

APPENDIX

TECHNICAL SPECIFICATIONS FOR THE IDAHO SPENT FUEL FACILITY

Docket No. 72-25

Materials License No. SNM-2512

**Technical Specifications
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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 ISF Facility Technical Specifications and Bases.

<u>Term</u>	<u>Definition</u>
ACTIONS	ACTIONS shall be that part of a Specification that prescribes Required Actions to be taken under the designated Conditions within the specified Completion Times.
CANISTER HANDLING	CANISTER HANDLING exists when SPENT NUCLEAR FUEL is contained in an ISF CANISTER that has passed its leak rate acceptance test and is not within a STORAGE TUBE that has passed its interseal leak rate acceptance test.
CHANNEL CHECK	A CHANNEL CHECK is the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications and status derived from independent instrument channels measuring the same parameter.
CHANNEL FUNCTIONAL TEST	A CHANNEL FUNCTIONAL TEST is the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify OPERABILITY, including required alarms, interlocks, display, and trip functions.
ISF CANISTER	The ISF CANISTER is the sealed SPENT NUCLEAR FUEL container that consists of a cylindrical shell with welded upper and lower closure heads. The ISF CANISTER provides for the canning of consolidated fuel rods or unconsolidated assemblies to meet the requirements of 10 CFR 72.122(h)(1). The ISF CANISTER also provides the primary confinement for the stored SPENT NUCLEAR FUEL.

(continued)

1.1 Definitions (continued)

LOADING OPERATIONS	<p>LOADING OPERATIONS include activities associated with packaging SPENT NUCLEAR FUEL into ISF canisters. LOADING OPERATIONS exist whenever</p> <ul style="list-style-type: none">• SPENT NUCLEAR FUEL is present in a transfer cask without a restrained closure lid (i.e., either the transfer cask closure lid bolts are not fully tensioned or the cask adapter remote release lid restraints are not fully engaged);• SPENT NUCLEAR FUEL is in the Fuel Packaging Area; or• SPENT NUCLEAR FUEL is in an ISF CANISTER that has not completed its leak rate acceptance test.
OPERABLE/OPERABILITY	<p>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 instrumentation, controls, normal or emergency electrical power, and other auxiliary equipment required for the system, component, or device to perform its specified important to safety function(s) are also capable of performing their related support functions.</p>
RECEIPT OPERATIONS	<p>RECEIPT OPERATIONS include all activities associated with handling SPENT NUCLEAR FUEL while it is contained in a transfer cask with a restrained closure lid (i.e., either the transfer cask lid closure bolts are fully tensioned or the cask adapter remote release lid restraints are fully engaged).</p>
SPENT NUCLEAR FUEL	<p>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 constituents elements by reprocessing. SPENT NUCLEAR FUEL includes the special nuclear material, byproduct material, source material, and other radioactive materials associated with fuel assemblies.</p>
STORAGE OPERATIONS	<p>STORAGE OPERATIONS exist when an ISF CANISTER is contained within a STORAGE TUBE that has passed its interseal leak rate acceptance test.</p>
STORAGE TUBE	<p>The STORAGE TUBE is the sealed ISF CANISTER container, which consists of a cylindrical shell, shield plug, and a bolted closure plate. The STORAGE TUBE provides the secondary confinement boundary for the stored radioactive materials.</p>

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 may 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 indentations 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 Completion Time, Surveillance, or Frequency.

1.2 Logical Connectors (continued)

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.... <u>AND</u> 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.

EXAMPLE 1.2-2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO not met	A.1 Stop.... <u>OR</u> A.2.1 Verify... <u>AND</u> A.2.2.1 Reduce... <u>OR</u> A.2.2.2 Perform... <u>OR</u> 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	<p>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 facility 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 facility is not within the LCO Applicability.</p> <p>Once a Condition has been entered, subsequent subsystems, components, or variables expressed in the Condition, discovered to be not within limits, will <u>not</u> 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.</p>

(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 Times not met	B.1 Perform Action B.1	12 hours
	<u>AND</u> B.2 Perform Action B.2	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 completing 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.

EXAMPLE 1.3-2

ACTIONS

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

When a system is determined to not 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.

1.3 Completion Times (continued)

EXAMPLE 1.3-3

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

ACTIONS

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	6 hours
	<u>AND</u> B.2 Complete action B.2	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 as well as certain Notes in the Surveillance column that modify performance requirements.

