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WS #14

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ENGINEERING DATA TRANSMITTAL

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1	SNF-5790		0	Design Compliance	QS	2	1	
				Matrices to ANSI and OSHA				

16. KEY

Approval Designator (F)	Reason for Transmittal (G)	Disposition (H) & (I)
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17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)

(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
1/2	1	Design Authority S.A. Krieg	S.A. Krieg	2-22-00	S8-06	3		D.M. Black			R3-86
		Design Agent				3		O.M. Serrano			R3-86
		Cog. Eng.				3		R Bendixsen			R3-26
1/2	1	Cog. Mgr. G.D. Bazinet	G.D. Bazinet	2-16-00	S8-06			CSB Project Files			S8-06
4/2	1	QA	Stephen Bartlinski	3-21-2000	R3-11			Central Files (2)			B1-07
4/2	1	Safety for R.L. Garrett			~~R3-26~~ R3-26						
		Env.									

18.	19.	20.	21. DOE APPROVAL (if required)
S.A. Krieg S.A Krieg — 2-22-00 Signature of EDT Originator — Date	S.A. Krieg G.D. Bazinet — 2-22-00 Authorized Representative for Receiving Organization — Date	S.A. Krieg GD Bazinet — 2-22-00 Design Authority/ Cognizant Manager — Date	Ctrl No. N/A ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments

INFORMATION CLEARANCE FORM

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Design Compliance Matrices to ANSI and OSHA

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E. Required Information

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Information Clearance Approval

K. If Additional Comments, Please Attach Separate Sheet

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Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Project Hanford Management Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200
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Fluor Federal Services

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FDI RESPONSE TO ADDITIONAL CLARIFICATIONS TO FDH-9761261

BACKGROUND

This Supporting Document contains Design Compliance Matrices originally transmitted in DRAFT form by Fluor Daniel, Inc. to DE&S Hanford, Inc. for review and comment under Transmittal No. FDT-110 dated May 28, 1998. To the best of the knowledge of the author, DE&S Hanford, Inc. had no review comments on this transmittal. DE&S Hanford, Inc. has requested the Fluor Daniel, Inc. prepare the contents of FDT-110 for issue as a Supporting Document. The words DRAFT have been removed from pages transmitted under FDT-110, each page has been sequentially numbered, and the supporting document number and revision have been placed on every page.

ABSTRACT

U.S. Department of Energy Letter 98-SFD-026 requested Fluor Daniel Hanford, Inc. to provide clarifications as to compliance with ANSI 57.1, 57.2, 57.9, and 29 CFR 1910.179 (OSHA), in the form of an item-by-item compliance matrix, for the CSB. This Supporting Document contains Fluor Daniel, Inc.'s response for use by Fluor Daniel Hanford, Inc. regarding the clarifications requested by the U.S. Department of Energy.

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ATTACHMENT 1

FDI Response to Additional Clarifications to FDH-9761261

SUBJECT: FDI RESPONSE TO ADDITIONAL CLARIFICATIONS TO FDH-9761261

DESH had previously requested FDI to evaluate the safety classification of the Receiving Crane in letter DESH-9761243 (Reference 3.1). FDI assigned EDN-077 for evaluating the Receiving Crane for compliance with 10 CFR 72, ANSI 57.1, 57.2 and 57.9 for reasons other than release criteria. The report was transmitted to DESH on 1/6/98 via FDI Transmittal FDP-473 (Reference 3.2). The Service Station Gantry Crane and Hoist compliance was arrived at separately by DESH with input from FDI T3 personnel and, along with a similar evaluation for the MHM, included with the Receiving Crane evaluation in FDH letter report FDH-9761261 R4 (Reference 3.3) and submitted to DOE on 1/20/98.

After review of that submittal, the DOE in letter 98-SFD-026 (Reference 3.4) dated 3/4/98 requested FDH to provide clarifications as to compliance with ANSI 57.1, 57.2 and 57.9 in the CSB SAR revision or separate formal submittal. The DOE requested an item-by-item compliance matrix and a discussion as to how each of the applicable ANSI standard items was incorporated into the handling devices. The complete list of action items required by DOE letter 98-SFD-026 (Reference 3.4) which require FDI actions are as follows.

* **Item #4 Receiving Crane**. Provide mitigation feature design and safety classification feature design.

ACTION: FDI is to issue the specification package on the Receiving Pit impact absorbers. Classification of IA package is SC. Include description of the IAs and how the design meets the SC requirements in the CSB FSAR.

* **Item #11 Receiving Crane**. Include results of seismic analysis to be performed on the existing RC design for the rated load of 60 tons. Provide a discussion in the CSB SAR of how ITS equipment meet 10 CFR 72.122(b)(3)seismic requirements. FDI has previously supplied the RC vendor with spectra for the Truck Vestibule and LI/LO area.

ACTION: FDI to include results in CSB FSAR.

* **Item Item #13a CSB Receiving Crane**. Provide an item by item discussion of ANSI 57.1 and ANSI 57.2 for the CSB receiving crane and how each item (requirement) was implemented. These were previously provided in FDP-473 by reference to an earlier work for compliance to the 29 NRC equivalency items contained in FDP-012.

ACTION: FDI to prepare an item by item discussion of ANSI 57.1 and ANSI 57.2 for the CSB receiving crane and how each item (requirement) was implemented.

* **Item #14 CSB Major Equipment-*(Important to Safety-maybe safety class)***. Provide an item by item discussion of ANSI 57.9 compliance for the CSB receiving crane and all other CSB major equipment. This was previously provided in FDP-473 by reference to an earlier work for compliance contained in FRF-2792.

ACTION: Provide an item by item discussion of ANSI 57.9 compliance for the CSB receiving crane and all other CSB major equipment. Include design changes by DCN to the safety classification of the Service Station Gantry Crane and Hoist. Include DESH secondary confinement white paper information. Include discussion from CSB SAR Rev 7. Provide

discussion in CSB FSAR.

* **Item #15 CSB**. Provide discussion in the CSB SAR of facility features to mitigate MCO drops to acceptable limits.

ACTION: See item 4. Update drop discussion in the CSB FSAR.

As requested, FDI has completed Design Compliance Matrixes (DCM) to address the DOE clarification comments 13 and 14 to FDH-9761261 R4, Attachment 1 (Reference 3.2). The design compliance matrixes address the American National Standards (ANSI) 57.1, 57.2, and 57.9, and the Occupational Safety and Health Administration (OSHA) Regulation Standard 29 CFR 1910.179 to verify design compliance for the Canister Storage Building (CSB) receiving crane and major equipment and components with these standards. The ANSI 57.1, ANSI 57.2, and OSHA 29 CFR 1910.179 address only the design for the receiving crane, and the ANSI 57.9 addresses the CSB facility. These DCMs are issued for your review and concurrence.

1.0 Summary:

The DCMs provided a ANSI standard section review of the design for the receiving crane and major equipment and components. Each standard section was provided with a justification for compliance and a references to a design or project document that substantiated the determination.

The DCM for the OSHA compliance provided same review of the receiving crane design, and some sections were not applicable based on the type of crane provided for the CSB facility and facility operating requirements.

ANSI standards 57.1 and 57.2 address primarily pool type SNF storage facilities, and consequently some sections are not applicable to the CSB facility (and components). The CSB facility provides only interim storage of dry Multicanister Overpacks (MCO) in dry storage vaults for future retrieval for long term storage or processing.

The DCMs determined that some discrepancies exist in complying with the standards which are based on the project's design-to-cost decisions or other codes and standards relied on for the design of the facility. The following section provides the process used to determine design compliance with each standard.

2.0 Design Compliance Matrixes

The specific requests of DOE letter 98-SFD-026 (Reference 3.4) are repeated below in italics with a discussion of the process and specific compliance deviations for each standard DCM.

2.1 Item 13

- *Page 18: SNFP Path Forward Additional NRC Requirments, HNF-SD-SNF-DB-003 invokes the requirements of ANSI 57.1 and 57.2 to the CSB and CVD. Many*

requirements from ANSI 57.1 and 57.2 do not appear to have been incorporated into the receiving crane specification or the cold vacuum facility hoist, e.g., ANSI 57.1, 6.1.3, 6.3.4: ANSI 57.2, 5.2.4.5, 6.2.1.1.a. FDH shall verify DB-003 has item #13 been applied to these two cranes?

Action: Along with the CSB and CVD SAR revisions or separate formal document submittal matrix showing compliance with the ANSI 57.1 and 57.2 to both the CSB Receiving Crane and CVDF Hoist. Include the discussion how each of the applicable ANSI Standard items was incorporated into these handling devices. (Provide references).

2.1.1 ANSI 57.1

The ANSI 57.1 DCM for the receiving crane (Attachment 1) was conducted to determine compliance sections and deviations from the standard. The process for the evaluation is based on the following.

a) Base the design review on the Procurement Specification W-379-P-CSB-14620, CSB FSAR HNF-SD-SNF-RPT-004, Rev 7B, MCO Topical Report HNF-SD-SNF-SARR-005, and the Receiving Crane Operating, Parts, & Maintenance Manual MGW-SVX-452651.

b) Base the ANSI 57.1 review on Sections 5 and 6 of the standard.

c) Base the design review on the receiving crane only, and mention interfaces with the CSB facility design or operation as applicable.

The ANSI 57.1 DMC design deviations are as follows.

a) The crane design is not part of the primary reactor containment, pool handling equipment, building electrical power supply, storage pool equipment, grappling, fuel handling and refueling machines, upender, fuel transfer carriage or machine, handling tools, inspection equipment, temporary storage, transfer tube assembly, fuel elevator, and fuel preparation equipment.

b) The crane design does not move fuel units in storage pools or directly handle fuel units.

c) The crane design does not provide communication or building location.

d) The crane will not be in a galvanic or chemical corrosive environment.

2.1.2 ANSI 57.2

The ANSI 57.2 DCM for the receiving crane (Attachment 2) was conducted to determine compliance sections and deviations from the standard. The process for the evaluation is based on the following.

a) Base the design review on the Procurement Specification W-379-P-CSB-14620, CSB FSAR HNF-SD-SNF-RPT-004, Rev 7B, MCO Topical Report HNF-SD-SNF-SARR-005, and the Receiving Crane Operating, Parts, & Maintenance Manual MGW-SVX-452651.

b) Base the ANSI 57.2 review on Sections 5 and 6 of the standard.

c) Base the design review on the receiving crane only, and mention interfaces with the CSB facility design or operation as applicable.

The ANSI 57.2 DMC design deviations are as follows.

a) The crane design is not part of the cooling, cleanup and makeup systems, spent fuel storage racks, fuel storage building, cask coolent flush system, shipping cask, transportation vehicle, cask decontamination area, monitoring systems, and spent fuel storage assemblies.

b) The crane design does not move fuel units in or over storage pools, or directly handle fuel units.

c) The crane design does not provide electrical power, I&C, health protection, and communication.

d) The crane design does not maintain MCOs.

e) The crane design does not directly transfer radioactive materials.

2.1.3 OSHA 29 CFR 1910.179

The OSHA 29 CFR 1910.179 DCM for the receiving crane (Attachment 3) was conducted to determine compliance sections and deviations from the standard. Compliance to this standard was predicated by its inclusion as a reference in ANSI 57.9. The process for the evaluation is based on the following.

a) Base the design review on the Procurement Specification W-379-P-CSB-14620, CSB FSAR HNF-SD-SNF-RPT-004, Rev 7B, MCO Topical Report HNF-SD-SNF-SARR-005, and the Receiving Crane Operating, Parts, & Maintenance Manual MGW-SVX-452651.

b) Base the OSHA 29 CFR 1910.179 review on Sections (b) and (o) of the standard.

c) Base the design review on the receiving crane only, and mention interfaces with the CSB facility design or operation as applicable.

The OSHA 29 CFR 1910.179 DCM design deviations are as follows.

a) The crane design does not have more than one trolley.

b) The crane design does not provide a cab.

c) The crane design is not parallel to other cranes.

d) The crane design is for an indoor crane.

e) The crane design is not for a modified crane.

f) The crane design does not provide sweeps, and bridge stops provided are provided by the CSB facility.

g) The crane design does not handle hot metal.

h) The crane design does not use foot-operated mechanical control brakes.

I) The crane design does not use a pendent station.

j) The crane design does not provide main power disconnect (provided by CSB facility).

k) The crane design does not use hoist chains.

l) The crane design does not provide operational testing, inspection, maintenance.

