PROPOSED TECHNICAL SPECIFICATIONS
FOR
HUMBOLDT BAY
INDEPENDENT SPENT FUEL STORAGE INSTALLATION

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1.0 USE AND APPLICATION

1.1 Definitions

----------NOTE----------

The defined terms of this section appear in capitalized type and are applicable throughout these Technical Specifications and Bases.

Term	Definition
ACTIONS	ACTIONS shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.
DAMAGED FUEL ASSEMBLY	DAMAGED FUEL ASSEMBLIES are fuel assemblies with known or suspected cladding defects, as determined by a review of records, greater than pinhole leaks or hairline cracks; empty fuel rod locations that are not filled with solid Zircaloy or stainless steel rods; no longer in the form of an intact fuel assembly and consists of, or contains, debris such as loose fuel pellets, rod segments, etc.; or those that cannot be handled by normal means. This also includes fuel assemblies that are damaged in such a manner as to impair their structural integrity, or have missing or displaced structural components such as grid spacers. DAMAGED FUEL ASSEMBLIES must be stored in a DAMAGED FUEL CONTAINER.
DAMAGED FUEL CONTAINER (DFC)	DFCs are specially designed enclosures for DAMAGED FUEL ASSEMBLIES that permit gaseous and liquid media to escape to the atmosphere in the MPC-HB, while minimizing dispersal of gross particulates within the MPC-HB. A DFC can hold one DAMAGED FUEL ASSEMBLY comprised of material up to the equivalent of an INTACT FUEL ASSEMBLY.

(continued)

1.1 Definitions (continued)

INTACT FUEL ASSEMBLY	INTACT FUEL ASSEMBLY is a fuel assembly without known or suspected cladding defects greater than pinhole leaks or hairline cracks and which can be handled by normal means. A fuel assembly shall not be classified as INTACT FUEL ASSEMBLY unless solid Zircaloy or stainless steel rods are used to replace missing fuel rods and which displace an amount of water equal to that displaced by the original fuel rod(s).
LOADING OPERATIONS	LOADING OPERATIONS include all licensed activities on an SFSC while it is being loaded with its approved contents. LOADING OPERATIONS begin when the first fuel assembly is placed in the MPC and end when the SFSC is suspended from or secured on the transporter.
MULTI-PURPOSE CANISTER (MPC-HB)	MPC-HB is a sealed SPENT NUCLEAR FUEL container that consists of a honeycombed fuel basket contained in a cylindrical canister shell that is welded to a baseplate, lid with welded port cover plates, and closure ring. The MPC-HB provides the confinement boundary for the contained radioactive materials.
OPERABLE/OPERABILITY	A system, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instruments, controls, normal or emergency electrical power, and other auxiliary equipment that are required for the system, component, or device to perform its specific safety function(s) are also capable of performing their related support function(s).
OVERPACK	OVERPACK is a cask that receives and contains a sealed MPC-HB for transportation to and interim storage in the independent spent fuel storage installation (ISFSI). It provides the helium retention boundary, gamma and neutron shielding, protection against environmental phenomena, and a set of lifting trunnions for handling.

(continued)

1.1 Definitions (continued)

SPENT FUEL STORAGE CASKS (SFSCs)	SFSCs are containers approved for the storage of spent fuel assemblies at the ISFSI. The HI-STAR HB SFSC System consists of the OVERPACK and its integral MPC-HB.
SPENT NUCLEAR FUEL	SPENT NUCLEAR FUEL means fuel that has been withdrawn from a nuclear reactor following irradiation, has undergone at least one year's decay since being used as a source of energy in a power reactor and has not been chemically separated into its constituent elements by reprocessing. SPENT NUCLEAR FUEL includes the special nuclear material, byproduct material, source material, and other radioactive materials associated with fuel assemblies, including fuel channels.
STORAGE OPERATIONS	STORAGE OPERATIONS include all licensed activities that are performed at the ISFSI at least one loaded SFSC is in place in the storage vault with the vault lid and all its lid bolts installed.
TRANSPORT OPERATIONS	TRANSPORT OPERATIONS include all licensed activities performed on an SFSC loaded with its approved contents when it is being moved to or from the ISFSI. TRANSPORT OPERATIONS begin when the loaded SFSC is first suspended from or secured to the transporter and end when the SFSC is at its destination and no longer secured on or suspended from the transporter.
UNLOADING OPERATIONS	UNLOADING OPERATIONS include all licensed activities on an SFSC while its contained MPC-HB is being unloaded of its approved contents. UNLOADING OPERATIONS begin when the SFSC is no longer suspended from the transporter and end when the last of its approved contents is removed from the MPC-HB.

1.0 USE AND APPLICATION

1.2 Logical Connectors

PURPOSE

The purpose of this section is to explain the meaning of logical connectors.

Logical connectors are used in Technical Specifications (TS) to discriminate between, and yet connect, discrete Conditions, Required Actions, Completion Times, Surveillances, and Frequencies. The only logical connectors that appear in TS are AND and OR. The physical arrangement of these connectors constitutes logical conventions with specific meanings.

BACKGROUND

Several levels of logic may be used to state Required Actions. These levels are identified by the placement (or nesting) of the logical connectors and by the number assigned to each Required Action. The first level of logic is identified by the first digit of the number assigned to a Required Action and the placement of the logical connector in the first level of nesting (i.e., left justified with the number of the Required Action). The successive levels of logic are identified by additional digits of the Required Action number and by successive indentions of the logical connectors.

When logical connectors are used to state a Condition, Completion Time, Surveillance, or Frequency, only the first level of logic is used, and the logical connector is left justified with the statement of the Condition, Completion Time, Surveillance, or Frequency.

EXAMPLES

The following examples illustrate the use of logical connectors.

EXAMPLE 1.2-1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO not met.	A.1 Verify AND A.2 Restore	

In this example, the logical connector AND is used to indicate that when in Condition A, both Required Actions A.1 and A.2 must be completed.

(continued)

1.2 Logical Connectors

EXAMPLES
(continued)

EXAMPLE 1.2-2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO not met.	A.1 Stop OR A.2.1 Verify AND A.2.2.1 Reduce OR A.2.2.2 Perform OR A.3 Remove	

This example represents a more complicated use of logical connectors. Required Actions A.1, A.2, and A.3 are alternative choices, only one of which must be performed as indicated by the use of the logical connector OR and the left justified placement. Any one of these three ACTIONS may be chosen. If A.2 is chosen, then both A.2.1 and A.2.2 must be performed as indicated by the logical connector AND. Required Action A.2.2 is met by performing A.2.2.1 or A.2.2.2. The indented position of the logical connector OR indicates that A.2.2.1 and A.2.2.2 are alternative choices, only one of which must be performed.

1.0 USE AND APPLICATION

1.3 Completion Times

PURPOSE	The purpose of this section is to establish the Completion Time convention and to provide guidance for its use.
BACKGROUND	Limiting Conditions for Operation (LCOs) specify the lowest functional capability or performance levels of equipment required for safe operation of the facility. The ACTIONS associated with an LCO state Conditions that typically describe the ways in which the requirements of the LCO can fail to be met. Specified with each stated Condition are Required Action(s) and Completion Time(s).
DESCRIPTION	The Completion Time is the amount of time allowed for completing a Required Action. It is referenced to the time of discovery of a situation (e.g., equipment or variable not within limits) that requires entering an ACTIONS condition unless otherwise specified, providing the cask system is in a specified condition stated in the Applicability of the LCO. Required Actions must be completed prior to the expiration of the specified Completion Time. An ACTIONS Condition remains in effect and the Required Actions apply until the condition no longer exists or the cask system is not within the LCO Applicability. Once a Condition has been entered, subsequent subsystems, components, or variables expressed in the Condition, discovered to be not within limits, will not result in separate entry into the Condition unless specifically stated. The Required Actions of the Condition continue to apply to each additional failure, with Completion Times based on initial entry into the Condition.

(continued)

1.3 Completion Times (continued)

EXAMPLES

The following examples illustrate the use of Completion Times with different types of Conditions and changing Conditions.

EXAMPLE 1.3-1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time not met.	B.1 Perform Action B.1 AND B.2 Perform Action B.2	12 hours 36 hours

Condition B has two Required Actions. Each Required Action has its own separate Completion Time. Each Completion Time is referenced to the time that Condition B is entered.

The Required Actions of Condition B are to complete action B.1 within 12 hours AND complete action B.2 within 36 hours. A total of 12 hours is allowed for completion action B.1 and a total of 36 hours (not 48 hours) is allowed for completing action B.2 from the time that Condition B was entered. If action B.1 is completed within 6 hours, the time allowed for completing action B.2 is the next 30 hours because the total time allowed for completing action B.2 is 36 hours.

(continued)

1.3 Completion Times

EXAMPLES
(continued)

EXAMPLE 1.3-2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One system not within limit.	A.1 Restore system to within limit.	7 days
B. Required Action and associated Completion Time not met.	B.1 Complete action B.1. AND B.2 Complete action B.2.	12 hours 36 hours

When a system is determined not to meet the LCO, Condition A is entered. If the system is not restored within 7 days, Condition B is also entered and the Completion Time clocks for Required Actions B.1 and B.2 start. If the system is restored after Condition B is entered, Conditions A and B are exited, and therefore, the Required Actions of Condition B may be terminated.

(continued)

1.3 Completion Times

EXAMPLES
(continued)

EXAMPLE 1.3-3

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each component.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO not met.	A.1 Restore compliance with LCO.	4 hours
B. Required Action and associated Completion Time not met.	B.1 Complete action B.1 AND B.2 Complete action B.2	6 hours 12 hours

The Note above the ACTIONS table is a method of modifying how the Completion Time is tracked. If this method of modifying how the Completion Time is tracked was applicable only to a specific Condition, the Note would appear in that Condition rather than at the top of the ACTIONS Table.

The Note allows Condition A to be entered separately for each component, and Completion Times tracked on a per component basis. When a component is determined to not meet the LCO, Condition A is entered and its Completion Time starts. If subsequent components are determined to not meet the LCO, Condition A is entered for each component and separate Completion Times start and are tracked for each component.

IMMEDIATE COMPLETION TIME	When "Immediately" is used as a Completion Time, the Required Action should be pursued without delay and in a controlled manner.

1.0 USE AND APPLICATION

1.4 Frequency

PURPOSE	The purpose of this section is to define the proper use and application of Frequency requirements.
DESCRIPTION	Each Surveillance Requirement (SR) has a specified Frequency in which the Surveillance must be met in order to meet the associated Limiting Condition for Operation (LCO). An understanding of the correct application of the specified Frequency is necessary for compliance with the SR. The "specified Frequency" is referred to throughout this section and each of the Specifications of Section 3.0, Surveillance Requirement (SR) Applicability. The "specified Frequency" consists of the requirements of the Frequency column of each SR. Situations where a Surveillance could be required (i.e., its Frequency could expire), but where it is not possible or not desired that it be performed until sometime after the associated LCO is within its Applicability, represent potential SR 3.0.4 conflicts. To avoid these conflicts, the SR (i.e., the Surveillance or the Frequency) is stated such that it is only "required" when it can be and should be performed. With an SR satisfied, SR 3.0.4 imposes no restriction.

(continued)

1.4 Frequency (continued)

EXAMPLES

The following examples illustrate the various ways that frequencies are specified.

EXAMPLE 1.4-1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Verify pressure within limit	12 hours

Example 1.4-1 contains the type of SR most often encountered in the Technical Specifications (TS). The Frequency specifies an interval (12 hours) during which the associated Surveillance must be performed at least one time. Performance of the Surveillance initiates the subsequent interval. Although the Frequency is stated as 12 hours, an extension of the time interval to 1.25 times the interval specified in the Frequency is allowed by SR 3.0.2 for operational flexibility. The measurement of this interval continues at all times, even when the SR is not required to be met per SR 3.0.1 (such as when the equipment or variables are outside specified limits, or the facility is outside the Applicability of the LCO). If the interval specified by SR 3.0.2 is exceeded while the facility is in a condition specified in the Applicability of the LCO, the LCO is not met in accordance with SR 3.0.1.

If the interval as specified by SR 3.0.2 is exceeded while the facility is not in a condition specified in the Applicability of the LCO for which performance of the SR is required, the Surveillance must be performed within the Frequency requirements of SR 3.0.2 prior to entry into the specified condition. Failure to do so would result in a violation of SR 3.0.4.

(continued)

EXAMPLES
(continued)

EXAMPLE 1.4-2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Verify flow is within limits.	Once within 12 hours prior to starting activity AND 24 hours thereafter

Example 1.4-2 has two Frequencies. The first is a one-time performance Frequency, and the second is of the type shown in Example 1.4-1. The logical connector "AND" indicated that both Frequency requirements must be met. Each time the example activity is to be performed, the Surveillance must be performed within 12 hours prior to starting the activity.

The use of "once" indicates a single performance will satisfy the specified Frequency (assuming no other Frequencies are connected by "AND"). This type of Frequency does not qualify for the 25 percent extension allowed by SR 3.0.2.

"Thereafter" indicated future performances must be established per SR 3.0.2, but only after a specified condition is first met (i.e., the "once" performance in this example). If the specified activity is cancelled or not performed, the measurement of both intervals stops. New intervals start upon preparing to restart the specified activity.

2.0 APPROVED CONTENTS

2.1 Functional and Operating Limits

2.1.1 Spent Fuel To Be Stored

INTACT FUEL ASSEMBLIES and DAMAGED FUEL ASSEMBLIES meeting the limits specified in Tables 2.1-1 and 2.1-2 may be stored in the SFSC System.

2.1.2 GTCC Waste To Be Stored

Greater-than-class-C (GTCC) waste meeting the description is SAR Section 3.1 may be stored one cask at the ISFSI.

2.2 Functional and Operating Limits Violations

If any Fuel Specifications or Loading Conditions of 2.1 are violated, the following ACTIONS shall be completed:

1. The affected fuel assemblies shall be placed in a safe condition.
2. Within 24 hours, notify the NRC Operations Center.
3. Within 30 days, submit a special report which describes the cause of the violation, and ACTIONS taken to restore compliance and prevent recurrence.

TABLE 2.1-1

MPC-HB-HB FUEL ASSEMBLY LIMITS

A. Allowable Contents (Notes 1 and 2)

1. Uranium oxide, INTACT FUEL ASSEMBLIES and DAMAGED FUEL ASSEMBLIES, with or without channels, meeting the criteria specified in Table 2.1-2 and the following specifications.

Cladding type	ZR (Note 3)
Planar-Average Initial enrichment	$\leq$ 2.60 and $\geq$ 2.09 wt% ^{235}U.
Post-irradiation cooling time per assembly	$\geq$ 29 years
Average burnup per assembly	$\leq$ 23,000 MWD/MTU
Decay heat per assembly	$\leq$ 50 Watts
Decay heat per SFSC	$\leq$ 2000 Watts
Fuel assembly length	$\leq$ 96.91 inches (nominal design)
Fuel assembly width	$\leq$ 4.70 inches (nominal design)
Fuel assembly weight	$\leq$ 400 lb (including channel and DFC)

B. Quantity per MPC-HB: Up to 80 fuel assemblies.

C. DAMAGED FUEL ASSEMBLIES must be stored in a DAMAGED FUEL CONTAINER. Allowable Loading Configurations: Up to 28 DAMAGED FUEL ASSEMBLIES in DAMAGED FUEL CONTAINERS, can be stored in the peripheral fuel storage locations as shown in Figure 2.1-1, or up to 40 DAMAGED FUEL ASSEMBLIES in DAMAGED FUEL CONTAINERS, can be stored in a checkerboard pattern as shown in Figure 2.1-2. The remaining fuel storage locations may be filled with INTACT FUEL assemblies meeting the above applicable specifications, or with INTACT FUEL assemblies optionally stored in DFCs.

NOTE 1: Fuel assemblies with channels may be stored in any fuel cell location.

NOTE 2: The total quantity of damaged fuel permitted in a single DAMAGED FUEL CONTAINER is limited to the equivalent weight and special nuclear material quantity of one intact fuel assembly.

NOTE 3: ZR means any-zirconium-based fuel cladding material authorized for use in a commercial nuclear power plant reactor.

TABLE 2.1-2

FUEL ASSEMBLY CHARACTERISTICS (Note 1)

Fuel Assembly Type	GE Type II	GE Type III, Exxon Type III & IV
Design Initial U (kg/assy.)	≤ 78	≤ 78
No. of Fuel Rods	49	36
Fuel Rod Cladding O.D. (in.)	≥ 0.486	≥ 0.5585
Fuel Rod Cladding I.D. (in.)	≤ 0.426	≤ 0.505
Fuel Pellet Dia. (in.)	≤ 0.411	≤ 0.488
Fuel Rod Pitch (in.)	≤ 0.631	≤ 0.740
Active Fuel Length (in.)	≤ 80	≤ 80
No. of water rods	0	0
Channel Thickness (in)	0.060	0.060

NOTE 1: All dimensions are design nominal values. Maximum and minimum dimensions are specified to bound variations in design nominal values among fuel assemblies.

FIGURE 2.1-1

CONFIGURATION 1: DAMAGED FUEL IN
PERIPHERAL CELLS OF BASKET ONLY

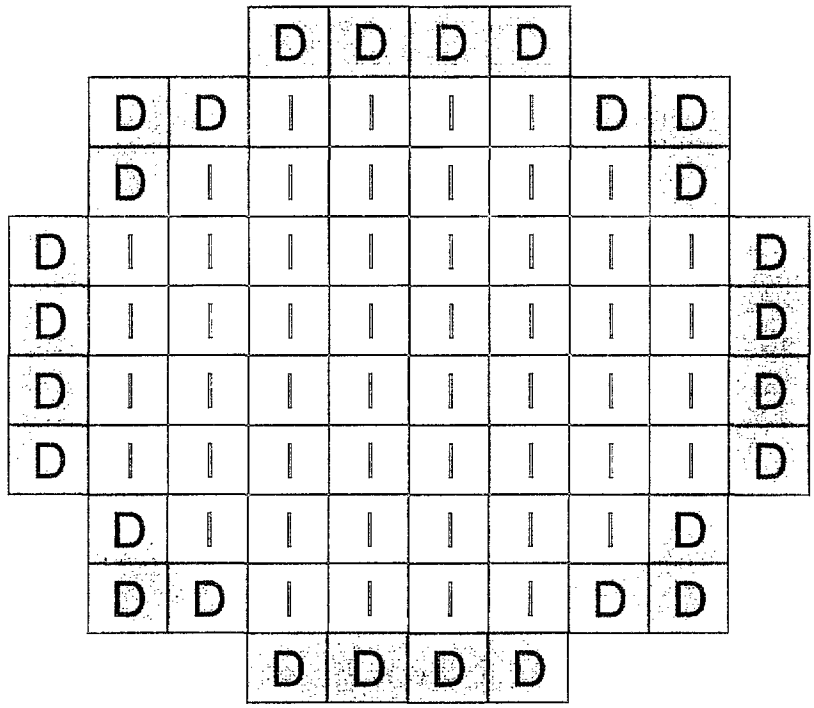
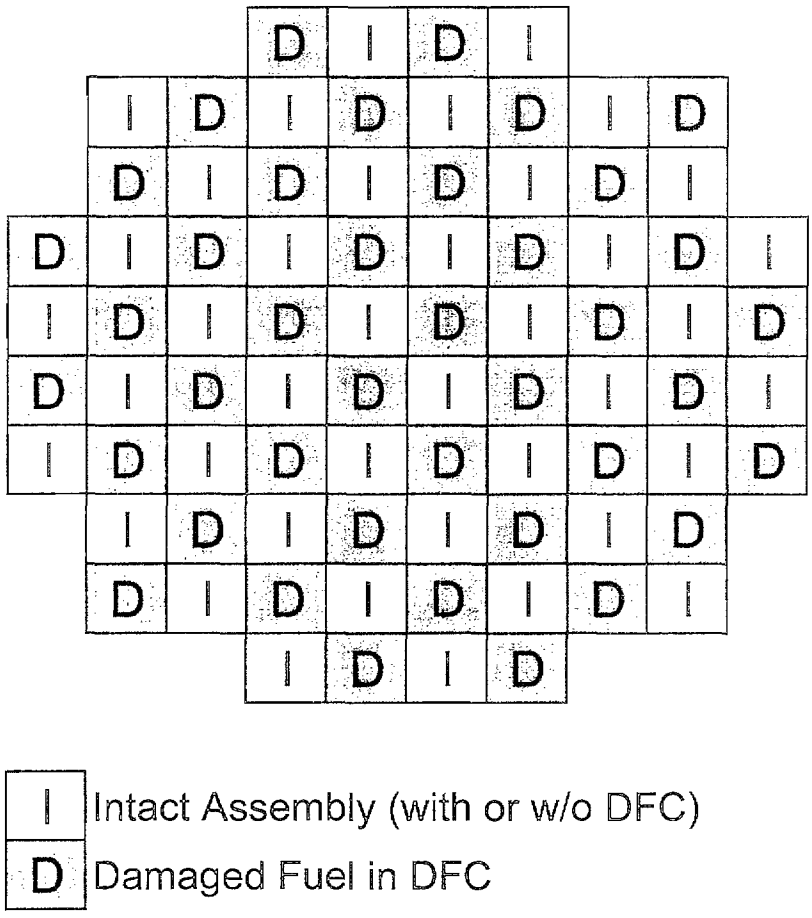


FIGURE 2.1-2

CONFIGURATION 2: CHECKERBOARD OF
DAMAGED FUEL AND INTACT FUEL



3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

LCO 3.0.1	LCOs shall be met during specified conditions in the Applicability, except as provided in LCO 3.0.2
LCO 3.0.2	Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met. If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required, unless otherwise stated.
LCO 3.0.3	Not applicable.
LCO 3.0.4	When an LCO is not met, entry into a specified condition in the Applicability shall not be made except when the associated ACTIONS to be entered permit continued operation in the specified condition in the Applicability for an unlimited period of time. This Specification shall not prevent changes in specified conditions in the Applicability that are required to comply with ACTIONS or that are related to the unloading of an SFSC.
LCO 3.0.5	Not applicable.

3.0 SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

SR 3.0.1	SRs shall be met during specified conditions in the Applicability for individual LCOs, unless otherwise stated in the SR. Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the LCO. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the LCO except as provided in SR 3.0.3. Surveillances do not have to be performed on equipment or variables outside specified limits.
SR 3.0.2	The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met. For Frequencies specified as "once," the above interval extension does not apply. If a Completion Time requires periodic performance on a "once per ..." basis, the above Frequency extension applies to each performance after the initial performance. Exceptions to this Specification are stated in the individual Specifications.
SR 3.0.3	If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is less. This delay period is permitted to allow performance of the Surveillance. If the Surveillance is not performed within the delay period, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered. When the Surveillance is performed within the delay period and the Surveillance is not met, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.
SR 3.0.4	Entry into a specified condition in the Applicability of an LCO shall not be made unless the LCOs Surveillances have been met within their specified Frequency. This provision shall not prevent entry into specified conditions in the Applicability that are required to comply with Actions or that are related to the unloading of an SFSC.