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 a 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 stated 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 a variable is 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)

1.4 Frequency (continued)

EXAMPLE 1.4-2

SURVEILLANCE REQUIREMENTS	
SURVEILLANCE	FREQUENCY
Verify flow is within limits.	Once within 12 hours prior to starting activity <u>AND</u> 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” indicates 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% extension allowed by SR 3.0.2.

“Thereafter” indicates 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 canceled 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 The ISF Facility shall be limited to the receipt, packaging, and storage of the following SPENT NUCLEAR FUEL:

- Peach Bottom fuel elements with characteristics as described in Table 2-1,
- Shippingport fuel rods with characteristics as described in Table 2-2, and
- TRIGA fuel elements with characteristics as described in Table 2-3.

Table 2-1.
Spent Fuel Limits – Peach Bottom Fuel

Characteristic	Limit
Cladding	Graphite
Maximum Fuel Enrichment	16 w/o uranium enriched to 93.15% ²³⁵ U
Maximum Decay Heat per ISF CANISTER	33 W
Fuel Design	High-temperature gas-cooled with graphite moderation
Maximum Burnup	900 EFPD

Table 2-2.
Spent Fuel Limits –Shippingport LWBR Fuel

Characteristic	Limit
Cladding	Zircaloy-4
Maximum Fuel Enrichment	Not applicable
Maximum Decay Heat per ISF CANISTER	10 W
Fuel Design	LWBR ThO ₂ Type IV/V reflector
Maximum Burnup	30,000 EFPH

(continued)

2.0 APPROVED CONTENTS (continued)

Table 2-3.
Spent Fuel Limits – Training Research Isotope Production General Atomics (TRIGA)
Fuel

Characteristic	Limit
Cladding	Aluminum or Stainless Steel
Maximum Enrichment	9 w/o uranium enriched to 20% ²³⁵ U
Maximum Decay Heat per ISF CANISTER	36 W

2.2 The decay heat load of the ISF Facility storage vaults shall not exceed the limits shown in Table 2-4.

Table 2-4
ISF Facility
Heat Load Limits

	STORAGE TUBE Heat Load (Watts)	Number of STORAGE TUBES	Heat Load (Watts)	Vault Heat Load (Watts)
Vault 1	40	76	3040	6160
	120	26	3120	
Vault 2	40	132	5280	6720
	120	12	1440	
Total				12880

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	<p>Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO 3.0.5.</p> <p>If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Actions(s) is not required, unless otherwise stated.</p>
LCO 3.0.3	Not applicable to an ISFSI.
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.
LCO 3.0.5	Equipment removed from service or not in service in compliance with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate it meets the LCO or that other equipment meets the LCO. This is an exception to LCO 3.0.2 for the system returned to service under administrative control to perform the testing.

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 SR, 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 inoperable 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 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 LCO’s SRs 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 unloading of a STORAGE TUBE.

3.1 Canister Integrity

3.1.1 Canister Integrity

LCO 3.1.1 The ISF CANISTER helium leak rate shall be $\leq 10^{-4}$ std cm³/sec at a pressure of 19-21 psia at 80-100°F.

APPLICABILITY: CANISTER HANDLING, STORAGE OPERATIONS

ACTIONS:

-----NOTE-----
 Separate Condition entry is allowed for each ISF Canister.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO not met.	A.1 Establish ISF CANISTER pressure and fill helium leak rate within limits.	Prior to CANISTER HANDLING

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.1. Verify ISF CANISTER fill pressure and helium leak rate is within limits.	Once prior to CANISTER HANDLING.

3.2 STORAGE TUBE Integrity

3.2.1 STORAGE TUBE Pressure and Interseal Leak Rate

LCO 3.2.1 The STORAGE TUBE interseal leak rate shall be $\leq 10^{-4}$ std cm³/sec at a pressure within the limits of Figure 3.2-1.

APPLICABILITY: STORAGE OPERATIONS

ACTIONS:

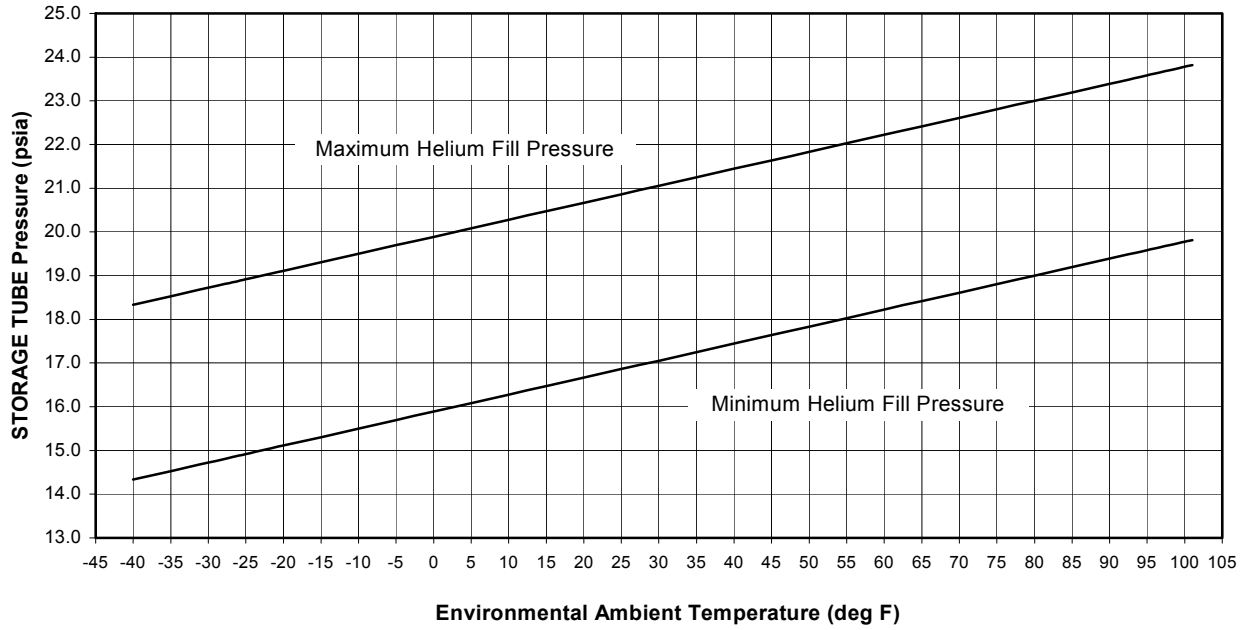
-----NOTE-----
Separate Condition entry is allowed for each STORAGE TUBE containing an ISF CANISTER.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO not met.	A.1 Restore STORAGE TUBE pressure and interseal leak rate within limits.	30 days

(continued)

3.2 STORAGE TUBE Integrity

Figure 3.2-1
STORAGE TUBE Helium Fill Pressure Limits



(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.1.1 Verify STORAGE TUBE pressure and interseal leak rate within specified limits.	Prior to commencing STORAGE OPERATIONS for the STORAGE TUBE being tested.
SR 3.2.1.2 Verify STORAGE TUBE pressure and interseal leak rate within specified limits.	Annually for 1 occupied STORAGE TUBE from each storage vault.

3.2 STORAGE TUBE Integrity

3.2.2 Storage Vault Heat Removal System

LCO 3.2.2 The Storage Vault Heat Removal System for each occupied STORAGE TUBE shall be OPERABLE.

APPLICABILITY: STORAGE OPERATIONS

ACTIONS:

-----NOTE-----
Separate Condition entry is allowed for each STORAGE TUBE containing an ISF CANISTER.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO not met.	A.1 Restore Storage Vault Heat Removal System to OPERABLE status.	48 hours
B. Required Action and associated Completion Time not met.	B.1 Transfer the ISF CANISTER to an unaffected STORAGE TUBE.	96 hours

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.2. Visually inspect all inlet air vents, outlet air vents, and occupied STORAGE TUBE annular outlets for blockage.	48 hours

3.3 Criticality Control Program

3.3.1 Fuel Packaging Area Limits

LCO 3.3.1 Only one SPENT NUCLEAR FUEL type (i.e., Peach Bottom, Shippingport, or TRIGA) shall be present within the Fuel Packaging Area.

APPLICABILITY: RECEIPT OPERATIONS, LOADING OPERATIONS

ACTIONS:

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO not met.	A.1 Suspend LOADING OPERATIONS.	Immediately
	<u>AND</u>	
	A.2 Perform an evaluation and develop a recovery plan to restore Fuel Packaging Area such that it contains only one SPENT NUCLEAR FUEL type.	72 hours
	<u>AND</u>	
	A.3 Restore Fuel Packaging Area such that only one SPENT NUCLEAR FUEL type is present	90 days

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE REQUIREMENTS	
SURVEILLANCE	FREQUENCY
SR 3.3.1.1 Verify SPENT NUCLEAR FUEL type in transfer cask.	Prior to transferring transfer cask loaded with SPENT NUCLEAR FUEL into Transfer Tunnel
SR 3.3.1.2 Verify SPENT NUCLEAR FUEL type in Fuel Packaging Area	Once during visual inspection of first fuel package unloaded from each transfer cask.