2.2 Item 14

- *Page 19: SNFP Path Forward Additional NRC Requirments, HNF-SD-SNF-DB-003 requires that the requirements of ANSI 57.9 be reviewed for incorporation into the design of the CSB. Many sections of ANSI 57.9 were not mentioned and not justification, e.g., 6.1.1.3.3, 6.1.2.3.1. FDH shall demonstrate that the additional considerations of DB-003, item #28 be applied to the CSB.*

  Action: Along with a CSB SAR revision or separate formal submittal, provide an item by item discussion of the compliance with ANSI 57.9 to the CSB design. Include in the discussion a description of how each of the applicable ANSI Standard items was implemented into the CSB design, include all major equipment in that discussion.

2.2.1 ANSI 57.9

The ANSI 57.9 DCM for the CSB facility (Attachment 4) was conducted to determine compliance sections and deviations from the standard. The process for the evaluation is based on the following.

a) Base the design review on the CSB FSAR HNF-SD-SNF-RPT-004, Design Basis Document FDI 80460200, Procurement Specification W-379-P-CSB-14620 and W-379-C-CSB-14320, Rev 7B, MCO Topical Report HNF-SD-SNF-SARR-005, and the Receiving Crane Operating, Parts, & Maintenance Manual MGW-SVX-452651.

b) Base the ANSI 57.9 review on Sections 5 and 6 of the standard.

c) Base the design review on the CSB facility only, and mention interfaces with the CSB facility operations, K-Basins and CVD design or operations, or MCO, MHM, and handling equipment as applicable

The ANSI 57.9 DMC design deviations are as follows.

a) The CSB facility design is not part of the CVD or K-Basins facilities..

b) The CSB facility design does not provide washdown areas, radwaste drainage, washdown of transportation packages, and decontamination facilities per design-to-cost.

c) The CSB facility design does not require auxiliary cooling for MCOs.

d) The CSB facility design does not provide a shielded cell.

e) The CSB facility design does not handle fuel units or store uncanistered fuel units.

f) The CSB facility design does not provide operational requirements.

g) The CSB facility design does not provide the handling tools, MCO or MHM.

3.0 References

3.1 DE&S Hanford Letter DESH-9761243, *Evaluation of Receiving Crane*, dated December 3, 1997, M.K. Mahaffey to P.J. Bedell.

3.2 Fluor Daniel Inc. Transmittal No. FDP-473, *FDI Evaluation of the Receiving Crane*, dated January 6, 1998, P.J. Bedell to M.K. Mahaffey.

3.3 Fluor Daniel Hanford Letter FDH-9761261 R4, *Safety Classification of Cranes and Handling Equipment*, dated January 20, 1998, N.H. Williams to E.D. Sellers.

3.4 DOE-RL Letter 98-SFD-026, *Safety Classification and Designation as Important-to-Safety of Spent Nuclear Fuel Project (SNFP) Cranes and Handling Equipment*, E.D. Sellers to H.J. Hatch.

ATTACHMENT 2

ANSI 57.1

COMPLIANCE MATRIX

SECTION 5. SYSTEM FUNCTIONAL DESCRIPTION - CSB RECEIVING CRANE

SECTION 5. SYSTEM FUNCTIONAL DESCRIPTION

Section	Performance Requirement	Current Design Compliance
5.	**SYSTEM FUNCTIONAL DESCRIPTION**	
5.1	Fuel handling system consists of equipment that handles, stores, and inspects fuel units and control components.	The CSB Receiving Crane System provides the following basic functions when handling spent fuel during the receiving operation for storage. (1) Raising and Lowering (2) Rotation (3) Supporting The receiving crane is an auxiliary fuel handling crane which handles the MCO shipping casks from the CSB truck vestibule to the CSB loading and staging area, and deposits the cask into the MCO service station pit load-in/load-out area for on-site MCO removal and storage. See the CSB FSAR HNF-SD-SNF-RPT-004, Rev 7B, Chapter 2.0 (HNF-SD-SNF-RPT-004).
5.2	Fuel handling system moves fuel within the reactor, lifts fuel units from reactor, transfers them to the spent fuel storage pool for interim storage, testing, and inspection, and loads them into a cask for on-site storage and off-site shipping.	The CSB Receiving Crane unloads the MCO shipping casks into the MCO service station pit load-in/load-out area for on-site interim dry storage of the MCOs in the CSB storage vaults. (HNF-SD-SNF-RPT-004)

ANSI 57.1, SECTION 6 - COMPLIANCE MATRIX

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

SECTION 6.1 GENERAL

Section	Performance Requirement	Current Design Compliance
6.1	Overall design requirement of the fuel handling system is to handle fuel units and control components in a safe manner.	The CSB receiving crane is designed to be safe and reliable during the transfer of MCO shipping casks to the CSB MCO service station pit. (W-379-P-CSB-14620)
6.1.1	Mechanical or electrical safety devices designed into the system to prevent damage to fuel units and conditions that pose a radiation hazard or an unintentional radiation exposure risk to personnel.	Mechanical and electrical devices are designed into the CSB receiving crane system to prevent damage to the MCO shipping cask such as main and auxiliary hoist final limit switches; main and auxiliary hoist equalizer assemblies and overweight limit switches; bridge, trolley and rotator, and anti-collision limit switches. Refer to Operating, Parts & Maintenance Manual, Purchase Order No. MGW-SVX-452651, ACECO 60/10-Ton Gantry Crane No. 2506 (MGW-SVX-452651).
6.1.2	All equipment that handles new or spent fuel designed to prevent accidental criticality during fuel unit handling (see 6.3.1.2).	The CSB receiving crane will unload the MCO shipping casks which contain the MCOs that have been designed to maintain the spent fuel material in a subcritical condition for transfer, handling, and storage at the CSB facility. Refer to the MCO Topical Report WHC-SD-SNF-SARR-005, Rev 0 (WHC-SD-SNF-SARR-005), Section 6.1.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.1.3	Design stresses for equipment involved with movement of fuel units chosen to ensure there will not be a structural failure of any part of the handling equipment that would result in dropping or damaging a fuel unit (see 6.3.3.22).	The design and operation of the CSB receiving crane is documented in the OP&M Manual MGW-SVX-452651. The design stresses are provided in the structural calculation reference data on drawing D-14899-001, sh 1 (Vol 1, Sec 2). (MGW-SVX-452651)
6.1.4	Fuel handling system should be designed to operate in an efficient manner with a high degree of reliability .	The CSB receiving crane is part of the fuel handling system, and is designed to operate in an efficient manner with high reliability during a design life of 40 years of continuous use. The expected 40 year continuous use is unlikely for normal operation. (W-379-P-CSB-14620)
6.1.5	Design life, radiation damage, resistance, maintainability, and ease of decontamination evaluated in the design of the equipment.	The CSB receiving crane design requires that design life, radiation damage, resistance, maintainability, and ease of decontamination evaluated in the design of the equipment per W-379-P-CSB-14620, and the seller design has addressed these issues in their design calculations and applications. (MGW-SVX-452651)
6.1.6	System components designed and installed to allow testing and maintenance as required in subsequent sections of this standard.	The CSB receiving crane was designed and installed to allow testing and maintenance as verified in subsequent sections below. (MGW-SVX-452651)

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.1.7	Equipment design and layout considers personnel safety, radiation exposure, human factor engineering for normal operation, abnormal operation, maintenance, and testing.	The CSB receiving crane equipment design and layout considers personnel safety, radiation exposure, human factor engineering for normal operation, abnormal operation, maintenance, and testing as verified in subsequent sections below. (MGW-SVX-452651)

SECTION 6.2 SAFETY CLASSIFICATION AND DESIGN STANDARDS

Section	Performance Requirement	Current Design Compliance
6.2	***Safety Classification and Design Standards***	
	Portion of the transfer tube that serves as part of the primary reactor containment designated as Safety Class 2 and meets the requirement of ANSI/ANS-56.2-1984(R1989).	Not applicable. The CSB receiving crane is not a portion of the transfer tube or part of the primary reactor.
	The Safety Class 2 portion designed and fabricated in accordance with ANSI/ASME B&PV Code-1992, Section III.	Not applicable. The CSB receiving crane is not a portion of the transfer tube or part of the primary reactor.
	The Safety Class 2 portion provided with a quality assurance program meeting the applicable requirements of ANSI/ASME NQA-1-1989.	Not applicable. The CSB receiving crane is not a portion of the transfer tube or part of the primary reactor.
	All other components of the fuel handling system designated non-nuclear safety, and designated and fabricated to commercial codes and standards.	The CSB receiving crane is an auxiliary fuel handling crane and is part of the fuel handling system. This crane has been designated safety significant, and is non-nuclear safety (HNF-SD-SNF-RPT-004). Also, this crane is designated and fabricated to commercial codes and standards as defined in Procurement Specification W-379-P-CSB-14620. The crane is designated ITS Category B per EDH-971261 R4.

SECTION 6.3 SYSTEM DESIGN REQUIREMENTS

Section	Performance Requirement	Current Design Compliance
6.3	**System Design Requirements**	
6.3.1	**Safety Requirements**	
6.3.1.1	Features provided per table 1 to prevent damage to fuel units or control components and to provide for personnel safety (items 1-13).	The CSB receiving crane is an auxiliary fuel handling crane which provided with the following interlocks (MGW-SVX-452651): (1) Underload - Hoist and auxiliary wire rope mis-spooling systems, Hoist and auxiliary drum level wind limit switch controls (drawing EB-14899-01, sh 1). (2) Overload (not over pool) - Hoist and auxiliary hoist limit switch controls (drawing EB-14899-01, sh 2). (3) Up-Position - Hoist AFD external fault input control (drawing EB-14899-01, sh 2).

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.3.1.1 (Continued)	Features provided per table 1 to prevent damage to fuel units or control components and to provide for personnel safety (items 1-13).	(5) End-Travel (hardstop) - Bridge and trolley bumpers (MGW-SVX-452651, Vol 2, Section 6). (6) Up-Limit (main power cut-out switch) - Main and auxiliary final limit switches. Hoist AFD external fault input control (drawing EB-14899-01, sh 2). (8) Nonsimultaneous Motion - Not required. The receiving crane is manually actuated. (10) Bridge Travel - Bridge limit switches, AFD East and West travel controls (drawing EB-14899-01, sh 3). (11) Trolley Travel - Trolley limit switches, ADF North and South travel controls (drawing EB-14899-01, sh 4).
6.3.1.2	Fuel handling equipment designed to ensure that subcriticality is maintained with the equipment fully loaded with fuel and the pool flooded with unborated water.	Not applicable. The CSB receiving crane is not part of the pool fuel handling equipment. See Section 6.1.2 above.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.3.1.3	Physical safety features provided for personnel operating the equipment (see 29CFR1910).	The CSB receiving crane provides the following physical safety features; ladders, ladder cages, handrails, toeboards, steps, deck plate, shielding plate with lead glass window, footwalks, safety chains with hasps, and guards over mechanical and electrical hazards. (MGW-SVX-452651, Vol 1, Sec 2)
6.3.1.4	Bridge travel audibly annunciated automatically.	The CSB receiving crane motion warning horns will sound automatically for approximately three seconds whenever the bridge motion is commanded. (MGW-SVX-452651, Vol 3, Sec 8, WRC1-AC-0025)
6.3.1.5	In the event of loss of control or motive power, a fuel unit or control component remains in a safe condition.	The CSB receiving crane emergency shutdown will immediately shutdown the crane main contactor, cutting power to the crane motors and setting all the brakes. (MGW-SVX-452651, Vol 3, Sec 8, WRC1-AC-0025)

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.3.1.6	Capability for emergency shutdown of power supply incorporated into the equipment design.	Not applicable. The main electrical power supply and crane disconnect were not included in the *scope of the receiving crane* (W-379-P-CSB-14620). A manual disconnect switch is located in the CSB receiving crane operating area to deenergize the runway conductor bars during operation of the crane, and operator has emergency shutdown capabilities at the operator control station and the radio transmitter. (MGW-SVX-452651, Vol 3, Sec 8, WRC1-AC-0025)
6.3.1.7	All cabling including power supplies do NOT interfere with the movement of fuel handling equipment.	All CSB receiving crane power supply cable are located on the outside of the bridge and trolley with rotate cable reels, and are not located between the working area of the bridge and trolley to not interfere with the movement of the crane operation. (MGW-SVX-452651, Vol 1, Sec 17)
6.3.2	***Analysis Requirements***	
6.3.2.1	Design analysis, tests, or applicable historical data used to demonstrate adequacy of the equipment to meet functional requirements.	The design and operation of the CSB receiving crane is documented in the OP&M Manual MGW-SVX-452651 by the structural and shielding calculation reference data on drawing D-14899-001, sh 1 (Vol 1, Sec 2) and the Pre-Shipment Operational Test procedure WRC1-AC-0008 (Vol 3, Sec 4). The equipment meets the functional requirements. (MGW-SVX-452651)