3.1 SFSC INTEGRITY

3.1.1 MULTI-PURPOSE CANISTER (MPC-HB)

LCO 3.1.1 The MPC-HB shall be dry and helium filled.

APPLICABILITY: During TRANSPORT OPERATIONS and STORAGE OPERATIONS

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each MPC-HB

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. MPC-HB cavity drying acceptance criterion not met.	A.1. Perform an engineering evaluation to determine the quantity of moisture left in the MPC-HB. AND A.2 Develop and initiate corrective actions necessary to return the MPC-HB to an analyzed condition.	7 days 30 days
B. MPC-HB helium backfill pressure limit not met.	B.1 Perform an engineering evaluation to determine the impact of helium pressure differential. AND B.2 Develop and initiate corrective actions necessary to return the MPC-HB to an analyzed condition.	72 hours 14 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Actions and associated Completion Times not met.	C.1 Remove all fuel assemblies from the MPC-HB.	30 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.1.1	Verify MPC-HB cavity vacuum drying pressure is ≤ 3 torr for ≥ 30 min. OR While recirculating helium through the MPC-HB cavity, verify that the gas temperature exiting the demoisturizer is ≤ 21°F for ≥ 30 min or the dew point of the gas exiting the MPC is ≤ 22.9°F for ≥ 30 min.	Once, prior to TRANSPORT OPERATIONS.
SR 3.1.1.2	Verify MPC-HB helium backfill pressure is ≥ 45.2 psig and ≤ 48.8 psig at a reference temperature of 70°F.	Once, prior to TRANSPORT OPERATIONS.

3.1 SFSC INTEGRITY

3.1.2 OVERPACK Heat Removal System

LCO 3.1.2 The OVERPACK shall be dry and helium filled.

APPLICABILITY: During TRANSPORT OPERATIONS and STORAGE OPERATIONS

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each OVERPACK

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. OVERPACK annulus drying acceptance criterion not met.	A.1. Perform an engineering evaluation to determine the quantity of moisture left in the OVERPACK. AND A.2 Develop and initiate corrective actions necessary to return the OVERPACK to an analyzed condition.	7 days 30 days
B. OVERPACK annulus helium backfill pressure limit not met.	B.1 Perform an engineering evaluation to determine the impact of helium pressure differential. AND B.2 Develop and initiate corrective actions necessary to return the OVERPACK to an analyzed condition.	72 hours 30 days
C. OVERPACK helium leak rate limit not met	C.1 Perform an engineering evaluation to determine impact of increased helium leak rate on heat removal capability and off-site dose release effects. AND C.2 Develop and initiate corrective actions necessary to return the OVERPACK to analyzed condition.	7 days 30 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.2.1 Verify OVERPACK annulus vacuum drying pressure is ≤ 3 torr for ≥ 30 min.	Once, prior to TRANSPORT OPERATIONS
SR 3.1.2.2 Verify OVERPACK annulus helium backfill pressure is ≥ 10 psig and ≤ 14 psig	Once, prior to TRANSPORT OPERATIONS
SR 3.1.2.3 Verify that the total helium leak rate through the OVERPACK closure plate inner mechanical seal, the OVERPACK vent port plug seal and the OVERPACK drain port plug seal is ≤ 4.3E-6 atm-cc/sec (He).	Once, prior to TRANSPORT OPERATIONS

3.1 SFSC INTEGRITY

3.1.3 Fuel Cool-Down

LCO 3.1.3 The MPC-HB cavity bulk helium temperature shall be ≤ 200°F.

----------NOTE----------
The LCO is only applicable to wet UNLOADING OPERATIONS.

APPLICABILITY: During UNLOADING OPERATIONS prior to re-flooding.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each MPC-HB

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. MPC-HB cavity bulk Helium temperature not within limit.	A.1 Establish MPC-HB cavity bulk Helium temperature within limit. AND A.2 Ensure adequate heat transfer from the MPC-HB to the environment	Prior to initiating MPC-HB re-flooding operations. 24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.3.1 Ensure via analysis or direct measurement that the MPC-HB cavity bulk helium temperature is ≤ 200°F.	Prior to MPC-HB re-flooding operations.

4.0 DESIGN FEATURES

4.1 Design Features Significant to Safety

4.1.1 Criticality Control

a. MULTI-PURPOSE CANISTER (MPC-HB) MPC-HB

1. Fuel cell pitch: $\geq$ 5.83 in.

2. ^{10}B loading in the neutron absorbers: $\geq$ 0.01 g/cm^2

4.2 Codes and Standards

The American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), 1995 Edition with Addenda through 1997, is the governing Code for the HI-STAR HB System, except for Sections V and IX. For activities governed by Section V and IX, the latest effective Code Edition is applicable.

Any specific alternatives to these codes and standards, and the codes and standards for other components followed for the Humboldt Bay ISFSI storage system, are provided in the Humboldt Bay ISFSI Safety Analysis Report (SAR).

4.2.1 Alternatives to Design Codes, Standards, and Criteria

Approved alternatives to the ASME Code are listed in SAR Table 3.4-6. Changes to these alternatives or new alternatives may be used when authorized by the Director of the Office of Nuclear Material Safety and Safeguards or designee. The licensee should demonstrate that:

a. The proposed alternative would provide an acceptable level of quality and safety, or

b. Compliance with the specified requirements of the ASME Code would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Requests for relief in accordance with this section shall be submitted in accordance with 10 CFR 72.4.

(continued)

4.0 DESIGN FEATURES (continued)

4.3 Cask Handling

4.3.1 Cask Transporter

A cask transporter is used to transport the SFSC between the power plant and the ISFSI. The requirements for the cask transporter are as follows:

a. Except for the period of time in which the loaded SFSC is being moved on the rail dolly, TRANSPORT OPERATIONS shall be conducted using the cask transporter.

b. The cask transporter fuel tank shall not contain > 50 gallons of diesel fuel at any time.

c. The cask transporter shall be designed, fabricated, inspected, maintained, operated, and tested in accordance with the applicable guidelines of NUREG-0612.

d. The cask transporter lifting towers shall have redundant drop protection features.

4.3.2 Storage Capacity

The Humboldt Bay ISFSI can accommodate up to 400 spent fuel assemblies. The ISFSI storage capacity can accommodate up to six SFSCs.

4.3.3 SFSC Load Handling Equipment

Lifting of a SFSC outside of structures governed by 10 CFR 50 shall be performed with load handling equipment that is designed, fabricated, inspected, maintained, operated and tested in accordance with the applicable guidelines of NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants".

5.0 ADMINISTRATIVE CONTROLS

5.1 Administrative Programs

The following programs shall be established, implemented, and maintained:

5.1.1 Technical Specifications (TS) Bases Control Program

This program provides a means for processing changes to the Bases of these TS.

a. Changes to the TS Bases shall be made under appropriate administrative controls and reviews.

b. Changes to the TS Bases may be made without prior NRC approval in accordance with the criteria in 10 CFR 72.48.

c. The TS Bases Control Program shall contain provisions to ensure that the TS Bases are maintained consistent with the Humboldt Bay ISFSI SAR.

d. Proposed changes that do not meet the criteria of 5.5.1.b above shall be reviewed and approved by the NRC prior to implementation. 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).

5.1.2 Radioactive Effluent Control Program

a. This program is established and maintained to implement the requirements of 10 CFR 72.44 (d) or 72.126, as appropriate.

b. Provide limits on surface contamination of the OVERPACK and verification of meeting those limits prior to removal of a loaded OVERPACK from the refueling building.

5.1.3 MPC-HB and SFSC Loading, Unloading, and Preparation Program

This program shall be established and maintained to implement Humboldt Bay ISFSI SAR Section 10.2 requirements for loading fuel and components into MPC-HBs, unloading fuel and components from MPC-HBs, and preparing the MPC-HBs for storage in the SFSCs. The requirements of the program for loading and preparing the MPC-HB shall be complete prior to removing the MPC-HB from the Refueling Building. The program provides for evaluation and control of the following requirements during the applicable operation:

a Verify that the acceptance criteria for drying are met to ensure short term fuel temperature limits are not violated and the MPC-HB and OVERPACK are adequately dry.

b Verify that the MPC-HB and OVERPACK inerting backfill pressures and purity assure adequate heat transfer and corrosion control.

c Verify that leak testing assure adequate OVERPACK integrity.

d Verify surface dose rates on the SFSCs are consistent with the offsite dose analysis.

e During MPC-HB re-flooding, verify the MPC cavity bulk helium temperature is such that water quenching or flashing does not occur.

(continued)

5.0 ADMINISTRATIVE CONTROLS (continued)

5.1.4 ISFSI Operations Program

This program will implement the Humboldt Bay ISFSI SAR requirements for ISFSI operations. It will include criteria to be verified and controlled:

a. SFSC cask storage location.

b. Design features listed in Section 4.0 and design basis ISFSI parameters consistent with the Humboldt Bay ISFSI SAR analysis.

5.1.5 Cask Transportation Evaluation Program

This program will evaluate and control the transportation of loaded SFSCs between the HBPP Refueling Building and the ISFSI storage vault. Included in this program will be pre-transport evaluation and control during transportation of the following:

- Transportation route road surface conditions.
- Onsite hazards along the transportation route.
- Security, including control of the 100 meter boundary.
- Transporter control functions and operability.
- Offsite marine hazards from barge transport.
- Severe weather.

TECHNICAL SPECIFICATION BASES
FOR
HUMBOLDT BAY
INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI)

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B 3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

BASES

LCO	LCO 3.0.1, 3.0.2, and 3.0.4 establish the general requirements applicable to all Specifications and apply at all times, unless otherwise stated.
LCO 3.0.1	LCO 3.0.1 establishes the Applicability statement within each individual Specification as the requirement for when the LCO is required to be met (i.e., when the facility is in the specified conditions of the Applicability statement of each Specification.)
LCO 3.0.2	LCO 3.0.2 establishes that upon discovery of a failure to meet an LCO, the associated ACTIONS shall be met. The Completion Time of each Required Action for an ACTIONS condition is applicable from the point in time that an ACTIONS condition is entered. The Required Actions establish those remedial measures that must be taken within specified Completion Times when the requirements of an LCO are not met. This Specification establishes that: a. Completion of the Required Actions within the specified Completion Times constitutes compliance with a Specification; and b. Completion of the Required Actions is not required when an LCO is met within the specified Completion Time, unless otherwise specified. There are two basic types of Required Actions. The first type of Required Action specifies a time limit in which the LCO must be met. This time limit is the Completion Time to restore a system or component or to restore variables to within specified limits. Whether stated as a Required Action or not, correction of the entered condition is an action that may always be considered upon entering ACTIONS. The second type of Required Action specifies the remedial measures that permit continued operation that is not further restricted by the Completion Time. In this case, compliance with the Required Actions provides an acceptable level of safety for continued operation. Completing the Required Actions is not required when an LCO is met or is no longer applicable, unless otherwise stated in the individual Specifications. The Completion Times of the Required Actions are also applicable when a system or component is removed from service intentionally. The reasons for intentionally relying on the ACTIONS include, but are not limited to, performance of Surveillances, preventive maintenance, corrective maintenance, or investigation of operational problems. Entering ACTIONS for these reasons must be done in a manner that does not compromise safety. Intentional entry into ACTIONS should not be made for operational convenience.

(continued)

BASES (continued)

LCO 3.0.3	This specification is not applicable to the Humboldt Bay ISFSI because it describes conditions under which a power reactor must be shut down when an LCO is not met and an associated ACTION is not met or provided. The placeholder is retained for consistency with the power reactor technical specifications.
LCO 3.0.4	LCO 3.0.4 establishes limitations on changes in specified conditions in the Applicability when an LCO is not met. It precludes placing the facility in a specified condition stated in that Applicability (e.g., Applicability desired to be entered) when the following exist: a. Facility conditions are such that the requirements of the LCO would not be met in the Applicability desired to be entered; and b. Continued noncompliance with the LCO requirements, if the Applicability were entered, would result in being required to exit the Applicability desired to be entered to comply with the Required Actions. Compliance with Required Actions that permit continued operation of the facility for an unlimited period of time in a specified condition provides an acceptable level of safety for continued operation. This is without regard to the status of the facility. Therefore, in such cases, entry into a specified condition in the Applicability may be made in accordance with the provisions of the Required Actions. The provisions of this Specification should not be interpreted as endorsing the failure to exercise the good practice of restoring systems or components before entering an associated specified condition in the Applicability. The provisions of LCO 3.0.4 shall not prevent changes in specified conditions in the Applicability that are required to comply with ACTIONS, or that are related to the unloading of an SFSC Exceptions to LCO 3.0.4 are stated in the individual Specifications. Exceptions may apply to all the ACTIONS or to a specific Required Action of a Specification.
LCO 3.0.5	This specification is not applicable to the Humboldt Bay ISFSI because it describes conditions under which a power reactor must be shut down when an LCO is not met and an associated ACTION is not met or provided. The placeholder is retained for consistency with the power reactor technical specifications.

B 3.0 SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

BASES

SRs	SR 3.0.1 through SR 3.0.4 establish the general requirements applicable to all Specifications and apply at all times, unless otherwise stated.
SR 3.0.1	SR 3.0.1 establishes the requirement that SRs must be met during the specified conditions in the Applicability for which the requirements of the LCO apply, unless otherwise specified in the individual SRs. This Specification is to ensure that Surveillances are performed to verify that systems and components meet the LCO and variables are within specified limits. Failure to complete a Surveillance within the specified Frequency, in accordance with SR 3.0.2, constitutes a failure to meet an LCO. Systems and components are assumed to meet the LCO when the associated SRs have been met. Nothing in this Specification, however, is to be construed as implying that systems or components meet the associated LCO when: a. The systems or components are known to not meet the LCO, although still meeting the SRs; or b. The requirements of the Surveillance(s) are known to be not met between required Surveillance performances. Surveillances do not have to be performed when the facility is in a specified condition for which the requirements of the associated LCO are not applicable, unless otherwise specified. Surveillances including Surveillances invoked by Required Actions, do not have to be performed on equipment that has been determined to not meet the LCO because the ACTIONS define the remedial measures that apply. Surveillances have to be met and performed in accordance with SR 3.0.2, prior to returning equipment to service. Upon completion of maintenance, appropriate post-maintenance testing is required. This includes ensuring applicable Surveillances are not failed and their most recent performance is in accordance with SR 3.0.2. Post-maintenance testing may not be possible in the current specified conditions in the Applicability due to the necessary facility parameters not having been established. In these situations, the equipment may be considered to meet the LCO provided testing has been satisfactorily completed to the extent possible and the equipment is not otherwise believed to be incapable of performing its function. This will allow operation to proceed to a specified condition where other necessary post-maintenance tests can be completed.

(continued)

BASES (continued)

SR 3.0.2

SR 3.0.2 establishes the requirements for meeting the specified Frequency for Surveillances and any Required Action with a Completion Time that requires the periodic performance of the Required Action on a "once per....." interval.

SR 3.0.2 permits a 25% extension of the interval specified in the Frequency. This extension facilitates Surveillance scheduling and considers facility conditions that may be suitable for conducting the Surveillance (e.g., transient conditions or other ongoing Surveillance or maintenance activities).

The 25% extension does not significantly degrade the reliability that results from performing the Surveillance at its specified Frequency. This is based on the recognition that the most probable result of any particular Surveillance being performed is the verification of conformance with SRs. The exceptions to SR 3.0.2 are those Surveillances for which the 25% extension of the interval specified in the Frequency does not apply. These exceptions are stated in the individual Specifications as a Note in the Frequency stating, "SR 3.0.2 is not applicable."

As stated in SR 3.0.2, the 25% extension also does not apply to the initial portion of a periodic Completion Time that requires performance on a "once per ...." basis. The 25% extension applies to each performance after the initial performance. The initial performance of the Required Action, whether it is a particular Surveillance or some other remedial action, is considered a single action with a single Completion Time. One reason for not allowing the 25% extension to this Completion Time is that such an action usually verifies that no loss of function has occurred by checking the status of redundant or diverse components or accomplishes the function of the affected equipment in an alternative manner.

The provisions of SR 3.0.2 are not intended to be used repeatedly merely as an operational convenience to extend Surveillance intervals or periodic Completion Time intervals beyond those specified.

(continued)

BASES (continued)

SR 3.0.3

SR 3.0.3 establishes the flexibility to defer declaring affected equipment as not meeting the LCO or an affected variable outside the specified limits when a Surveillance has not been completed within the specified Frequency. A delay period of up to 24 hours or up to the limit of the specified Frequency, whichever is less, applies from the point in time that it is discovered that the Surveillance has not been performed in accordance with SR 3.0.2, and not at the time that the specified frequency was not met.

This delay period provides adequate time to complete Surveillances that have been missed. This delay period permits the completion of a Surveillance before complying with Required Actions or other remedial measures that might preclude completion of the Surveillance.

The basis for this delay period includes consideration of facility conditions, adequate planning, availability of personnel, the time required to perform the Surveillance, the safety significance of the delay in completing the required Surveillance, and the recognition that the most probable result of any particular Surveillance being performed is the verification of conformance with the requirements. When a Surveillance with a Frequency based not on time intervals, but upon specified facility conditions, is discovered not to have been performed when specified, SR 3.0.3 allows the full delay period of 24 hours to perform the Surveillance.

SR 3.0.3 also provides a time limit for completion of Surveillances that become applicable as a consequence of changes in the specified conditions in the Applicability imposed by the Required Actions.

Failure to comply with specified Frequencies for SRs is expected to be an infrequent occurrence. Use of the delay period established by SR 3.0.3 is a flexibility, which is not intended to be used as an operational convenience to extend Surveillance intervals.

If a Surveillance is not complete within the allowed delay period, then the equipment is considered to not meet the LCO or the variable is considered outside the specified limits and the Completion Times of the Required Actions for the applicable LCO Conditions begin immediately upon expiration of the delay period. If a Surveillance is failed within the delay period, then the equipment does not meet the LCO, or the variable is outside the specified limits and the Completion Times of the Required Actions for the applicable LCO Conditions begin immediately upon the failure of the Surveillance.

Completion of the Surveillance within the delay period allowed by this Specification, or within the Completion Time of the ACTIONS, restores compliance with SR 3.0.1.

(continued)

BASES (continued)

SR 3.0.4

SR 3.0.4 establishes the requirement that all applicable SRs must be met before entry into a specified condition in the Applicability.

This Specification ensures that system and component requirements and variable limits are met before entry into specified conditions in the Applicability for which these systems and components ensure safe operation of the facility.

The provisions of this Specification should not be interpreted as endorsing the failure to exercise the good practice of restoring systems or components before entering an associated specified condition in the Applicability.

However, in certain circumstances, failing to meet an SR will not result in SR 3.0.4 restricting a change in specified condition. When a system, subsystem, division, component, device, or variable is outside the specified limits, the associated SR(s) are not required to be performed per SR 3.0.1, which states that Surveillances do not have to be performed on equipment that has been determined to not meet the LCO. When equipment does not meet the LCO, SR 3.0.4 does not apply to the associated SR(s) since the requirement for the SR(s) to be performed is removed. Therefore, failing to perform the Surveillance(s) within the specified Frequency does not result in an SR 3.0.4 restriction to changing specified conditions of the Applicability. However, since the LCO is not met in this instance, LCO 3.0.4 will govern any restrictions that may (or may not) apply to specified condition changes.

The provisions of SR 3.0.4 shall not prevent changes in specified conditions in the Applicability that are required to comply with ACTIONS.

The precise requirements of performance of SRs are specified such that exceptions to SR 3.0.4 are not necessary. The specific time frames and conditions necessary for meeting the SRs are specified in the Frequency, in the Surveillance, or both. This allows performance of Surveillances when the prerequisite condition(s) specified in a Surveillance procedure require entry into the specified condition in the Applicability of the associated LCO prior to the performance or completion of a Surveillance. A Surveillance that could not be performed until after entering the LCO Applicability would have its Frequency specified such that it is not "due" until the specific conditions needed are met. Alternately, the Surveillance may be stated in the form of a Note as not required (to be met or performed) until a particular event, condition, or time has been reached. Further discussion of the specific formats of SRs annotation is found in Humboldt Bay ISFSI Technical Specification Section 1.4, Frequency.

B 3.1 SPENT FUEL STORAGE CASK (SFSC) INTEGRITY

B 3.1.1 Multi-Purpose Canister (MPC)

BASES

BACKGROUND

A SFSC (HI-STAR HB OVERPACK with an empty MPC) is placed in the spent fuel pool and loaded with fuel assemblies meeting the requirements TS Section 2.0 Approved Contents. A lid is then placed on the MPC. An MPC lid retention device is placed over the lid and attached to the HI-STAR HB OVERPACK. The SFSC is raised to the top of the spent fuel pool surface. The SFSC is then moved into the cask washdown area where dose rates are measured and the MPC lid is welded to the MPC shell and the welds are inspected and tested. The water is drained from the MPC cavity and moisture removal performed. The MPC cavity is backfilled with helium. Additional dose rates are measured and the MPC vent and drain cover plates and closure ring are installed and welded. Inspections are performed on the welds.

MPC cavity moisture removal using vacuum drying or forced helium recirculation is performed to remove residual moisture from the MPC fuel cavity after the MPC has been drained of water. If vacuum drying is used, any water that has not drained from the fuel cavity evaporates from the fuel cavity due to the vacuum. This is aided by the temperature increase due to the decay heat of the fuel.

If helium recirculation is used, the dry gas introduced to the MPC cavity through the vent and drain port absorbs the residual moisture in the MPC. This humidified gas exits the MPC via the other port and the absorbed water is removed through condensation and/or mechanical drying. The dried helium is then forced back though the MPC until the temperature acceptance limit is met.

After the completion of moisture removal, the MPC cavity is backfilled with helium meeting the backfill pressure requirements of the LCO.

Backfilling of the MPC fuel cavity with helium promotes gaseous heat dissipation and the inert atmosphere protects the fuel cladding.