3.3 Criticality Control Program

3.3.2 Criticality Monitoring System

LCO 3.3.2 The criticality monitoring system shall be OPERABLE.

APPLICABILITY: LOADING OPERATIONS with SPENT NUCLEAR FUEL in the Fuel Packaging Area.

ACTIONS:

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO not met.	A.1 Suspend LOADING OPERATIONS. <u>AND</u> A.2 Restore criticality monitoring system to operable status.	Immediately Prior to resuming fuel movement.

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE REQUIREMENTS	
SURVEILLANCE	FREQUENCY
SR 3.3.2.1 Perform a CHANNEL CHECK of criticality monitoring system.	Within 1 hour prior to commencing LOADING OPERATIONS in the Fuel Packaging Area and every 24 hours thereafter.
SR 3.3.2.2 Perform a CHANNEL FUNCTIONAL TEST of criticality monitoring system.	Once, within 7 days prior to initial LOADING OPERATIONS in the Fuel Packaging Area and every 12 months thereafter.

3.4 Fuel Packaging Area Confinement Boundary

3.4.1 Heating, Ventilation, Air Conditioning (HVAC) System

LCO 3.4.1 HVAC System shall be OPERABLE.

APPLICABILITY: LOADING OPERATIONS

ACTIONS:

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO not met.	A.1 Suspend SPENT NUCLEAR FUEL movement.	Immediately
	<u>AND</u>	
	A.2 Verify all supply fans deenergized	Immediately
	<u>AND</u>	
	A.3 Ensure confinement penetration boundaries closed.	1 hour
	<u>AND</u>	
	A.4 Commence air monitoring.	Within 1 hour of HVAC system declared INOPERABLE and every 8 hours thereafter.

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR.3.4.1.1 Verify 1 Transfer Area exhaust fan running.	Within 1 hour prior to commencing LOADING OPERATIONS. <u>AND</u> Every 24 hours during LOADING OPERATIONS.
SR 3.4.1.2 Verify HVAC primary exhaust HEPA filter differential pressure is >0 in w.g. and < 4 in w.g.	Within 1 hour prior to commencing LOADING OPERATIONS. <u>AND</u> Every 24 hours during LOADING OPERATIONS.
SR 3.4.1.3 Verify the following Fuel Packaging Area access port conditions: Cask port plug in place <u>OR</u> Transfer cask positioned beneath cask port and associated seal inflated <u>AND</u> Canister port plug in place <u>OR</u> Canister cask positioned beneath canister port and associated seal inflated. <u>AND</u> Waste port plugs in place <u>OR</u> SPENT NUCLEAR FUEL in designated storage locations in Fuel Packaging Area.	Within 1 hour prior to commencing LOADING OPERATIONS with SPENT NUCLEAR FUEL in the Fuel Packaging Area. <u>AND</u> Every 24 hours when SPENT NUCLEAR FUEL is in the Fuel Packaging Area.

4.0 DESIGN FEATURES

4.1 Design Features Significant to Safety

4.1.1 Criticality Control

ISF CANISTER loading shall not exceed the following limits:

SPENT NUCLEAR FUEL	Maximum Loading per ISF CANISTER
Peach Bottom	10 elements
TRIGA	108 elements
Shippingport LWBR	1 reflector module or 127 loose rods

4.1.2 Materials

1. Confinement boundary materials

The STORAGE TUBE and lid shall be constructed of carbon steel to form a pressure vessel.

The ISF CANISTER and lid shall be constructed of stainless steel to form a pressure vessel.

2. Confinement boundary seals

During STORAGE OPERATIONS, SPENT NUCLEAR FUEL shall be confined in a welded ISF CANISTER within a bolted STORAGE TUBE employing redundant ring seals.