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.3.2.2	SSC required to remain functional during and after an SSE designated as Seismic Category I.	The CSB receiving crane was designed for a DBE which is similar to the SSE. Structural calculation CAL-SE-001, Stardyne Structural Model/Static and Seismic Analysis, was conducted to address the requirements of the Procurement Specification W-379-P-CSB-14620. (MGW-SVX-452651, Vol 1, Sec 2)
6.3.2.3	Nuclear criticality safety evaluation performed to demonstrate that criticality could NOT occur without at least two unlikely, independent, and concurrent changes in condition before a criticality incident.	The CSB receiving crane will unload the MCO shipping casks which contain the MCOs that have been designed to maintain the spent fuel material in a subcritical condition for transfer, handling, and storage at the CSB facility. Refer to the MCO Topical Report WHC-SD-SNF-SARR-005, Rev 0, Section 6.1, and criticality analysis HNF-SD-SNF-CSER-005, Section 5.2.
6.3.3	**Design Features**	
6.3.3.1	Parts that are removed for normal maintenance and operation are attached with suitable retaining devices.	The CSB receiving crane parts are attached with screws with torque nuts and lock washers and bolts with torqued nuts which provide suitable retaining devices for operation and maintenance of the crane. (MGW-SVX-452651, Vol 1, Sec 2 and Vol 3, Sec 1)

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.3.3.2	Suitable fastener locking devices used to prevent parts from falling from the equipment.	The CSB receiving crane parts are attached with screws with torque nuts and lock washers and bolts with torqued nuts which provide suitable retaining devices for operation and maintenance of the crane. (MGW-SVX-452651, Vol 1, Sec 2 and Vol 3, Sec 1)
6.3.3.3	Final surface finish of equipment contacting fuel units or control components to be no rougher than 3.175×10^{-6} m (125μ in.) root-mean-square (rms).	Not applicable. The CSB receiving crane will not come in direct contact with fuel units which are in side the MCO in the MCO shipping cask.
6.3.3.4	Underwater tools and equipment should be designed to minimize crevices where contaminates could accumulate.	Not applicable. The CSB receiving crane is not an underwater tool or equipment.
6.3.3.5	Normal underwater operation members capable of dry operation for limited periods for functional checkout and maintenance.	Not applicable. The CSB receiving crane is not an underwater operation.
6.3.3.6	Inertial loads imparted to fuel units and control components during normal handling operations less than the loads that could cause damage.	Not applicable. The CSB receiving crane does not apply inertial loads to MCO shipping cask during unloading that is greater than the transportation accident which is designed to protect the MCO in the shipping cask. The MCO shipping cask will protect the MCO during unloading. (WHC-SD-TP-SARP-017)

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.3.3.7	Equipment designed to permit removal and replacement or repair of all functional components (including underwater components).	The CSB receiving crane design allows removal and replacement of components. (MGW-SVX-452651)
6.3.3.8	During handling, fuel units and control components should be protected from damage that would prevent them from being used for their intended service.	Not applicable. The CSB receiving crane does not handle fuel units. The MCO shipping cask provides the protection.
6.3.3.9	Capability provided to manually move a fuel unit or control component in the event of equipment malfunction or loss of power.	Not applicable. The CSB facility requirement during unloading of MCO shipping casks.
6.3.3.10	Drip pan or other devices for preventing leakage into pools or creation of personnel safety hazards provided for nonimmersed gear boxes, speed reducers, and oil hydraulic mechanisms.	Not applicable. The CSB receiving crane is located in a dry storage facility, and does not operate over spent fuel pools.
6.3.3.11	All fuel handling system components located within the primary reactor containment designed to withstand the containment test pressure or to be removable.	Not applicable. The CSB receiving crane is not located within a primary reactor containment.
6.3.3.12	Controls, interlocks, or other features provided to minimize dropping or jamming during all handling operations.	The CSB receiving crane provides controls, interlocks, and limit switches to protect from creating hazards which could cause dropping or jamming during handling of the MCO shipping casks. (MGW-SVX-452651, Vol 1, Sec 2)

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.3.3.13	Load sensing unit(s) that limit the load of hoisting devices required if Seismic Category I SSCs could be damaged by the hoist failure due to overload.	The CSB receiving crane provides overload protection, and has been designed to Seismic Category 1. (MGW-SVX-452651, Vol 1, Sec 2 and Vol 3, Sec 6)
6.3.3.14	Loudspeaker or communication systems provided both in the spent fuel building and the primary containment for rapid communication from the control room to these buildings.	Not applicable. The CSB facility provides this capability.
6.3.3.15	Auxiliary fuel handling crane, refueling machine, and fuel handling machine to be capable of continuous operation at minimum design speed for at least 1 h.	The CSB receiving crane was designed for ~~continuous trolley and bridge design speed~~ capabilities for 1 hour. (W-379-P-CSB-14620)
6.3.3.16	Commercial components, assemblies, and subassemblies should be selected to facilitate repair or replacement.	The CSB receiving crane utilized commercial components, assemblies, and subassemblies in the design and construction of the crane. These items are readily available for repair or replacement. (MGW-SVX-452651, Vol 1 and 2)
6.3.3.17	Means provided to preclude release of fuel unit or control component by the grapple unless it is at the intended release elevation and there is no load on the grapple.	Not applicable. The CSB receiving crane does not utilize a grappling device nor contact fuel units.
6.3.3.18	All normal operator controls designed for manipulation with gloved hands.	The CSB receiving crane normal operator controls are designed for manipulation with gloved hands. (MGW-SVX-452651, Vol 2, Sec 14)

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.3.3.19	Any components required to perform a safety function following an accident designed for the accumulated environmental effects (pressure, temperature, humidity, corrosive vapors, radiation, spray, and flooding) of the accident.	The CSB receiving crane is required to withstand a DBE with load without tipping over (HNF-SD-SNF-RPT-004), and the receiving crane is designed for it's temperature environment (W-379-P-CSB-14620). No environmental conditions are exceeded by the postulated DBAs. Refer to HNF-SD-SNF-RPT-004, Tables 2-1, 2-2, 2-3, 2-4, 2-6, 2-7, 2-8, 2-9, and 2-11.
6.3.3.20	Effects of galvanic or chemical corrosion evaluated as part of the material selection process.	Not applicable. The CSB receiving crane, including its load blocks, will not be exposed to elevated temperature, pressures, or corrosive chemicals. (W-379-P-CSB-14620)
6.3.3.21	If the design requires immersion of components, the following applies.	Not applicable. The CSB receiving crane, including its load blocks, will not be exposed to immersion. (W-379-P-CSB-14620)
6.3.3.21 (1)	If used, fluids used in immersed hydraulic systems and lubricants for immersed components to be compatible with the expected water chemistry.	See Section 6.3.3.21 above.
6.3.3.21 (2)	Rust inhibitive coatings used on non-corrosion-resistant materials and to be compatible with wear conditions and expected water chemistry.	See Section 6.3.3.21 above.
6.3.3.21 (3)	Sealed bearings or provisions for waterproofing to be utilized to prevent contamination of components and pool water.	See Section 6.3.3.21 above.

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SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.3.3.22	Materials used in the fabrication of fuel handling equipment load bearing members conform to standards defining chemical and mechanical properties specified by the designer.	The CSB receiving crane materials conform to the standards specified by the designer. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 3, Sec 1)
6.3.3.23	Joint and weld details designed to prevent lamellar tearing.	The CSB receiving crane joint and weld details designed to prevent lamellar tearing. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 3, Sec 1)
6.3.3.24	All materials in contact with pool water compatible with the wetted materials of the reactor coolant system.	Not applicable. The CSB receiving crane is not part of the fuel storage pool system or near a storage pool.
6.3.3.25	Lubricants, sealants, and protective coatings compatible with their intended service and environment.	The CSB receiving crane was designed for operating temperatures of -27° F to 200° F. (W-379-P-CSB-14620)
6.3.3.26	In selection of materials, including lubricants, sealants, and electrical insulation for equipment to be stored or used in the primary reactor containment, design life radiation exposure is considered and materials selected so there will be no loss of function for the design life of the equipment or adverse material interaction effects due to radiolytic decomposition products.	The CSB receiving crane is designed for radiation exposure when the MCO shipping cask is being moved at a maximum dose rate of about 11 mr/h for 40 years, or 4×10^3 Rad for the 40 year lifetime TID. (W-379-P-CSB-14620)
6.3.3.27	Equipment monitored underwater through remote viewing devices should have surfaces treated to reduce glare.	Not applicable. The CSB receiving crane is not part of the pool fuel handling equipment.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.3.4	**Specific Component Requirements**	
6.3.4.1	Handling Equipment	
6.3.4.1.1	Power-driven equipment not covered by commercial standards provided with load limiting devices, or the equipment and associated structures designed to withstand, without failure, the overload produced by the maximum torque their motors can produce.	The CSB receiving crane is provided with hoist and auxiliary hoist overload limit switches. (MGW-SVX-452651, Vol 3, Sec 6, EB-14899-01, sh 2)
6.3.4.1.2	Allowances made for equipment movement so that in performing intended operations, safe distances can be maintained from personnel in normally accessible work areas.	Not applicable. The CSB facility provides the safe distances for performing intended operations.
6.3.4.1.3	Equipment should be located in areas accessible for operation, testing, inspection, and maintenance.	Not applicable. The CSB facility design locates the receiving crane in an area that is accessible for the required activities.
6.3.4.1.4	Provisions should be made for mounting equipment such as cameras, borescopes, and radiation monitors on the fuel handling machine and the refueling machine.	Not applicable. The CSB receiving crane is not a fuel handling machine or refueling machine.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.3.4.1.5	Fuel handling equipment designed so the operator will not be exposed to >2.5 mrem/h from an irradiated fuel unit, control component, or both, elevated to the up-position interlock with the pool at normal operation water level.	Not applicable. The CSB receiving crane is not part of the fuel storage pool system or near a storage pool. However, the CSB receiving crane is designed for radiation exposure when the MCO shipping cask is being moved at a maximum rate of about 11 mr/h for 40 years, or 4×10^3 Rad for the 40 year lifetime TID. (W-379-P-CSB-14620)
6.3.4.1.6	Control panels located to afford the operator a full view of the upender being operated.	Not applicable. The CSB receiving crane does not use the upender. However, the crane operator is provided full view of the MCO shipping cask during receiving operations (MGW-SVX-452651, Vol 1, Sec 2, D-14899-001, sh 1 and 2).
6.3.4.1.7	Primary reactor containment upender and refueling machine controls interlocked to ensure proper equipment position during each phase of the fuel unit transfer operation to prevent damage to the fuel unit.	Not applicable. The CSB receiving crane is not part of the primary reactor containment upender or refueling machine systems.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.3.4.1.8	Spent fuel building upender and fuel handling machine controls interlocked to ensure proper equipment position during each phase of the fuel unit transfer operation to prevent damage to the fuel unit.	Not applicable. The CSB receiving crane is not part of the CSB tube loading process for fuel canister storage. However, the fuel handling crane tracks will be manually blocked to prevent MHM crane travel during the receiving crane transfer of MCO shipping casks to the receiver pit for future canister storage, and anti-collision limit switches are provide to prevent collisions with the overhead HVAC door and MHM crane (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 3, Sec 6).
6.3.4.1.9	Drive systems for the refueling machine, fuel handling, and all overhead crane designed to de-energize automatically upon release of the control switch.	The CSB receiving crane is required to provide adjustable voltage AC speed control in accordance with NOG-6412 for hoist and travel drives (W-379-P-CSB-14620), and Joysticks were provided for control of the drives which return to the off/center position when released (MGW-SVX-452651; Vol 2, Sec 14; Vol 3, Sec 6).
6.3.4.1.10	Equipment designed to withstand long periods in an idle condition in a high humidity environment.	Not applicable. The CSB receiving crane is not part of the fuel storage pool system or near a storage pool.
6.3.4.1.11	Underwater lights enclosed to prevent parts or debris from the light from falling into the pool.	Not applicable. The CSB receiving crane is not part of the fuel storage pool system or near a storage pool.

