16 TECHNICAL SPECIFICATIONS

16.1 Conduct of Review

This chapter of the Safety Evaluation Report (SER) evaluates the proposed technical specifications (TS) for the Humboldt Bay Independent Spent Fuel Storage Installation (ISFSI). Attachment C, "Proposed Technical Specifications," of the License Application (Pacific Gas and Electric Company, 2004a) and Chapter 10, "Operating Controls and Limits," of the Safety Analysis Report (SAR) (Pacific Gas and Electric Company, 2004b) provide information about the proposed TSs, including their bases and justification. The technical specifications include functional and operating limits, monitoring instruments and limiting control settings, limiting conditions, surveillance requirements, design features, and administrative controls to ensure safe operation of the facility. The review objectives of this chapter are to ensure that the proposed technical specifications are complete, appropriately defined and justified, and supported by the technical disciplines reviewed in this SER.

The review considered how the SAR and related documents address the regulatory requirements of 10 CFR §72.26, §72.44(a), §72.44(c)(1–5), and §72.44(d)(1–3). Complete citations of these regulations are provided in the Appendix of this SER.

The storage system to be used at the Humboldt Bay ISFSI is the HI-STAR HB System. The HI-STAR HB system is a modified version of the HI-STAR 100 system, which is described in detail in the HI-STAR 100 system Final Safety Analysis Report (Holtec International, 2002). The Humboldt Bay ISFSI technical specifications are based on the approved technical specifications for the Holtec HI-STAR 100 system (U.S. Nuclear Regulatory Commission, 2001a, Appendices A and B). Where applicable, the staff relied on its findings from its previous review of the HI-STAR 100 system, as documented in the HI-STAR 100 Cask System SER (U.S. Nuclear Regulatory Commission, 2001b).

16.1.1 Functional/Operating Limits, Monitoring Instruments, and Limiting Control Settings

Functional and operating limits are those limits on fuel and waste handling and storage conditions necessary to protect the integrity of the stored fuel and waste container, to protect employees against occupational exposure, and to guard against the uncontrolled release of radioactive materials. The functional and operating limits that will be included in the Humboldt Bay ISFSI technical specifications, and the associated SAR sections, are listed in Table 16-1. The table also lists the sections of this SER that address each functional and operating limit.

Based on a review of the application, the staff confirms that the functional and operating limits listed in Table 16-1 to be placed on fuel and waste to be stored at the Humboldt Bay ISFSI are necessary to protect the integrity of the stored fuel, to protect employees against occupational exposure, and to guard against the uncontrolled release of radioactive materials. In addition, the staff confirms that because of the passive design features of the Humboldt Bay ISFSI, the applicant's proposal to not include technical specifications for monitoring instruments and limiting control settings is acceptable. The staff concludes that the proposed technical specifications for the Humboldt Bay ISFSI are in compliance with 10 CFR §72.26 and §72.44(c)(1).

Table 16-1. Functional/Operating Limits, Monitoring Instruments, and Limiting Control Settings			
Technical Specification Item	**Functional/Operating Limit**	**Associated SAR Section(s)**	**Associated SER Section(s)**
2.1.1	Spent Nuclear Fuel to be Stored	3.1.1, 10.2.1	4.1.1, 6.1.2, 7.1.1, 8.1.2
2.1.2	Greater than Class C Waste To Be Stored	3.1.1.4, 10.2.1.3	4.1.1, 7.1.1
2.2	Functional and Operating Limits Violations	10.2.1.4	8.1.2

16.1.2 Limiting Conditions/Surveillance Requirements

Limiting conditions for operation (LCOs) are the lowest functional capability or performance levels of equipment required for safe operation. Surveillance requirements (SRs) include inspection, test, and calibration activities to ensure that the necessary integrity of required systems is maintained, confirmation that operation of the ISFSI is within the required functional and operating limits, and confirmation that the limiting conditions required for safe storage are met. The LCOs and SRs that will be included in the Humboldt Bay ISFSI technical specifications and the associated SAR sections are listed in Table 16-2. The table also lists the sections of this SER that address each LCO and SR.

The staff confirmed that the LCOs listed in Table 16-2 specify the lowest functional capability for the equipment required for safe operation. In addition, the staff confirmed that the SRs listed in Table 16-2 provide for necessary inspection and testing, confirm operation within appropriate functional and operating limits, and confirm that LCOs for safe storage are met. The staff finds that the proposed technical specifications for the Humboldt Bay ISFSI are in compliance with 10 CFR §72.26, §72.44(c)(2), and §72.44(c)(3).

Table 16-2. Limiting Conditions for Operation and Surveillance Requirements				
Technical Specification Item	**Limiting Condition for Operation**	**Associated Surveillance Requirement(s)**	**Associated SAR Section(s)**	**Associated SER Section(s)**
LCO 3.1.1	Multi-purpose canister (MPC-HB) Drying and Helium Backfilling	SR 3.1.1.1, 3.1.1.2, 3.1.1.3	4.4.1.2.3, 5.1.1.2, 10.2.2	4.1.3.3, 9.1.3
LCO 3.1.2	Overpack Drying and Helium Backfilling	SR 3.1.2.1, 3.1.2.2, 3.1.2.3	4.4.1.2.3, 5.1.1.2, 10.2.4	4.1.3.3
LCO 3.1.3	MPC-HB Cavity Bulk Helium Temperature Limit	SR 3.1.3.1	4.4.1.2.6, 10.2.3	3.1.1

16.1.3 Design Features

The design features of the technical specifications include items that could have a significant effect on safety if altered or modified (e.g., materials of construction or geometric arrangements). The design features that will be included in the Humboldt Bay ISFSI technical specifications and the associated SAR sections are listed in Table 16-3. The table also lists the sections of this SER that address each design feature.

