

DOCKET NO. 72-27

## HUMBOLDT BAY

### INDEPENDENT SPENT FUEL STORAGE INSTALLATION



# LICENSE APPLICATION



PACIFIC GAS AND ELECTRIC COMPANY

**HUMBOLDT BAY  
INDEPENDENT SPENT FUEL STORAGE INSTALLATION  
LICENSE APPLICATION  
ENVIRONMENTAL REPORT  
SAFETY ANALYSIS REPORT**

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December 15, 2003

PG&E Letter HIL-03-001

U.S. Nuclear Regulatory Commission  
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Washington, DC 20555-0001

Docket No. 72-27  
Humboldt Bay Independent Spent Fuel Storage Installation  
License Application for Humboldt Bay Independent Spent Fuel Storage Installation

Dear Commissioners and Staff:

In accordance with Title 10 Part 72, Subpart B, of the Code of Federal Regulations (CFR), Pacific Gas and Electric Company (PG&E) hereby submits an application to the Nuclear Regulatory Commission (NRC) requesting a site-specific license for an Independent Spent Fuel Storage Installation (ISFSI) at the Humboldt Bay Power Plant (HBPP) to store the Unit 3 spent nuclear fuel. The project objective is to relocate the fuel assemblies from wet storage in a spent fuel pool located in Unit 3, to dry storage containers at an ISFSI. The ISFSI will be located on the same property as the existing HBPP facility. The ISFSI will be an interim facility consisting of an in-ground concrete structure with storage capacity for six shielded casks, five containing spent nuclear fuel and one containing "Greater than Class C" (GTCC) waste. The spent fuel will be held there until the U.S. Department of Energy (DOE) is prepared to take possession of the spent fuel and transport it to a long-term repository. An ISFSI will facilitate dismantling the existing Unit 3 structures, thereby providing for earlier termination of the 10 CFR 50 license for Unit 3.

PG&E is submitting the Humboldt Bay ISFSI Physical Security Plan in PG&E Letter HIL-03-002, dated December 9, 2003. PG&E will submit calculation packages and geologic data reports by December 31, 2003, to support NRC review of the ISFSI License Application.

In early 2004, PG&E intends to submit a 10 CFR 50 license amendment request to permit handling of the HI-STAR HB casks in the HBPP Refueling Building

### **Background**

HBPP consists of five electric generation units. Unit 3, a boiling water reactor (BWR), operated for approximately 13 years before being shut down in July 1976. The reactor has remained inactive since that time. Units 1 and 2 are collocated conventional 53 megawatt-electric (MWe) units capable of operating on fuel oil or natural gas. Unit 3 is located in a separate building, but is adjacent to Unit 2. There are also two gas



turbines, rated at 15 MWe each, located in the vicinity of the Units 1, 2 and 3 structures. The five generating units, as well as the plant site, are owned by PG&E.

HBPP Unit 3 received a construction permit on October 17, 1960. Provisional Operating License DPR-7 was issued in August 1962 and commercial operation began in August 1963. On May 17, 1976, the NRC issued an order that required the satisfactory completion of a specified seismic design upgrade program and resolution of certain geologic and seismic concerns prior to return to power operation following the 1976 refueling outage. In 1983, PG&E concluded that the seismic modifications and other modifications required in response to the Three Mile Island accident in 1979 were not economical and opted to decommission the plant. In 1988, the NRC approved the SAFSTOR Decommissioning Plan for Unit 3 and revised the operating license to a possess-but-not-operate license that expires on November 9, 2015.

The Nuclear Waste Policy Act (NWSA) of 1982 as amended, mandated that the DOE assume responsibility for the permanent disposal of spent nuclear fuel from the nation's commercial nuclear power plants beginning in January 1998 pending the availability of a permanent DOE repository. Nuclear power plant operators such as PG&E have been given the responsibility under the NWSA to provide for the interim onsite storage of spent fuel until DOE accepts it. DOE has not met its NWSA mandate to have a repository in operation commencing in January 1998, and no interim spent fuel storage facility has been established. Thus, spent fuel stored at HBPP will need to remain at HBPP time until a DOE or other facility is available. An ISFSI will facilitate the dismantling of the existing Unit 3 structures, thereby providing for earlier termination of the 10 CFR 50 license for Unit 3. In contrast with the current wet storage method, dry storage of spent fuel is a passive storage process that does not require extensive operating equipment or personnel to maintain. There are no effluents, liquids or gases from the operation of an ISFSI, as compared to the allowable effluents from SAFSTOR.

PG&E has considered several alternative means for continued spent fuel storage at HBPP, including continuing the existing wet storage. Based on an overall assessment of operational and safety considerations, as well as the transportation requirements associated with some of the alternatives, PG&E has concluded that dry cask storage of spent fuel at HBPP is the optimum alternative at this time for providing the necessary storage capacity. This storage option allows for the early decommissioning of HBPP Unit 3.

### **Dry Cask Storage: Design and Licensing Considerations**

The Humboldt Bay ISFSI will consist of: the ISFSI storage vault, the onsite cask transporter, and the dry cask storage system. PG&E has decided to use the Holtec International HI-STAR dry cask system, as modified for the HBPP spent fuel. The HBPP-specific design is referred to as the HI-STAR HB. The HI-STAR HB is a storage and transport cask, which provides structural protection and radiation shielding for the



multi-purpose canister (MPC) containing the spent fuel. The handling of the HI-STAR HB onsite will be accomplished using a tracked transporter. HBPP will use the transporter developed for the Diablo Canyon ISFSI. The HI-STAR HB will be licensed for transporting the spent fuel offsite to a federal repository under 10 CFR 71.

