel from another plant.
- (2) The fuel fragments and SNM waste total is much less than the fuel in one full assembly. The fuel fragments and SNM waste are conservatively assumed equivalent to one of the three uncanned fuel assemblies allowed by the SFP criticality analysis (i.e. PG&E Calculation N-265, Rev. 0) provided their mass does not approach that of an intact fuel assembly.
- (3) A description of fuel fragments was added to the DSAR. There was no need to add a description of fuel fragments to the TS. However, PG&E submitted a LAR on June 8, 2004, to request adding a statement in the TS to not require fuel fragments be stored in neutron absorbing

containers. The NRC approved this request and issued a License Amendment on September 10, 2004.

There is no adverse impact for this DSAR change because:

- HBPP is not outside of its TS relative to the number of fuel assemblies in the SFP, hence there is no adverse impact.
- The existing SFP criticality analysis (i.e., PG&E Calculation N-265, Rev. 0) is bounding because the aggregate mass of the fuel fragments and SNM waste does not approach that of an intact fuel assembly.
- Lack of documentation of fuel fragments has no adverse impact on the public health and safety.