13 FINANCIAL QUALIFICATIONS AND DECOMMISSIONING EVALUATION

13.1 Conduct of Review

The objectives of this evaluation are to ensure that the applicant's financial qualifications for constructing and operating the ISFSI and its provisions for the eventual decommissioning of the ISFSI provide reasonable assurance of adequate protection of public health and safety. The evaluation addresses the applicant's financial qualifications, the design and operational features of the ISFSI that facilitate decommissioning, the proposed decommissioning plan, and the associated financial assurance and record keeping plan for decommissioning.

Financial qualification requirements are specified in 10 CFR §72.22(e). Requirements regarding the decommissioning of the ISFSI are given in 10 CFR §72.24(q), §72.30 and §72.130. Complete citations of these regulations are provided in the Appendix of this SER.

13.1.1 Financial Qualifications Evaluation

13.1.1.1 Humboldt Bay Power Plant Decommissioning Funding

The HBPP was permanently shutdown in July 1976 and has since been in a SAFSTOR decommissioning configuration, with spent fuel stored in the facility's spent fuel pool. The NRC approved an initial decommissioning plan in July 1988, which was subsequently converted into the Defueled Safety Analysis Report (DSAR), followed by the Post-Shutdown Decommissioning Activities Report (PSDAR), issued by the licensee in February 1998. At that time, PG&E anticipated that the HBPP spent fuel would remain stored in the spent fuel pool until 2015 and then transferred to DOE. Active decommissioning of the HBPP would not commence until after 2015.

As an electric utility, PG&E's operating budget for maintaining the SAFSTOR condition for the permanently shutdown HBPP is authorized by the California Public Utility Commission (CPUC) to be included in the utility's base rates. The costs of maintaining Humboldt Bay in SAFSTOR, including costs associated with storage of the spent fuel in the spent fuel pool, are funded on an annual basis from the utility's operating budget. The current costs associated with storage of the spent fuel in the spent fuel pool will continue to be funded annually from the utility's operating budget. However, in pursuing the licensing and construction of a dry cask storage facility for interim storage of spent fuel, PG&E has provided additional information specific to the costs of the Humboldt Bay ISFSI.

13.1.1.2 Financial Qualifications for Humboldt Bay ISFSI

In its application dated December 15, 2003, as amended October 1, 2004 (Pacific Gas and Electric Company, 2004a), and as supplemented by letters dated April 23, 2004 (Pacific Gas and Electric Company, 2004b), and July 27, 2004 (Pacific Gas and Electric Company, 2004c), PG&E provided information to address the financial qualification requirements of 10 CFR §72.22(e). This required information includes estimated ISFSI construction costs, estimated operating costs over the life of the ISFSI, and the estimated decommissioning costs and

necessary financial arrangements to provide reasonable financial assurance that decommissioning will be carried out after the removal of spent fuel from the ISFSI.

PG&E estimates that the total costs associated with the long-term management of spent fuel in dry cask storage from ISFSI licensing to decommissioning will be $68 million (2004 Dollars) of which approximately $5.5 million had been disbursed through the end of 2003. Because these anticipated ISFSI costs are not covered by the annual operating budget, PG&E established, as required by 10 CFR §50.54(bb), a decommissioning fund and enumerated how monies for the fund are collected, reserved and expended for ISFSI related expenses. PG&E developed an accounting spreadsheet to partition their decommissioning trust fund into three areas: 1) radiological decommissioning costs; 2) non-radiological decommissioning costs; and 3) ISFSI and spent fuel management related costs.

At the end of 2003, the Humboldt decommissioning trust fund balance was $213.9 million. Table 13-1, "Humboldt Bay Decommissioning Funding Status as of December 31, 2003," summarizes the information provided by PG&E on the allocation of funds within the decommissioning trust for each cost area, including the spent fuel management funding for ISFSI-related costs. Table 13-1 also includes known future additions to the funds authorized by the CPUC and current unfunded balances.

Table 13-1: Humboldt Bay Decommissioning Funding Status as of December 31, 2003 ($ in Millions)

	Radiological Decommissioning	Non-Radiological Decommissioning	ISFSI [1] Related	Total
Trust Account Balance	$172.9	$1.1	$39.9	$213.9
Additional Funds to be Collected	$41	$0.2	0.3	$41.5
Estimated Funds Needed to Complete Each Activity (Shortfall)	$53.8	$2.1	$22.3	$78.2
Total Estimated Costs	$267.7[2]	$3.4	$62.5[2]	$333.6

[1]The ISFSI related costs were based on a site-specific cost estimate prepared by TLG, include engineering, licensing, construction, operation, and decommissioning costs (Pacific Gas and Electric Company, 2004b).