(continued)

BASES (continued)

APPLICABLE SAFETY ANALYSIS	The confinement of radioactivity during the storage of spent fuel in the MPC is ensured by the multiple confinement boundaries and systems. The barriers relied on are the fuel pellet matrix, the metallic fuel cladding tubes in which the fuel pellets are contained, and the MPC in which the fuel assemblies are stored. Long-term integrity of the fuel and cladding depend on storage in an inert atmosphere. This is accomplished by removing water from the MPC and backfilling the cavity with an inert gas. The thermal analyses of the MPC assume that the MPC cavity is filled with dry helium of a minimum quality to ensure the assumptions used for convection heat transfer are preserved. Keeping the backfill pressure below the maximum value preserves the initial condition assumptions made in the MPC over-pressurization evaluation.
LCO	A dry, helium filled and sealed MPC establishes an inert heat removal environment necessary to ensure the integrity of the multiple confinement boundaries.
APPLICABILITY	The dry, sealed and inert atmosphere is required to be in place during TRANSPORT OPERATIONS and STORAGE OPERATIONS to ensure both the confinement barriers and heat removal mechanisms are in place during these operating periods. These conditions are not required during LOADING OPERATIONS or UNLOADING OPERATIONS as these conditions are being established or removed, respectively during these periods in support of other activities being performed with the stored fuel.
ACTIONS	A note has been added to the ACTIONS, which states that, for this LCO, separate Condition entry is allowed for each MPC. This is acceptable since the Required Actions for each Condition provide appropriate compensatory measures for each MPC not meeting the LCO. Subsequent MPCs that do not meet the LCO are governed by subsequent Condition entry and application of associated Required Actions. A.1 If the cavity drying criteria has been determined not to be met during TRANSPORT OPERATIONS or STORAGE OPERATIONS, an engineering evaluation is necessary to determine the potential quantity of moisture left within the MPC cavity. Since moisture remaining in the cavity during these modes of operation may represent a long-term degradation concern, immediate action is not necessary. The Completion Time is sufficient to complete the engineering evaluation commensurate with the safety significance of the CONDITION.

(continued)

BASES

ACTIONS (continued)

A.2

Once the quantity of moisture potentially left in the MPC cavity is determined, a corrective action plan shall be developed and actions initiated to the extent necessary to return the MPC to an analyzed condition. Since the quantity of moisture estimated under Required Action A.1 can range over a broad scale, different recovery strategies may be necessary. Since moisture remaining in the cavity during these modes of operation may represent a long-term degradation concern, immediate action is not necessary. The Completion Time is sufficient to develop and initiate the corrective actions commensurate with the safety significance of the CONDITION.

B.1

If the helium backfill pressure limit has been determined not to be met during TRANSPORT OPERATIONS or STORAGE OPERATIONS, an engineering evaluation is necessary to determine the quantity of helium within the MPC cavity. Since too much or too little helium in the MPC during these modes represents a potential overpressure or heat removal degradation concern, an engineering evaluation shall be performed in a timely manner. The Completion Time is sufficient to complete the engineering evaluation commensurate with the safety significance of the CONDITION.

B.2

Once the quantity of helium in the MPC cavity is determined, a corrective action plan shall be developed and initiated to the extent necessary to return the MPC to an analyzed condition. Since the quantity of helium estimated under Required Action B.1 can range over a broad scale, different recovery strategies may be necessary. Since elevated or reduced helium quantities existing in the MPC cavity represent a potential overpressure or heat removal degradation concern, corrective actions should be developed and implemented in a timely manner. The Completion Time is sufficient to develop and initiate the corrective actions commensurate with the safety significance of the CONDITION.

C.1

If the MPC fuel cavity cannot be successfully returned to a safe, analyzed condition, the fuel must be placed in a safe condition in the spent fuel pool. The Completion Time is reasonable based on the time required to perform fuel cool-down operations, re-flood the MPC, install the lid retention device, cut the MPC lid welds, move the SFSC into the spent fuel pool, remove the lid retention device and the MPC lid, and remove the spent fuel assemblies in an orderly manner and without challenging personnel.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS	SR 3.1.1.1 and SR 3.1.1.2 The long-term integrity of the stored fuel is dependent on storage in a dry, inert environment. Cavity dryness may be demonstrated either by evacuating the cavity to a very low absolute pressure and verifying that the pressure is held over a specified period of time or by recirculating dry helium through the MPC cavity to absorb moisture until the demoisturizer exit temperature reaches and remains below the acceptance limit for the specified time period. A low vacuum pressure or a demoisturizer exit temperature meeting the acceptance limit is an indication that the cavity is dry. Having the proper helium backfill pressure ensures adequate heat transfer from the fuel to the fuel basket and surrounding structure of the MPC. Both of these surveillances must be successfully performed once, prior to TRANSPORT OPERATIONS to ensure that the conditions are established for SFSC storage, which preserve the analysis basis supporting the cask design.
REFERENCES	1. Humboldt Bay ISFSI SAR Sections 3.1 2. Humboldt Bay ISFSI SAR Section 4.2.3.3 and Table 4.5-1 3. Humboldt Bay ISFSI SAR Section 5.1.1.2 and Table 5.1-1 4. Humboldt Bay ISFSI SAR Sections 7.4 and Table 7.4-1 5. Humboldt Bay ISFSI SAR Sections 10.2.2.2, 10.2.2.3, and Figure 10.2-3.

B 3.1 SPENT FUEL STORAGE CASK (SFSC) INTEGRITY

B 3.1.2 OVERPACK Heat Removal System

BASES

BACKGROUND	The OVERPACK heat removal system is a passive heat transfer system that ensures heat from the MULTI-PURPOSE CANISTER (MPC) is transferred to the environs by conduction and radiation.
APPLICABLE SAFETY ANALYSIS	The thermal analyses of the SFSC take credit for the decay heat from the spent fuel assemblies being ultimately transferred to the ambient environment surrounding the OVERPACK. Transfer of heat away from the fuel assemblies ensures that the fuel cladding and other SFSC component temperatures do not exceed applicable limits.
LCO	The SFSC heat removal system must be verified to be operable to preserve the assumptions of the thermal analyses. The operability of the heat removal system ensures that the decay heat generated by the stored fuel assemblies is transferred to the environs at a sufficient rate to maintain fuel cladding and other SFSC component temperatures within design limits.
APPLICABILITY	The LCO is applicable during TRANSPORT and STORAGE OPERATIONS. Once a SFSC has been placed in storage, the heat removal system must be operable to ensure adequate heat transfer of the decay heat away from the fuel assemblies.
ACTIONS	A note has been added to the ACTIONS, which states that for this LCO, separate condition entry is allowed for each MPC-HB. This is acceptable since the Required Actions for each condition provide appropriate compensatory measures for each SFSC not meeting the LCO. Subsequent SFSCs that don't meet the LCO are governed by subsequent condition entry and application of associated Required Actions. A.1 If the cavity pressure limit has been determined not to be met during TRANSPORT OPERATIONS or STORAGE OPERATIONS, an engineering evaluation is necessary to determine the potential quantity of moisture left within the OVERPACK cavity. Since moisture remaining in the cavity during these modes of operation may represent a long-term degradation concern, immediate action is not necessary. The Completion Time is sufficient to complete the engineering evaluation commensurate with the safety significance of the CONDITION.

(continued)

BASES

ACTIONS (continued)

A.2

Once the quantity of moisture potentially left in the OVERPACK cavity is determined, a corrective action plan shall be developed and actions initiated to the extent necessary to return the OVERPACK to an analyzed condition. Since the quantity of moisture estimated under Required Action A.1 can range over a broad scale, different recovery strategies may be necessary. Since moisture remaining in the cavity during these modes of operation may represent a long-term degradation concern, immediate action is not necessary. The Completion Time is sufficient to develop and initiate the corrective actions commensurate with the safety significance of the CONDITION.

B.1

If the helium backfill pressure limit has been determined not to be met during TRANSPORT OPERATIONS or STORAGE OPERATIONS, an engineering evaluation is necessary to determine the quantity of helium within the OVERPACK cavity. Since too much or too little helium in the OVERPACK during these modes represents a potential overpressure or heat removal degradation concern, an engineering evaluation shall be performed in a timely manner. The Completion Time is sufficient to complete the engineering evaluation commensurate with the safety significance of the CONDITION.

B.2

Once the quantity of helium in the OVERPACK cavity is determined, a corrective action plan shall be developed and initiated to the extent necessary to return the OVERPACK to an analyzed condition. Since the quantity of helium estimated under Required Action B.1 can range over a broad scale, different recovery strategies may be necessary. Since elevated or reduced helium quantities existing in the OVERPACK cavity represent a potential overpressure or heat removal degradation concern, corrective actions should be developed and implemented in a timely manner. The Completion Time is sufficient to develop and initiate the corrective actions commensurate with the safety significance of the CONDITION.

C.1

If the helium leakrate limit has been determined not to be met during TRANSPORT OPERATIONS or STORAGE OPERATIONS, an engineering evaluation is necessary to determine the impact of increased helium leak rate on the heat removal capability. The Completion Time is sufficient to complete the engineering evaluation commensurate with the safety significance of the CONDITION.

(continued)

BASES

ACTIONS (continued)	C.2 Once the cause and consequences of the elevated leak rate from the OVERPACK are determined, a corrective action plan shall be developed and initiated to the extent necessary to return the OVERPACK to an analyzed condition. Since the recovery mechanisms can range over a broad scale based on the evaluation performed under Required Action C.1, different recovery strategies may be necessary. Since an elevated helium leak rate represents a challenge to heat removal rates, reasonably rapid action is required. The Completion Time is sufficient to develop and initiate the corrective actions commensurate with the safety significance of the CONDITION.
SURVEILLANCE REQUIREMENTS	SR 3.1.2.1, SR 3.1.2.2, and SR 3.1.2.3 The long-term integrity of the stored fuel is dependent on storage in a dry, inert environment. Cavity dryness is demonstrated by maintaining cavity pressure below the acceptance limit for the specified time period. Having the proper helium backfill pressure ensures adequate heat transfer from the MPC to the OVERPACK. Meeting the helium leak rate limit ensures there is adequate helium in the OVERPACK for long term storage. The leakage rate acceptance limit is specified in units of atm-cc/ sec. This is a mass-like leakage rate as specified in ANSI N14.5 (1997). This is defined as the rate of change of the pressure-volume product of the leaking fluid at test conditions. This allows the leakage rate as measured by a mass spectrometer leak detector (MSLD) to be compared directly to the acceptance limit without the need for unit conversion from test conditions to standard, or reference conditions. All three of these surveillances must be successfully performed once prior to TRANSPORT OPERATIONS to ensure that the conditions are established for storage, which preserve the analysis basis supporting the cask design.
REFERENCES	1. Humboldt Bay ISFSI SAR Section 3.4, Table 3.4-2 2. Humboldt Bay ISFSI SAR Section 4.4 3. Humboldt Bay ISFSI SAR Sections 7.1, 7.2, and 7.3 4. Humboldt Bay ISFSI SAR Section 8.1 5. Humboldt Bay ISFSI SAR Sections 8.2.11

B 3.1 SPENT FUEL STORAGE CASK (SFSC) INTEGRITY

B 3.1.3 Fuel Cool-Down

BASES

BACKGROUND	In the event that an MPC must be unloaded, the SFSC is returned to the cask preparation area to begin the process of fuel unloading. The MPC closure ring, and vent and drain port cover plates are removed. The MPC gas is sampled to determine the integrity of the spent fuel cladding. The MPC is attached to the Cool-Down System. The Cool-Down System is a closed-loop forced ventilation gas cooling system that cools the fuel assemblies by cooling the surrounding helium gas. Following fuel cool-down, the MPC is then re-flooded with water, the lid retention device is installed, and the MPC lid weld is removed leaving the MPC lid in place. The SFSC is placed in the spent fuel pool and the lid retention device is removed, followed by the MPC lid. The fuel assemblies are removed from the MPC and the MPC and HI-STAR HB OVERPACK are removed from the spent fuel pool and decontaminated. Reducing the fuel cladding temperatures significantly reduces the temperature gradients across the cladding thus minimizing thermally-induced stresses on the cladding during MPC re-flooding. Reducing the MPC internal temperatures eliminates the risk of high MPC pressure due to sudden generation of steam during re-flooding.
APPLICABLE SAFETY ANALYSIS	The confinement of radioactivity during the storage of spent fuel in the MPC is ensured by the multiple confinement boundaries and systems. The barriers relied on are the fuel pellet matrix, the metallic fuel cladding tubes in which the fuel pellets are contained, and the MPC in which the fuel assemblies are stored. Long-term integrity of the fuel and cladding depend on minimizing thermally induced stresses to the cladding. This is accomplished during the unloading operations by lowering the MPC internal temperatures prior to MPC re-flooding. The Integrity of the MPC depends on maintaining the internal cavity pressures within design limits. This is accomplished by reducing the MPC internal temperatures such that there is no sudden formation of steam during MPC re-flooding.

(continued)

BASES (continued)

LCO	Determining the circulating MPC gas exit temperature is below the acceptance criteria ensures that there will be no large thermal gradient across the fuel assembly cladding during re-flooding which could be potentially harmful to the cladding. The temperature limit specified in the LCO was selected to ensure that the MPC gas exit temperature will closely match the desired fuel cladding temperature prior to re-flooding the MPC. The temperature was selected to be lower than the boiling temperature of water with an additional margin.
APPLICABILITY	The MPC helium bulk gas exit temperature is determined during UNLOADING OPERATIONS after the SFSC is back in the fuel building and is no longer suspended from, or secured in, the transporter. Therefore, the Fuel Cool-Down LCO does not apply during TRANSPORT OPERATIONS and STORAGE OPERATIONS. A note has been added to the APPLICABILITY for LCO 3.1.3 which states that the Applicability is only applicable during wet UNLOADING OPERATIONS. This is acceptable since the intent of the LCO is to avoid uncontrolled MPC pressurization due to water flashing during re-flooding operations. This is not a concern for dry UNLOADING OPERATIONS.
ACTIONS	A note has been added to the ACTIONS which states that, for this LCO, separate Condition entry is allowed for each MPC. This is acceptable since the Required Actions for each Condition provide appropriate compensatory measures for each MPC not meeting the LCO. Subsequent MPCs that do not meet the LCO are governed by subsequent Condition entry and application of associated Required Actions. A.1 If the MPC helium bulk gas exit temperature limit is not met, actions must be taken to restore the parameters to within the limits before re-flooding the MPC. Failure to successfully complete fuel cool-down could have several causes, such as failure of the cool down system, inadequate cool down, or clogging of the piping lines. The Completion Time is sufficient to determine and correct most failure mechanisms and proceeding with activities to flood the MPC cavity with water are prohibited.

(continued)

BASES

ACTIONS (continued)

A.2

If the LCO is not met, in addition to performing Required Action A.1 to restore the bulk gas temperature to within the limit, the proper conditions must exist for the transfer of heat from the MPC to the surrounding environs to ensure the fuel cladding remains below the short term temperature limit.

Ensure the annulus between the MPC and the HI-STAR HB OVERPACK is filled with water. This places the system in a heat removal configuration which is bounded by the SAR thermal evaluation of the system considering a vacuum in the MPC. The system is open to the ambient environment which limits the temperature of the ultimate heat sink (the water in the annulus) and, therefore, the MPC shell to 212°F.

Twenty-four (24) hours is an acceptable time frame to allow for completion of Required Action A.2 and is conservatively based on a thermal evaluation of a HI-STAR HB OVERPACK located in a vault. In such a configuration, passive cooling mechanisms will be largely diminished. Eliminating 90 percent of the passive cooling mechanisms with the cask emplaced in the vault, the thermal inertia of the cask (approximately 20,000 Btu/°F) will limit the rate of temperature rise with design basis maximum heat load to less than 4 °F per hour. Thus, the fuel cladding temperature rise in 24 hours will be less than 100°F. Large short term temperature margins exist to preclude any cladding integrity concerns under this temperature rise.

SURVEILLANCE REQUIREMENTS

SR 3.1.3.1

The long-term integrity of the stored fuel is dependent on the material condition of the fuel assembly cladding. By minimizing thermally-induced stresses across the cladding, the integrity of the fuel assembly cladding is maintained. The integrity of the MPC is dependent on controlling the internal MPC pressure. By controlling the MPC internal temperature prior to re-flooding the MPC there is no formation of steam during MPC re-flooding.

The MPC helium exit gas temperature limit ensures that there will be no large thermal gradients across the fuel assembly cladding during MPC re-flooding and no formation of steam which could potentially overpressurize the MPC.

Fuel cool down must be performed successfully on each SFSC before the initiation of MPC re-flooding operations to ensure the design and analysis basis are preserved.

BASES (continued)

REFERENCES

1. Humboldt Bay ISFSI SAR Sections 4.2.3.3.5, 4.4.1, and 4.4.1.2.6
2. Humboldt Bay ISFSI SAR Table 5.1-1
3. Humboldt Bay ISFSI SAR Sections 9.4.1.1.2 and 9.4.1.1.4
4. Humboldt Bay ISFSI SAR Sections 10.2.3 and 10.2.3.1

HUMBOLDT BAY ISFSI
LICENSE APPLICATION

ATTACHMENT D

TRAINING PROGRAM

HUMBOLDT BAY ISFSI
TRAINING PROGRAM

Pursuant to 10 CFR 72.190 and 10 CFR 72.192, all personnel (including supervisory personnel who personally direct the operation of important-to-safety equipment and controls) working at the Humboldt Bay ISFSI receive training and indoctrination designed to provide and maintain a well-qualified work force for safe and effective operation of the ISFSI. Humboldt Bay Power Plant (HBPP) Unit 3 has a general employee training (GET) program for PG&E and contractor employees who work on Unit 3. The HBPP Unit 3 GET portions are directly applicable to the Humboldt Bay ISFSI. Supplemental training specific to the ISFSI is provided to HBPP personnel who are assigned duties associated with spent fuel dry cask storage. (Holtec International will participate in the initial development and presentation of the supplemental training material.) Additional information on the Humboldt Bay ISFSI training program is provided in SAR 9.3.

HUMBOLDT BAY ISFSI
LICENSE APPLICATION

ATTACHMENT E

QUALITY ASSURANCE PROGRAM

HUMBOLDT BAY ISFSI
LICENSE APPLICATION
SYNOPSIS OF ISFSI-RELATED CHANGES
QUALITY ASSURANCE PROGRAM

Section	Page	Change
General	-	As allowed by 10 CFR 72.140(d), this QA Program is based a prior NRC-approved 10 CFR 50, Appendix B, Diablo Canyon Power Plant (DCPP) QA Program, as specified in the DCPP FSAR Update, Chapter 17, Revision 15 (September 2003) The word "plant" was changed to "DCPP" throughout the QA Program. As specified in Section 17.2, the QA Program also applies to the Humboldt Bay ISFSI.
17.1	17.1-1	Describes ISFSI activities to which positions identified in Figure 17.1-2 are responsible for.
	17.1-2 17.1-3	Added ISFSI responsibilities for various positions. Added the positions of the Director, Fossil Generation and Asset Management, the Director and Plant Manager, HBPP, and the Engineering Manager.
	17.1-4	Added ISFSI responsibilities for the Director, Nuclear Quality, Analysis, and Licensing (NQAL). The Director, NQAL also has access to the Director, Fossil Generation and Asset Management and the Director and Plant Manager, HBPP for any significant quality-related problem or deficiency.
	17.1-7	Added HBPP Plant Staff Review Committee, whose responsibilities will include timely and continuing of ISFSI operating activities.
17.2	17.2-1 17.2-2	Added ISFSI activities that the QA Program applies to.
	17.2-3	Changes to HB ISFSI specific requirements will be performed in accordance with 10 CFR 50.54.
	17.2-5	Added ISFSI proposed changes that the Independent Review and Audit Program will review.
	17.2-6	The Director and Plant Manager, HBPP, will be provided a summary of reviews report of the Independent Review and Audit Program.
	17.2-7	Added the HB ISFSI PSRC composition and meeting frequency
	17.2-8	Added ISFSI proposed changes that the PSRC will review.
	17.2-9	Added requirement for handling disagreements between PSRC members.
17.3	17.3-2	Addresses how proposed changes or modifications to the ISFSI will be handled.
	17.3-3	The Director and Plant Manager, HBPP, approved each ISFSI change or modification.
17.5	17.5-1	Procedures are required to be established as required by the ISFSI Technical Specifications and other ISFSI license requirements.
	17.5-2	The Director and Plant Manager, HBPP, or designee, approves ISFSI procedures prior to implementation. ISFSI procedures reviewers must meet or exceed the qualification requirements of ANSI/ANS 3.1-1978, Section 4.7.2.
	17.5-3	Added provisions to make temporary changes to ISFSI procedures.
17.6	17.6-1	The ISFSI Safety Analysis Report is considered a controlled document.
17.7	17.7-1	Quality verification plans are to consider importance to ISFSI safety.
17.10	17.10-1	Inspection if ISFSI activities are to be in accordance with existing design requirements.
17.16	17.16-1	Significant conditions adverse to quality are to be evaluated for Reportability to the NRC in accordance with 10 CFR 72.74, 10 CFR 72.75,

HUMBOLDT BAY ISFSI
LICENSE APPLICATION
SYNOPSIS OF ISFSI-RELATED CHANGES
QUALITY ASSURANCE PROGRAM

Section	Page	Change
		and the ISFSI Technical Specifications.
17.17	17.17-4 17.17-5	Added ISFSI-related records to be maintained.
17.18	17.18-1	Audit system plan will reflect ISFSI activities and ISFSI SAR commitments.
	17.18-2	Added ISFSI activities to be audited.
	17.18-4	Added audit of the HB ISFSI Access Authorization Program
Table 17.1-1	1	Table identifies current regulatory requirements and PG&E commitments pertaining to the ISFSI portion of the QA Program. Regulatory Guide 1.37 is not applicable to the ISFSI.
	6	PG&E will perform biennial review of ISFSI procedures with the noted exception.
	7	HB ISFSI personnel shall meet the requirements of the Training Program, Attachment C to the HB ISFSI License Application.
	8	Regulatory Guide 4.15 does is not applicable to the ISFSI.
		BTP PCSB 9.5-1, Appendix A is not applicable to the ISFSI.
	8	Regulatory Guide 1.26 is not applicable to the ISFSI.
		Regulatory Guide 1.97 is not applicable to the ISFSI.
Figure 17.1-2		Added the Director, Fossil Generation and Asset Management reporting to the Vice President, Nuclear Services. Added the Director and Plant Manager, HBPP reporting to the Director, Fossil Generation and Asset Management.

Chapter 17

QUALITY ASSURANCE

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Chapter 17

TABLES

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17.1-1	Current Regulatory Requirements and PG&E Commitments Pertaining to the Quality Assurance Program

Chapter 17

FIGURES

Figure	Title
17.1-1	Pacific Gas and Electric Company Utility Organization
17.1-2	Nuclear Quality, Analysis, and Licensing in the Utility Organization

Chapter 17

QUALITY ASSURANCE

17.1 ORGANIZATION

The Pacific Gas and Electric Company's (PG&E) efforts to assure the quality and safety of *DCPP and independent spent fuel storage installations (ISFSIs)* are organized in a structured manner with clearly defined levels of authority, assignments of responsibility, and lines of communication. Assignment of responsibility for an item or activity includes responsibility for its quality. Figure 17.1-1 depicts the organizational structure of PG&E. The position of the Nuclear Quality, Analysis, and Licensing (NQAL) Department in the utility organization is shown in Figure 17.1-2.

PG&E has assumed full responsibility to its employees, stockholders, the general public, and affected governmental regulatory agencies for the establishment and execution of the Quality Assurance (QA) Program prescribed *herein*, quality-related program directives, and administrative procedures. The work of executing selected portions of the QA Program may be delegated to organizations external to PG&E; however, in all such instances, PG&E retains overall responsibility.