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SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.3.4.1.12	Provisions made to permit withdrawal of the fuel transfer carriage with auxiliary equipment such as an overhead crane in the event it becomes jammed in the transfer tube or if it cannot be moved by the normal method.	Not applicable. The CSB receiving crane does not withdraw the fuel transfer carriage.
6.3.4.1.13	Fuel transfer mechanism designed to ensure adequate cooling for a full complement of fuel units in the transfer tube.	Not applicable. The CSB receiving crane is not part of the fuel transfer mechanism.
6.3.4.1.14	Indicators provided for horizontal and vertical positions of components handled by the refueling machine and fuel handling machine.	Not applicable. The CSB receiving crane is not part of the refueling machine and fuel handling machine.
6.3.4.2	Handling tools	Not applicable. The CSB receiving crane does not utilize the handling tools. However, the crane utilizes a cask lift yoke (designed by others) to lift and lower the MCO shipping casks which was analyzed in HNF-SD-SNF-DA-022.
6.3.4.2.1	Handling tool provided with a positive means of latching to preclude inadvertent release.	See Section 6.3.4.2.
6.3.4.2.2	Handling tools designed to perform their intended function without compromising personnel safety.	See Section 6.3.4.2.
6.3.4.2.3	Means provided to visibly indicate the latched or unlatched condition of the tools.	See Section 6.3.4.2.

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SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.3.4.2.4	Handling tools designed to remain in a safe condition upon loss of actuating power or force.	See Section 6.3.4.2.
6.3.4.2.5	Handing tools to be free of all burrs, sharp corners, edges, and weld beads that could damage fuel units or control component surfaces.	See Section 6.3.4.2.
6.3.4.2.6	Exterior finish of tools used underwater and contacting fuel assemblies or control components to be no rougher than 3.175×10^{-6} m (125μ in.) root-mean-square (rms).	See Section 6.3.4.2.
6.3.4.2.7	Underwater handling tools vented to permit filling with water when submerged in the pool.	Not applicable. The CSB receiving crane is not part of the fuel storage pool system, near a storage pool, or use underwater handling tools. See Section 6.3.4.2.
6.3.4.2.8	Handling tools used in or over a pool should have provisions for attaching safety line.	Not applicable. The CSB receiving crane is not part of the fuel storage pool system, near a storage pool, or use underwater handling tools. See Section 6.3.4.2.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.3.4.3	Inspection equipment	
6.3.4.3.1	Failed fuel detection equipment capable of permitting evaluation or irradiated fuel assemblies up to the design burnup limit without impairing the structural integrity of the assembly during examination, and ensuring that the fuel unit temperature is limited to avoid damage to the assembly being monitored, and located so that fuel units can be safely inserted and removed.	Not applicable. The CSB receiving crane is not part of the Inspection equipment for failed fuel assemblies.
6.3.4.3.2	Failed fuel detection equipment equipped with temperature and radiation detection alarms dictated by safety considerations.	Not applicable. The CSB receiving crane is not part of the Inspection equipment for failed fuel assemblies.
6.3.4.4	Temporary storage equipment	
6.3.4.4.1	Temporary storage equipment designed in accordance with ANSI/ANS-57.2-1983.	Not applicable. The CSB receiving crane is not part of temporary storage equipment used solely for temporary storage of fuel units or control components during the refueling operation per Section 4.4 (ANSI 57.1).
6.3.4.4.2	Temporary storage equipment designed to Seismic Category I requirements do not fail in such a manner as to permit criticality or prevent Seismic Category I equipment from performing its intended safety function in the event of an SSE.	Not applicable. The CSB receiving crane is not part of temporary storage equipment used solely for temporary storage of fuel units or control components during the refueling operation per Section 4.4 (ANSI 57.1).

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.3.4.5	Transfer tube assembly	Not applicable. The CSB receiving crane is not part of the transfer tube assembly.
6.3.4.5.1	Failure of a valve in a inclined transfer tube does NOT result in reduction of pool shielding and unacceptable exposure rates (see 6.3.4.1.12).	See Section 6.3.4.5.
6.3.4.5.2	Transfer tube assembly and associated appurtenance designed to remove fuel assembly following an SSE	See Section 6.3.4.5.
6.3.4.5.3	Means provided for handle parts to disassemble for operation, maintenance, and inspection.	See Section 6.3.4.5.
6.3.4.5.4	Items of the transfer tube assembly requiring testing, inspection, and maintenance have access openings and test connections.	See Section 6.3.4.5.
6.3.4.5.5	Considerations given in the arrangement of the transfer tube assembly terminus points to protect against the consequences of dropping a heavy object.	See Section 6.3.4.5.
6.3.4.5.6	Interlock provided to restrict travel of the transfer carriage unless the transfer tube valve(s) is in a predetermined open position.	See Section 6.3.4.5.

SECTION 6.4 TESTING AND MAINTENANCE PROVISIONS

Section	Performance Requirement	Current Design Compliance
6.4	**Testing and maintenance provisions**	
6.4.1	Testing provisions made in the design of the equipment to allow testing the following components on a scheduled basis.	The CSB receiving crane is required to be inspected and tested per NOG-7000 (W-379-P-CSB-14620), and the pre-shipment operational test procedure WRC1-AC-0008 was conducted (MGW-SVX-452651, Vol 3, Sec 3), and storage and operational test procedures WRC1-AC-0016 was provided (MGW-SVX-452651, Vol 3, Sec 4).
6.4.1.1	Electrical testing capabilities provided include provisions to test electrical safety features and controls to verify at least items 1-6.	The CSB receiving crane is provides the inspection and testing provisions per the storage and operational test procedures WRC1-AC-0016 (MGW-SVX-452651, Vol 3, Sec 4).
6.4.1.2	Mechanical testing capabilities provided include provisions to test mechanical safety features and controls to verify at least items 1-5.	The CSB receiving crane is provides the inspection and testing provisions per the storage and operational test procedures WRC1-AC-0016 (MGW-SVX-452651, Vol 3, Sec 4).
6.4.1.3	Special testing capability design includes provisions to perform special testing that is unique to the equipment.	The CSB receiving crane is provides the inspection and testing provisions per the storage and operational test procedures WRC1-AC-0016 (MGW-SVX-452651, Vol 3, Sec 4).

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Section	Performance Requirement	Current Design Compliance
6.4.2	Maintenance is provided with standardization of parts and hardware design goals to permit interchangability of parts between similar pieces.	The CSB receiving is provided with commercially available parts and hardware to permit interchangability. (MGW-SVX-452651)
6.4.2.1	Handling equipment	
6.4.2.1.1	Fuel handling and refueling machines provided with safe access points, unobstructed access to electrical panels, removable and reinstallable limit switches and their electrical leads, and with removable and reinstallable remote viewing apparatus attached to the these machines.	The CSB receiving crane provided with safe access points, unobstructed access to electrical panels, removable and reinstallable limit switches and their electrical leads, and with removable and reinstallable remote viewing apparatus attached to the crane (MGW-SVX-452651). The CSB facility provides unobstructed access to the electrical panels per HNF-SD-SNF-RPT-004, Figures 2-1 and 4-6.
6.4.2.1.2	New fuel elevator provided with active components that are underwater are removable and reinstallable without requiring the water level to be lowered below that necessary to maintain minimum shielding and cooling capabilities (Unless located in an area that can be isolated by valves or gates), and with a carriage or basket used to raise and lower fuel assemblies are removable from the elevator rails without requiring removal of the entire elevator assembly from the pool.	Not applicable. The CSB receiving crane is not part of the new fuel elevator.

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SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.4.2.1.3	Auxiliary fuel handling crane provided with unobstructed access to electrical panels, and with safe access to perform necessary maintenance and inspection.	The CSB receiving crane is provided with unobstructed access to electrical panels, and with safe access to perform necessary maintenance and inspection per drawings D-14899-001 sh 1 - 4. (MGW-SVX-452651, Vol 1, Sec 2)
6.4.2.1.4	Fuel transfer carriage and upenders provided with active components that are underwater are removable and reinstallable without requiring the water level to be lowered (Unless located in an area that can be isolated by valves or gates), and with accessible and maintainable drive cables and chains.	Not applicable. The CSB receiving crane is not part of the fuel transfer carriage and upenders.
6.4.2.1.5	Fuel preparation equipment provided with a machine designed so that the assembly can be removed for maintenance and reinstallation without requiring the water level to be lowered (Unless located in an area that can be isolated by valves or gates), and with carriage inspection fixtures that are remotely removable from the base without requiring the removal of the fuel preparation machine assembly from the pool or requiring the pool water level to be lowered (Unless located in an area that can be isolated by valves or gates), and with drive motors and active control and limit equipment accessible for routine maintenance without equipment removal.	Not applicable. The CSB receiving crane is not part of the fuel preparation equipment.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.4.2.1.6	Handling tools designed so they can be easily disassembled to facilitate decontamination, maintenance, handling, and storage, and provided with removable and reinstallable active components without requiring the pool water level to be lowered (Unless located in an area that can be isolated by valves or gates).	Not applicable. The CSB receiving crane is not part of the handling tools. However, the crane utilizes the cask lift yoke to lift and lower the MCO shipping casks.
6.4.2.1.7	Inspection equipment provided with safe access points, removable and reinstallable remote viewing apparatus and its associated lights without requiring the pool water level to be lowered, equipment designed to facilitate handling ~~and storage, and provided with~~ removable and reinstallable active components without requiring the pool water level to be lowered (Unless located in an area that can be isolated by valves or gates).	Not applicable. The CSB receiving crane is not part of the inspection equipment.
6.4.2.1.8	Transfer tube assembly provided with replaceable seals, provisions made for either removal or in-place maintenance of the valve(s), provided with removable and reinstallable devices used to indicate the position of the valve(s)without requiring the pool water level to be lowered, and design ensures the adequacy of rail wearing surfaces during the plant lifetime.	Not applicable. The CSB receiving crane is not part of the transfer tube assembly.

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Section	Performance Requirement	Current Design Compliance
6.4.2.1.9	General requirement for all handling equipment above or adjacent to pools, canals, or cavities having electrical hardware using screw-tightened wiring connections use nonremovable screws to permit safe disconnection required for module replacement or other maintenance operations.	Not applicable. The CSB receiving crane is not above or adjacent to pools, canals, or cavities which would require modular replacements above or adjacent to these areas.

ATTACHMENT 3

ANSI 57.2

COMPLIANCE MATRIX

SECTION 5 FACILITY PERFORMANCE REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
5	Facility Performance Requirements	
	Plant Conditions (PC) I occurrences accommodated with margin between any facility parameter and the value of those parameters that would require either automatic or manual protective action.	The CSB Receiving Crane design provides normal unloading of the MCO shipping casks into the MCO service station pit load-in/load-out area for on-site interim dry storage of the MCOs in the CSB storage vaults per CSB safety analysis report, Section 2.5.1.1, Rev 7B (HNF-SD-SNF-RPT-004).
	PC II occurrences accommodated with necessary corrective action which is capable of being performed assuming a single active failure.	The CSB Receiving Crane design provides an operating design that should reduce operator errors while unloading the MCO shipping casks in the CSB facility. (W-379-P-CSB-14620 and MGW-SVX-452651)
	PC III occurrences accommodated with necessary corrective action which is capable of being performed assuming a single active failure.	The CSB Receiving Crane design provides for unloading the MCO shipping casks into the MCO service station pit load-in/load-out area for on-site interim dry storage of the MCOs in the CSB storage vaults per Section 2.5.1.1 (HNF-SD-SNF-RPT-004).
	Single PC IV or V fault does not cause a consequential loss of required function of systems needed to cope with the fault nor result in a consequential loss of function of the Reactor Coolant System, Reactor Containment barriers or any other engineered safety features or components.	The CSB Receiving Crane design provides for unloading which may potentially drop the MCO shipping casks on the operating deck or into the MCO service station pit load-in/load-out area in the CSB facility per Section 3.4.2.3.1 (HNF-SD-SNF-RPT-004).