[2]These amounts do not include funds previously disbursed.

PG&E stated that a significant portion of the funding shortfall will be obtained from investment growth of the decommissioning trust and tax-savings related to the trust. PG&E also stated that any future funding shortfalls resulting from poor investment returns or unforseen expenses would necessitate requests for additional rate recovery from the CPUC to fully fund the decommissioning activities in each trust sector. The information in Table 13-1 is based on a site-specific decommissioning cost estimate for HBPP, Unit 3, prepared by TLG Services

(Pacific Gas and Electric Company, 2004b). In PG&E's estimates, the costs for ISFSI decommissioning are projected to be less than $1 million.

10 CFR 72.30(b) and (c) require that an applicant must provide a decommissioning funding plan that describes the financial assurance method for the decommissioning the ISFSI, and that this mechanism must be provided by some combination of prepayment; a surety method, insurance or other guarantee; or an external sinking fund. The Humboldt Bay decommissioning trust fund is an external sinking fund that contains monies designated specifically for spent fuel management costs and non-radiological decommissioning activities (including the ISFSI costs), in addition to the radiological decommissioning funds in support of 10 CFR §50.82 decommissioning requirements.

The NRC staff previously found that PG&E's approach to decommissioning funding is consistent with the NRC's regulatory Statements of Consideration concerning the spent fuel management program (67 FR 78340, December 24, 2002, or 61 FR 39385, July 29, 1996), in that the decommissioning regulations do not prohibit commingling of decommissioning funds with spent fuel management (ISFSI) funds and other non-radiological decommissioning funds, provided that accounting mechanisms are employed to ensure that funds for each type of activity are appropriately identified and segregated (Nuclear Regulatory Commission, 2004). PG&E has established an accounting mechanism to maintain the segregation of decommissioning funds and will adhere to the intent of this funding segregation.

The NRC staff finds the applicant's spent fuel management cost estimates to be reasonable based on a cost comparison with some similar decommissioning reactors. These cost estimates account for all ISFSI-related expenses, in addition to other spent fuel management costs. The staff recognizes the current funding shortfalls but expects that the CPUC would likely approve justifiable requests for additional rate recovery as necessary to fully fund the decommissioning trust for circumstances that could not be foreseen or reasonably avoided by PG&E. The CPUC has provided funding for HBPP costs since Unit 3 shut down in July 1976, a period of more than 29 years. The staff finds that the licensee's proposed plan to transfer the spent fuel to an ISFSI and its associated funding mechanism provides reasonable assurance that adequate funds will be available to complete radiological decommissioning of the ISFSI. Furthermore, the NRC staff considers the transfer of spent fuel to dry cask storage to be a necessary step toward radiological decommissioning of Humboldt Bay Power Plant, Unit 3.

The NRC staff finds that the revised PG&E plan for the interim storage of spent fuel is adequate and provides sufficient details on associated funding mechanisms. The staff therefore concludes that the PG&E spent fuel management program for Humboldt Bay provides reasonable assurance that sufficient funds are available to build, operate and decommission the ISFSI. The staff finds that PG&E has submitted sufficient information to address the requirements of 10 CFR §72.22(e)(1) and (2). The staff reviewed PG&E's estimates of the costs to construct, operate and decommission the ISFSI and concluded that the estimates are reasonable. The staff also concludes that the existing balance of funds and cost recovery mechanisms provide reasonable assurance that sufficient funds will be available to construct, operate, and decommission the ISFSI, recognizing that the CPUC has been authorizing funding of reasonable costs for the HBPP since 1976.

On the bases of the foregoing evaluation, the staff finds that the financial requirements of 10 CFR §72.22(e) and 10 CFR §72.30(b) and (c) have been met.

13.1.2 Decommissioning Evaluation

13.1.2.1 Design and Operational Features

The requirements of 10 CFR §72.130 specify that the ISFSI must be designed for decommissioning. Provisions must be made to facilitate decontamination of structures and equipment, minimize the quantity of radioactive wastes and contaminated equipment, and facilitate the removal of radioactive wastes and contaminated materials at the time the ISFSI is permanently decommissioned. Also, 10 CFR §72.30(a) requires the submittal of a proposed decommissioning plan that contains sufficient information on proposed practices and procedures for the decontamination of the site and facilities and for disposal of residual radioactive materials after all spent fuel and other stored material has been removed. This plan must identify and discuss those design features of the ISFSI that facilitate its decontamination and decommissioning at the end of its useful life.