4.0 DESIGN FEATURES

4.2 Codes and Standards

The following are the governing codes for the ISF Facility storage component design:

Storage Component Important to Safety	Applicable Codes	Editions / Years	Application	
			Design	Fabrication
STORAGE TUBE	ASME Boiler and Pressure Vessel Code (B&PVC), Section II ASME B&PVC, Section III, Division 1, Subsection NCA, NC, and Appendix F ASME B&PVC, Section V ASME B&PVC, Section IX	1998 with 2000 addenda	Yes	Yes
ISF CANISTER	ASME B&PVC, Section II ASME B&PVC, Section III, Division 1, Subsections NCA, NB, Appendix F ASME B&PVC, Section V ASME B&PVC, Section IX	1998 with 2000 addenda	Yes	Yes
ISF Basket	ASME B&PVC, Section II, ASME B&PVC, Section III, Division 1, Subsections NCA, NF, NG, & Appendix F	1998 with 2000 addenda	Yes	No. In accordance with ISF Quality Program Plan

4.2.1 Alternatives to Design Codes, Standards, and Criteria

No alternatives to the codes listed in 4.2 above have been used in the design of the ISF Facility.

4.2.2 Construction/Fabrication Alternatives to Codes, Standards, and Criteria

Proposed alternatives to the codes listed in 4.2 above may be used when authorized by the Director of the Office of Nuclear Material Safety and Safeguards or designee. The request for such alternatives should demonstrate that:

1. The proposed alternatives would provide an acceptable level of quality and safety, or
2. Compliance with the specified requirements of the codes listed in 4.2 above would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Requests for alternatives shall be submitted in accordance with 10 CFR 72.4.

4.0 DESIGN FEATURES

4.3 SPENT NUCLEAR FUEL Handling Equipment

4.3.1 ISF Facility Cranes and Trolleys

The components classified to be important to safety of the Cask Receipt Crane, the Fuel Handling Machine, the Canister Handling Machine, the Cask Trolley, and the Canister Trolley shall meet the requirements of NUREG-0554, "Single Failure Proof Cranes for Nuclear Power Plants", and NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants". These are considered supplemental requirements to the base code, Crane Manufacturers Association of America Specification #70 (CMAA 70).

Other exceptions to CMAA 70 are tabulated below.

4.3.2 Lifting Devices

All lifting devices used to raise or lower SPENT NUCLEAR FUEL shall be designed in accordance with ANSI N14.6 – 1993, "Special Lifting Devices for Shipping Containers Weighing 10,000 Pounds (4500 kg) or More".

Other exceptions to ANSI N14.6 are tabulated below.

4.3.3 Peach Bottom Transfer Casks

The original design standard for the Peach Bottom transfer cask was 10 CFR 71. The original fabrication criteria were contained in a set of detailed drawings and construction specifications prepared by Battelle Memorial Institute (BMI) and furnished to the cask fabricator. The BMI SAR for the Peach Bottom transfer casks contains six specifications and procedures that are referenced on the drawings. One of these six specifications and procedures cited ASME Section VIII Unfired Pressure Vessels 1962 Edition and Section IX Welding Qualification 1962 Edition for the welding of austenitic stainless steel and clad stainless steel by the Metallic Arc Process and the TIG process. ASTM is cited for base metals and filler metals within this same procedure. The assembly basis was the set of detailed drawings and construction specifications.

The exceptions to Codes and Standards for the existing transfer casks are tabulated in Appendix A Table A4.7-4 to the Safety Analysis Report.

4.0 DESIGN FEATURES

Exceptions to Codes and Standards		
System, Structure, or Component: Cask Receipt Crane, Cask Trolley, Canister Trolley, Fuel Handling Machine, Canister Handling Machine		
Reference Code or Standard Section/Article	Code or Standard Requirement	Exception, Justification & Compensatory Measures
Crane Manufacturers Association of America Specification #70 (CMAA 70)	Various	NUREG-0554 and NUREG-0612 have been invoked and take precedence over CMAA 70 where applicable. NUREG-0554 and NUREG-0612 contain additional guidance provided by the NRC with respect to cranes.
Crane Manufacturers Association of America Specification #70 (CMAA 70)	Section 3.2 Welding, 3.2.1 All welding and designs and procedures shall conform to the current issue of AWS D14.1, "Specification for Welding Industrial and Mill Cranes"	Welding is in accordance with AWS D1.1 "Structural Welding Code - Steel". NUREG-0554 cites use of portions of AWS D1.1.
Crane Manufacturers Association of America Specification #70 (CMAA 70)	Section 1.7 Design Stresses, 1.7.1 ... All other load carrying parts shall be designed so that the calculated static stress in the material, based on rated crane capacity, shall not exceed 20 percent of the published average ultimate strength of the material.	Lifting devices that are load carrying parts are designed, fabricated, tested, and inspected in accordance with ANSI N14.6 in lieu of the CMAA 70 criteria. NUREG-0612 defines the use of ANS N14.6 for special lifting devices. ANSI N14.6 requires a safety factor on ultimate strength of the material of 5 on non-critical loads and 10 on critical loads that do not have redundant load paths.