The staff confirmed that the design features listed in Table 16-3 are those which, if altered, could have a significant effect on safety. The staff finds the proposed technical specifications for the Humboldt Bay ISFSI are in compliance with 10 CFR §72.26 and §72.44(c)(4).

Table 16-3. Design Features

Technical Specification Item	Design Feature	Associated SAR Sections	Associated SER Sections
4.1.1	Criticality Control	3.3.1.4, 4.2.3.3.7	8.1.1.2
4.2	Codes and Standards	4.2.3.3	4.1.3.2, 5.1.1, 5.1.4, 9.1.1
4.2.1	Alternatives to Design Codes, Standards, and Criteria	3.4, Table 3.4-5	4.1.3.2
4.3.1	Cask Transporter	3.3.3, 4.3.2.1, Table 3.4-4	3.1.1, 4.1.3.2, 5.1.4.1
4.3.2	Storage Capacity	3.1	1.1.1, 4.1.1
4.3.3	Spent Fuel Storage Cask Load Handling Equipment	4.4.1	3.1.2

16.1.4 Administrative Controls

The administrative controls of the technical specifications include controls on the ISFSI organization and management, record keeping, review and audit, and reporting processes. The administrative controls included in the Humboldt Bay ISFSI technical specifications and the associated SAR sections are listed in Table 16-4. The table also lists the sections of this SER that address those administrative controls.

The staff confirmed that the administrative controls listed in Table 16-4 are those necessary to ensure that the operations involved in the storage of spent nuclear fuel (SNF) at the ISFSI are performed in a safe manner. The staff finds that the proposed technical specifications for the Humboldt Bay ISFSI are in compliance with 10 CFR §72.26, §72.44(c)(5), and §72.44(d)(1–3).

Table 16-4. Administrative Controls			
Technical Specification Item	**Administrative Control**	**Associated SAR Sections**	**Associated SER Sections**
5.1.1	Technical Specifications Bases Control Program	10.2.9	10.1.3.1
5.1.2	Radioactive Effluent Control Program	7.2.2, 7.3.4, 7.5.3	11.1.2.5, Chapter 14
5.1.3	MPC-HB and Spent Fuel Storage Cask Loading, Unloading, and Preparation Program	10.2	3.1.1, 8.1.2, 10.1.2.2, 10.1.3.1
5.1.4	ISFSI Operations Program	Chapter 5	Chapter 3
5.1.5	Cask Transportation Evaluation Program	8.2, 9.2.6, 10.2.9	10.1.3.1, 15.1.2
5.1.6	Greater than Class C Cask Loading and Preparation Program	3.1.1.4, 7.2.1.1. 10.2	7.1.1.1, 10.1.3.1

16.1.5 License Conditions

Section 10 CFR §72.44(a) requires that each license issued under 10 CFR Part 72 includes license conditions which pertain to design, construction, and operation, or which the U.S. Nuclear Regulatory Commission may include as it deems appropriate. In addition, 10 CFR §72.44(b) specifies whether certain license conditions which apply to each license issued under 10 CFR Part 72 are explicitly stated in the license. Those conditions are specified in 10 CFR §72.44(b)(1) through (b)(6) and are binding on the Humboldt Bay ISFSI license, but are not explicitly restated in the Humboldt Bay ISFSI license.

Table 16-5 lists the license conditions that the staff identified during its review of the Humboldt Bay ISFSI License Application and associated documents. These license conditions, related to the testing program for the neutron absorber materials and record keeping requirements, are discussed in Sections 8.1.3.2 and 10.1 of this SER, respectively. The staff finds that the proposed license conditions for the Humboldt Bay ISFSI are in compliance with 10 CFR §72.26 and §72.44(a).

Table 16-5. License Conditions	
License Condition Description	**Associated SER Section**
Testing of Neutron Absorber Materials	8.1.3.2
Record keeping requirements	10.1

16.2 Evaluation Findings

Based on its review of the information in the license application and SAR, the staff makes the following findings regarding the technical specifications of the Humboldt Bay ISFSI:

- The license application and SAR identify necessary technical specifications for the ISFSI to satisfy the requirements of 10 CFR §72.26, §72.44(a), §72.44(c)(1–5), and §72.44(d)(1–3).

- The proposed technical specifications provide reasonable assurance that the ISFSI will allow safe storage of SNF.

16.3 References

Holtec International. *Final Safety Analysis Report for the Holtec International Storage, Transport, and Repository Cask System* (*HI-STAR 100 Cask System*). Rev. 1. HI-2012610. Docket 72-1008. Marlton, NJ: Holtec International. 2002.

Pacific Gas and Electric Company. *Humboldt Bay Independent Spent Fuel Storage Installation License Application.* Amendment 1. Docket No. 72-27. Avila Beach, CA: Pacific Gas and Electric Company. 2004a

Pacific Gas and Electric Company. *Humboldt Bay Independent Spent Fuel Storage Installation Safety Analysis Report*. Amendment 1. Docket No. 72-27. Avila Beach, CA: Pacific Gas and Electric Company. 2004b.

U.S. Nuclear Regulatory Commission. *10 CFR Part 72 Certificate of Compliance No. 1008, Amendment 2, for the HI-STAR 100 Cask System*. Docket No. 72-1008. Washington, DC: U.S. Nuclear Regulatory Commission. 2001a.

U.S. Nuclear Regulatory Commission. *Holtec International HI-STAR 100 Cask System Safety Evaluation Report, Amendment 2*. Docket No. 72-1008. Washington, DC: U.S. Nuclear Regulatory Commission. 2001b.