The NRC staff has previously reviewed the design of the Holtec HI-STAR 100 storage system, and concluded that its design features will facilitate decontamination and decommissioning. The design and operational features of the HI-STAR HB storage system to be used at the Humboldt Bay ISFSI are very similar (with the exception of the storage vault) and will likewise minimize contamination and facilitate decommissioning at the end of the useful life of the ISFSI. These features include procedures for preventing contamination of MPC outer surfaces during loading in the spent fuel pool and for decontaminating the HI-STAR HB cask and MPC top lid prior to movement to the ISFSI. The confinement design of the MPCs, which are loaded and seal welded before transfer to the storage vault, and the passive design of the storage system, minimize the potential for radioactive contamination to occur and to spread. The neutron flux levels generated by the spent fuel are expected to be sufficiently low that any activation of the overpacks or storage vault components will be insignificant. Any HI-STAR HB overpacks meeting the free release criteria may be made available to other parties for their use or disposed of as non-controlled material. If these components do become slightly contaminated, the steel-lined surfaces will facilitate decontamination efforts. In the unlikely event any residual contamination cannot be sufficiently removed, the overpacks will still be suitable for disposal as low specific activity material in a licensed near-surface disposal site.

Through the imposition of administrative controls, the applicant will limit any contamination on each HI-STAR HB cask prior to its movement, so that neither the cask transporter, nor the storage vault or other supporting components are expected to become contaminated. Unlike the HI-STAR 100 overpack design, the HI-STAR HB overpacks are sealed with a bolted closure and backfilled with helium, greatly reducing the already very low potential for spread of contamination to supporting equipment and structures. PG&E will perform surveys of all supporting equipment and structures at the time of decommissioning, and they will be decontaminated as necessary so as to be in a condition suitable for free release. If, in the unlikely event that the equipment or structures cannot be decontaminated to appropriate levels, PG&E will dispose of them in a licensed near-surface disposal site. Radiation survey measurements will be made of all components prior to their final dispensation to determine whether they will be subject to further decontamination efforts, disposed of as low-level radioactive waste, or released for re-use or commercial disposal.

13.1.2.2 Decommissioning Plan

The requirements of 10 CFR §72.30(a) specify that each application for an ISFSI license include a proposed decommissioning plan that contains sufficient information on proposed practices and procedures for the decontamination of the site and facilities and for disposal of residual radioactive materials after all spent fuel and other stored material have been removed, in order to provide reasonable assurance that the decontamination and decommissioning of the ISFSI at the end of its useful life will provide adequate protection to the health and safety of the public. The requirements of 10 CFR §72.30(b) specify that the proposed decommissioning plan must also include a decommissioning funding plan containing information on how reasonable assurance will be provided that funds will be available to decommission the ISFSI. This information must include a cost estimate for decommissioning and a description of the method for assuring funds for decommissioning. The requirements of 10 CFR §72.30(c) specify that financial assurance for decommissioning must be provided by some combination of prepayment; a surety method, insurance, or other guarantee; or an external sinking fund. The requirements of 10 CFR §72.30(d) specify that records of information important to the decommissioning of a facility shall be kept in an identified location until the site is released for unrestricted use. These include records of spills or other unusual occurrences involving the spread of contamination around the site; as-built drawings and modifications of structures and equipment in restricted areas where radioactive materials are used or stored; a list of designated, or previously designated, restricted areas, and any contaminated areas requiring documentation; and records of the cost estimate performed and the funding method for the decommissioning funding plan.

The Humboldt Bay ISFSI Preliminary Decommissioning Plan (Pacific Gas and Electric Company, 2004a, Appendix F) was prepared and submitted in accordance with the requirements of 10 CFR §72.30. The plan discusses the ISFSI decommissioning objective, activities and tasks; records; cost estimate; funding plan and decommissioning facilitation. The ISFSI decommissioning plan is based on PG&E's assumption that the fuel assemblies will remain sealed in the loaded MPCs and will be transported offsite. The HI-STAR HB overpacks, storage vault, and other ISFSI components will be decontaminated as necessary, then disposed of as low-level radioactive waste at a licensed disposal site, or as non-controlled material at a commercial facility, as appropriate, or otherwise dispositioned to allow release of the ISFSI site for unrestricted use.

13.1.2.2.1 General Provisions

Each of the elements listed in 10 CFR §72.30 have been provided in the Humboldt Bay ISFSI License Application, SAR or in the ISFSI Preliminary Decommissioning Plan. As discussed in Section 13.1.2.1 of this SER, PG&E has described the measures that will provide for the necessary decontamination of the site and facilities and the disposal of residual radioactive materials after all spent fuel and other stored material have been removed.