4.0 DESIGN FEATURES

Exceptions to Codes and Standards (Cont.)		
System, Structure, or Component: Cask Receipt Crane, Cask Trolley, Canister Trolley, Fuel Handling Machine, Canister Handling Machine (Cont.)		
Crane Manufacturers Association of America Specification #70 (CMAA 70)	Section 1.4 Runway, ... The runway rails should be standard rail sections or any other commercial rolled sections with equivalent specifications of a proper size for the crane to be installed and must be provided with proper rail splices and hold-down fasteners.	Anchor bolts are in accordance with AISC, Manual of Steel Construction, 9th Edition. CMAA 70 does not provide an explicit code or standard. The NRC recognizes the use of AISC for structural anchor bolts.
System, Structure, or Component: Special Lifting Devices used with the Fuel Handling Machine		
Reference Code or Standard Section/Article	Code or Standard Requirement	Exception, Justification & Compensatory Measures
ANSI N14.6 - 1993	Sections 4.3.5 Positive means of attachment to the fuel under load in all handling positions and 7.1b Single failure proof design	A friction grip device is used to handle Peach Bottom Core 2, instrumented TRIGA, and LWBR loose rod fuels. The handling features on the Peach Bottom Core 2 fuel element have been removed and the other two fuels do not contain specific handling features. The fuel handling operations in question will occur within the FPA confinement barrier, and the fuels will be packaged and stored in a manner consistent with NRC requirements for failed fuel. Under these conditions, dropping a fuel element will not result in unacceptable dose consequences during handling or storage. Therefore, these exceptions are considered acceptable.

5.0 ADMINISTRATIVE CONTROLS

5.1 Responsibility

The ISF Facility Director shall be responsible for overall facility operation and shall delegate in writing the succession to this responsibility during his absence. |

The ISF Facility Director or his designee shall approve, prior to implementation, each proposed change, test, or experiment to structures, systems, or components that are important to safety as defined in 10 CFR 72.3. |

5.0 ADMINISTRATIVE CONTROLS

5.2 Organization

5.2.1 Onsite and Offsite Organizations

Onsite and offsite organizations shall be established for facility operation and corporate management, respectively. The onsite and offsite organizations shall include the positions for activities affecting safety of the ISF Facility.

- a) Lines of authority, responsibility, and communication shall be defined and established throughout highest management levels, intermediate levels, and operating organization positions. These relationships shall be documented and updated, as appropriate, in organizational charts, functional descriptions of departmental responsibilities and relationships, and job descriptions for key personnel positions, or in equivalent forms of documentation. These requirements, including the plant-specific titles of those personnel fulfilling the responsibilities of the positions delineated in these Technical Specifications, shall be documented in the Safety Analysis Report;
 - b) The ISF Facility Director shall be responsible for overall safe operation of the facility and shall have control over those onsite activities necessary for safe operation and maintenance of the facility;
 - c) The Deputy Manager for the Idaho Cleanup Project (ICP) shall have ultimate responsibility for overall facility nuclear safety and shall take any measures needed to ensure acceptable performance of the staff in operating, maintaining, and providing technical support to the facility to ensure nuclear safety; and
 - d) The individuals who perform health physics functions, or perform quality assurance functions shall have sufficient organizational freedom to ensure their independence from operating pressures.
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5.0 ADMINISTRATIVE CONTROLS

5.3 ISF Facility Staff Qualifications

The ISF Facility Staff shall meet or exceed the minimum qualifications of ANSI 18.1-1971 for comparable positions. The ISF Facility Operations Manager and certified Operators shall be trained and certified in accordance with the ISF Operator Training Plan.