SECTION 5 FACILITY PERFORMANCE REQUIREMENTS - CSB RECEIVING CRANE

SECTION 5.1 SPENT FUEL STORAGE AND CASK HANDLING POOLS

Section	Performance Requirement	Current Design Compliance
5.1	**Spent Fuel Storage and Cask Handling Pools**	Not applicable. The CSB receiving crane is not part of the spent fuel storage and cask handling pools. The CSB Receiving Crane unloads the MCO shipping casks into the MCO service station pit load-in/load-out area for on-site interim dry storage of the MCOs in the CSB storage vaults. (HNF-SD-SNF-RPT-004)
5.1.1	Provide shielding adjacent to spent fuel pool to ensure that when the pool is at design fuel assembly inventory and at minimum design water depth, the expected direct radiation dose rate from the stored fuel assemblies is ALARA (not to exceed >2.5 mrem/h to any person occupying such spaces) for PC I and II.	Not applicable. The CSB receiving crane is not part of the spent fuel storage and cask handling pools. The CSB facility storage vault does not rely on water level for shielding per Figures 2-1 and 2-6 (HNF-SD-SNF-RPT-004).
5.1.2	Retain pool water such that the water contaminated with radioactive material is not inadvertently released.	See Section 5.1.1 above.
5.1.3	Retain pool water depth such that shielding is provided to prevent accessible areas from becoming high radiation areas for recovery operations following PC III events.	See Section 5.1.1 above.
5.1.4	Retain pool water level such that it is maintained above the top of the stored fuel during all storage conditions and all plant conditions to prevent overheating.	See Section 5.1.1 above.

SECTION 5 FACILITY PERFORMANCE REQUIREMENTS - CSB RECEIVING CRANE

SECTION 5.2 SPENT FUEL CASK HANDLING

Section	Performance Requirement	Current Design Compliance
5.2	**Spent Fuel Cask Handling**	
5.2.1	Provide for loading and unloading of the cask transport carrier for PC I.	The CSB receiving crane provides unloading and future loading of MCO shipping casks with SNF and empty MCOs per Section 2.5.1. (HNF-SD-SNF-RPT-004)
5.2.2	Provide for inspection, monitoring, decontamination, venting, and flushing of casks received at and to be shipped from the facility for PC I.	Not applicable. The CVD is expected to send clean MCO casks per Section 2.5.1 (HNF-SD-SNF-RPT-004).
5.2.3	Provide for cask movement in both loaded and unloaded conditions between positions within the storage facility for PC I.	The CSB receiving crane provides unloading and future loading of MCO shipping casks. (HNF-SD-SNF-RPT-004)
5.2.4	Provide auxiliary cooling if required on the basis of cask design for casks within the facility at the transport off-loading station for PC I and II.	Not applicable. The CSB receiving crane does not provide cooling of the MCO shipping cask, and cooling is not required per Section 2.5.1 (HNF-SD-SNF-RPT-004).
5.2.5	Prevent mechanical damage that could result in a cask drop, cause a loss of cask integrity or result in the failure of the cask to perform any of its design functions during cask handling operations for all plant conditions.	The CSB receiving crane provides mechanical damage protection of the MCO shipping cask during the unloading and loading process by providing safety features which limit load, bridge and trolley travel, and operator error, and 30 ton MCO shipping casks will be lifted by the 60 ton rated, receiving crane. (W-379-P-CSB-14620 and MGW-SVX-452651)

SECTION 5 FACILITY PERFORMANCE REQUIREMENTS - CSB RECEIVING CRANE

5.2.6	Restrict shipping cask movement such that casks cannot pass over or impact stored fuel either directly or indirectly for all plant conditions.	The CSB receiving crane does not pass over or impact stored fuel either directly or indirectly. The CSB facility restricts shipping cask movement by placing the cask in the MCO service station pit which does not require the cask to travel over the stored MCOs per Figure 2-1. (HNF-SD-SNF-RPT-004)

SECTION 5 FACILITY PERFORMANCE REQUIREMENTS - CSB RECEIVING CRANE

SECTION 5.3 COOLING, CLEANUP AND MAKEUP SYSTEMS

Section	Performance Requirement	Current Design Compliance
5.3	**Cooling, Cleanup and Makeup Systems**	Not applicable. The CSB receiving crane is not part of the cooling, cleanup and makeup systems, and the CSB storage vault relies on passive convection cooling.
5.3.1	Provide for forced cooling capacity to maintain the specified pool water temperature for PC I.	See Section 5.3 above.
5.3.2	Provide capability to recover from PC IV and V occurrences with either a redundant, Seismic Category I and Safety Class 3 system or makeup system that has the capability to feed and bleed.	See Section 5.3 above.
5.3.3	Provide capability to recover from loss of forced cooling before bulk boiling occurs for PC II events and before the design limits of the pool structures are exceeded for PC III, IV, and V events.	See Section 5.3 above.
5.3.4	Provide capability to add demineralized water to the storage pool at a rate greater than the loss of pool water by evaporation for PC I occurrences.	See Section 5.3 above.
5.3.5	If credit is taken for use of pool water for shielding, provide capability to maintain minimum shielding depth with demineralized water for PC I, II, and III.	See Section 5.3 and 5.1.1 above.

ANSI 57.2 SECTION 5 - COMPLIANCE MATRIX

SECTION 5 FACILITY PERFORMANCE REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
5.3.6	Provide capability to add water to the storage pool to maintain water level above fuel assembles for PC IV and V events.	See Section 5.3 above.
5.3.7	Provide capability to maintain pool water activity such that worker exposures are <2.5 mrem/h and ALARA for PC I and II.	See Section 5.3 and 5.1.1 above.
5.3.8	Provide capability to maintain or restore visual clarity to allow observation of assembly identifiers while in their stored position for PC I (see 6.3.2.9.1).	See Section 5.3 above.
5.3.9	Provide capability to maintain design decontamination factors for PC I and II.	See Section 5.3 above.
5.3.10	Provide capability to maintain bulk average fuel storage pool temperatures at a level consistent with personnel comfort and safety under less than full storage conditions for PC I.	Not applicable. The CSB operating area provides HVAC for operation, comfort, and safety per Section 2.7.3 (HNF-SD-SNF-RPT-004). See Section 5.3 above.
5.3.11	Provide capability to maintain the bulk average fuel storage pool temperature no higher than 60° c (140° f) under conditions of maximum heat generation and no concurrent failures for PC I.	See Section 5.3 above.
5.3.12	Fluid system piping designed to preclude syphoning and freezing of the fluid systems piping for all plant conditions.	See Section 5.3 above.

SECTION 5 FACILITY PERFORMANCE REQUIREMENTS - CSB RECEIVING CRANE

SECTION 5.4 SPENT FUEL STORAGE RACKS

Section	Performance Requirement	Current Design Compliance
5.4	**Spent Fuel Storage Racks**	Not applicable. The CSB receiving crane is not part of the spent fuel storage racks. The CSB storage vault provides storage tubes for the SNF stored in MCOs.
5.4.1	Maintain capability to remove and insert fuel assemblies for PC I and subsequent to PC II and III events.	See Section 5.4 above.
5.4.2	Prevent physical damage to stored fuel for PC I, II and III events.	See Section 5.4 above.
5.4.3	Maintain the stored fuel in a coolable geometry for all plant conditions.	See Section 5.4 above.
5.4.4	Maintain the stored fuel in a subcritical configuration for all plant conditions.	See Section 5.4 above.

SECTION 5 FACILITY PERFORMANCE REQUIREMENTS - CSB RECEIVING CRANE

SECTION 5.5 FUEL STORAGE BUILDING

Section	Performance Requirement	Current Design Compliance
5.5	**Fuel Storage Building**	Not applicable. The CSB receiving crane is not part of the fuel storage building. However, the building provides crane rails, power, lighting, fire protection, ventilation, health protection, natural phenomena protection, communication, and the MCO service station pit for the receiver crane operation per Sections 2.4.4.2, 2.5.1, 2.7.1, 2.7.2, 2.7.3, 2.8.1, and 2.9. (HNF-SD-SNF-RPT-004)
5.5.1	Provide controlled environment for the spent fuel storage area that will NOT prevent maintaining the fuel in a coolable and subcritical geometry as required in 6.5.2.2.	See Section 5.5 above.
5.5.2	Allow for control of access to prevent spread of contamination from areas that are potential sources of contamination during PC I and II events.	See Section 5.5 above.
5.5.3	Provide barriers to prevent spread of fire from localized potential sources during PC I, II, and III events.	See Section 5.5 above.
5.5.4	Provide isolation or filtration to limit iodine or other radioisotope releases to 10% of 10CFR Part 100 limits for PC III and 25% of those limits for PC IV and V events.	See Section 5.5 above.
5.5.5	Control interior ambient temperatures within design limits for PC I events.	See Section 5.5 above.

SECTION 5 FACILITY PERFORMANCE REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
5.5.6	Assure that air leakage is into rather than out of the fuel handling area for PC I, II, and III.	See Section 5.5 above.

SECTION 5 FACILITY PERFORMANCE REQUIREMENTS - CSB RECEIVING CRANE

SECTION 5.6 ELECTRICAL POWER, I&C AND COMMUNICATIONS

Section	Performance Requirement	Current Design Compliance
5.6	**Electrical Power, I&C and Communications**	Not applicable. Electrical power, I&C, health protection, and communications components and systems are provided by the CSB facility to support the operation of the receiving crane during receipt of MCO shipping casks. (HNF-SD-SNF-RPT-004)
5.6.1	Provide power for all electrically operated components for PC I events.	See Section 5.6 above.
5.6.2	Provide lighting within the storage pool to allow stored assemblies to be identified for PC I.	Not applicable. The CSB facility does not store SNF in pools. Storage is provided for SNF in MCOs which are stored in storage tubes in the dry CSB facility storage vault per Section 2.5.1. (HNF-SD-SNF-RPT-004)
5.6.3	Monitor process system and area radiation levels for direct radiation, gaseous and airborne particulate activity for all plant conditions.	See Section 5.6 above.
5.6.4	Provide instrument and alarm functions necessary for each process system to assure that system failures can be detected and the systems can be placed in a safe condition for all plant conditions.	See Section 5.6 above.
5.6.5	Provide on-site communications for spent fuel building for all plant conditions.	See Section 5.6 above.

SECTION 5 FACILITY PERFORMANCE REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
5.6.6	Provide interior and exterior lighting for normal operation for PC I and physical security a specified in ANSI/ANS-3.3-1982 for all plant conditions.	See Section 5.6 above.

ANSI 57.2 SECTION 6 - COMPLIANCE MATRIX

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

SECTION 6.1 SPENT FUEL STORAGE AND CASK HANDLING POOLS

Section	Performance Requirement	Current Design Compliance
6.1	**Spent Fuel Storage and Cask Handling Pools**	Not applicable. The CSB receiving crane is not part of the Spent fuel storage and cask handling pools. Storage is provided for SNF in MCOs which are stored in storage tubes in the dry CSB facility storage vault per Section 2.5.1. (HNF-SD-SNF-RPT-004)
6.1.1	**Codes and Standards**	
6.1.1.1	Spent fuel storage and cask handling pools designed to applicable code and standards Item a-f.	See Section 6.1 above.
6.1.1.2	Materials selected based on applicable code and standard Items a-e.	See Section 6.1 above.
6.1.2	**Conditions of Design**	
6.1.2.1	Pools structures designed to seismic category I requirements.	See Section 6.1 above.
6.1.2.2	Removal gates and bulkheads designed to support full height of water remaining on the fuel pool side after the other side is completely drained.	See Section 6.1 above.
6.1.2.3	Design of spent fuel pool structure based on loading combinations contained in the facility FSAR or alternatively those in ACI 349-1980.	See Section 6.1 above.