Specific responsibilities pertaining to QA matters are assigned by the QA Program and its implementing procedures and instructions to various individuals throughout PG&E. In each instance, the assignment of a responsibility to an individual includes with it a commensurate delegation of sufficient authority that the person can, in fact, fulfill that responsibility. Unless otherwise specifically prohibited, it is understood that the functions, tasks, and activities necessary to carry out a responsibility may be delegated to and performed by other qualified individuals. All delegations of functions, tasks, activities, and authority shall be documented.

Figure 17.1-2 identifies those individuals and organizational components of PG&E with direct responsibilities related to the quality of the:

- design, maintenance, and operation of *DCPP, and*
- *design, fabrication, construction, testing, operation, maintenance, modification, and decommissioning of ISFSI structures, systems, and components (SSCs) that are important to safety.*

The narrative description throughout this section is based primarily on Figure 17.1-2.

THE BOARD OF DIRECTORS OF PG&E CORPORATION is responsible for all facets of PG&E's utility business.

THE CHAIRMAN OF THE BOARD is accountable to the Board of Directors and establishes the corporate policies, goals, and objectives related to all of PG&E's activities and operations.

THE PRESIDENT AND CHIEF EXECUTIVE OFFICER is responsible for and directs the planning, distribution, and development of all the Company's energy resources and nuclear power generation. These functions include such activities as planning and development, engineering, construction, and fossil and nuclear power plant *and ISFSI* operations. Reporting to the President and Chief Executive Officer are the Senior Vice President and Chief of Utility Operations, the Senior Vice President, Generation and Chief Nuclear Officer, and the Senior Vice President, Governmental and Public Relations.

THE SENIOR VICE PRESIDENT, GENERATION AND CHIEF NUCLEAR OFFICER, is responsible for the safe and efficient operation of the Company's nuclear power plants. *He is also responsible for overall ISFSI safety and for taking measures needed to ensure acceptable performance of the ISFSI staff in designing, fabricating, constructing, testing, operating, modifying, decommissioning, and providing technical support to the ISFSI.* The Senior Vice President, Generation and Chief Nuclear Officer, is the corporate officer specified by the DCPP Technical Specifications, Section 5, who shall have corporate responsibility for overall *DCPP* nuclear safety and shall take any measures needed to ensure acceptable performance of the staff in operating, maintaining, and providing technical support to *DCPP* to ensure nuclear safety. Reporting directly to him is the Vice President and General Manager, Diablo Canyon. The Senior Vice President, Generation and Chief Nuclear Officer, or his designee, as specified in administrative procedures, approves and signs official company correspondence to the U.S. Nuclear Regulatory Commission (NRC) or its representatives. The Independent Review and Audit Program, and the Diablo Canyon Plant Staff Review Committee (PSRC) report to the Senior Vice President. He approves revisions to the QA Program as described *herein* that constitute a reduction in a commitment made to the NRC. He also approves revisions to program directives.

THE VICE PRESIDENT AND GENERAL MANAGER, DIABLO CANYON is responsible for the conduct of all onsite *DCPP* activities related to the safe and efficient maintenance and operation of *DCPP* as well as activities related to *Diablo Canyon* ISFSI operation and decommissioning. He is responsible to develop, and has been delegated the necessary authority to approve and direct the implementation of, those programs, procedures, and instructions required for the operation of *DCPP* and the *Diablo Canyon* ISFSI, within limits established by the QA Program, Technical Specifications, and administrative guidelines established by the Senior Vice President, Generation and Chief Nuclear Officer. Reporting directly to the Vice President and General Manager, Diablo Canyon are the Vice President, Diablo Canyon Operations and Station Director; the Vice President, Nuclear Services, the Director, Site Services; and the Director, Nuclear Quality, Analysis and Licensing.

THE VICE PRESIDENT, DIABLO CANYON OPERATIONS AND STATION DIRECTOR is responsible for overall safe operation of *DCPP* and has control over those onsite activities necessary for safe operation and maintenance of the plant as well as activities related to Diablo Canyon ISFSI operation and decommissioning. The Vice President, Diablo Canyon Operations and Station Director is the plant manager specified in the DCPP Technical Specifications, Section 5. Reporting directly to the Vice President, Diablo Canyon Operations and Station Director are the Director, Operations Services; the Director, Maintenance Services; the Director, Outage Management, and the Manager, NPG, Learning Services.

THE DIRECTOR, OPERATIONS SERVICES, is responsible for operations, radiological protection, and chemistry and environmental operations activities *at DCPP*. The Director, Operations Services reports to the Vice President, Diablo Canyon Operations and Station Director. Reporting to the Director, Operations Services are the Manager, Operations; the Manager, Radiation Protection; and the Manager, Chemistry and Environmental Operations.

THE VICE PRESIDENT, NUCLEAR SERVICES, is responsible for providing engineering and design services and geotechnical services for DCPP and Humboldt Bay Power Plant (HBPP), *as well as Diablo Canyon ISFSI preoperational activities. He is also responsible for HB ISFSI activities.* He is responsible for procurement of material and equipment for *DCPP and ISFSI*. Reporting directly to the Vice President, Nuclear Services, are the Director, Engineering Services; the Director Strategic Projects and Assistant to the Vice President, Nuclear Services; the *Director, Fossil Generation and Asset Management;* the Manager, Procurement Services; the Manager, Nuclear Fuels Purchasing; the Director, Geosciences, *and the HBPP PSRC.*

The DIRECTOR, FOSSIL GENERATION AND ASSET MANAGEMENT has overall responsibility for HB ISFSI operations and decommissioning. Reporting directly to him is the Director and Plant Manager, HBPP.

The DIRECTOR AND PLANT MANAGER, HBPP, is responsible for the conduct of all activities related to the HB ISFSI. This includes responsibility for operation, maintenance, engineering, radiation protection, training, and security. He is the chairman of the PSRC. He is responsible to develop, and is authorized to approve and direct the implementation of those programs, procedures, and instructions required for the ISFSI within limits established by this QA Program, the Humboldt Bay ISFSI Technical Specifications, and administrative guidelines established in the HB ISFSI Safety Analysis Report (SAR). Design authority for the HB ISFSI has also been delegated to the Director and Plant Manager, HBPP.

THE ENGINEERING MANAGER reports directly to the Director and Plant Manager, HBPP, and is responsible for technical aspects of the engineering and design of HB ISFSI SSCs for monitoring system performance and trends; for performance of modifications to the HB ISFSI; for configuration control and design bases defense and

management; for quality classification of HB ISFSI SSCs; and for the specification of technical and quality requirements for the purchase of HB ISFSI material and equipment

THE DIRECTOR, ENGINEERING SERVICES, is responsible for technical aspects of the engineering and design of company nuclear power plant systems *and Diablo Canyon ISFSI* SSCs. He is also responsible for monitoring system performance and trends, implementation of the maintenance rule, evaluation of industry operating experience, and for reporting trend and performance status information to the Senior Vice President, Generation and Chief Nuclear Officer. In addition, he is specifically charged with development, evaluation, qualification, testing, and improvement of nondestructive examination procedures required by PG&E and for evaluation of these types of procedures that are used at DCPP by other organizations.

THE DIRECTOR, STRATEGIC PROJECTS AND ASSISTANT TO THE VICE PRESIDENT, NUCLEAR SERVICES, is responsible for *DCPP* knowledge management and configuration control, design bases defense and management, performance of modifications to *DCPP*, and providing assistance to the Vice President, Nuclear Services in miscellaneous areas including Diablo Canyon rate-making and decommissioning trust fund management. He is also responsible for the specification of technical and quality requirements for the purchase of *Diablo Canyon* material and equipment.

THE DIRECTOR, NUCLEAR QUALITY, ANALYSIS, AND LICENSING, is responsible for management of the QA Program and for assuring that the QA Program prescribed *herein*, program directives, and administrative procedures is effectively implemented and complied with by all involved organizations, both internal and external to PG&E. The Chairman of the Board; the President and Chief Executive Officer; the Senior Vice President, Generation and Chief Nuclear Officer; the Vice President and General Manager, Diablo Canyon; and the Vice President, Nuclear Services, have given him the organizational freedom and delegated the requisite authority to investigate any area or aspect of PG&E's operations as necessary to identify and define problems associated with establishment or execution of the QA Program. They have also delegated to him the authority to initiate, recommend, or provide solutions for such problems to whatever management level is necessary, and to verify that effective corrective action is taken in a timely manner. This delegation includes the authority to assess, audit and monitor the conduct of quality related activities performed by or for PG&E to assure compliance with the QA Program and other regulatory requirements.

The Director, NQAL, has access to the Senior Vice President, Generation and Chief Nuclear Officer; the Vice President, Nuclear Services; the Vice President and General Manager, Diablo Canyon; the Vice President, Diablo Canyon Operations and Station Director; *the Director, Fossil Generation and Asset Management; the Director and Plant Manager, HBPP*; and appropriate directors and managers for any significant quality-related problem or deficiency. He is authorized to prescribe a uniform company-wide method of performing an activity affecting quality by sponsoring or requiring the issuance of procedures when such standardization is considered desirable or essential

to the effectiveness of the QA Program. Such uniform methods are contained in program directives and administrative procedures, and compliance with their requirements by all PG&E personnel is mandatory.

The Director, NQAL, will not be responsible for any activities unrelated to responsibilities described in the QA Program that would prevent the required attention to QA matters. Further, the responsibility of the implementation of the QA Program will take precedence over the other non-QA duties.

The Director, NQAL, shall meet the following qualification requirements: management experience through assignments to responsible positions; knowledge of QA regulations, policies, practices, and standards; and experience working in QA or related activity in reactor design, construction, or operation or in a similar highly technological industry. At the time of initial core loading or assignment to the active position, the Director, NQAL, shall have 6 years experience in implementing quality assurance, preferably at an operating nuclear plant, or nuclear power plant experience in the overall implementation of the QA Program. A minimum of 1 year of this 6-year experience requirement shall be related technical or academic training. A maximum of 4 years of this 6-year experience requirement may be fulfilled by related technical or academic training.

The Director, NQAL, is responsible to regularly assess and report on the status, adequacy, and effectiveness of PG&E's QA Program to the Senior Vice President, Generation and Chief Nuclear Officer, and other affected PG&E Management. He is responsible to identify, prepare, and submit for approval such changes to *the QA Program prescribed herein* as are necessary to maintain the QA Program up to date and in conformance with current regulatory requirements and PG&E commitments to the NRC. He is responsible for the review of all regulatory submittals as they pertain to the QA Program, and his concurrence is required prior to submittal. He is responsible for assuring that the QA Program is effectively implemented at *DCPP and the ISFSI sites*. He assures timely and effective corrective actions through regular assessments, trend and status reports, and root cause analysis assistance. Reporting to the Director are the Manager, Problem Prevention and Resolution; the Manager, Quality Verification; the Manager, Regulatory Services; the Supervisor, System Transient Analysis; the Supervisor, Probabilistic Risk Assessment.

The Manager, Quality Verification, reports to the Director, NQAL, and is responsible for providing recommendations on solutions to quality problems and performing monitoring, assessments, and audits for the areas of licensing, probabilistic risk assessment (PRA), and transient analysis, and problem prevention and resolution areas.

The Nuclear Safety Employee Concerns Program, reports to the Manager, Problem Prevention and Resolution.

For *DCPP and ISFSI* independent review issues involving the licensing, system transient analysis, PRA and problem prevention and resolution areas, the Manager,

Quality Verification, has the authority to directly report to and communicate with the Vice President and General Manager, Diablo Canyon.

In the event of a conflict between any non-QA activity reporting to the Director, NQAL, the Director, NQAL, will delegate his authority to resolve the conflict to the Manager, Quality Verification, who has the authority to report directly to the Vice President and General Manager, Diablo Canyon.

The Director, NQAL, has the authority and responsibility to stop work should there be a serious breach of any part of the QA Program, or of technical or regulatory requirements wherein public health or safety could be involved. If stopping work would involve changing a nuclear generating unit's power level or separating such a unit from the PG&E system, the concurrence of the Senior Vice President, Generation and Chief Nuclear Officer, is required.

The Director, NQAL, is responsible for review of:

(1) *DCPP* operating characteristics, *DCPP* operations, modifications, maintenance, and surveillance, *and*

(2) *ISFSI design, fabrication, construction, testing, operation, modification, decommissioning, and related activities*

to verify independently that these activities are performed correctly and that human errors are reduced as much as practicable. The NQAL organization reviews NRC correspondence, industry advisories, licensee event reports, and other sources of *DCPP and ISFSI* design and operating experience information that may indicate areas for improving DCPP *and ISFSI* safety. From these reviews, NQAL makes detailed recommendations for improving *DCPP and ISFSI* safety.

The Director, NQAL, is responsible for coordinating with the NRC for all NPG matters relating to obtaining, maintaining, amending, revising, and otherwise changing *DCPP* licenses. He is also responsible for probabilistic risk assessments, transient analyses, and for providing support for the independent review groups and agencies such as the Diablo Canyon Independent Safety Committee (DCISC).

THE MANAGER, PROCUREMENT SERVICES, is responsible for administering, coordinating, planning, and operation of warehousing and procurement of materials in support of *DCPP and ISFSI* operations and construction, as well as for contract services. He is responsible for the functions within the materials procurement group including: the procurement specialist group, warehousing operations, administrative coordination of warehouse quality control receipt inspection activities, and materials coordination.

The DIRECTOR, TECHNICAL AND ECOLOGICAL SERVICES, is responsible to the Vice President, General Services, for providing technical investigations, tests, analyses,

examinations, and calibration services in support of Diablo Canyon and Humboldt Bay Power Plants. He also provides environmental, radiological, and health physics investigations, analyses, monitoring, and mitigation services. In addition, he is specifically charged with development, evaluation, qualification, testing, and improvement of welding, brazing, and heat-treating procedures required by the company and evaluation support of these procedures.

The DIRECTOR, GEOSCIENCES, is responsible to the Vice President, Nuclear Services, for providing geo-scientific studies; reports, and calculations (including geology, seismology, vibration ground motion studies, surface faulting, stability of subsurface materials, and slope stability) in support of DCPP and HBPP.

THE MANAGER, SUPPORT SERVICES, is responsible to the Director, Purchasing, for providing document-services support for Diablo Canyon and Humboldt Bay Power Plants. These services include indexing, preparing, and duplicating microfiche for the drawing control system; storing the master microfiche and drawings that cannot be microfilmed; and scanning and indexing drawings when requested by NPG. They also provide remote storage of master microfilm reels for the records management system (RMS) and storage of vendor manuals.

The following committees function at the managerial level within PG&E to provide review and audit of *DCPP and ISFSI* design, maintenance, and operation activities. The Company may elect to have additional committees (e.g., Nuclear Safety Oversight Committee (NSOC). President's Nuclear Advisory Committee (PNAC), etc.) to provide advice and recommendations to enhance safe operation.

THE INDEPENDENT REVIEW AND AUDIT PROGRAM, implemented by the NQAL Quality Verification Section, issues reports to the Senior Vice President, Generation and Chief Nuclear Officer. The Independent Review and Audit Program provides for the independent review and audit of activities occurring during the operational phase of PG&E's nuclear power facilities *and ISFSIs*. The quality verification manager has the authority to have reviews and audits performed in such areas *as ISFSI construction, DCPP and ISFSI* operations, nuclear engineering, chemistry and radiochemistry, metallurgy, instrumentation and control, radiological safety, nondestructive testing, mechanical and electrical engineering, administrative controls, security, and QA practices to independently verify that the performance of activities in these areas is satisfactory. The Independent Review and Audit Program functions, responsibilities, and meeting requirements are described in Section 17.2.3.

THE *DCPP* PLANT STAFF REVIEW COMMITTEE reports to the Senior Vice President, Generation and Chief Nuclear Officer, and is responsible to advise the Vice President, Diablo Canyon Operations and Station Director on matters related to nuclear safety. The Committee is responsible for providing timely and continuing monitoring of operating activities to assist the Vice President, Diablo Canyon Operations and Station Director in keeping aware of general *DCPP and Diablo Canyon ISFSI* conditions and to verify that day-to-day operating activities are conducted safely and in accordance with

applicable administrative controls. The Committee performs periodic reviews of *DCPP* operating activities to evaluate *DCPP and Diablo Canyon ISFSI* operations and to plan future activities. In addition, the PSRC performs special reviews, investigations or analyses, and screens subjects of special concern as requested by NSOC. PSRC functions, responsibilities, and meeting requirements are described in Section 17.2.

THE HBPP PLANT STAFF REVIEW COMMITTEE reports to the Vice President, Nuclear Services, and is responsible to advise the Director and Plant Manager, HBPP, on matters related to nuclear safety. The Committee is responsible for providing timely and continuing monitoring of ISFSI operating activities to assist the Director and Plant Manager, HBPP, in keeping aware of general ISFSI conditions and to verify that day-to-day operating activities are conducted safely and in accordance with applicable administrative controls. The Committee performs periodic reviews of ISFSI operating activities to evaluate operations and to plan future activities. In addition, the PSRC performs special reviews, investigations or analyses, and screens subjects of special concern as requested by NSOC. PSRC functions, responsibilities, and meeting requirements are described in Section 17.2.

Administrative procedures or charters for the above committees provide detailed responsibilities and functions, as well as membership, authority, and reporting requirements. The reporting relationships of the committee are identified in the organization chart on Figure 17.1-2.

Verification of conformance to established requirements (except designs) is accomplished by individuals or groups within NQAL, Quality Verification who do not have direct responsibility for performing the work being verified or by individuals or groups trained and qualified in QA concepts and practices and independent of the organization responsible for performing the task. The persons and organizations performing QA and quality control functions have direct access to management levels that assure the ability to: (a) identify quality problems; (b) initiate, recommend, or provide solutions through designated channels; and (c) verify implementation of solutions. They are sufficiently free from direct pressures for cost and schedule and have the responsibility to stop unsatisfactory work and control further processing, delivery, or installation of nonconforming material. (The organizational positions with stop work authority are identified in the implementing procedures.) NQAL, Quality Verification, reviews and documents concurrence with all procedures and instructions that define methods for implementing the QA Program.

Each organization that supports DCPP *and the ISFSIs* documents and maintains current a written description of its internal organization. This documentation describes the business unit or department's structure, levels of authority, lines of communication, and assignments of responsibility. Such documentation takes the form of organization charts supported by written job descriptions or other narrative material in sufficient detail that the duties and authority of each individual whose work affects quality is clear. Interfaces between organizations are described in administrative procedures or other documents controlled in accordance with the appropriate requirements of Section 17.6.

The individuals assigned to the positions having a particular responsibility in program directives and administrative procedures (as described above) are the only individuals who are authorized to perform these activities. However, circumstances may arise where it is considered either necessary or desirable to have such activities, or some portion of them, actually performed by someone else. In such cases, the assigning organization retains responsibility and shall verify that the procedures and instructions to be followed in performing the work are adequate for controlling the work and meet applicable requirements. In such circumstances, the detailed procedures and instructions to be followed in performing the work are reviewed and approved by the person assigned responsibility for the work prior to the commencement of work. The purpose of such review and approval is to verify that such procedures and instructions reflect an acceptable method of performing the work and are in compliance with the requirements of the QA Program. All instances in which authority is to be delegated or support services are to be provided are documented.

Suppliers to *DCPP and the ISFSIs* are required to conform to the PG&E QA Program or to their own program approved by PG&E. Supplier QA Programs are required to comply with the applicable portions of both 10 CFR 50, Appendix B *and 10 CFR 72, Subpart G,* and the applicable regulatory documents and industry standards identified in Table 17.1-1. The quality program is defined in the contract or similar procurement document. Suppliers to PG&E are required to document their internal organizational arrangements to the extent necessary for PG&E to assure the supplier is capable of effectively managing, directing, and executing the requirements of the procurement documents. The authority and responsibility of persons and organizations who perform activities that might affect the quality of the procured items or services shall be clearly established. The Suppliers' organizational structure, levels of authority, and functional assignments of responsibility shall be such that:

(1) The QA function of formally verifying conformance to the technical and quality requirements of the procurement documents is accomplished by qualified personnel who are independent of those who performed or directly supervised the work.

(2) Personnel who perform QA functions have sufficient authority and organizational freedom to identify quality problems; to initiate, recommend, or provide solutions; to verify implementation of those solutions; and to control further processing of the items or services until proper dispositioning has occurred.

17.2 QUALITY ASSURANCE PROGRAM

17.2.1 Program Applicability

The quality of the safety-related aspects of the design, construction, and operation of *DCPP* shall be assured through the QA Program prescribed herein, quality-related program directives, and administrative procedures. The QA Program requirements, as a minimum, apply to those DCPP structures, systems, and components (SSCs) classified as Design Class I in Section 3.2 of the FSAR Update.

The quality of the important-to-safety aspects related to the design, fabrication, construction, testing, operation, maintenance, modification, and decommissioning of the Diablo Canyon and Humboldt Bay (HB) ISFSI SSCs shall be assured through the QA Program prescribed herein, quality related program directives, and administrative procedures. The QA Program requirements apply to the Diablo Canyon and HB ISFSI SSCs classified as important to safety in their respective ISFSI SAR, Section 4.5. The applicable QA criteria are executed to an extent that is commensurate with the importance to safety.

The QA Program also applies to the following:

(1) *DCPP* design, construction, and operation of SSCs that prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public. The *SSCs* that serve these functions are classified as Design Class I. In addition, certain QA Program requirements apply to the nonsafety-related programs listed in (1) through (10) below to provide additional assurance that these objectives are satisfied.

(2) The design, construction, and operation of those portions of *DCPP SSCs* whose function is not required as above but whose failure could reduce the functioning of the above *DCPP* features to an unacceptable level or could incapacitate control room occupants. Certain of these *SSCs* are conservatively designated as Design Class I. Other nonsafety-related SSCs with seismic qualification requirements are subject to the seismic configuration control program listed below. Seismically Induced System Interaction Program requirements are governed by quality-related procedures.

(3) Activities affecting the above *DCPP* features.

(4) *Managerial and administrative controls to ensure safe operation of the ISFSI, both prior to issuance of a license and throughout the life of the licensed activity.*

(5) *Activities that provide confidence that an ISFSI SSC will perform satisfactorily in service, including activities that determine that physical characteristics and quality of materials or components adhere to predetermined requirements.*

In addition, the QA Program includes requirements that apply to *the following DCPP and ISFSI* nonsafety-related programs:

	Program	DCPP	*ISFSI*
(1)	Fire Protection	X	
(2)	Emergency Preparedness	X	X
(3)	Security	X	X
(4)	Radiation Protection	X	X
(5)	Radiological Monitoring and Controls Program	X	
(6)	*ISFSI Radiological Environmental Monitoring*		X
(7)	Environmental Monitoring	X	
(8)	Radioactive Waste Management	X	X
(9)	Fitness for Duty	X	
(10)	Regulatory Guide 1.97, Category 2 and 3 Instrumentation	X	
(11)	Seismic Configuration Control	X	
(12)	Anticipated Transient Without Scram Mitigation System Actuation Circuitry (AMSAC) Equipment	X	

17.2.2 Program Control

The status and adequacy of this QA Program shall be regularly monitored, and it shall be revised as necessary to improve its effectiveness or to reflect changing conditions.