The ISFSI storage vault will be an interim facility consisting of an in-ground concrete structure with storage capacity for six shielded casks, five containing spent nuclear fuel and one containing GTCC waste. PG&E is proposing that the 10 CFR 72 Humboldt Bay site-specific license also include the capability to store GTCC waste in accordance with Federal Register Notice dated October 11, 2001 (66 FR 51823), and with the guidance of Interim Staff Guidance ISG-17.

Licensing of the Humboldt Bay ISFSI also involves NRC review of a number of site-specific issues. These include the site-specific environmental review, geotechnical issues related to the site, natural phenomena, and other site-specific matters. Holtec developed a modified HI-STAR overpack and MPC for use at Humboldt Bay due to the HBPP smaller (length and width) fuel assemblies. The modified design and associated analyses were performed in accordance with the analyses methodologies previously licensed by the NRC for the HI-STAR 100 System. This License Application references the Holtec HI-STAR 100 FSAR Revision 1 for description of the generic HI-STAR analyses that are applicable to the HI-STAR HB and also provides supplemental analyses for the site-specific issues that are applicable to the Humboldt Bay ISFSI site and the HI-STAR HB. PG&E is submitting information on these matters as part of this site-specific application and intends that these issues be reviewed and licensed as part of the PG&E site-specific 10 CFR 72 license.

### **Schedule**

As discussed above, an ISFSI will facilitate the dismantling of the existing Unit 3 structures, thereby providing for earlier termination of the 10 CFR 50 license. Therefore, PG&E desires that the NRC complete its review and issue a license for the Humboldt Bay ISFSI as soon as practicable. Assuming no delays in the review process and issuance of the Humboldt Bay ISFSI license in 2005, PG&E will apply to the California Public Utilities Commission (CPUC) to use Humboldt Decommissioning Trust funds for procurement and construction of the ISFSI. After CPUC approval, PG&E will proceed with ISFSI procurement and construction long-lead time items.

### **Application Overview**

In support of this 10 CFR 72 License Application, PG&E is submitting the following:

- One original License Application signed under oath
- Fifteen copies of the License Application
- Fifteen copies of the Safety Analysis Report
- Fifteen copies of the Environmental Report



In accordance with Regulatory Guide 3.50, the Emergency Plan, proposed Technical Specifications, Training Program, Quality Assurance (QA) Program, and Preliminary Decommissioning Plan are included as attachments to the License Application.

With respect to the QA program required by 10 CFR 72, Subpart G, the Diablo Canyon QA Program was revised to include the Humboldt Bay ISFSI requirements and is included as Attachment E to the License Application. PG&E intends to apply this revised QA Program to Humboldt Bay ISFSI activities, and is submitting the revised QA Program to allow the NRC to make a finding that the QA Program complies with 10 CFR 72, Subpart G.

The Humboldt Bay ISFSI Physical Security Plan, which includes the Security Training and Qualification Plan and Safeguards Contingency Plan, has been developed in conformance with 10 CFR 72.180 and is being submitted under separate cover (reference PG&E Letter HIL-01-002, dated December 9, 2003).

#### **Other Matters**

The information contained in this License Application is not considered to be proprietary.

In addition to the approval from the NRC under 10 CFR 72, other state and local permits and licenses will be required to support the construction and operation of the Humboldt Bay ISFSI, as discussed in detail in Chapter 9 of the Environmental Report. With respect to the State of California, PG&E will be applying for a Coastal Development Permit (CDP) in early 2004. The CDP application will require an environmental determination in accordance with state law. The California Coastal Commission (CCC) acts as the lead agency on behalf of the state. PG&E encourages NRC coordination with the CCC during the environmental review process.

If you have any questions regarding this application or require additional information, please contact Mr. Terence Grebel at (805) 545-4160.

Sincerely,

Lawrence F. Womack  
*Vice President – Nuclear Services*

gwh

Enclosures

cc: PG Fossil Gen HBPP Humboldt Distribution  
cc/enc: James R. Hall (15)

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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In the Matter of ) Docket No. 72-27  
PACIFIC GAS AND ELECTRIC COMPANY ) )  
 ) )  
Humboldt Bay Independent Spent Fuel ) )  
Storage Installation ) )  
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AFFIDAVIT

Lawrence F. Womack, of lawful age, first being duly sworn upon oath says that he is Vice President, Nuclear Services of Pacific Gas and Electric Company; that he has executed PG&E Letter HIL-03-001 (License Application for Humboldt Bay Independent Spent Fuel Storage Installation) on behalf of said company with full power and authority to do so; that he is familiar with the content thereof; and that the facts stated therein are true and correct to the best of his knowledge, information, and belief.



\_\_\_\_\_  
Lawrence F. Womack  
*Vice President, Nuclear Services*

Subscribed and sworn to before me this 15th day of December, 2003.

  
\_\_\_\_\_  
Notary Public  
County of San Luis Obispo  
State of California