ANSI 57.2 SECTION 6 - COMPLIANCE MATRIX

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.1.2.4	Spent fuel storage pool structure designed to withstand the impact from maximum load that can be dropped into the pool from highest attainable position without causing leakage in excess of makeup capability.	See Section 6.1 above.
6.1.2.5	Spent fuel pool shielding design based on maximum complement of fuel assemblies expected over the life of the facility.	See Section 6.1 above.
6.1.2.6	Cask handling pool designed to assure that a dropped cask cannot impact on stored fuel or result in loss of fuel storage pool functional integrity.	See Section 6.1 above.
6.1.2.7	Cask handling pool should be designed to accept anticipated shipping casks.	See Section 6.1 above.
6.1.2.8	Storage pool designed to assure that water contaminated with radioactive material is not inadvertently released.	See Section 6.1 above.
6.1.2.9	Means provided for detection and location of leakage from the spent fuel pool.	See Section 6.1 above.
6.1.2.10	Suitable liner provided as an aid in meeting the requirements of minimum leakage.	See Section 6.1 above.
6.1.2.11	Spent fuel storage design to address effect of internal gamma heating of concrete.	See Section 6.1 above.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.1.2.12	Design of storage facility and associated systems include minimum water depth and redundant means provided to monitor spent fuel pool level.	See Section 6.1 above.
6.1.2.13	Maximum water level in the pool should be controlled by a system that provides protection against over filling.	See Section 6.1 above.
6.1.2.14	Spent fuel pool structure penetrations located below the minimum level for cooling defined in Section 5.1.4.	See Section 6.1 above.
6.1.3	Spent fuel storage and cask handling pools interface with cask handling, fuel handling, fuel storage racks, and pool water makeup systems.	See Section 6.1 above.
6.1.4	**Testing, Inspecting and Maintenance**	
6.1.4.1	Design facilitates testing, inspection, and routine preventive maintenance for safety related equipment.	See Section 6.1 above.
6.1.4.2	Components requiring periodic maintenance located underwater in the spent fuel pool are remotely removable without lowering the pool water level below the minimum safe shielding depth (unless located in an area that is isolated by valves or gates).	See Section 6.1 above.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.1.5	Documentation maintained for conformance to ANSI 57.2, and Federal, State, and Local requirements, and design documentation verified by a qualified person as required by ANSI/ASME NQA-1-1983.	See Section 6.1 above.

SECTION 6.2 SPENT FUEL CASK HANDLING SYSTEM

Section	Performance Requirement	Current Design Compliance
6.2	**Spent Fuel Cask Handling System**	
6.2.1	**Codes and Standards**	
6.2.1.1	Shipping cask handling equipment designed to applicable code and standard Items a-c.	The CSB receiving crane is designed to ANSI B30.2-1990, CMAA 70-1994, ASME NOG-1-1995, and NUREG-0554-1979. (W-379-P-CSB-14620)
6.2.1.2	Purchase of equipment and materials based on applicable codes and standards that represent a level of capability to meet the design requirements specified in CMAA 70-1975 and ANSI B30.2-1976.	The CSB receiving crane equipment and materials are based on ASME NOG-1-1995, CMAA 70-1994, and ANSI B30.2-1990. (W-379-P-CSB-14620 and MGW-SVX-452651)
6.2.2	**Conditions of Design**	
6.2.2.1	System components to be operable within environmental limits established for their location within the facility (temperature, humidity, radiation levels, etc.).	The CSB receiving crane was designed to its operating environment for design temperatures of -27° F to 200° F , and for radiation exposure when the MCO shipping cask is being moved at a maximum rate of about 11 mr/h for 40 years, or 4 x 10^3 Rad for the 40 year lifetime TID. (W-379-P-CSB-14620)

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.2.2.2	Cask handling facility contains the required structures, systems and equipment to receive the cask, clean cask exterior, monitor cask for radiation, unload and load cask, transport the cask, vent the cask, and cooldown the cask internally.	The CSB contains the receiving crane which unloads the MCO shipping casks into the MCO service station pit load-in/load-out area for on-site interim dry storage of the MCOs in the CSB storage vaults. (HNF-SD-SNF-RPT-004)
6.2.2.3	Cask coolant flush system should have the capability of monitoring for the presence of radioactive contaminates.	Not applicable. The CSB facility does not have a cask coolant flush system.
6.2.2.4	Cask handling facility to be laid out so that personnel access and passage on all sides of the cask when aboard the transport vehicle.	Not applicable. The CSB receiving crane is part of CSB facility, and the facility provides the proper clearances. (HNF-SD-SNF-RPT-004)
6.2.2.5	Provide the ability to maintain the cask internal temperature within acceptable limits.	Not applicable. The CSB receiving crane is not part of MCO shipping cask. The CVD facility process measures the MCO temperatures are within cask specifications prior to shipment to the CSB facility.
6.2.2.6	Lighting provided for visual inspection of the casks for mechanical damage.	The CSB receiving crane provides bridge lights for MCO shipping cask unloading/loading (MGW-SVX-452651, Vol 2, Sec 12 and Vol 3, Sec 6), and the CSB facility truck vestibule provides additional lighting for visual inspection per Section 2.8.1 (HNF-SD-SNF-RPT-004)

ANSI 57.2 SECTION 6 - COMPLIANCE MATRIX

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.2.2.7	Positive braking or holding mechanism provided for the transportation vehicle in the facility.	Not applicable. The CSB receiving crane is not part of the transportation vehicle in the CSB facility receiving station. The CSB facility truck vestibule provides truck stops.
6.2.2.8	Limits placed on height of cask drop accident using either electrical or mechanical controls.	The CSB receiving crane does not provide electrical or mechanical control limits for cask height. The CSB facility provides administrative controls to limit the cask height during loading and unloading activities, and provided the impact absorber in the MCO service station pit per Sections 2.5.1 and 2.5.1.1, and Drawing H-2-120902. (HNF-SD-SNF-RPT-004).
6.2.2.9	Access to electrical panels unobstructed.	The CSB receiving crane is provided with unobstructed access to electrical panels, and with safe access to perform necessary maintenance and inspection per drawings D-14899-001 sh 1 - 4. (MGW-SVX-452651, Vol 1, Sec 2)
6.2.2.10	Cask decontamination area provided for external cleaning.	Not applicable. The CSB receiving crane is not part of the cask decontamination area. The MCO shipping cask is cleaned at the CVD facility prior to shipment to the CSB facility (HNF-SD-SNF-RPT-004).

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.2.2.11	Radiation and contamination monitoring capability available at fuel handling locations where fuel is handled.	Not applicable. The CSB receiving crane is not part of the radiation and contamination monitoring system. The CSB facility provides this capability (HNF-SD-SNF-RPT-004).
6.2.2.12	Cask handling design protects the spent fuel from dropping or tipping over the spent fuel shipping cask.	The CSB receiving crane provides loss of power and underload limit brake capabilities to protect the MCO shipping cask from dropping or tipping during loading and unloading activities. (MGW-SVX-452651, Vol 3, Sec 6)
6.2.3	All systems of the cask handling facility interfacing with other plant systems engineered consistent with the connecting system's safety class and seismic categories unless it can be shown that a malfunction within the cask handling facility system does not compromise the connecting plant system's operation.	Not applicable. The CSB receiving crane is not part of the CSB facility. The operating deck, truck vestibule, and load-in/load-out area are designed to the same seismic standards CSB--S structural calculation per the CSB Design Basis Document FDI 80460200, Section 10.
6.2.4	**Testing, Inspection and Maintenance**	
6.2.4.1	Provisions made to allow testing, maintenance, and inspection of cranes in accordance with the manufacturer's requirements and ANSI B30.2.0-1976.	The CSB receiving crane is required to be inspected and tested per NOG-7000 (W-379-P-CSB-14620), and the pre-shipment operational test procedure WRC1-AC-0008 was conducted (MGW-SVX-452651, Vol 3, Sec 3), and storage and operational test procedures WRC1-AC-0016 were provided (MGW-SVX-452651, Vol 3, Sec 4).

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.2.4.2	Safe access provided for component testing, maintenance, and inspection.	The CSB receiving crane provides safe access for component testing, maintenance, and inspection. (MGW-SVX-452651, Vol 1, Sec 2)
6.2.4.3	Systems used for transfer of radioactive material incorporate provisions for decontamination by flushing to permit maintenance.	Not applicable. The CSB receiving crane does not transfer radioactive material, and is designed to operate in a clean environment (W-379-P-CSB-14620).
6.2.5	Documentation maintained for conformance to ANSI 57.2, and Federal, State, and Local requirements, and design documentation verified by a qualified person as required by ANSI/ASME NQA-1-1983.	The CSB receiving crane documentation is in accordance with ASME NOG-1, paragraph NOG-7610 and 7630 (W-379-P-CSB-14620). This documentation is reviewed and approved by the Buyer prior to final acceptance of the crane.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

SECTION 6.3 COOLING AND CLEANUP SYSTEM

Section	Performance Requirement	Current Design Compliance
6.3	**Cooling and Cleanup System**	Not applicable. The CSB receiving crane is not part of the cooling and cleanup system.
6.3.1	**Codes and Standards**	
6.3.1.1	Spent fuel pool water makeup, cooling, and cleanup system designed to applicable code and standard Items a-f.	See Section 6.3 above.
6.3.1.2	Purchase of equipment and materials based on referenced code and standard Items a-b.	See Section 6.3 above.
6.3.2	**Conditions of Design**	
6.3.2.1	System components to be operable within environmental limits established for their location within the facility (temperature, humidity, radiation levels, etc.).	See Section 6.3 above.
6.3.2.2	Cooling system design based on maximum heat generation rate from maximum inventory of spent fuel assemblies and accounting for the burnup post radiation decay time of fuel to be stored in the facility, and meet the criteria of Section 5.3.11.	See Section 6.3 above.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.3.2.3	Cooling system designed to maintain an average normal pool water temperature (≤32.2°C) with a normal pool water operating temperature (≤43.3°C).	See Section 6.3 above.
6.3.2.4	Equipment for cooling may be added in increments to match the actual inventory heat removal requirements.	See Section 6.3 above.
6.3.2.4.1	If the Incremental option is chosen, the original design of the permanently installed equipment is based on full inventory heat loads (see Section 6.3.2.2).	See Section 6.3 above.
6.3.2.4.2	System performance analyzed for each added increment of cooling.	See Section 6.3 above.
6.3.2.4.3	Subsystems for each increment of cooling provided with means for its isolation and flushing.	See Section 6.3 above.
6.3.2.5	Cooling system designed it inhibit escape of contaminated water.	See Section 6.3 above.
6.3.2.6	Seismic category I makeup system provided to add demineralized water to pool (redundant or backup).	See Section 6.3 above.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.3.2.7	Capacity of the pool water makeup system sized to maintain pool water level above the minimum depth for cooling (assuming the maximum decay heat load in the pool is rejected to the environment by boiling of the pool water).	See Section 6.3 above.
6.3.2.7.1	Permanent emergency pool water makeup system designed to be protected from missiles and withstand SSE.	See Section 6.3 above.
6.3.2.7.2	If the emergency pool water makeup system is not permanently installed, its to be shown that the time required to implement its operation is less than the time required for the pool water to reach boiling temperature (assuming the loss of all pool cooling), or the pool water level to drop below the minimum cooling depth (as a result of other potential losses of pool water inventory).	See Section 6.3 above.
6.3.2.8	Pool water makeup system design to provide demineralized water at a rate at leased sufficient to compensate for evaporative losses with the spent fuel storage pool at the maximum design operating temperature.	See Section 6.3 above.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.3.2.9	Pool water cleanup system design requirements are as follows.	
6.3.2.9.1	Maintain or restore water clarity such that fuel assembly identification can be established with underwater viewing devices.	See Section 6.3 above.
6.3.2.9.2	Control water chemistry to maintain material properties of fuel assembly cladding, structural members, and cooling system during storage within the pool.	See Section 6.3 above.
6.3.2.10	Pool water cleanup system may be connected or completely separate and need not be designed to operate continuously, and water turnover rate should be ≤72 hours for water clarity and minimize gross activity.	See Section 6.3 above.
6.3.2.11	Pool water cleanup system provided for control, retention, disposal of radioactive material collected from the pool water.	See Section 6.3 above.
6.3.2.12	Capability provided to recover from loss of cooling condition before the design limits of the pool structure are exceeded.	See Section 6.3 above.
6.3.2.13	Piping designed to eliminate traps, loops, and minimize flanges that accumulate radioactive materials.	See Section 6.3 above.