The Director, NQAL, is responsible for the preparation, issue, interpretation, and control of this *QA Program*, and for concurring with changes to quality-related program directives and administrative procedures that propose a change to the QA Program as it is described in a commitment to a regulatory agency. The Director, NQAL, is responsible to assure the requirements set forth in this QA Program, quality-related

program directives, and administrative procedures are in compliance with current regulatory requirements and PG&E commitments to the NRC as shown in Table 17.1-1. Proposed changes to program directives are also approved by the Senior Vice President, Generation and Chief Nuclear Officer.

The QA Program documents, including any changes, supplements, or appendices, are issued and maintained as controlled documents. Changes to the *DCPP-specific* QA Program as described herein that do not reduce commitments shall be included in the periodic updates required by 10 CFR 50.71. *Changes to HB ISFSI-specific QA Program requirements shall be made in accordance with 10 CFR 50.54.* Proposed changes to this QA Program that reduce commitments are reviewed and concurred with in writing by the Director, NQAL, and are approved by the Senior Vice President, Generation and Chief Nuclear Officer, or his designee, prior to being submitted to and approved by the NRC in accordance with 10 CFR 50.54 prior to issue for use.

Implementation of the QA Program is accomplished through separately issued procedures, instructions, and drawings. Each vice president and director is responsible for the establishment and implementation of detailed procedures and instructions prescribing the activities for which he is responsible. Such documents are derived from the requirements and reflect the responsibilities specified in the QA Program. Activities affecting quality are accomplished in accordance with these instructions, procedures, and drawings. All personnel are instructed that compliance with those requirements, and the requirements of the QA Program, is mandatory.

Questions or disputes involving interpretations of QA Program requirements, or of the commitments and requirements upon which it is based, are referred to the Director, NQAL, for resolution. Questions or disputes involving the responsibilities defined in this chapter and program directives are referred to the Senior Vice President, Generation and Chief Nuclear Officer. Questions or disputes involving other quality matters are resolved by referring the matter in a timely manner to successively higher levels of management until, if necessary, the matter reaches that level which has direct authority over all contesting parties.

Personnel who perform functions addressed by the QA Program are responsible for the quality of their work. They are indoctrinated, trained, and appropriately qualified to assure that they have achieved and maintained suitable proficiency to perform those functions. Qualifications of such personnel are in accordance with applicable codes, standards, and regulatory requirements.

The Director, NQAL, or his designated representative, regularly reports to the Senior Vice President, Generation and Chief Nuclear Officer, and responsible company management on the effectiveness of the QA Program as it relates to the *DCPP and ISFSI* design, maintenance, and operation. Such reports are based on the results of audits, reviews, inspections, tests, and other observations of activities as prescribed by the QA Program.

Annually, the Director, NQAL, shall report to the Senior Vice President, Generation and Chief Nuclear Officer, on the effectiveness of the QA Program and the Independent Review and Audit Program. The report shall include an evaluation of NPG's compliance with current regulatory requirements and commitments to the NRC.

17.2.3 Independent Review and Audit Program

The QA Program also includes an independent review and audit function, implemented by NQAL – Quality Verification. This function provides an independent review of *DCPP and ISFSI* changes, tests, and procedures, which constitute a change to the facility *or ISFSI* as described in the FSAR Update *or ISFSI SAR*. In addition, the independent review function will verify that reportable events are investigated in a timely manner and corrected in a manner that reduces the probability of recurrence of such events; and detect trends that may not appear to a day-to-day observer.

The individuals assigned responsibility for independent reviews shall be qualified in specific disciplines. These individuals shall collectively have the experience and competence required to review activities in the following areas:

(1) *DCPP and ISFSI* operations

(2) Nuclear engineering

(3) Chemistry and radiochemistry

(4) Metallurgy

(5) Nondestructive testing

(6) Instrument and control

(7) Radiological safety

(8) Mechanical and electrical engineering

(9) Administrative controls

(10) Quality assurance practices

(11) Other appropriate fields

The individuals assigned responsibility for independent reviews shall report to and advise the Senior Vice President, Generation and Chief Nuclear Officer, on those areas of responsibility specified in the Review and Audits sections below.

Composition - NQAL – Quality Verification Section shall be composed of a manager and a minimum of four members. The manager shall have a bachelor's degree in an engineering-related field and, in addition, shall have a minimum of 10 years related experience, of which 5 years shall be in the operation and/or design of nuclear power plants. The manager shall also have a minimum of 6 years of professional level managerial experience in the power field.

Quality Verification Section members assigned to perform independent reviews shall have a bachelor's degree in an engineering-related field and, in addition, shall have a minimum of 5 years of professional level experience in the field of their specialty. In special cases, 10 years of experience in a specialized field may be acceptable.

Any individual may possess competence in more than one specialty area.

If sufficient expertise is not available within the Quality Verification Section, competent individuals from other company organizations, or, at the discretion of the quality verification manager, outside consultants shall be used in performing independent reviews and investigations.

The quality verification manager should schedule periodic staff meetings to foster interaction in review of specific activities. These meetings should, as a minimum, be held every 6 months.

Individuals qualified in the appropriate disciplines shall review the documents submitted for review. Multiple reviews shall be conducted, where appropriate, to meet applicable disciplines. Individuals not directly involved with the activity under review and not responsible for the activity under review shall conduct independent reviews. Independence shall extend to and exclude voting members of the PSRC who reviewed a specific activity, from being involved in an independent review.

The independent review and audit function shall be conducted in accordance with written procedures.

The Independent Review and Audit Program shall review:

(1) The evaluations for: (a) changes to procedures, equipment, or systems, and (b) tests or experiments completed under the provision of 10 CFR 50.59 *or 10 CFR 72.48*, to verify that such actions did not require prior NRC approval

(2) Proposed changes to procedures, equipment, or systems, that require prior NRC approval as defined in 10 CFR 50.59 *or 10 CFR 72.48*

(3) Proposed tests or experiments that require prior NRC approval as defined in 10 CFR 50.59 *or 10 CFR 72.48*

(4) Proposed changes to *the DCPP* Technical Specifications or Operating License

(5) *Proposed changes to the ISFSI Technical Specifications or license*

(6) Violations of codes, regulations, orders, Technical Specifications, license requirements, or of internal procedures or instructions having nuclear safety significance

(7) Significant operating abnormalities or deviations from normal and expected performance of *DCPP and ISFSI* equipment that affect nuclear safety

(8) All reportable events

(9) All recognized indications of an unanticipated deficiency in some aspect of *DCPP* design or operation of safety-related SSCs that could affect nuclear safety

(10) All recognized indications of an unanticipated deficiency in some aspect of ISFSI design or operation of important-to-safety SSCs that could affect nuclear safety

(11) Reports and meeting minutes of the PSRC.

(12) Any other matter involving safe operation of *DCPP and ISFSI* that the quality verification manager deems appropriate for consideration, or which is referred to the manager by organizational units.

Audits of *DCPP and ISFSI* activities shall be performed by or under the cognizance of the quality verification manager. See Section 17.18 for minimum audit frequency details.

The Independent Review and Audit Program shall be reviewed at least semi-annually to assure that audits are being accomplished in accordance with the requirements of Sections 17.2 and 17.18.

Records of Independent Review and Audit Program activities shall be prepared, approved, and distributed as indicated below:

(1) A summary of reviews report shall be prepared, approved, and forwarded to the Senior Vice President, Generation and Chief Nuclear Officer, the Vice President and General Manager, Diablo Canyon; the Vice President, Diablo Canyon Operations and Station Director; the Vice President, Nuclear Services; *the Director and Plant Manager, HBPP;* and the Director, NQAL.

(2) Audit reports encompassed by the Audit section, above, shall be forwarded to the Senior Vice President, Generation and Chief Nuclear Officer, and to the management positions responsible for the areas audited within 30 days after completion of the audit

17.2.4 Plant Staff Review Committee

A PSRC has been established *for DCPP and the ISFSI.* The committee satisfies applicable requirements of ANSI N18.7, 1976, and *these* activities are controlled as described below:

PSRC Function - The PSRC shall function to advise the Vice President, Diablo Canyon Operations and Station Director *or the Director and Plant Manager, HBPP, as applicable,* on all matters related to nuclear safety.

Diablo Canyon Composition - The PSRC shall be chaired by the Vice President, Diablo Canyon Operations and Station Director, and shall be composed of a minimum of 8 senior management individuals whose responsibilities include the functional areas of operations, maintenance, radiation protection, support services, technical services, and quality control. The PSRC Chairman shall appoint all members in writing. The qualifications of each PSRC member shall meet or exceed the requirements and recommendations of Section 4.7 of ANSI/ANS 3.1-1978.

HB ISFSI Composition - The PSRC shall be chaired by the Director and Plant Manager, HBPP, or delegate, and shall be composed of a members of the plant staff who have responsibility in the areas of ISFSI operations, mechanical maintenance, instrumentation and control maintenance; radiation protection, nuclear engineering, and quality control. The PSRC Chairman shall appoint all members in writing. Each PSRC member shall meet or exceed the minimum qualifications of ANSI/ANS 3.1-1978, Section 4.7, for comparable positions, except for ISFSI operations and radiation protection. The ISFSI operations member shall be a certified fuel handler. The radiation protection member shall meet or exceed the qualifications of Regulatory Guide 1.8, Revision 2, April 1987.

Alternates - The Chairman may designate in writing other regular members who may serve as the Acting Chairman of PSRC meetings. The applicable PSRC Chairman shall appoint all alternate members in writing. Alternates may be designated for specific PSRC members and shall have expertise *and qualifications* in the same general area as the regular PSRC member they represent. No more than two alternates shall participate as voting members in PSRC activities at any one time.

Diablo Canyon Meeting Frequency - The PSRC shall meet at least once per calendar month and as convened by the PSRC Chairman or his designated alternate.

HB ISFSI Meeting Frequency - The PSRC shall meet at least once per calendar quarter and as convened by the PSRC Chairman or his designated alternate.

Quorum - The minimum quorum of the PSRC necessary for performance of the PSRC responsibility and authority provisions of this QA Program section shall be a majority (more than one-half) of the members of the PSRC. For purposes of the quorum, this majority shall include the Chairman or his designated alternate and no more than two alternate members.

The PSRC shall be responsible for:

(1) Reviewing the documents listed below to verify that proposed actions do not require prior NRC approval or require a change to the Technical Specifications and recommending approval or disapproval in writing to the appropriate approval authority

(a) Evaluations of proposed procedures and procedure changes completed under the provisions of 10 CFR 50.59 *or 10 CFR 72.48*

(b) Evaluations of proposed tests or experiments completed under the provisions of 10 CFR 50.59 *or 10 CFR 72.48*

(c) Evaluations of proposed changes or modifications to *DCPP or ISFSI* structures, systems, or equipment completed under the provisions of 10 CFR 50.59 *or 10 CFR 72.48*

(d) Evaluations of proposed changes to the following plans and programs completed under the provisions of 10 CFR 50.59 or *10 CFR 72.48* other applicable regulations:

1. Security Plan
2. Emergency Plan
3. Process Control Program – *for DCPP only*
4. Fire Protection Program – *for DCPP only*

(2) Reviewing all proposed changes to the DCPP Technical Specifications and *ISFSI Technical Specifications and* advising the Vice President, Diablo Canyon Operations and Station Director *or the Director and Plant Manager, HBPP, as applicable,* on their acceptability

(3) Investigating all violations of the *DCPP* Technical Specifications *and the ISFSI Technical Specifications* including the preparation and forwarding of reports covering evaluation and recommendations to prevent recurrence to the Senior Vice President, Generation and Chief Nuclear Officer. The assessment shall include an assessment of the safety significance of each violation

(4) Reviewing all reportable events in order to advise the Vice President, Diablo Canyon Operations and Station Director *or the Director and Plant Manager,*

HBPP, as applicable, on the acceptability of proposed corrective actions, and forwarding of reports covering evaluation and recommendations to prevent recurrence to the Senior Vice President, Generation and Chief Nuclear Officer.Reviewing significant *DCPP and ISFSI* operating experience or events that may indicate the existence of a nuclear safety hazard, and advising the Vice President, Diablo Canyon Operations and Station Director *or the Director and Plant Manager, HBPP, as applicable,* on an appropriate course of action

(6) Reviewing the Security Plan and implementing procedures and submitting results and recommended changes to the Vice President, Diablo Canyon Operations and Station Director *or the Director and Plant Manager, HBPP, as applicable*

(7) Reviewing the Emergency Plan and implementing procedures and submitting results and recommended changes to the Vice President, Diablo Canyon Operations and Station Director *or the Director and Plant Manager, HBPP, as applicable*

(8) Reviewing any accidental, unplanned, or uncontrolled radioactive release including the preparation and forwarding of reports covering evaluation, recommendations, and disposition of the corrective action to prevent recurrence to the Senior Vice President, Generation and Chief Nuclear Officer

(9) Recommending in writing to the appropriate approval authority, approval or disapproval of the items considered under paragraphs (1) and (2), above

(10) Rendering determinations in writing with regard to whether each item considered under paragraphs (1) through (4), above, require prior NRC approval

(11) *For Diablo Canyon*, providing written notification within 24 hours to the Senior Vice President, Generation and Chief Nuclear Officer, of disagreement between the PSRC and the Vice President, Diablo Canyon Operations and Station Director; however, the Vice President, Diablo Canyon Operations and Station Director shall have responsibility for resolution of such disagreements

(12) For HB ISFSI, in the event of a disagreement between PSRC members on a matter affecting nuclear or radiological safety, a conservative course shall be followed as determined by the Director and Plant Manager, HBPP. Records of such disagreements shall be included in the meeting minutes.

(13) *For Diablo Canyon*, reviewing, prior to approval, new procedures used to handle heavy loads in exclusion areas and changes directly related to methods and routes used to handle heavy loads in exclusion areas.

Records - The PSRC shall maintain written minutes of each PSRC meeting that, at a minimum, document the results of all PSRC activities performed under the responsibility and authority provisions of this QA Program section. Copies shall be provided to the Senior Vice President, Generation and Chief Nuclear Officer, and to the quality verification manager.

17.3 DESIGN CONTROL

Design activities shall be performed in an orderly, planned, and controlled manner directed to achieving the *DCPP and ISFSI* design that best serves the needs of PG&E and its customers without posing an undue risk to the health and safety of the public.

Design activities shall be controlled to assure that design, technical, and quality requirements are correctly translated into design documents and that changes to design and design documents are properly controlled. Design control procedures shall address responsibilities for all phases of design including:

(1) Responsibilities

(2) Interface control

(3) Design input

(4) Design performance

(5) Design verification

(6) Design change

Systematic methods shall be established and documented for communicating needed design information across the external and internal design interfaces, including changes to the design information, as work progresses. The interfaces between the Engineering Services Department, *the HB ISFSI engineering organization,* and other organizations, either internal or external to PG&E, performing work affecting quality of design shall be identified and documented. This identification shall include those organizations providing criteria, designs, specifications, technical direction, and technical information and shall be in sufficient detail to cover each structure, system, or component and the corresponding design activity.

Provisions for design input shall define the technical objectives for structures, systems, and components being designed or analyzed. For the structure, system, or component being designed, or for the design services being provided (for example, design verification), design input requirements shall be determined, documented, reviewed, approved, and controlled.

Required design analyses (such as physics, stress, thermal, hydraulic, and accident analysis; material compatibility; accessibility for inservice inspection, maintenance, and repair; and ALARA considerations) shall be performed in a planned, controlled, and correct manner. PG&E procedures shall identify the review and approval responsibilities for design analyses.

The preparation and control of design documents (such as specifications, drawings, reports, and installation procedures) shall be performed in a manner to assure design inputs are correctly translated into design documents (for example, a documented check to verify the dimensional accuracy and completeness of design drawings and specifications).

PG&E shall provide for reviewing, confirming, or substantiating the design to assure that the design meets the specified design inputs. Design verification shall be performed by competent individuals or groups other than those who performed the original design, but who may be from the same department. Individuals performing the verification shall not:

(1) Have immediate supervisory responsibility for the individual performing the design. In exceptional circumstances, the designer's immediate supervisor can perform the verification provided:

  (a) The supervisor is the only technically qualified individual

  (b) The need is individually documented and approved in advance by the supervisor's management

  (c) Quality assurance audits cover frequency and effectiveness of use of supervisors as design verifiers to guard against abuse

(2) Have specified a singular design approach

(3) Have ruled out certain design considerations

(4) Have established the design inputs for the particular design aspect being verified

The results of the design verification efforts shall be documented with the identification of the verifier clearly provided. Design verification methods may include, but not be limited to, the following: design reviews, use of alternate calculations, and qualification testing. The design verification shall be identified and documented. The design verification shall be completed prior to relying upon the component system or structure to perform its function. Procedures shall assure that verified computer codes are certified for use and that their applicability is specified.

Proposed changes or modifications to *ISFSI or DCPP* systems or equipment that affect nuclear safety shall be designed by a qualified individual or organization, and reviewed by a qualified individual/group other than the individual/group who prepared the change or modification, but who may be from the same organization. These reviews shall include a determination as to whether additional cross-discipline reviews are necessary. If deemed necessary, they shall be performed by review personnel of the appropriate discipline(s). These reviews shall also determine whether an evaluation per 10 CFR 50.59 *or*

10 CFR 72.48 is necessary. If necessary, one shall be prepared and presented to the PSRC for review prior to approval.

Each *DCPP and Diablo Canyon ISFSI* change or modification shall be approved by the Vice President, Diablo Canyon Operations and Station Director or his designee *and each HB ISFSI change or modification shall be approved by the Director and Plant Manager, HBPP, or his designee, as* specified in administrative procedures, prior to implementation.

Procedures for implementing design changes, including field changes, shall assure that the impact of the change is carefully considered, required actions documented, and information concerning the change transmitted to all affected persons and organizations. These changes shall be subjected to design control measures commensurate with those applied to the original design. Design changes shall be reviewed and approved by the same organization or group that was responsible for the original design.

Document control measures shall be established for design documents that reflect the commitments of the FSAR Update *and the ISFSI SAR*. These design documents shall include, but are not limited to, specifications, calculations, computer programs, system descriptions, the FSAR Update *and the ISFSI SAR* when used as a design document, and drawings including flow diagrams, piping and instrument diagrams, control logic diagrams, electrical single line diagrams, structural drawings for major facilities, site arrangements, and equipment locations.

Nonconforming activities such as procedure violations, deviations, or errors and deficiencies in approved design documents, including design methods (such as computer codes), shall be controlled as described in Sections 17.15 and 17.16.

17.4 PROCUREMENT DOCUMENT CONTROL

The procurement documents shall include those requirements necessary to assure that the items and services to be provided will be of the desired quality.

The procurement documents shall also include provisions for the following, as appropriate:

(1) Basic Technical Requirements - These include drawings, specifications, codes, and industrial standards with applicable revision data; test and inspection requirements; and special instructions and requirements, such as for designing, fabricating, cleaning, erecting, packaging, handling, shipping, and, if applicable, extended storage in the field.

(2) Quality Assurance Requirements - These include the requirements for the supplier to have an acceptable QA Program; provisions for access to the supplier's facilities and records for source inspection and audit when the need for such inspection and audit has been determined; and provisions for extending applicable QA Program and other requirements of procurement documents to subcontractors and suppliers, including PG&E's access to facilities and records.

(3) Documentation Requirements - These shall include records to be prepared, maintained, submitted or made available for review and instructions on record retention and disposition.

The procedures that implement procurement document control shall describe the organizational responsibilities for procurement planning; preparation, review, approval and control of procurement documents; supplier selection; bid evaluations; and review and evaluation of supplier QA Programs prior to initiation of activities affected by the program.

Procedures shall be established to review the adequacy of technical and quality assurance requirements stated in procurement documents; determine that requirements are correctly stated, inspectable, and controllable; assure adequate acceptance and rejection criteria; and provide for the preparation, review, and approval of procurement documents in accordance with QA Program requirements. The review and documented concurrence of the adequacy of quality assurance requirements stated in procurement documents shall be performed by independent personnel trained and qualified in applicable QA practices and concepts.

Changes to procurement documents shall be subject to the same control as the original document.

17.5 INSTRUCTIONS, PROCEDURES, AND DRAWINGS

Activities affecting quality shall be prescribed by and accomplished in accordance with documented procedures, instructions, and drawings.

The Vice President in charge of each PG&E organizational unit that performs activities affecting quality is responsible for the establishment and implementation of instructions, procedures, or drawings prescribing such activities. Standard guidelines for the format, content, and review and approval processes shall be established and set forth in a procedure or instruction issued by that organizational unit.

The method of performing activities affecting quality shall be prescribed in documented instructions, procedures, or drawings of a type appropriate to the circumstances. This may include shop drawings, process specifications, job descriptions, planning sheets, travelers, QA manuals, checklists, or any other written or pictorial form provided that the activity is described in sufficient detail such that competent personnel could be expected to satisfactorily perform the work functions without direct supervision.

Within the constraints, limitations, or other conditions as may be imposed by the specific *DCPP* Technical Specifications and other license requirements or commitments, procedures prescribing a preplanned method of conducting the following aspects of *DCPP* operations shall be established in accordance with the applicable regulations, codes, standards, and specifications: preoperational tests, systems operations, general *DCPP* activities, startup, shutdown, power operations and load changing, process monitoring, fuel handling, maintenance, modifications, radiation control, calibrations and tests, chemical-radiochemical control, abnormal or alarm conditions, emergency plan, tests and inspections, emergencies, and significant events.

Within the constraints, limitations, or other conditions as may be imposed by the ISFSI Technical Specifications and other ISFSI license requirements or commitments, procedures prescribing a preplanned method of conducting the activities and programs specified shall be established in accordance with the applicable regulations, codes, standards, and specifications.

In addition to the above, *DCPP and ISFSI* procedures and programs shall be established and controlled as described below.

(1) *Written procedures shall be established, implemented, and maintained covering the activities referenced in the ISFSI Technical Specifications.*

(2) *For DCPP*, written procedures shall be established, implemented, and maintained covering the activities referenced Specification 5.4.1 of the Diablo Canyon Power Plant's Technical Specifications.

(3) Each procedure of paragraph (1) and *(2)* above, and changes thereto, and all proposed tests or experiments that affect nuclear safety shall be reviewed and approved prior to implementation in accordance with the review and approval requirements below. Each procedure of paragraphs (1) and (2) above, as modified by Table 17.1-1, shall also be reviewed periodically as set forth in administrative procedures.

These procedure review and approval requirements apply when approving DCPP *and ISFSI* programs and procedures, or changes to *DCPP and ISFSI* programs and procedures. They also apply when approving or changing corporate procedures and procedures used by support organizations if they could have an immediate effect on *DCPP and ISFSI* operations or the operational status of safety-related structures, systems, or components *(SSCs) or ISFSI SSCs that are important to safety.* They do not apply to editorial or typographical changes.