13.1.2.2.2 Cost Estimate

The cost for decommissioning the Humboldt Bay ISFSI was estimated to be roughly $900,000, as stated in the Humboldt Bay ISFSI Preliminary Decommissioning Plan and supplemental information (Pacific Gas and Electric Company, 2004a, b). This estimate covers the costs for

decontamination of ISFSI structures and components, as well as the disposal of any ISFSI-related material as low-level radioactive waste. As discussed in Section 13.1.1.2 of this SER, the ISFSI decommissioning costs represent a small fraction of the total estimated decommissioning costs for HBPP Unit 3.

13.1.2.2.3 Financial Assurance Mechanism and Record Keeping

The decommissioning funding mechanism for the Humboldt Bay ISFSI is described in the ISFSI Preliminary Decommissioning Plan. An external sinking trust fund account has been established by PG&E for the decommissioning of the HBPP, Unit 3, and that account contains monies for the decommissioning of the ISFSI. The ISFSI decommissioning costs are identified as separate line items in the detailed cost estimates provided in the decommissioning funding reports for the Humboldt Bay Power Plant, Unit 3. The PG&E decommissioning funding program meets the appropriate requirements of 10 CFR §72.30(c), as described in the ISFSI Preliminary Decommissioning Plan and in the decommissioning funding reports for Humboldt Bay Power Plant, Unit 3.

In the ISFSI Preliminary Decommissioning Plan, PG&E also committed to maintain records in support of ISFSI decommissioning, as required by 10 CFR §72.30(d). Specifically, these records will include records of spills or unusual occurrences involving the spread of contamination around the site, as-built drawings and modifications of structures and equipment in the ISFSI restricted area(s), and decommissioning cost estimates and funding methods. These records will be maintained in accordance with PG&E's existing records management program, which falls under the Diablo Canyon Power Plant Quality Assurance Program, as amended to include the Humboldt Bay ISFSI activities as discussed in Appendix E of the Humboldt Bay ISFSI License Application.

13.2 Evaluation Findings

The staff made the following findings regarding the applicant's financial qualifications and decommissioning plans for the Humboldt Bay ISFSI:

- The staff has determined that the applicant has adequately demonstrated its financial qualifications to construct, operate and decommission the proposed ISFSI, in accordance with 10 CFR §72.22(e).

- The staff has determined that the decommissioning plan submitted by the applicant provides reasonable assurance that the decontamination and decommissioning of the ISFSI at the end of its useful life will provide adequate protection to the health and safety of the public. The staff, therefore, concludes that the proposed decommissioning plan complies with 10 CFR §72.24(q), §72.30(a) and §72.130.

- The staff has determined that the decommissioning funding plan submitted by the applicant is sufficient to provide reasonable assurance that costs related to decommissioning as characterized by the proposed decommissioning plan have been adequately estimated. The staff, therefore, concludes that the cost estimate in the decommissioning funding plan complies with 10 CFR §72.30(b).

- The staff has determined that the financial assurance mechanisms submitted by the applicant are sufficient to provide reasonable assurance that adequate funds will be available to decommission the ISFSI so that the site will ultimately be available for unrestricted use for any private or public purpose. The staff, therefore, concludes that the financial assurance mechanisms in the decommissioning funding plan comply with 10 CFR §72.30(c).

- The staff has determined that the applicant will maintain all records of information important to the decommissioning of the ISFSI, consistent with the requirements of the Quality Assurance Program. The staff, therefore, concludes that the record keeping commitments made by the applicant comply with 10 CFR §72.30(d).

13.3 References

Pacific Gas and Electric Company. *Humboldt Bay Independent Spent Fuel Storage Installation Safety Analysis Report, Amendment 1, Preliminary Decommissioning Plan, Appendix F to License Application*. Avila Beach, CA: Pacific Gas and Electric Company. October 1, 2004. 2004a.

Pacific Gas and Electric Company. *Humboldt Bay Independent Spent Fuel Storage Installation Supplemental General and Financial Information - 10 CFR 72.22.* Letter HIL-04-003, Pacific Gas and Electric Company, April 23, 2004. 2004b

Pacific Gas and Electric Company. *Response to NRC Request for Supplemental Humboldt Bay Independent Spent Fuel Storage Installation Financial Information.* Letter HIL-04-006, Pacific Gas and Electric Company, July 27, 2004. 2004c.

U.S. Nuclear Regulatory Commission. *Humboldt Bay Nuclear Power Plant - Review and Preliminary Approval of Spent Fuel Management Program (TAC L52613)* Docket Nos. 50-133, 72-27. U.S. Nuclear Regulatory Commission. June 14, 2004. 2004.