Section	*Performance Requirement*	*Current Design Compliance*
6.3.2.14	Provisions made in design and installation of pool water auxiliary systems to maintain worker radiation exposure during operation and maintenance to ALARA.	See Section 6.3 above.
6.3.2.15	Spent fuel pool water purification system design includes provisions for removing dissolved and particulate radionuclides to assure that the radiation dose rate from the shielding water itself can be maintained within required limits specified in Section 5.3.7.	See Section 6.3 above.
6.3.3	**Interfaces**	
6.3.3.1	Cooling and cleanup system pool penetrations designed above the minimum water level for shielding.	See Section 6.3 above.
6.3.3.2	Cooling and cleanup system piping configuration to be such as to eliminate syphoning of pool water to a level below the minimum water depth required for shielding.	See Section 6.3 above.
6.3.4	**Testing, Inspection and Maintenance**	
6.3.4.1	Pumps, valves, filters and other components to be readily accessible for maintenance.	See Section 6.3 above.
6.3.4.2	Filters capable of being either remotely back flushed or designed so that cartridges can be removed directly into a shielded container.	See Section 6.3 above.

ANSI 57.2 SECTION 6 - COMPLIANCE MATRIX

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.3.4.3	Equipment should be provided for periodic functional testing of the pool water cleanup system performance.	See Section 6.3 above.
6.3.4.4	Instrumentation should be provided for periodic functional testing of the heat exchanger(s) (inlet pressure, pressure drop and Δt).	See Section 6.3 above.
6.3.5	**Design Documentation**	
6.3.5.1	Documentation of the pool water cooling and cleanup systems sizing provided.	See Section 6.3 above.
6.3.5.2	Certificates of compliance with applicable standards required for all component materials in contact with the pool water.	See Section 6.3 above.
6.3.5.3	Design documents verified in accordance with ANSI/ASME NQA-1-1983.	See Section 6.3 above.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

SECTION 6.4 SPENT FUEL STORAGE RACKS

Section	Performance Requirement	Current Design Compliance
6.4	**Spent fuel storage racks**	Not applicable. The CSB receiving crane does not interface with the spent fuel storage assemblies.
6.4.1	Spent fuel storage racks designed with applicable commercial code and Standard Items a-e.	See Section 6.4 above.
6.4.2	**Conditions of Design - Nuclear Criticality Safety assessment**	
6.4.2.1	**Scope of Nuclear Criticality Safety Assessment**	
6.4.2.1.1	Nuclear criticality safety analysis performed for each system that involves handling, transfer, and storage of spent fuel assemblies.	Not applicable. The CSB receiving crane does not interface with the spent fuel storage assemblies. The CSB facility storage design calculations determined that the design configuration was bellow the k_{eff} and subcritical per calculation CSB-SH-1005 (this is substantiated by HNF-SD-SNF-CSER-005) and no special design requirements are required per Section 3.3.2.3.3 (HNF-SD-SNF-RPT-004, Rev 7).
6.4.2.1.2	Nuclear criticality safety analysis demonstrates that each system is subcritical under the design and operating limits specified for all plant conditions.	See Section 6.4.2.1.1 above.
6.4.2.1.3	Nuclear criticality safety analysis includes consideration of credible abnormal occurrences that include Items a-l.	See Section 6.4.2.1.1 above.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.4.2.1.4	Nuclear criticality safety analysis demonstrates criticality could not occur where spent fuel is handled or stored.	See Section 6.4.2.1.1 above.
6.4.2.1.5	Nuclear criticality safety analysis explicitly identifies fuel assembly characteristics upon which subcriticality depends.	See Section 6.4.2.1.1 above.
6.4.2.1.6	Nuclear criticality safety analysis explicitly identifies design limits upon which subcriticality depends that require physical verification at the completion of fabrication or construction.	See Section 6.4.2.1.1 above.
6.4.2.2	Criticality calculations include the adverse effects of fuel handling accidents or conditions postulated in Section 2.12.4 and the following requirements.	See Section 6.4.2.1.1 above.
6.4.2.2.1	Evaluate the multiplication factor of fuel in the fuel storage racks under normal and credible abnormal occurrence is $\leq k_a$.	See Section 6.4.2.1.1 above.
6.4.2.2.2	Δk_u includes uncertainties in the benchmark experiments and bias that result from extrapolation of the benchmark experiments into the range of parameters encountered in the fuel storage rack design (95/95 tolerance limit).	See Section 6.4.2.1.1 above.
6.4.2.2.3	Δk_m provides adequate margin of subcriticality under operating limitations and any plant conditions, and assumes a value of 0.05 or less (not less than 0.02).	See Section 6.4.2.1.1 above.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.4.2.2.4	Fuel assembly assumptions for storage rack design are at maximum reactivity point in its life, or most reactive fuel assembly to be stored based on a minimum burnup (confirmed by analysis).	See Section 6.4.2.1.1 above.
6.4.2.2.5	Determination of the most reactive fuel assembly includes evaluation of parameter Items a-l.	See Section 6.4.2.1.1 above.
6.4.2.2.6	Fuel assembly arrangement assumed in storage rack design is arranged in the highest value of k_s which considered Items a-c.	See Section 6.4.2.1.1 above.
6.4.2.2.7	Determination of the fuel assembly arrangement with the highest value of k_s based on Items a-g.	See Section 6.4.2.1.1 above.
6.4.2.2.8	Credit may be taken for inherent neutron absorbing effect of materials of construction, and added nuclear poisons based on the requirements of Items a-c.	See Section 6.4.2.1.1 above.
6.4.2.2.9	Consideration for soluble neutron absorber in pool water considered for PC IV and V, or not considered for PC I, II, and III for evaluation of k_s.	See Section 6.4.2.1.1 above.
6.4.2.3	Allowable design stresses for racks do not exceed those calculated in accordance with AISC S326-1978 or ASME B & PVC (Section III, Div 1, Part NF) for all anticipated loadings (including seismic forces, dropped fuel assemblies, and crane lift loads).	See Section 6.4 above.
6.4.2.4	Structural designed to limit deformations to preclude criticality for all plant conditions.	See Section 6.4 above.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.4.2.5	Racks may be designed to be free standing, individually supported on embedments on pool floor, or supported by combination compression tension embedments in pool walls.	See Section 6.4 above.
6.4.2.6	Each cell in the racks have sufficient clearance and lead-in to permit fuel assembly insertion and removal during handling operations without marring or damaging the assembly.	See Section 6.4 above.
6.4.2.7	Construction to be such that it will not be possible to place fuel assemblies closer to one another than the minimum specified separations.	See Section 6.4 above.
6.4.2.8	Fuel storage rack design limits tipping of the rack such that the maximum angle of tilt does not exceed ½ of the over turning angle.	See Section 6.4 above.
6.4.2.9	Fuel damage or reduction in required margin to criticality due to sliding impacts during a seismic event are not allowed.	See Section 6.4 above.
6.4.2.10	Fuel assembly support surfaces of a cell apply to loads to a fuel assembly only where the fuel assembly is designed to withstand such loads.	See Section 6.4 above.
6.4.2.11	All surfaces contacting fuel assemblies during loading and storage free of burrs, sharp corners, edges and weld bead or spatter, and projection of rivets or bolt heads into the interior of the cell are not permitted.	See Section 6.4 above.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.4.2.12	Storage racks designed to preclude interferences between stored fuel assemblies (including those containing control components, and the fuel handling equipment).	See Section 6.4 above.
6.4.2.13	Storage racks and their associated support structures designed to Seismic Category I requirements.	See Section 6.4 above.
6.4.2.14	Apply seismic loading to design based on the criteria Items a-d.	See Section 6.4 above.
6.4.2.15	Minimum storage capacity in racks consist of enough space allow for maximum number of fuel assemblies unloaded from the reactor core during normal refueling cycle plus a full core load of fuel assemblies.	See Section 6.4 above.
6.4.2.16	Provision may be made for storage of defective fuel assemblies in the canisters and consolidated fuel in canisters.	See Section 6.4 above.
6.4.2.17	All materials of construction capable of withstanding expected cumulative radiation exposures and compatible with pool water chemistry.	See Section 6.4 above.
6.4.2.18	Provide permanent identification of each cell.	See Section 6.4 above.
6.4.3	**Interfaces**	
6.4.3.1	Pool structure and liner designed to support the spent fuel storage racks, and withstand the effects of the fuel handling accident in combination.	See Section 6.4 above.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.4.3.2	Spent fuel storage rack arrangement and design in the spent fuel storage pool facilitates natural circulation cooling of the stored spent fuel in the racks in order to maintain the cooling requirements in the event of loss of forced cooling.	See Section 6.4 above.
6.4.4	**Testing, Inspection and Maintenance**	
6.4.4.1	Verification of credited, fixed neutron poisons before use of racks.	See Section 6.4 above.
6.4.4.2	Provisions made for periodic verification of required physical properties and continued presence of fixed neutron absorbers.	See Section 6.4 above.
6.4.4.3	Spent fuel storage racks should be removable under water without loss of structural integrity under normal loads of the remaining racks in the pool.	See Section 6.4 above.
6.4.5	**Design documentation**	
6.4.5.1	Documentation of design calculations and analyses for spent fuel storage racks provided as required by ANSI/ASME NQA-1-1983.	See Section 6.4 above.
6.4.5.2	Certificate of Conformance with applicable standards required for all component materials in contact with the pool water.	See Section 6.4 above.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.4.5.3	Certificate of Conformance of loading and homogeneity provided for fixed neutron absorber materials for spent fuel storage racks where credit is taken for their use in design.	See Section 6.4 above.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

SECTION 6.5 FUEL STORAGE BUILDING

Section	Performance Requirement	Current Design Compliance
6.5	**Fuel Storage Building**	Not applicable. The CSB receiving crane is not part of the fuel storage building. The CSB facility provides crane rails, electrical power, lighting, fire protection, health protection monitors, natural phenomena protection, HVAC, and HEPA filtered exhaust for the receiver crane operation. (HNF-SD-SNF-RPT-004)
6.5.1	**Codes and Standards**	
6.5.1.1	Building designed in accordance with applicable code and standard Items a-e.	See Section 6.5 above.
6.5.1.2	Purchase of materials based on codes and standards that meet the design requirements specified in the requirement Items a-c.	See Section 6.5 above.
6.5.2	**Conditions of Design**	
6.5.2.1	System components to be operable within environmental limits established for their location within the facility (temperature, humidity, radiation levels, etc.).	See Section 6.5 above.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.5.2.2	Pool structure and associated equipment installed in a building designed to Seismic Category I requirements, and capable of protecting the pool, its Safety Class 3 mechanical and fluid systems and stored fuel during all plant conditions.	See Section 6.5 above.
6.5.2.3	Redundant safety grade filtration systems, designed and constructed to ANSI/ASME N509-1980 provided for fuel storage building to limit the potential release of iodine and other radioisotopes during a PC IV and V fuel rupture incident.	See Section 6.5 above.
6.5.2.4	Layout for the building normal ventilation provides air flow across the pool surface to minimize exposure of fuel handling equipment operators to airborne contamination and generally direct air flow from areas of low radioactivity to areas of high radioactivity.	See Section 6.5 above.
6.5.2.5	Air flow from spent fuel building controlled to minimize any activity release, and provide air leakage into the fuel handling area during fuel handing operations when the potential for accidental radioactivity release is greater.	See Section 6.5 above.
6.5.2.6	Effluent air from areas with significant potential radioactive contamination filtered prior to being exhausted from the building stack.	See Section 6.5 above.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.5.2.7	Radiation monitoring systems provided for all areas and operations where personnel may be exposed to levels of radiation or airborne radioactive materials above background levels; SSCs in these areas requiring maintenance and inspection are designed, fabricated, shielded, controlled, and tested to maintain external radiation exposures to personnel ALARA; Includes means Items a-d.	See Section 6.5 above.
6.5.2.8	Airborne radioactive monitoring systems located for gaseous effluents with appropriate alarms, and exhausted air filtered on high airborne radiation through 90% ASHRAE prefilters and 99.97% HEPA filter in series.	See Section 6.5 above.
6.5.2.9	Physical means provided to ensure that loads heavier than accounted for in the rack analysis cannot be transported over the spent fuel racks, and interlocks provided for cask crane to prevent passing over the spent fuel storage pool.	See Section 6.5 above.
6.5.2.10	Layout of the fuel storage building to preclude flood damage to makeup systems and mixing of surface waters with spent fuel storage pool water.	See Section 6.5 above.
6.5.2.11	Fuel storage building ingress and egress controlled to permit only authorized personnel.	See Section 6.5 above.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.5.2.12	Design of the structure should facilitate maintenance of the cranes.	See Section 6.5 above.
6.5.2.13	Building layout should be designed to minimize crane travel during cask loading operations.	See Section 6.5 above.
6.5.2.14	Floor designed to withstand the forces developed by a PC III cask drop on the edge (if such failure would adversely effect the integrity of the storage area or result in the loss of any safety function).	See Section 6.5 above.
6.5.3	Building provides with controlled sumps and drains interfacing with the radwaste system to prevent uncontrolled or unmonitored releases of radioactive liquid waste to the environment; Interconnecting piping designed to eliminate traps, loops and minimize flanges that might accumulate radioactive particles.	See Section 6.5 above.
6.5.4	**Testing, Inspection and Maintenance**	
6.5.4.1	Spent fuel building filters accessible for replacement, and means to provide enclosed replaced filters at the point of replacement to prevent contamination.	See Section 6.5 above.
6.5.4.2	Sufficient Instrumentation provided to test and evaluate the ventilation system required by ANSI/ASME N510-1980.	See Section 6.5 above.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.5.4.3	All HEPA filters designed for in-place testing for pressure drop and filtration efficiency as described in ANSI/ASME N510-1980.	See Section 6.5 above.
6.5.4.4	All filter mount designed to permit ready access and visual inspection of the gaskets and seals.	See Section 6.5 above.
6.5.4.5	Provisions made on the exhaust side of all HEPA filters for monitoring for airborne radioactive materials in the exhaust air.	See Section 6.5 above.
6.5.5	Design documentation maintained to substantiate conformance with applicable standards and with Federal, State, and Local requirements, and design documentation verified by a qualified person as required by ANSI/ASME NQA-1-1983.	See Section 6.5 above.