(4) Each procedure or program required by paragraph (1) and *(2)* above, and other procedures, tests, and experiments that affect nuclear safety or the treatment of radwaste, and changes thereto, shall be prepared by a qualified individual/group. Each procedure, program, test, or experiment, and changes thereto, shall be reviewed by an individual/group other than the individual/group who prepared the proposed document or change, but who may be from the same organization as the individual/group who prepared it, and, *for DCPP,* shall be approved, prior to implementation, by the Vice President, Diablo Canyon Operations and Station Director or his designee, as identified in administrative procedures. *The Director and Plant Manager, HBPP, or his designee, shall approve HB ISFSI procedures prior to implementation, as identified in administrative procedures.*

(5) A responsible organization shall be assigned for each program or procedure required by paragraph (1) *and (2)* above. The responsible organization shall assign reviews of proposed procedures, programs, and changes to qualified personnel of the appropriate discipline(s).

(6) Individuals responsible for the above reviews shall be knowledgeable in the document's subject area, shall meet or exceed the qualification requirements of Section 4.7.2 of ANSI/ANS 3.1-1978, and shall be designated as qualified reviewers by the Vice President, Diablo Canyon Operations and Station Director or his designee *for DCPP procedures and by the Director and Plant Manager, HBPP for HB ISFSI procedures.*

(7) The reviews specified in paragraph (4) above shall include a determination as to whether additional cross-discipline reviews are necessary. If deemed necessary, they shall be performed by review personnel of the appropriate discipline(s).

(8) The reviews specified in paragraph (3) above shall also determine whether an evaluation per 10 CFR 50.59 *or 10 CFR 72.48* is necessary. If necessary, one shall be prepared and presented to the PSRC for review prior to approval.

(9) Temporary changes to procedures of paragraph (1) above may be made provided:

(a) The intent of the original procedure is not altered

(b) Administrative controls for approval and timely notification or training of personnel affected by the temporary change shall be implemented

(c) The change is documented, reviewed as described above, and approved by the appropriate approval authority within 14 days of implementation.

(10) Temporary changes to procedures of paragraph *(2)* above may be made provided:

(a) The intent of the original procedure is not altered

(b) The change is approved by at least two management staff members who meet applicable qualification requirements of ANSI/ANS 3.1, 1978, and are knowledgeable in the subject area of the procedure. For changes to procedures listed below, at least one approver shall hold a Senior Reactor Operators license.

1. All Operations Section procedures
2. Surveillance Test Procedures
3. Emergency Plan Implementing Procedures
4. Any other procedure if the proposed change affects equipment or system operating status

If the approving Senior Reactor Operator is not the Shift Foreman of the affected unit, that individual shall determine whether the Shift Foreman should be notified of the change immediately, and shall notify him/her if appropriate.

(c) The change is documented, reviewed as described above, and approved by the appropriate approval authority within 14 days of implementation.

17.6 DOCUMENT CONTROL

Documents and changes to documents that prescribe or verify activities affecting quality shall be controlled in a manner that precludes the use of inappropriate or outdated documents. As a minimum, controlled documents include: design documents, including documents related to computer codes; procurement documents; instructions and procedures for such activities as fabrication, construction, modification, installation, test, operation, maintenance, and inspection; as-built documents; quality assurance and quality control manuals and quality-affecting procedures; FSAR Update; *ISFSI SAR,* and nonconformance reports.

The organization responsible for establishing instructions, procedures, drawings, or other documents prescribing activities affecting quality is also responsible to develop and implement systematic methods for the control of such documents in accordance with the requirements herein. In those instances where such documents directly involve organizational interfaces, that organization with ultimate responsibility for the issuance of the documents is responsible for establishing the methods for their control.

Procedures and instructions shall assure that documents, including changes, are prepared; reviewed by a qualified individual other than the person who generated the document; approved for release by authorized personnel; distributed to the location where the activity is performed prior to commencing work; and used in performing the activity. Procedures and instructions shall require the development of as-built drawings and the removal or appropriate identification of obsolete or superseded documents.

Procedures and instructions that define methods for implementing the QA Program requirements shall be reviewed and concurred with by NQAL, Quality Verification, for compliance and alignment with the Program. Revisions to these documents shall also be reviewed and concurred with by NQAL, Quality Verification if they propose a change to the QA Program as it is described in a commitment to a regulatory agency.

The controls shall identify those responsible for preparing, reviewing, approving, and issuing documents to be used. They shall also define the coordination and control of interfacing documents and shall require the establishment of current and updated distribution lists.

A document control system shall be established to identify the current revision of instructions, procedures, specifications, drawings, and procurement documents. Master lists, when utilized as an element of the document control system, shall be updated and distributed to predetermined responsible personnel.

17.7 CONTROL OF PURCHASED MATERIAL, EQUIPMENT, AND SERVICES

Supplier activities in providing purchased material, equipment, and services shall be monitored as planned and necessary to assure such items and services meet procurement document requirements.

Procedures shall describe each organization's responsibilities for the control of purchased material, equipment, and services, including the interfaces between all affected organizations.

All materials, equipment, and services shall meet the specified technical and quality requirements. Verification that a supplier can meet the specified technical and quality requirements shall be by one or a combination of the following:

(1) Evaluation of the supplier's history

(2) Evaluation of current supplier quality records

(3) Evaluation of the supplier's facilities, personnel, and implementation of a QA Program

Such evaluations shall be documented. Suppliers whose QA Programs have been found by NQAL, Quality Verification, to satisfy specified quality requirements shall be listed on the PG&E Qualified Suppliers List, which is controlled by NQAL, Quality Verification.

A quality verification plan shall be established and documented that applies to each procurement and identifies the manner by which PG&E intends (with appropriate NQAL, Quality Verification organization involvement) to assure the quality of the material, equipment, or service as defined in the procurement documents and to accept those items or services from the supplier.

The quality verification plan shall identify inspection, audit, and/or surveillance activities to be performed including the characteristics or processes to be witnessed, inspected, or verified; the method of surveillance; and the extent of documentation required. The timing and sequence of the activities shall be planned to identify any system or product deficiencies before subsequent activities may preclude their disclosure.

The plan shall also be based on consideration of:

(1) Importance to *DCPP and ISFSI* safety

(2) Complexity of inspectable characteristics

(3) Uniqueness of the item or service

Supplier performance and compliance with procurement documents may be monitored by either source verification, receiving inspection, or a combination of the two. Source verification activities may consist of inspections, audits, surveillance, or a combination thereof and are conducted at the supplier's facility. When source verification activities are specified in the quality verification plan, the timing and sequence of these activities are to be delineated.

Receiving inspection activities, as required by the quality verification plan, shall be coordinated with source verification activities performed prior to shipments. If sampling is performed, it shall be in accordance with procedures and/or recognized standards. Receipt inspection shall include a review which verifies that supplier quality records required by procurement documents are acceptable and that items are properly identified and traceable to appropriate documentation.

Records of quality verification activities shall be traceable to the materials, equipment, or services to which they apply. Documentation of acceptance in accordance with the procurement quality verification plan shall be available at the site prior to installation or acceptance for use. Documentary evidence that procurement document requirements have been met shall clearly reflect each requirement. Supplier's Certificates of Conformance are periodically evaluated by audits and independent inspections or tests to assure they are valid and the results documented.

When spare or replacement parts are procured, supplier selection and quality verification activities shall be planned and implemented to verify compliance with requirements meeting or exceeding those of the original.

17.8 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS

Materials, parts, and components shall be identified and controlled in a manner to preclude the use of incorrect or defective items.

All materials, parts, and components, including partially fabricated subassemblies, batches, lots, and consumables, shall be identified in a manner that each can be related to its applicable drawing, specification, or other technical documentation at any stage from initial receipt through fabrication, installation, repair, or modification. Controls and implementing procedures shall ensure that only correct and accepted items are used during all stages and describe the responsibilities of the involved organizations.

Physical identification of items shall be used whenever possible and practical. Controls may, however, be through physical separation, procedure, or other appropriate means. Identification may be either on the item or on records traceable to the item.

Identification marking, where employed, shall be clear, unambiguous, and indelible and its application shall not impair the function of the identified item or any other item. When an item is subdivided, the identifying marking shall be transferred to each resulting part. Markings shall not be rendered illegible by treatment, process, assembly, installation, or coating unless other means of identification and determining acceptability are provided.

Verification activities, such as inspection, shall be performed to ensure that the provisions of this policy and related implementing procedures are followed for items prior to release for fabrication, assembly, shipping, installation, and use.

When required by code, standard, or specification, traceability of materials, parts, or components to specific inspection or test records shall be provided for and verified.

17.9 SPECIAL PROCESSES

Special processes shall be controlled and performed by qualified personnel using qualified procedures or instructions in accordance with applicable codes, standards, specifications, criteria, or other special requirements.

A special process is an activity in which the quality of the result is highly dependent upon either process variables or the skill and performance of the person doing the work, and the specified quality is difficult to verify by inspection and test after the process is completed.

Special processes include, but are not limited to:

(1) Welding

(2) Heat treating

(3) Nondestructive examination

(4) Chemical cleaning

(5) Others as specified in design and procurement documents (examples are certain protective coating applications and concrete batch plant operations, which are controlled by specifications on a case-by-case basis)

The implementing instructions shall contain the criteria for assuring proper process control and shall be qualified and controlled to assure compliance with applicable codes, standards, QA procedures, and design specifications. Substantiating records of qualifications and controls shall be maintained.

17.10 INSPECTION

A comprehensive program of inspection of items and activities affecting quality shall be conducted to verify conformance with established requirements. Procedures shall describe the organizational responsibilities necessary to carry out the inspection program.

The objective of the inspection program shall be to verify the quality of the items and activities and conformance to the applicable documented instructions, procedures, and drawings for accomplishing activities affecting quality. The inspection program, including information relative to individual inspections to be performed, shall be developed based on a review of the design drawings, specifications, and other controlled documents which prescribe items and activities affecting quality. Inspections shall be performed utilizing appropriate inspection procedures and instructions together with the necessary drawings, specifications, and other controlled documents. The inspections shall be documented and evaluated.

Inspection procedures, instructions, or checklists shall provide for the following: identification of characteristics and activities to be inspected; a description of the method of inspection; identification of the individuals or groups responsible for performing the inspection operation; acceptance and rejection criteria; identification of required procedures, drawings, and specifications and revisions; recording the name of the inspector or data recorder and the results of the inspection operation; and specifying necessary measuring and test equipment including accuracy requirements. The inspection program shall include, but not be limited to, those inspections required by applicable codes, standards, specifications, and *DCPP and ISFSI* Technical Specifications. The inspection program shall also require the following during the operational phase of *DCPP*:

(1) Inspection of modifications, repairs, and replacements, where required to assure a suitable level of confidence that an item will perform its intended function, shall verify conformance to the original design requirements or appropriately approved equivalents

(2) Verification of the cleanness of those portions of *DCPP* safety-related systems that have been subject to potential contamination during maintenance and modification activities through an inspection performed immediately prior to closure of the portion of the system

The inspection program shall require inspection of ISFSI modifications, repairs, and replacements to be in accordance with existing design requirements.

The inspection program shall require inspection and/or test of items for each work operation where such is necessary to assure quality. If inspection of processed items is impossible or disadvantageous, indirect control by monitoring of process shall be required. Both inspection and process monitoring shall be required when control is

inadequate without both. Both inspection and process control shall be performed when required by applicable code, standard, or specification.

Mandatory quality control inspection hold points shall be identified in the inspection program. When required, the specific hold points shall be indicated in the drawings, procedures, or instructions that prescribe the work activity. Work shall not proceed beyond such hold points without the documented consent of NQAL Quality Verification.

When the inspection program permits or requires a sample of a large group of items that are amenable to statistical analysis, the sampling procedures to be used shall be based on recognized standard practices.

Inspections to verify the quality of work shall be performed by qualified individuals other than those who performed or directly supervised the activity being inspected. During the inspection, such persons shall not report directly to the immediate supervisors who are responsible for the work being inspected.

Personnel performing inspections shall be qualified in accordance with applicable regulations, codes, standards, and specifications.

Inspection records shall contain the following where applicable: a description of the type of observation, the date and results of the inspection, information related to conditions adverse to quality, inspector or data recorder identification, evidence as to the acceptability of the results, and action taken to resolve any discrepancies noted.

17.11 TEST CONTROL

A program of testing shall be conducted as necessary to demonstrate that structures, systems, and components will perform satisfactorily in service. This program shall ensure that the necessary testing is identified and performed at the appropriate time in accordance with written test procedures that incorporate or reference the requirements and acceptance limits contained in the applicable design documents.

The program shall cover all required tests, including tests prior to installation, preoperational tests, and operational tests.

The procedures that implement testing shall provide for meeting appropriate prerequisites for the test (for example, environmental conditions, specification of instrumentation, and completeness of tested item), sufficient instruction for the performance of the test, specification of any witness or hold points, acceptance and rejection criteria and limits, and the documentation of the test. The procedures shall provide for evaluation and documentation of the test results and data and their acceptability as determined by a qualified person or group.

Test records shall contain the following where applicable: a description of the type of observation, the date and results of the test, information related to conditions adverse to quality, inspector or data recorder identification, evidence as to the acceptability of the results, and action taken to resolve any discrepancies noted.

17.12 CONTROL OF MEASURING AND TEST EQUIPMENT

Organizational responsibilities shall be delineated for establishing, implementing, and assuring the effectiveness of the calibration program for measuring and test equipment (M&TE). This program shall include the generation, review, and documented concurrence of calibration procedures; the calibration of measuring and test equipment; and the maintenance and use of calibration standards.

M&TE, including reference standards, used to determine the acceptability of items or activities shall be strictly maintained within prescribed accuracy limits.

M&TE, including reference standards, shall be of suitable range, type, and accuracy to verify conformance with requirements.

Procedures for control of M&TE shall provide for the identification (labeling, codes, or alternate documented control system), recall, and calibration (including documented precalibration checks) of the M&TE. The calibration procedures shall delineate any necessary environmental controls, limits, or compensations in excess of those which may be inherent to the general program.

The calibrations shall utilize documented valid relationships to nationally recognized standards or accepted values of natural physical constants. Where national standards do not exist, the basis for the calibration shall be documented. Calibration of M&TE shall be against standards that have an accuracy of at least four times the required accuracy of the equipment being calibrated or, when this is not practical, have an accuracy that assures the equipment being calibrated will be within required tolerance and that the basis of acceptance is documented and authorized by responsible management of the PG&E organization performing that activity.

Calibrating standards have greater accuracy than standards being calibrated. Calibrating standards with the same accuracy may be used if it can be shown to be adequate for the requirements and the basis of acceptance is documented and authorized by responsible management.

The calibration intervals, whether calendar- or usage-based, shall be predetermined and documented. Indication of expiration, if feasible, will be displayed on or with the M&TE. Significant environmental or usage restrictions will be indicated on or with the equipment or be factored into the documented system used to control the issuance of the M&TE. Special calibration shall be required whenever the accuracy of the equipment is suspect.

Records shall be maintained to show that established schedules and procedures for the calibration of the M&TE have been followed. M&TE shall be identified and traceable to the calibration test data. Records of the usage of the M&TE shall be maintained to facilitate corrective action in the event of the discovery of a deficiency concerning the calibration or use of M&TE, so that measures may be taken and documented to determine the validity of previous inspections performed and of the acceptability of items inspected or tested since the previous calibration of the deficient M&TE.

17.13 HANDLING, STORAGE, AND SHIPPING

Material and equipment shall be handled, stored, and shipped in accordance with design and procurement requirements in a manner that will prevent damage, deterioration, or loss.

Special coverings, equipment, and protective environments shall be specified and provided where necessary for the protection of particular items from damage or deterioration. When such special protective features are required, their existence shall be verified and monitored as necessary to assure they continue to serve their intended function.

Special handling tools and equipment shall be provided where necessary to ensure items can be handled safely and without damage. Special handling tools and equipment shall be controlled and maintained in a manner such that they will be ready and fit to serve their intended function when needed. Such control shall include periodic inspection and testing to verify that special handling tools and equipment have been properly maintained.

Special attention shall be given to marking and labeling items during packaging, shipment, and storage. Such additional marking or labeling shall be provided as is necessary to ensure that items can be properly maintained and preserved. This shall include indication of the presence of special environments or the need for special control. Provisions shall be described for the storage of chemicals, reagents (including control of shelf life), lubricants, and other consumable materials.

Special handling, preservation, storage, cleaning, packaging, and shipping requirements are established and accomplished by suitably trained individuals in accordance with predetermined work and inspection instructions.

17.14 INSPECTION, TEST, AND OPERATING STATUS

The inspection, test, and/or operating status of material, equipment, and operating systems shall be readily apparent and verifiable.

The procedures used to indicate status shall provide means for assuring that required inspections and tests are performed in the prescribed sequence; acceptability is indicated; and nonconforming items are clearly identified throughout fabrication, installation, test, maintenance, repairs, and modification to prevent inadvertent use or operation. Items accepted and released are identified to indicate their inspection status prior to forwarding them to a controlled storage area or releasing them for installation or further work. Deviations from the prescribed sequence shall be subject to the same level of control as the generation of the original sequence to prevent the bypassing or omission of a required test or inspection.

Identification of status may be by such means as, but not limited to, tags, stamps, markings, labels, or travelers. In some instances, records traceable to the item may be used. The procedures implementing control of inspection, test, and operating status shall clearly delineate authority for the application, change, or removal of a status identifier.

17.15 CONTROL OF NONCONFORMING CONDITIONS

Items and activities that do not conform to requirements shall be controlled in a manner that will prevent their inadvertent use or installation. Technical decisions as to the disposition of each nonconforming condition shall be made by personnel with assigned authority in the relevant disciplines. The control, review, and disposition of nonconforming conditions shall be accomplished and documented in accordance with approved written procedures and instructions.

Nonconforming conditions shall be documented and affected organizations notified of such conditions. Further processing of the nonconforming conditions and other items affected by them shall be controlled in a manner to prevent their inadvertent use or installation pending a decision on their disposition.

The responsibility and authority for the disposition of nonconforming conditions shall be established and set forth in the applicable procedures and instructions for their control. The rework or repair of nonconforming items and the disposition of operational nonconforming conditions shall be accomplished in accordance with written procedures and instructions. Dispositions involving design changes shall be approved by the organization with the authority for design.

The acceptability of rework or repair of materials, parts, components, systems, or structures shall be verified by reinspecting and retesting the item as originally inspected and tested, or by a method that is at least equal to the original inspection or testing method. Reworked and repaired items shall be reinspected in accordance with applicable procedures and instructions. The acceptability of nonconforming items that have been dispositioned "repair" or "accept-as-is" shall be documented. Such documentation shall include a description of the change, waiver, or deviation that has been accepted in order to record the change and, if applicable, denote the as-built condition.

Corrective action for conditions adverse to quality shall be processed in accordance with Section 17.16.

In cases where required documentary evidence that items have passed required inspections and tests is not available, the associated materials or equipment shall be considered nonconforming. Until suitable documentary evidence is available to show that the material or equipment is in conformance, affected systems shall be considered to be inoperable and reliance shall not be placed on such systems to fulfill their intended safety functions.

Nonconforming conditions that require reporting to the NRC shall be reviewed by the Quality Verification Section. Such review shall include the results of any investigations made and the recommendations resulting from such investigations to preclude or reduce the probability of recurrence of the event or circumstance.

17.16 CORRECTIVE ACTION

Each individual condition adverse to quality shall be identified, controlled, and evaluated, and a disposition shall be determined for the remedial action and corrective action as soon as practicable. These activities shall be performed consistent with Section 17.15, Control of Nonconforming Conditions.

Systematic review and evaluation of all conditions adverse to quality shall be conducted and documented. Conditions adverse to quality shall include, but not be limited to: engineering, design, and drafting errors; equipment failures and malfunctions; abnormal occurrences; deficiencies; deviations; and defective material, equipment, and services.

The review and evaluation shall include identification of quality trends, repetitive occurrences, and significant conditions adverse to quality. The quality trends and other significant review findings shall be analyzed and appropriate corrective action determined. Findings and actual or recommended corrective action shall be reported to management by the responsible organization for review and assessment.

Significant conditions adverse to quality shall be investigated to the extent necessary to assess the root causes and to determine the corrective action required to prevent recurrence of the same or similar conditions. The corrective action required for significant conditions adverse to quality shall be accomplished in a timely manner. Significant conditions adverse to quality, the cause of the condition, and the corrective action taken shall be documented and reported to management.

Significant conditions adverse to quality that are related to *DCPP or ISFSI* operations or maintenance shall be reported to the Quality Verification Section. Completion of corrective actions for significant conditions adverse to quality shall be reviewed and verified by personnel having no direct responsibility for either the disposition or the corrective action taken.

Follow-up reviews shall be conducted to verify that the corrective action was properly implemented, performed in a timely manner, and that it was effective in correcting the identified condition.

Significant conditions adverse to quality shall be evaluated for reportability to the NRC in accordance with 10 CFR 21, 10 CFR 50.72, 10 CFR 50.73, 10 CFR 50.9, *10 CFR 72.74, 10 CFR 72.75,* the *DCPP and ISFSI* Technical Specifications, and other applicable regulations and shall be reported as required.

17.17 QUALITY ASSURANCE RECORDS

Sufficient records shall be maintained to furnish evidence of both the quality of items and activities affecting quality and to meet applicable code, standard, and regulatory requirements. The records include all documents referred to or described in *the QA Program* or required by implementing procedures such as operating logs, maintenance and modification procedures, related inspection results, reportable occurrences; *and other records required by the Technical Specifications and Code of Federal Regulations.* In addition to the records of the results of reviews, *designs, fabrication, installation,* inspections, calibrations, tests, *maintenance,* surveillances, audits, personnel qualification, special process qualification, and material analyses for PG&E quality-related activities, *and ISFSI structures, systems, and components that are important to safety;* those of vendors, suppliers, subcontractors, and contractors shall also be maintained.

A management control system for the collection, storage, and maintenance of completed quality assurance records shall be maintained. This records management program shall be designed and implemented to assure that the quality assurance records are complete, readily retrievable when needed, and protected from damage or destruction during storage by fire, flooding, theft, environmental conditions, or other causes.

Quality assurance records stored electronically will follow the guidance for electronic records management given in the Nuclear Information and Records Management Association (NIRMA) technical guidelines, TG 11-1998, "Authentication of Records;" TG 15-1998, "Management of Electronic Records;" TG 16-1998, "Software Configuration Management and Quality Assurance;" and TG 21-1998, "Electronic Records Protection and Restoration." Quality assurance records will be stored on electronic media (that is, optical disk, magnetic tape, network array, etc.) meeting the requirements of the NIRMA guidelines. Alternately, records stored on optical disks may meet the requirements of Generic Letter 88-18, "Plant Record Storage on Optical Disk," dated October 20, 1988. Information Systems will determine the appropriate electronic media. Regardless of the electronic media selected, the process must be capable of producing legible, accurate, and complete records during the required retention period.