5.0 ADMINISTRATIVE CONTROLS

5.4 Procedures

Written procedures shall be established, implemented, and maintained covering the following activities that are important to safety:

- a) Administrative controls;
 - b) Routine ISF Facility operations;
 - c) Alarms and Annunciators;
 - d) Emergency operations;
 - e) Design control and facility change or modification;
 - f) Control of surveillances and tests;
 - g) Control of special processes;
 - h) Maintenance;
 - i) Health physics, including ALARA practices;
 - j) Special nuclear material accountability;
 - k) Quality assurance, inspection, and audits;
 - l) Physical security and safeguards;
 - m) Records management;
 - n) Reporting; and
 - o) All programs specified in Specification 5.5.
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5.0 ADMINISTRATIVE CONTROLS

5.5 Programs

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

5.5.1 Technical Specifications Bases Control Program

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

- a) Changes to the Bases of the Technical Specifications shall be made under appropriate administrative controls and reviews.
 - b) Changes to the Bases may be made without prior NRC approval provided the change would not:
 1. require a change in the Technical Specifications incorporated in the license,
 2. meet the criteria provided in 10 CFR 72.48(c)(2),
 3. result in a significant increase in occupational exposure, or
 4. result in a significant unreviewed environmental impact.
 - c) The Bases Control Program shall contain provisions to ensure that the Bases are maintained consistent with the 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 Bases implemented without prior NRC approval shall be provided to the NRC on a frequency consistent with 10 CFR 72.48(d)(2).
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5.0 ADMINISTRATIVE CONTROLS

5.5.2 Radioactive Effluent Control Program

This program contains the offsite dose calculation methodologies, radioactive effluent controls, and radiological monitoring activities. This program shall contain:

- a) The methodologies and parameters used in calculation of offsite doses resulting from radioactive gaseous and liquid effluents;
- b) The methodologies and parameters used in calculation of gaseous and liquid effluent monitoring alarm and trip setpoints;
- c) The controls for maintaining the doses to members of the public from radioactive effluents as low as is reasonably achievable in accordance with 10 CFR 72.104(b). These include:
 1. Limitations on the functional capability of radioactive liquid and gaseous monitoring instrumentation including surveillance test and setpoint determination;
 2. Monitoring, sampling, and analysis of radioactive liquid and gaseous effluents in accordance with 10 CFR 20.1302.

Changes to the program shall be documented and records of reviews performed shall be retained. This documentation shall contain:

- a) Sufficient information to support the change together with the appropriate analyses or evaluations justifying the change(s), and
 - b) A determination that the change will maintain the level of radioactive effluent control required by 10 CFR 20.1302 and 10 CFR 72.104.
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5.0 ADMINISTRATIVE CONTROLS

5.5.3 Fuel Handling Program

This program implements the ISF Safety Analysis Report requirements for receipt, packaging, and storage of SPENT NUCLEAR FUEL. At a minimum, the program shall establish criteria that need to be verified to address ISF Facility Safety Analysis Report commitments and regulatory requirements for:

- a) Transfer Cask and fuel acceptance criteria;
- b) Fuel Packaging Area limits to ensure restrictions on fuel types are not violated;
- c) Limiting operations of structures, systems, or components that are important to safety to certified operators qualified in accordance with the ISF Facility Operator Training Plan;
- d) Acceptance testing of the ISF CANISTER final closure welds;
- e) Helium inerting pressure and purity to assure corrosion control;
- f) Leak testing to assure adequate ISF CANISTER and STORAGE TUBE integrity and consistency with the offsite dose analysis; and
- g) Configuring the Fuel Packaging Area for the fuel type being packaged.

The program shall include compensatory measures and appropriate completion times if program requirements are not met.

5.0 ADMINISTRATIVE CONTROLS

5.5.4 Fire Protection Program

This program contains the fire protection policy for protection of structures, systems, and components important to safety at the ISF Facility and the procedures, equipment, and personnel required to implement the program at the facility. At a minimum, the program shall contain:

- a) Organizational structure for fire protection responsibilities, including design, maintenance, surveillance, quality assurance of fire protection features, fire prevention activities, and fire fighting organization and training;
 - b) Fire Hazards Analysis describing the defense-in-depth approach for fire areas important to safety;
 - c) Implementing procedures for surveillance of fire protection equipment including identification of suitable compensatory measures for degraded or inoperable components;
 - d) Fire pre-plans for firefighting strategies; and
 - e) Administrative controls for housekeeping, control of combustibles, control of ignition sources (hot work), and fire notification.
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5.0 ADMINISTRATIVE CONTROLS

5.5.5 Radiation Protection Program

This program contains the radiation protection policy for maintaining onsite and offsite personnel exposure as low as is reasonably achievable (ALARA). At a minimum, the program shall contain:

- a) Procedures and administrative controls to limit personnel exposure ALARA in accordance with 10 CFR 20;
- b) Requirements for monitoring the DOE transfer cask during RECEIPT and LOADING OPERATIONS to ensure that surface dose rates are within analyzed values;
- c) A monitoring program to ensure the annual dose equivalent to any real individual located outside the ISF Facility controlled area does not exceed regulatory limits, (which is incorporated as part of the environmental monitoring program in the Radioactive Effluent Control Program of Specification 5.5.2);
- d) Requirements for monitoring the DOE transfer cask during RECEIPT and LOADING OPERATIONS prior to and after unloading SPENT NUCLEAR FUEL to ensure that removable surface contamination levels do not exceed 2200 dpm/100 cm² from beta and gamma sources and 220 dpm/100 cm² from alpha sources; and
- e) Measures for controlling access to high radiation areas as defined by 10 CFR 20. These measures are alternative methods allowed by 10 CFR 20.1601(c) and are further described in Regulatory Position 2.4 of Regulatory Guide 8.38, *Control of Access to High and Very High Radiation Areas in Nuclear Power Plants*.

Each area, accessible to individuals, in which radiation levels could result in an individual receiving a deep dose equivalent in excess of 0.1 rem (100 mrem) in 1 hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates shall be barricaded and conspicuously posted as a high radiation area, and entrance thereto should be controlled by requiring issuance of a radiation work permit (RWP) or equivalent.

Radiation Control Technicians or other individuals trained and qualified in radiation protection procedures or personnel continuously escorted by such individuals may be exempted from this RWP requirement while performing their assigned duties in high radiation areas where radiation doses could be received that are equal to or less 1.0 rem in 1 hour (measured at 30 centimeters from any source of radiation) provided they are otherwise following plant radiation protection procedures, or a general radiation protection RWP, for entry into such high radiation areas.

Any individual or group of individuals permitted to enter such areas should be provided with or accompanied by one or more of the following:

5.0 ADMINISTRATIVE CONTROLS

- A radiation monitoring device that continuously indicates the radiation dose rate in the area;
- A radiation monitoring device that continuously integrates the radiation dose rate in the area and alarms when a preset integrated dose is received. Entry into such areas with this monitoring device may be made after the dose rates in the area have been determined and personnel have been made knowledgeable of them;
- An individual qualified in radiation protection procedures with a radiation dose rate monitoring device. This individual is responsible for providing positive radiation protection control over the activities within the area and should perform periodic radiation surveillance at the frequency specified in the radiation protection procedures or the applicable RWP.

In addition, areas that are accessible to personnel and that have radiation levels greater than 1.0 rem (but less than 500 rads at 1 meter) in 1 hour at 30 cm from the radiation source, or from any surface penetrated by the radiation, should be provided with locked doors to prevent unauthorized entry, and the keys should be maintained under the administrative control of the shift supervisor on duty or health physics supervisor. Doors should remain locked except during periods of access by personnel under an approved RWP that specifies the dose rates in the immediate work areas and the maximum allowable stay time for individuals in that area. In lieu of a stay time specification on the RWP, direct or remote continuous surveillance (such as closed circuit TV cameras) may be made by personnel qualified in radiation protection procedures to provide positive exposure control over the activities being performed within the area.

Individual high radiation areas that are accessible to personnel, that could result in radiation doses greater than 0.01 Sv (1.0 rem) in 1 hour, and that are within large areas where no enclosure exists to enable locking and where no enclosure can be reasonably constructed around the individual area should be barricaded and conspicuously posted. A flashing light should be activated as a warning device whenever the dose rate in such an area exceeds or is expected to exceed 1.0 rem in 1 hour at 30 cm from the radiation source or from any surface penetrated by the radiation.

The Radiation Protection Program will be reviewed annually for content and implementation.

5.0 ADMINISTRATIVE CONTROLS

5.5.6 Essential Program Control Program

1. This program provides a means for processing changes to the following essential programs.
 - a) Quality Assurance Program
 - b) Radiological Environmental Monitoring Program
 - c) Training Program
2. Changes to essential programs shall be made under appropriate administrative controls and reviews.
3. The licensee may make changes to essential programs without prior NRC approval provided the changes do not involve either of the following:
 - a) A change in the Technical Specification incorporated in the license; or
 - b) A decrease in effectiveness.
4. The Essential Program Control Program shall contain provisions to ensure essential programs are maintained consistent with the regulations.
5. Proposed changes to essential programs which do not meet the criteria of 5.5.6.3 above shall be reviewed and approved by NRC before implementation.
6. Changes to essential programs implemented without prior NRC approval shall be provided to the NRC on a frequency consistent with 10 CFR 72.70(c)(6).
7. DOE will review and approve all submittals to the NRC made pursuant to TS 5.5.6.