Backup copies of in-process electronic media records will be maintained in multiple, physically-independent electronic locations. Backup copies of quality assurance records in electronic media will be maintained in multiple, physically-independent electronic locations until such time as images of these records are created, copied, and verified on two copies of an appropriate electronic storage media. The two copies will then be stored in separate physical locations. File legibility verification will be completed on all quality assurance records stored on electronic media by either visually verifying the file legibility or by electronically verifying exact binary file transfer.

Periodic media inspections to monitor image degradation will be conducted in accordance with the NIRMA guidelines or media manufacturers recommendations. These periodic inspections shall be documented.

Quality assurance records stored on electronic media will be refreshed or copied on to new media and subsequently verified if the projected lifetime of that media does not exceed the retention period of the records stored on that media. These requirements meet the intent of Generic Letter 88-18.

Detailed records for items or activities shall be specified by instructions, procedures, drawings, or specification or other documents that prescribe the item or activity and shall be generated by the organization responsible for the item or activity including PG&E and non-PG&E organizations. Each department generating quality assurance records is responsible for transmitting those records to the records processing organization for archival purposes.

All records shall be assigned a retention period in conformance with Title 10, Code of Federal Regulations, other applicable codes, standards, and specifications.

17.17.1 DCPP Lifetime Records

The following records are retained for the duration of the unit Operating License:

(1) Records and drawing changes reflecting unit design modifications made to systems and equipment described in the FSAR Update

(2) Records of new and irradiated fuel inventory, fuel transfers, and assembly burnup histories

(3) Records of radiation exposure for all individuals entering radiation control areas

(4) Records of gaseous and liquid radioactive material released to the environs

(5) Records of transient or operational cycles for those unit components identified in FSAR Update, Table 5.2-4.

(6) Records of reactor tests and experiments

(7) Records of training and qualification for current members of the unit staff

(8) Records of in-service inspection performed pursuant to the Technical Specifications

(9) Records of quality assurance activities required by the FSAR Update, Chapter 17

(10) Records of reviews performed for changes made to procedures or equipment or reviews of tests and experiments pursuant to 10 CFR 50.59

(11) Records of PSRC meetings

(12) Records of the Independent Review and Audit Program

(13) Records of analyses required by the Radiological Environmental Monitoring Program (Reg. Guide 4.15).

(14) Records of service lives of all hydraulic and mechanical snubbers required by the FSAR Update including the date at which the service life commences and associated installation and maintenance records

(15) Records of secondary water sampling and water quality

(16) Records of reviews performed for changes made to the Offsite Dose Calculation Manual

(17) Records of reviews performed for changes made to the Process Control Program

17.17.2 DCPP Nonpermanent Records

The following records are retained for at least 5 years:

(1) Records and logs of unit operation covering time interval at each power level.

(2) Records and logs of principal maintenance activities, inspections, repair, and replacement of principal items of equipment related to nuclear safety

(3) All reportable events

(4) Records of surveillance activities, inspections, and calibrations required by the Technical Specifications

(5) Records of changes made to procedures required by Technical Specification 5.4.1

(6) Records of radioactive shipments

(7) Records of sealed source and fission detector leak tests and results

(8) Records of annual physical inventory of all sealed source material of record

17.17.3 Diablo *Canyon and HB ISFSI Records*

Important-to-safety records shall be classified as lifetime or nonpermanent. The following records shall be maintained as required for the Diablo Canyon and HB ISFSIs:

(1) Radiation protection program and survey records (10 CFR 20.2101 to 20.2110)

(2) Records associated with reporting defects and noncompliance (10 CFR 21.51)

(3) Records important to decommissioning (10 CFR 72.30(d))

(4) Records of changes to the physical security plan made without prior NRC approval (10 CFR 72.44(e) and 72.186 (b))

(5) Records of changes, tests and experiments, and of changes to procedures described in the HB ISFSI Safety Analysis Report (SAR) (10 CFR 72.48(b)(1))

(6) Records showing receipt, inventory, location, disposal, acquisition, and transfer of spent fuel (10 CFR 72.72(a) and 10 CFR 72.72(d))

(7) A copy of the current inventory of spent fuel in storage at the HB ISFSI (10 CFR 72.72(b))

(8) A copy of the current material control and accounting procedures (10 CFR 72.72(c))

(9) Other records required by license conditions or by NRC rules, regulations or orders (10 CFR 72.80)

(10) Records of the occurrence and severity of important natural phenomena that affect the HB ISFSI design (10 CFR 72.92(b))

(11) QA records (including records pertaining to the design, fabrication, erection, testing, maintenance, and use of structures, systems, and components important to safety; and results of reviews, inspections, tests, audits, monitoring of work performance, and material analyses) (10 CFR 72.174)

(12) A copy of the current physical security plan, plus any superseded portions of the plan (10 CFR 72.180)

(13) A copy of the current safeguards contingency plan procedures, plus any superseded portions of the procedures (10 CFR 72.184)

(14) Operating records, including maintenance, alterations or additions made

(15) Records of off-normal occurrences and events

(16) Environmental survey records

(17) Records of employee qualifications and certifications

(18) Record copies of:

- *SAR and updates*
- *Reports of accidental criticality or loss of special nuclear material*
- *Material status reports*
- *Nuclear material transfer reports*
- *Reports of pre-operational test acceptance criteria and results*
- *Procedures*
- *Environmental Report*
- *Emergency Plan*

(19) Construction Records; and

(20) Records of events associated with radioactive releases

Facilities for the temporary or permanent storage of completed quality assurance records shall be established in predetermined locations as necessary to meet the requirements of codes, standards, and regulatory agencies. Such facilities shall be constructed and maintained so as to protect the contents from possible damage or destruction.

17.18 AUDITS

The adequacy and effectiveness of the QA Program shall be continually monitored through a comprehensive system of internal and supplier audits. The audit system implemented by NQAL includes all aspects of the QA Program. The audit system shall:

(1) Verify, through examination and evaluation of objective evidence, that this QA Program has been implemented as required

(2) Identify any deficiencies or nonconformances in this QA Program

(3) Verify the correction of any identified deficiencies or nonconformances

(4) Assess the adequacy and effectiveness of this QA Program

A comprehensive plan for the audit system shall be established and documented. Audit frequencies are determined by a performance-based evaluation plan. This plan uses assessment indicators to identify and schedule audits based on performance results and importance of the activity relative to safety. The plan shall identify the scope of individual audits that are to be performed, the aspects of this QA Program covered by each audit, and the schedule for performing audits. The audit system plan shall be reviewed at least semiannually, and revised as necessary, to assure that coverage and schedule reflect current activities and that audits of *DCPP* operational phase activities *and of ISFSI activities* are being accomplished in accordance with applicable requirements. Other associated activities included as part of the audit program are: indoctrination and training programs; the qualification and verification of implementation of QA programs of contractors and suppliers; interface control among the applicant and the principal contractors; audits by contractors and suppliers; corrective action, calibration, and nonconformance control systems; FSAR Update commitments; *ISFSI SAR commitments;* and activities associated with computer codes.

Auditors shall be independent of direct responsibility for the performance of the activities that they audit, have experience or training commensurate with the scope and complexity of their audit responsibility, and be qualified in accordance with applicable standards.

Auditing shall be initiated as early in the life of an activity as is practicable and consistent with the schedule for accomplishing the activity. In any case, auditing shall be initiated early enough to assure that this QA Program is effectively implemented throughout each activity. Individual audits shall be regularly scheduled on the basis of the status and importance of the activities which they address.

For audits, other than those who's scheduled frequency is mandated by regulation (such as the Safeguards Contingency Plans or the Security Program), a grace period of up to 90 days may be utilized when the urgency of other priorities makes meeting the specified schedule dates impractical. For audit activities deferred by using a grace period, the next scheduled due date shall be based on the original schedule due date but may not exceed the original due date plus 90 days.

Audit reports shall be prepared, signed by the Audit Team Leader, and issued to responsible management of both the audited and auditing organizations.

Audits are regularly scheduled on a formal audit schedule prepared by NQAL, Quality Verification. The audit schedule is reviewed regularly by the quality verification manager and the Director, NQAL, and the schedule is revised as necessary to assure adequate coverage as commensurate with activities and past performance. Audits are performed in accordance with approved audit plans. Additional audits may be performed as requested by the Senior Vice President, Generation and Chief Nuclear Officer, the Vice President and General Manager, Diablo Canyon, the Director, NQAL, or Manager, Quality Verification.

The following areas shall be audited at least once per 24 months, or more frequently as performance dictates:

(1) The conformance of *DCPP and ISFSI* operation to provisions contained within the Technical Specifications and applicable licenses

(2) The performance, training, and qualifications of the entire *DCPP and ISFSI* staff

(3) The results of actions taken to correct deficiencies occurring in *DCPP and ISFSI* equipment, structures, systems, or method of operation that affect nuclear safety

(4) The performance of activities required by the Quality Assurance Program to meet the criteria of Appendix B, 10 CFR 50

(5) The *DCPP* Radiological Environmental Monitoring Program, implementing procedures, and program results

(6) The *DCPP* Offsite Dose Calculation Procedure and its implementing procedures

(7) The *DCPP* Process Control Program and implementing procedures for processing and packaging radioactive wastes

(8) The *DCPP* Nonradiological Environmental Monitoring Program

(9) A representative sample of routine *DCPP and ISFSI* procedures that are used more frequently than every 2 years. This audit is to ensure the acceptability of the procedures and to verify that the procedures review and revision program is being implemented effectively.

(10) The performance of activities required to be audited by ANS-3.2/ANSI N18.7-1976, Section 4.5.

(11) Review of design documents and process to ensure compliance with Section 17.3 (i.e., use of supervisors as design verifiers). In addition, NQAL, Quality Verification shall sample and review specifications and design drawings to assure that the documents are prepared, reviewed, and approved in accordance with PG&E procedures and that the documents contain the necessary QA requirements, acceptance requirements, and quality documentation requirements.

(12) NQAL, Quality Verification shall audit the departments that qualify personnel and procedures to assure that the process qualification activity, records, and personnel meet the applicable requirements. They shall also audit the organizations implementing special processes to provide assurance that the processes are carried out in accordance with approved procedures by qualified personnel using qualified equipment and that required records are properly maintained.

(13) The performance of activities required by the *QA* Program for the *DCPP* Radioactive Effluent Controls Program.

(14) The Radiation Protection Program, in accordance with 10 CFR 20.

(15) *Audits of the ISFSI Emergency Plan and implementing procedures, and the ISFSI Physical Security programs shall be performed at least once per 24 months, or more frequently as indicated by regulatory requirements, significant program changes, or declining performance.*

(16) *ISFSI radiological environmental monitoring program.*

The following activities shall be audited at least once per 12 months unless specified otherwise. However, if the audit frequencies required by the governing regulations are changed, audit frequencies shall at least meet the revised minimum requirements.

(1) The Security Program in accordance with 10 CFR 73.55(g)(4) and 10 CFR 73.56(g)

(2) *For DCPP, t*he Access Authorization Program in accordance with 10 CFR 73.56(g)(1) - at least once per 24 months. If a contractor's or vendor's Access Authorization Program is accepted, that contractor's or vendor's Access Authorization Program shall be audited in accordance with 10 CFR 73.56(g)(2) - at least once every 12 months

(3) *For DCPP, t*he Fitness for Duty Program in accordance with 10 CFR 26.80

(4) *For DCPP, t*he Fire Protection and Loss Prevention Program is audited in accordance with the annual, biennial, and triennial audit requirements of NRC Generic Letter 82-21.

(5) The HB ISFSI Access Authorization Program.

Management of the audited organization shall review the audit report and respond to any quality problem reports, investigate any significant findings to identify their cause and determine the extent of corrective action required, including action to prevent recurrence. They shall schedule such corrective action and also take appropriate action to assure it is accomplished as scheduled. They shall respond to NQAL, Quality Verification regarding each significant finding stating the root cause, immediate action taken, and the corrective action taken or planned to prevent recurrence.

NQAL, Quality Verification shall review the written responses to all audit findings, evaluate the adequacy of each response, assure that corrective action to prevent recurrence is identified and taken for each significant finding, and confirm that corrective action is accomplished as scheduled.

Audit records shall be generated and retained by the NQAL Department for all audits.

TABLE 17.1-1

CURRENT REGULATORY REQUIREMENTS AND PG&E COMMITMENTS PERTAINING TO THE QUALITY ASSURANCE PROGRAM

The Quality Assurance Program *for DCPP, the Diablo Canyon Independent Spent Fuel Storage Installation (ISFSI), and the Humboldt Bay ISFSI* descried in Chapter 17 of the FSAR Update, program directives, and administrative procedures complies with the requirements set forth in the Code of Federal Regulations. In addition, it complies with the regulatory documents and industry standards listed below. Changes to this list are not made without the review and concurrence of the Director, Nuclear Quality, Analysis, and Licensing.

Reg. Guides	Date	Standard No.	Rev.	Title/Subject	Exceptions
(S.G.) 28	6/72	ANSI N45.2	1971	Quality Assurance Program Requirements for Nuclear Power Plants	
1.37	3/73	ANSI N45.2.1	1973	Quality Assurance Requirements for Cleaning Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants	*Not applicable to the ISFSI*
1.38	5/77	ANSI N45.2.2	1972	Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage, and Handling of Items for Water-Cooled Nuclear Power Plants	Warehouse personnel will normally visually scrutinize incoming shipments for damage of the types listed in Section 5.2.1, this activity is not necessarily performed prior to unloading. Separate documentation of the shipping damage is not necessary. Release of the transport agent after unloading and the signing for receipt of the shipment provides adequate documentation of completion of the shipping damage inspection. Any damage noted will be documented and dispositioned. Persons performing this visual scrutiny are not considered to be performing an inspection function as defined under Reg. Guide 1.74; therefore they do not require certification as an inspector under Reg. Guide 1.58.

Reg. Guides	Date	Standard No.	Rev.	Title/Subject	Exceptions
1.39	9/77	ANSI N45.2.3	1973	Housekeeping Requirements for Water-Cooled Nuclear Power Plants	Housekeeping zones established at the power plants differ from those described in the standard; however, PG&E is in compliance with the intent of the standard.
1.30	8/72	ANSI N45.2.4	1972	Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation and Electric Equipment	The evaluation of (data sheet) acceptability is indicated on the results and data sheets by the approval signature (paragraph 2.4). No visual examination for contact corrosion is made on breaker and starter contacts unless there is evidence of water damage or condensation. Contact resistance tests are made on breakers rated at 4 kV and above. No contact resistance test is made on lower voltage breakers or starters (paragraph 3[4]). No system test incorporates a noise measurement. If the system under test meets the test criteria, then noise is not a problem (paragraph 6.2.2).
1.94	4/76	ANSI N45.2.5	1974	Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants	Except PG&E will not require manufacturer's certification for material suitability as inferred in ANSI N45.2.5, Sections 3.1 and 3.2 when PG&E procures: (a) material from a supplier that has a QA program that meets the relevant requirements of 10CFR50, Appendix B and the supplier is included ASME Section III (NCA-3800/NCA-4000) or on the PG&E Qualified Suppler List; or (b) material as a "Commercial-Grade" item and dedicates it in accordance with PG&E's Commercial-Grade Dedication Program.
1.29	9/78	--	--	Seismic Design Classification	

Reg. Guides	Date	Standard No.	Rev.	Title/Subject	Exceptions
1.58	9/80	ANSI N45.2.6	1978	Qualification of Nuclear Power Plant Inspection, Examination and Testing Personnel	ANSI N45. 2. 6 applies to individuals conducting independent QC inspections, examinations, and tests. ANSI/ ANS 3.1-1978 applies to personnel conducting inspections and tests of items or activities for which they are responsible (e.g., plant surveillance tests, maintenance tests, etc.). Except that inspector/examiner reevaluation due dates may be extended a maximum of 90 days. The next reevaluation due date shall be based on the original scheduled due date but shall not exceed the original due date plus 90 days. NDE personnel shall be qualified and certified in accordance with SNT-TC-1A 1984 Edition. "Should" shall be interpreted as "shall" to comply with the intent of ASME Section XI. NDE personnel who perform examinations of the containment structure per the requirements of Section XI, Subsections IWE and IWL, visual examination and ultrasonic thickness measurement only, shall be qualified and certified to ANSI/ASNT CP-189-1991. ISI ultrasonic examiners shall meet the additional requirements of ASME Section XI, Appendix VIII, 1995 Edition with 1996 Addenda. The required implementation dates for the various supplements are as specified in 10CFR Part 50, RIN 3150 – AE26.
1.116	5/77	ANSI N45.2.8	1975	Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems	

Reg. Guides	Date	Standard No.	Rev.	Title/Subject	Exceptions
1.88	10/76	ANSI N45.2.9	1974	Collection, Storage, and Maintenance of Nuclear Power Plant Quality Assurance Records	Except PG&E will comply with the 2-hour rating of Section 5.6 of ANSI N45.2.9 issued July 15, 1979. Except PG&E will also meet the intent of the guidelines for the storage of QA records in electronic media as, endorsed by Generic Letter 88-18, "Plant Record Storage on Optical Disks," issued October 20, 1988, and Regulatory Issues Summary 2000-18, "Guidance on Managing Quality Assurance Records in Electronic Media," issued October 23, 2000.
1.74	2/74	ANSI N45.2.10	1973	Quality Assurance Terms and Definitions	
1.64	6/76	ANSI N45.2.11	1974	Quality Assurance Requirements for the Design of Nuclear Power Plants	Except PG&E will allow the designer's immediate supervisor to perform design verification in exceptional circumstances and with the controls as described in NUREG-0800, Revision 2, July 1981.
1.144	1/79	ANSI N45.2.12	1977	Auditing of Quality Assurance Programs for Nuclear Power Plants	Except the scheduled date for triennial vendor audits and annual supplier evaluations may be extended a maximum of 90 days. The next scheduled due date shall be based on the original scheduled due date but shall not exceed the original due date plus 90 days. Except that the corrective action program stipulated in the NPG QA Program may be used instead of the requirements of Section 4.5.1 as long as the appropriate time limits are applied to significant conditions adverse to quality. Also, no additional documentation is necessary if needed corrective actions are taken and verified prior to audit report issuance.

Reg. Guides	Date	Standard No.	Rev.	Title/Subject	Exceptions
1.123	7/77	ANSI N45.2.13	1976	Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants	In addition to ANSI N45.2.13, Section 10.3.3, PG&E will accept items and services which are complex or involve special processes, environmental qualification, or critical characteristics which are difficult to verify upon receipt by suppliers' Certificate of Conformance if and only if the supplier has been evaluated and qualified utilizing Performance Based Supplier Audit techniques.
1.146	8/80	ANSI N45.2.23	1978	Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants	Except that auditor recertification due dates may be extended a maximum of 90 days. The next recertification due date shall be based on the original scheduled due date but shall not exceed the original due date plus 90 days. Except that in lieu of the requirements of 2.3.4 of ANSI N45.2-1978, the prospective lead auditor shall have participated in at least one nuclear quality assurance audit within the year preceding the individual's effective date of qualification.
1.33	2/78	ANSI N18.7	1976	Quality Assurance Program Requirements (Operation)	Except that PG&E will not perform biennial review of all *DCPP and ISFSI* procedures, except under the conditions described in note below (See note at end of table). Except for temporary changes to procedures, PG&E will require a review by an individual who holds a Senior Reactor Operators license only if the procedure is one of the types listed in Section 17.5 (8) of this FSAR Update. Furthermore, this individual need not be the supervisor in charge of the shift.

Reg. Guides	Date	Standard No.	Rev.	Title/Subject	Exceptions
					Except that audit frequencies specified in Regulatory Guide 1.33, Revision 2, need not be met. Audits shall be performed at the frequencies specified in Section 17.18 of this FSAR Update. Except that audits and reviews of the Emergency Preparedness Program shall be performed in accordance with 10 CFR 50.54(t). Except that a grace period of up to 90 days will be allowed for audit scheduling, except where the schedule is mandated by regulation. The next schedule due date shall be based on the original scheduled date but shall not exceed the original due date plus 90 days.
1.8	2/79	ANSI/ANS 3.1	1978	Personnel Selection and Training	Except that the 1-year of qualifying nuclear power plant experience in the overall implementation of the Quality Assurance Program can be obtained outside the Quality Assurance organizations. *DCPP only* - Except certain personnel are trained and qualified to the Institute of Nuclear Power Operations (INPO) criteria as described in *the DCPP* FSAR Update Chapter 13. *DCPP only* - Except that a retraining and replacement training program for the plant staff meet or exceed the requirements and recommendations of Section 5.5 of ANSI N18.1-1971 and 10 CFR Part 55. This exception is based on the NRC letter to PG&E, dated July 19, 1989, issuing License Amendments No. 43 and 42.

Reg. Guides	Date	Standard No.	Rev.	Title/Subject	Exceptions
					Except that the Radiation Protection Manager's qualifications shall meet or exceed the qualifications of Regulatory Guide 1.8, Revision 2, April 1987, for the Radiation Protection Manager. Except that the person serving as the manager responsible for the independent review and audit program shall have a minimum of 6 years of professional level managerial experience in the power field. This exception is based on NRC letter to PG&E dated February 6, 1992, issuing Licensing Amendment No. 68/67. *DCPP only* - Except that the Operations Manager shall meet the requirements of the Technical Specifications. *HB ISFSI personnel shall meet the requirements of the Training Program, Attachment C to the HB ISFSI License Application.*
4.15	2/79	--	--	Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment	Record retention requirements are stated in Chapter 17, Section 17.17. *The Regulatory Guide does not apply to the ISFSI.*

Reg. Guides	Date	Standard No.	Rev.	Title/Subject	Exceptions
BTP PCSB 9.5-1 Appendix A	5/76	--	--	Guidelines for Fire Protection for Nuclear Power Plants	The fire protection program for DCPP satisfies the requirements of GDC 3 (1967) by complying with the guidelines of Appendix A to NRC Branch Technical Position (BTP) (APCSB) 9.5-1, and with the provisions of 10 CFR 50.48 and Appendix R, Section III.G, J, L, and O, as stipulated by Operating License Condition 2.C(5) and 2.C(4) for Units 1 and 2, respectively. Approved deviations from Appendix A to BTP (APCSB) 9.5-1, and Appendix R sections are identified in Supplement Numbers 8, 9, 13, 23, 27, and 31 to the Safety Evaluation Report. *Not applicable to the ISFSI*
1.26	2/76	--	--	Quality Group Classifications and Standards for Water, Steam, and Radioactive Waste Containing Components of Nuclear Power Plants	Design and construction of DCPP started in 1965 and most of the work cannot comply with the specific requirements of Regulatory Guide 1.26, February 1976. The intent of the Regulatory Guide has been followed as shown by comparing the Reg. Guide with Table 3.2-2 in the FSAR Update and the Q-List (Reference 8 of Section 3.2). *This Regulatory Guide does not apply to the ISFSI.*
---	--	NCIG-01	2	Visual Weld Acceptance Criteria for Structural Welding at Nuclear Power Plants	
---	--	NCIG-02	2	Sampling Plan for Visual Reinspection of Welds	
---	--	NCIG-03	1	Training Manual for Inspection of Structural Weld at Nuclear Power Plants Using the Acceptance Criteria of NCIG-01	

Reg. Guides	Date	Standard No.	Rev.	Title/Subject	Exceptions
1.97	05/83	ANSI/ANS 4.5	1980	Instrumentation for Light-Water-Cooled Nuclear Power Plants To Assess Plant And Environs Conditions During And Following An Accident	*This Regulatory Guide does not apply to the ISFSI.*

Note for Reg. Guide 1.33:

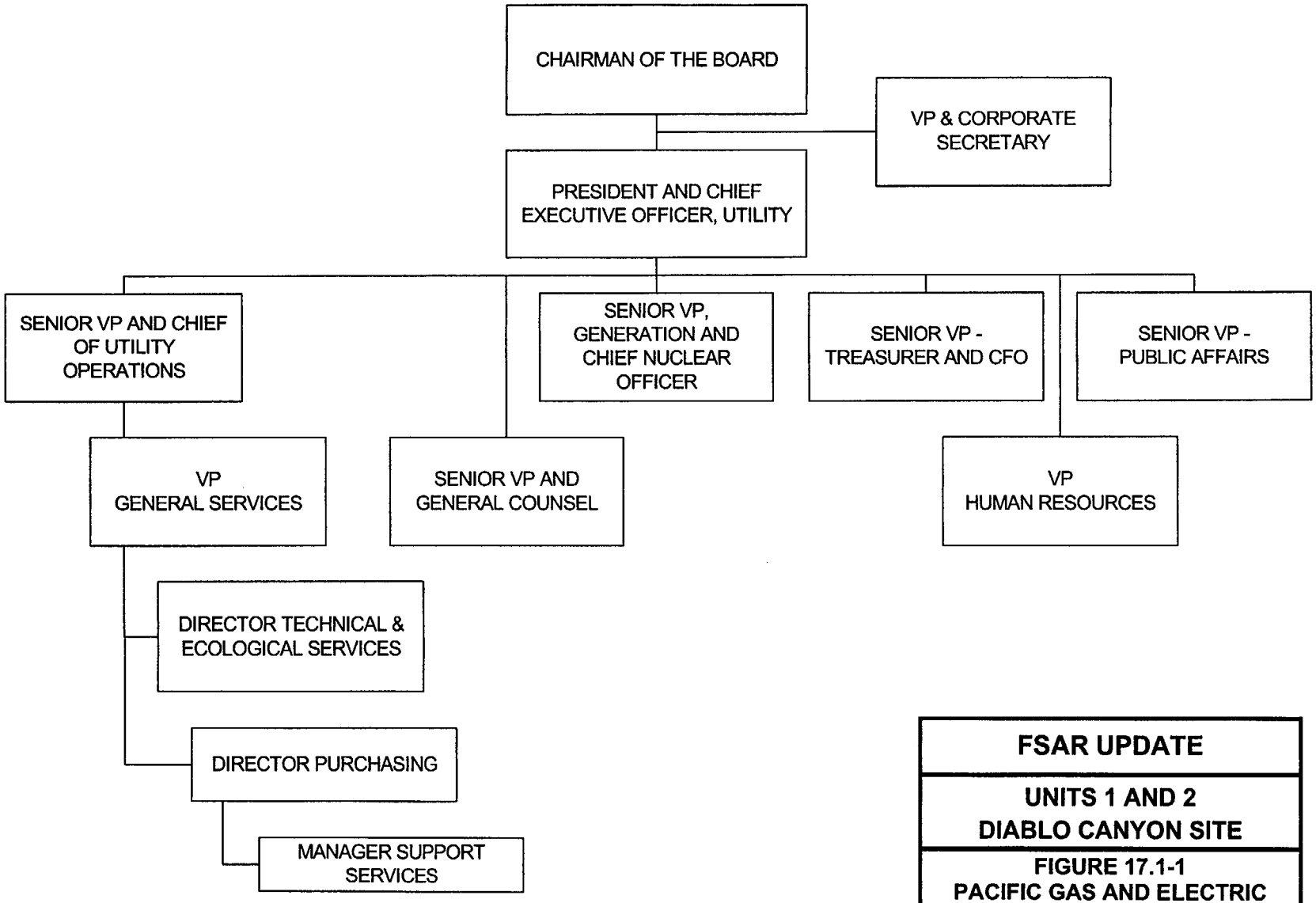
These controls replace the biennial procedure review requirement found in Section 5.2.15 of ANSI N18.7-1976.

1. All applicable *DCPP and ISFSI* procedures (shall)* be reviewed following an unusual incident, such as an accident, unexpected transient, significant operator error, or equipment malfunction, and following any modification to a system, as specified by Section 5.2 of ANSI N18.7/ANS 3.2, which is endorsed by Regulatory Guide 1.33.

2. Non-routine procedures (e.g. emergency operating procedures, procedures which implement the emergency plan, and other procedures whose usage may be dictated by an event) (shall)* be reviewed at least every two years and revised as appropriate.

3. Routine *DCPP and ISFSI* procedures that have not been used for two years (shall)* be reviewed before use to determine if changes are necessary or desirable.

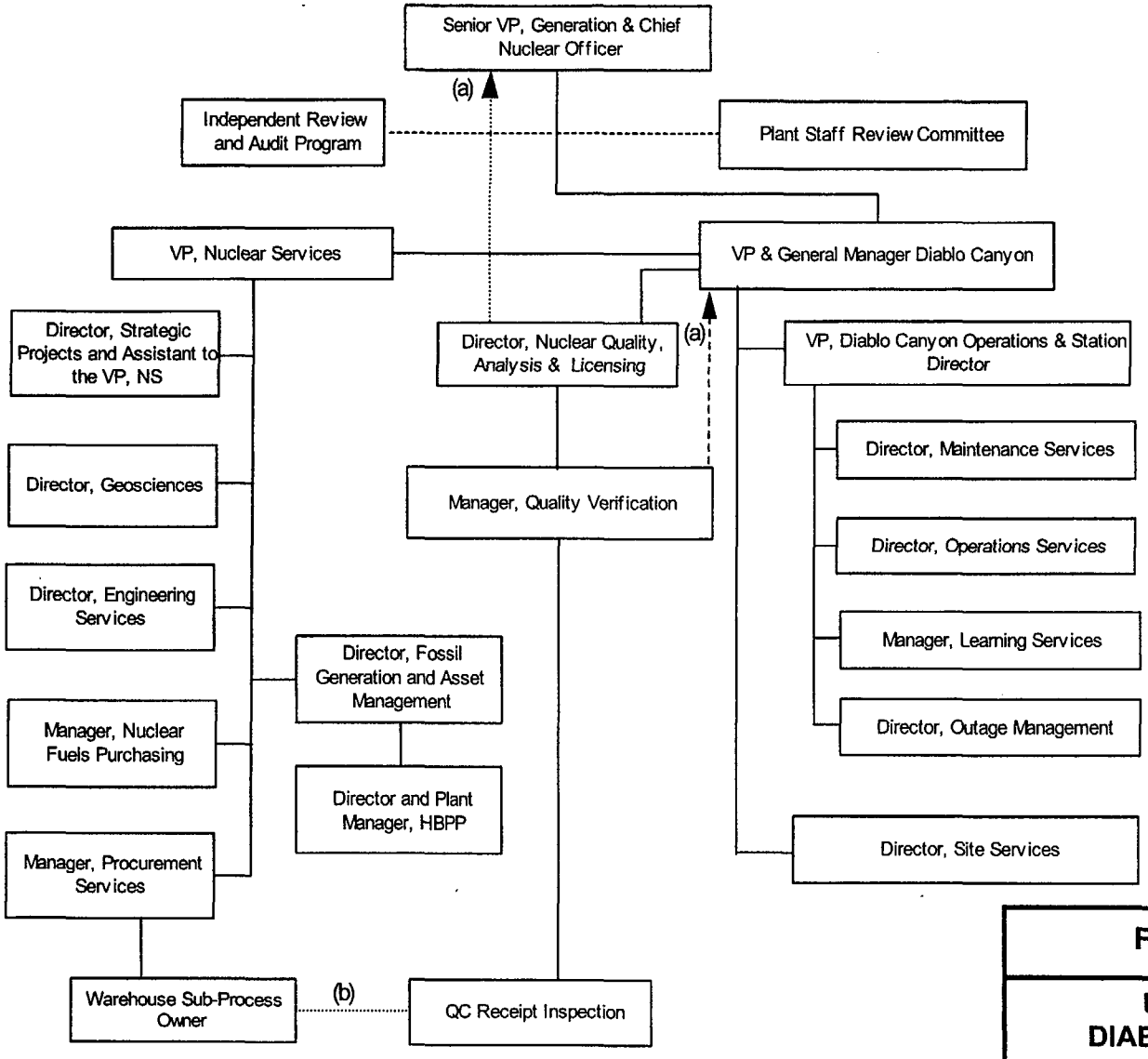
* The word should has been changed to shall denoting a regulatory commitment.



FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 17.1-1
PACIFIC GAS AND ELECTRIC COMPANY UTILITY ORGANIZATION



(a) Alternate reporting authorized for independent review and deficiency issues.

(b) Administrative tie to Warehouse Sub-process owner.

FSAR UPDATE

UNITS 1 AND 2
DIABLO CANYON SITE

FIGURE 17.1-2
NUCLEAR QUALITY IN THE UTILITY ORGANIZATION

HUMBOLDT BAY ISFSI
LICENSE APPLICATION

ATTACHMENT F

PRELIMINARY DECOMMISSIONING PLAN

HUMBOLDT BAY ISFSI
PRELIMINARY DECOMMISSIONING PLAN

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1.0 INTRODUCTION

Prior to the end of the Humboldt Bay Independent Spent Fuel Storage Installation (ISFSI) life, the multi- purpose canisters (MPCs) and HI-STAR HB casks containing spent fuel elements will be transported offsite. Since the MPCs are designed to meet Department of Energy (DOE) guidance applicable to MPCs for storage, transport and disposal of spent fuel, the fuel assemblies will remain sealed in the MPCs such that decontamination of the MPCs is not required. Following shipment of the MPCs offsite, the Humboldt Bay ISFSI will be decommissioned by the timely identification and removal of any residual radioactive materials above the applicable Nuclear Regulatory Commission (NRC) limits for unrestricted use; releasing the site for unrestricted use in accordance with Regulatory Guide 1.86 (Reference 1); and terminating the NRC license.

This Preliminary Decommissioning Plan has been prepared to comply with the requirements of 10 CFR 72.30 and describes the conceptual program for decontamination and decommissioning of the Humboldt Bay ISFSI, including the proposed practices and procedures for decontamination of the site and facilities, the disposal of radioactive materials, and the cost estimate associated with decommissioning. The specific methods and details of Humboldt Bay ISFSI decommissioning will be included in a formal decommissioning plan, that will be submitted for NRC review and approval prior to the commencement of decommissioning activities. Additional information regarding design features that facilitate decommissioning is provided in the Holtec HI-STAR 100 Final Safety Analysis Report (FSAR) Section 2.4.

2.0 DECOMMISSIONING OBJECTIVE, ACTIVITIES, AND TASKS

2.1 DECOMMISSIONING OBJECTIVE

The objective of decommissioning activities for the Humboldt Bay ISFSI is to remove all radioactive materials having activities above the applicable NRC release limits (currently 10 CFR Part 20, Subpart E, "Radiological Criteria for License Termination") in order that the site may be released for unrestricted use, and the NRC license terminated.

2.2 DECOMMISSIONING ACTIVITIES

Detailed information on proposed practices and procedures for decommissioning activities will be provided in a final decommissioning plan. The extent of any required decontamination efforts cannot be quantified at this time, especially in light of the Humboldt Bay Power Plant's (HBPP) "start clean/stay clean" philosophy and the efforts that will be taken throughout the life of the facility to minimize the potential for any contamination. Actual decontamination efforts and sequences of work will depend on facility operating history and whether any contamination actually exists. The descriptions presented here provide a conceptual plan for detailed engineering and planning that will occur at the end of facility operations.

The loading of spent fuel into the MPCs and HI-STAR HB casks occurs in HBPP refueling building (RFB), as described in Sections 4.4 and 5.1 of the Humboldt Bay ISFSI Safety Analysis Report (SAR). As part of each loading operation, the components that have been in contact with contaminated spent fuel pool water (i.e., the HI-STAR HB cask and the top of the MPC lid) are checked for surface contamination, and are decontaminated as necessary before being transported to the ISFSI. Because of this requirement, it is anticipated that at the time of decommissioning, the HI-STAR HB cask can be decontaminated to free release levels; if this is not the case, then it will be disposed of at an appropriate facility.

It is not anticipated that the ISFSI will have residual radioactive contamination once the casks/MPCs are removed because: (a) the MPCs are sealed by welding that precludes leakage, (b) measures are applied when fuel is loaded into the MPCs to prevent contamination of their outer surfaces, and (c) neutron flux levels generated by the spent fuel are sufficiently low that activation of the storage vault materials will be insignificant, with radiation levels that support either unrestricted release of materials or release as low specific activity (LSA) material. It is anticipated that HI-STAR HB overpacks, which meet applicable free release criteria, may be reused at other nuclear facilities following their use at the Humboldt Bay ISFSI. The LSA material will be suitable for burial in a near-surface disposal site.

Because of the administrative controls used to check for and remove (if possible) any contamination from the HI-STAR HB cask prior to its leaving the RFB, it is anticipated that the transporter and related facilities such as fences will not be contaminated at the time of decommissioning. Therefore, they will require no decontamination or special

handling and will be left in place or removed as determined by Pacific Gas and Electric Co. (PG&E). If this is not the case, they will be decontaminated to free release levels or disposed of at an appropriate facility.

PG&E intends to submit a final decommissioning plan to the NRC at least one year prior to the final removal of MPCs from the site, and in no case later than one year prior to the expiration of the ISFSI NRC operating license. The final decommissioning plan will address decontamination of the site, removal of radioactive materials, and termination of the facility- operating license. It will also include a description of how the Humboldt Bay ISFSI will continue
to protect the public health and the environment during decommissioning. The final decommissioning plan will be developed in accordance with the applicable NRC regulations in effect at the time of preparation of the plan. Decommissioning activities will be planned using as low as is reasonably achievable (ALARA) goals and criteria for protection of personnel from exposure to radiation and radioactive material. The final decommissioning plan will include such information as follows:

- A description of the current conditions of the ISFSI site sufficient to evaluate the acceptability of the plan.
- The choice of the alternative for decommissioning with a description of the activities involved.
- A description of controls and limits on procedures and equipment to protect occupational and public health and safety.
- A description of the planned final radiation survey.
- An updated detailed cost estimate for the chosen alternative for decommissioning; a comparison of that estimate with present funds set aside for decommissioning, and the plan for assuring the availability of adequate funds for completion of decommissioning, including means for adjusting cost estimates and associated funding levels over any storage or surveillance period.
- A description of technical specifications and quality assurance provisions in place during decommissioning.

2.3 DECOMMISSIONING TASKS

Prior to the commencement of Humboldt Bay ISFSI decommissioning activities, the HI-STAR HB/MPCs will be shipped offsite.

HI-STAR HB overpacks with activation and contamination levels below the applicable NRC limits for unrestricted release may be disposed of as noncontrolled material. Overpacks with contamination or activation levels above the applicable NRC limits for

unrestricted release will be dismantled, with the activated or contaminated portions segregated and disposed of as low-level waste. The dismantled portions or components of overpacks that are below the applicable NRC limits for unrestricted release will be disposed of as noncontrolled material. HI-STAR HB cask decontamination and decommissioning may be performed at any time following the removal of the MPC. This will allow overpack decommissioning efforts to be essentially complete by the end of MPC shipping operations.

Characterization surveys will be performed to verify that the storage vault area is free of contamination (i.e., with radiation and radioactivity levels below the applicable NRC limits for unrestricted release). In the event that the characterization surveys identify contamination levels above the applicable NRC limits for unrestricted release, the structures or components will be decontaminated using conventional decontamination techniques that minimize the volume and processing of the resulting radwaste. All low-level radioactive waste generated during decontamination efforts, and portions of any structures or components that remain contaminated, will be shipped offsite for disposal at an appropriate licensed facility.

After all the HI-STAR HB/MPCs have been shipped from the Humboldt Bay ISFSI, a detailed radiological characterization survey will be performed of the vault, with particular attention focused on any areas of known or historic contamination. Vault materials that may have contamination levels above applicable NRC limits for unrestricted release will be decontaminated to the extent practical using conventional methods. All radioactive material above the applicable NRC limits for unrestricted release will be removed from the site and disposed of as low-level waste.

A final radiation survey will be conducted to ensure that the ISFSI site is suitable for release in accordance with the 10 CFR 20, Subpart E criteria for decommissioning.

2.4 DECOMMISSIONING ORGANIZATION

The decommissioning organization and staff requirements will be defined in the final decommissioning plan. Trained and qualified personnel will be used to perform the technical, field, and administrative tasks required during decommissioning. To the extent practicable, the decommissioning organization will include staff from the PG&E HBPP ISFSI organization to capitalize on their knowledge and familiarity with the facility. Contractors may be used to provide specialized services, or to supplement the facility staff when warranted.

3.0 DECOMMISSIONING RECORDS

The following records will be maintained until the Humboldt Bay ISFSI is released for unrestricted use, in accordance with 10 CFR 72.30(d), and will be used to plan the actual decommissioning efforts:

- Records of spills or other unusual occurrences involving the spread of contamination in and around the facility, equipment, or site. These records will include any known information on identification of nuclides, quantities, forms, and concentrations.

- As-built drawings and modifications of structure and equipment in restricted areas.

- A document, which is updated a minimum of every 2 years, containing: (a) a list of all areas designated at any time as restricted areas as defined in 10 CFR 20.1003; and (b) a list of all areas outside of restricted areas involved in a spread of contamination as required by 10 CFR 72.30(d)(1).

- Records of decommissioning cost estimates and the funding method used.

These records will be stored at HBPP as part of the records management program, which is discussed in the ISFSI License Application, Attachment E, "Quality Assurance Program."

4.0 DECOMMISSIONING COST ESTIMATE

Decommissioning the Humboldt Bay ISFSI will be a multiphase effort, with radioactive contamination removed upon discovery, as possible, during the operational phase. The amount of decontamination required and the extent of decommissioning efforts will be based on the usage and the history of the facility. The philosophy of operating the Humboldt Bay ISFSI is "start clean/stay clean." Thus, the intention is to maintain the facility free of radiological contamination at all times.

A cost estimate has been performed by TLG Services, Inc for HBPP Unit 3. This detailed estimate is contained in the 2002 Nuclear Decommissioning Cost Triennial Proceeding (NDCTP) submitted to the CPUC (Application No 02-03-020) on March 15, 2002. As shown therein, it is estimated that decommissioning the Humboldt Bay ISFSI will cost about $878,000 in 2002 dollars. The major cost contributors are cost of labor, and radiological surveys. The costs are based on several key assumptions, including regulatory requirements, estimating methodology, contingency requirements (a 30 percent contingency was assumed), and site restoration requirements.

5.0 DECOMMISSIONING FUNDING PLAN

PG&E has established external sinking fund accounts for decommissioning HBPP Unit 3. As discussed in the Preliminary Decommissioning Plan and PG&E Letter HBL-03-002, dated March 27, 2003, Decommissioning Funding Report to the NRC, pursuant to the requirements of 10 CFR 50.75(f). With collection of additional funding that was approved by the CPUC in the 2002 NDCTP filing these accounts will contain adequate monies for any required nuclear decommissioning activities for the Humboldt Bay ISFSI. This financial assurance mechanism is prepared in conformance with the guidance of NRC Regulatory Guide 3.66 (Reference 2) and complies with the requirements of 10 CFR 72.30(c).

6.0 DECOMMISSIONING FACILITATION

The sources of contamination are the spent fuel itself and the spent fuel pool water. In conformance with 10 CFR 72.130, the spread of contamination from these sources can be controlled via various ISFSI design features and health physics measures as described herein.

The design features of the HI-STAR HB storage/transportation casks, plus a "start clean/stay clean" philosophy, will facilitate decommissioning the Humboldt Bay ISFSI. Radioactive materials associated with spent fuel assemblies are contained within MPCs, which will be seal welded before leaving the RFB. The MPC conforms to the requirements of Section III of the ASME code and provides assurance that radioactive material will not be released from the MPC over the life of the ISFSI. Health physics measures to ensure MPC external surfaces are maintained in a clean condition are implemented during MPC loading operations. These measures minimize contaminated fuel pool water from contacting the external surfaces of the MPC. Following fuel loading operations, a swipe survey is performed on the MPC lid and HI-STAR HB cask. Using administrative controls, transport of the HI-STAR HB cask and MPC to the storage vault is not permitted if removable contamination levels exceed NRC requirements. Since the MPCs are sealed to preclude release of radioactive material inside the MPCs, minimizing contamination on external surfaces of the MPCs transported to the ISFSI vault minimizes the quantity of radioactive waste and contaminated equipment.

The interior design of the HI-STAR HB casks facilitates decommissioning, if necessary. The interior of the casks are made of coated steel thereby making them relatively easy to decontaminate.

Minimal non-radioactive hazardous materials may be used or stored at the Humboldt Bay ISFSI and any that are needed to support the ISFSI operations will be identified and controlled in accordance with procedures. Strict measures will be applied to prevent any hazardous materials from contacting radioactive contamination, so that mixed hazardous and radioactive waste will not be generated at the Humboldt Bay ISFSI.

As shown in the HI-STAR 100 system FSAR, the overpack would be expected to have only minimal interior or exterior radioactive surface contamination. Any neutron activation of the metal cask walls and neutron shielding is expected to be extremely small and the assembly would qualify as Class A waste in a stable form based on definitions and requirements in 10 CFR 61.55. As such, the material would be suitable for burial in a near-surface disposal site as LSA material.

It is also likely that both the overpack and MPC, or extensive portions of both, can be further decontaminated to allow recycle or reuse options. After decontamination, the only radiological hazard the HI-STAR 100 system may pose is slight activation of the HI-Star 100 materials caused by irradiation over a 40-year storage period.

Section 2.4 of the HI-STAR 100 Final Safety Analysis Report (Reference 3), provides additional information on facilitation of decommissioning.

7.0 REFERENCES

1. Regulatory Guide 1.86, Terminating of Operating License for Nuclear Reactors, USNRC, June 1974.

2. Regulatory Guide 3.66, Standard Format and Content of Financial Assurance Mechanisms Required for Decommissioning Under 10 CFR Parts 30, 40, 72 and 72, USNRC, June 1999.

3. Final Safety Analysis Report for the HI-STORM 100 System, Holtec International Report No. HI-2002444, Revision 0, July 2000.