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SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

SECTION 6.6 ELECTRICAL POWER, I&C AND COMMUNICATIONS

Section	Performance Requirement	Current Design Compliance
6.6	**ELECTRICAL POWER, I&C AND COMMUNICATIONS**	Not applicable. Electrical power, I&C and communications component and systems are provided in the CSB facility to support the operation of the receiving crane during receipt of MCO shipping casks. The CSB facility provides crane rails, electrical power, lighting, fire protection, health protection monitors, natural phenomena protection, HVAC, and HEPA filtered exhaust for the receiver crane operation. (HNF-SD-SNF-RPT-004)
6.6.1	**Codes and Standards**	
6.6.1.1	Electrical power, I&c and communications components and systems designed in accordance with commercial codes and standards (ANSI/IEEE C2-1977, ANSI/NFPA 70-1981).	See Section 6.6 above.
6.6.1.2	Purchase of materials based on codes and standards that meet the design requirements specified in the referenced Items a-f.	See Section 6.6 above.
6.6.2	**Conditions of Design**	
6.6.2.1	System components to be operable within environmental limits established for their location within the facility (temperature, humidity, radiation levels, etc.).	See Section 6.6 above.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.6.2.2	Fuel storage building provides suitable radiation monitoring devises for protection of personnel in the building.	See Section 6.6 above.
6.6.2.3	If the fuel storage building safety related filtration and ventilation system is not in continuous operation, a redundant actuation system alarms and actuates this system.	See Section 6.6 above.
6.6.2.4	Loud speaker system provided in the fuel storage building and the primary reactor containment for rapid communication from the control room to these buildings.	See Section 6.6 above.
6.6.2.5	Indication and alarms provided from parameters table for the variables and their indication.	See Section 6.6 above.
6.6.2.6	Minimum level of instrumentation coincidence required to initiate protective action (actuation of the safety related ventilation system by radiation monitors to be 1 out of 2).	See Section 6.6 above.
6.6.3	**Interfaces**	
6.6.3.1	Electrical power system interfaces with the plant distribution system for normal and emergency power, and it interfaces with the class 1E power system for power to the safety related systems.	Electrical power system interfaces with the plant distribution system for normal and emergency power. See Section 6.6 above.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.6.3.2	If non-safety related systems are connected to the class 1E power system, the resulting circuits meet the requirements of IEEE 308-1980 and independence requirements of IEEE 384-1977.	See Section 6.6 above.
6.6.3.3	Lighting system interfaces with the normal and emergency power systems.	See Section 6.6 above.
6.6.3.4	Security system interfaces with the normal power and emergency power systems, and the emergency power system designed to accommodate the security requirements as defined in ANSI/ANS-3.3-1982.	See Section 6.6 above.
6.6.4	**Testing, Inspection and Maintenance**	
6.6.4.1	Electrical power system components designed for periodic testing, inspection and maintenance.	See Section 6.6 above.
6.6.4.2	Normal and emergency lighting systems designed for periodic testing, inspection and maintenance.	See Section 6.6 above.
6.6.4.3	Communications systems designed for periodic testing and maintenance.	See Section 6.6 above.
6.6.4.4	Alarm systems designed for periodic testing, inspection and maintenance.	See Section 6.6 above.
6.6.4.5	Sufficient instrumentation, sampling and indications provided for monitoring or periodic functional testing Items a-e.	See Section 6.6 above.

SECTION 6 DESIGN REQUIREMENTS - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
6.6.4.6	Storage design allows testing the effectiveness of neutron poisons in the spent fuel storage racks when credited by the design.	See Section 6.6 above.
6.6.5	Documentation maintained to substantiate conformance with applicable standards and with Federal, State, and Local requirements, and design documentation verified by a qualified person as required by ANSI/ASME NQA-1-1983.	See Section 6.6 above.

ATTACHMENT 4

29 CFR 1910.179

COMPLIANCE MATRIX

29 CFR 1910.179 - COMPLIANCE MATRIX

1910.179 - OVERHEAD AND GANTRY CRANES - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
(b)	General Requirements	
(b)(1)	Proper application of this section for overhead and gantry cranes (crane groups with trolleys and similar travel characteristics).	The CSB receiving crane is designed as a gantry crane with trolley. Refer to the procurement specification W-379-P-CSB-14620, Section 14620 Receiving Crane (W-379-P-CSB-14620) and Operating, Parts & Maintenance Manual, PO No. MGW-SVX-452651, ACECO 60/10-Ton Gantry Crane No. 2506 (MGW-SVX-452651).
(b)(2)	New and existing equipment constructed and installed to design specification ANSI B30.2.0-1967.	The CSB receiving crane was designed to ASME B30.2-1990. (W-379-P-CSB-14620)
(b)(3)	Modifications to cranes may be made and rerated provided such modifications and the supporting structure are checked thoroughly for the new rated load by a qualified engineer or the equipment manufacturer.	Not applicable. The CSB receiving crane is a new, unmodified crane. (W-379-P-CSB-14620)
(b)(4)	Wind indicators and rail clamps properly provided.	Not applicable. The CSB receiving crane is an indoor crane, and no wind load was applied. (W-379-P-CSB-14620)
(b)(5)	Rated load marking properly provided.	The CSB receiving crane design requires proper marking of the crane.
(b)(6)	Clearance from obstruction	

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1910.179 - OVERHEAD AND GANTRY CRANES - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
(b)(6)(i)	Minimum clearance of 3 inches overhead and 2 inches laterally provided and maintained between crane and obstructions (CMAA Specification No. 61).	The CSB receiving crane design clearances for height through the 38 foot high inner air lock door is 3 inches, and between the north column is 10 inches (MGW-SVX-452651, Vol 1, Sec 2). See drawings H-2-120900 and H-2-120913 (W-379-P-CSB-14620).
(b)(6)(ii)	Passageway or walkway obstructions not placed so that safety of personnel are jeopardized by movements of the crane.	The CSB receiving crane designed so that the passageway or walkway obstructions are not placed were the safety of personnel are jeopardized by movements of the crane. (MGW-SVX-452651, Vol 1, Sec 2)
(b)(7)	Adequate clearance between parallel cranes.	Not applicable. The CSB receiving crane is not parallel to other cranes.
(b)(8)	Designated personnel permitted to operate a crane.	The CSB receiving crane is required by the manufacturer to have a qualified crane operator per CMAA operator's manual and ASME B30.2. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 1)

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1910.179 - OVERHEAD AND GANTRY CRANES - CSB RECEIVING CRANE

Section	Performance Requirement	Current Design Compliance
(c)	Cabs-	
(c)(1)	Cab location	
(c)(1)(i)	General arrangement of cab and the location of control and protective equipment provides all operating handles within convenient reach when facing the load or travel direction.	Not applicable. The CSB receiving crane does not provide a cab but does have a shielded operator stations mounted on the bridge tracks per drawing H-2-120913 (W-379-P-CSB-14620), and the station provides all operating handles within convenient reach when facing the load or travel direction. (MGW-SVX-452651, Vol 1, Sec 2)
(c)(1)(ii)	Cab located to afford a minimum of 3 inches clearance from all fixed structures within its area of possible movement.	Not applicable. The CSB receiving crane does not provide a cab. (W-379-P-CSB-14620)
(c)(2)	Access to crane provided by conveniently placed fixed ladder, stair, or platform requiring no step over any gap exceeding 12 inches.	The CSB receiving crane is designed with a conveniently placed fixed ladders, stairs, and platforms which have no step overs with any gap exceeding 12 inches (MGW-SVX-452651, Vol 1, Sec 2 and Vol 3, Sec 1). However, toeboards should be installed at the gantry walkway near the trolley rail side to preclude slipping in between the walkway and the trolley rail box girder (MGW-SVX-452651, Vol 3, Sec 1).

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Section	Performance Requirement	Current Design Compliance
(c)(3)	Fire extinguisher properly provided.	Not applicable. The CSB receiving crane does not provide a cab (W-379-P-CSB-14620). However, the CSB facility should provide a fire extinguisher near or at the shielded operator stations.
(c)(4)	Lighting provided in the cab sufficient to enable the operator to see clearly enough to perform work.	Not applicable. The CSB receiving crane does not provide a cab (W-379-P-CSB-14620). However, the lighting should be provided above the shielded operator stations.

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Section	Performance Requirement	Current Design Compliance
(d)	Footwalks and ladders-	
(d)(1)	Location of footwalks	
(d)(1)(i)	If sufficient head room is available on cab-operated cranes, provide a footwalk on the drive side along the entire length of the bridge of all cranes having the trolley running on the top of the girders.	The CSB receiving crane designed with a footwalk on the drive side along the entire length of the bridge of the trolley running on the top of the girders (MGW-SVX-452651, Vol 1, Sec 2 and Vol 3, Sec 1). However, the ladder design for the trolley walkway should require a wing rail on the outside of the ladder to preclude falling from the west side of the gantry and trolley.
(d)(1)(ii)	Headroom of ≥48 inches provided for footwalks.	The CSB receiving crane designed with over 6 foot of headroom for the footwalks except when traveling through the inner door lock which is 2 foot and 10 3/4 inches clearance above the trolley walkway. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 2)
(d)(2)	Construction of footwalks	

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Section	Performance Requirement	Current Design Compliance
(d)(2)(i)	Footwalks are of rigid construction and designed sustain a distributed load ≥50 pounds per square foot.	The CSB receiving crane designed with footwalks that are of rigid construction and designed to sustain a distributed load ≥50 pounds per square foot per NOG-4473 (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 3, Sec 1)
(d)(2)(ii)	Footwalks have a walking surface of antislip type.	The CSB receiving crane designed footwalks with antislip diamond plate construction per NOG-4471 (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 3, Sec 1)
(d)(2)(iii)	[Reserved]	
(d)(2)(iv)	Inner edge extended at least to the line of the outside edge of the lower cover plate or flange of the girder.	The CSB receiving crane designed with footwalks Inner edge extended at least to the line of the outside edge of the lower cover plate or flange of the girder except on the west girder footwalk per NOG-4473 (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 2). The west girder footwalk has the inner edge extended to the line of the outside edge of the upper cover plate of the box girder, and a toeboard should be installed to stop slipping into the opening or falling objects.
(d)(3)	Toeboards and handrails for footwalks properly provided in compliance with Section 1910.23.	Toeboards and handrails for footwalks designed in accordance with OSHA per NOG-4470. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 2)

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Section	Performance Requirement	Current Design Compliance
(d)(4)	Ladders and stairways	
(d)(4)(i)	Gantry cranes provided with ladders or stairways extending from the ground to the footwalk or cab platform.	The CSB receiving crane designed with ladders or stairways extending from the ground to the footwalk per ASME B30.2. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 2)
(d)(4)(ii)	Stairway equipped with rigid and substantial metal handrails and walking surfaces antislip.	The CSB receiving crane designed with stairways equipped with rigid and substantial metal handrails per NOG-4470 (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 2), and designed with footwalks of diamond plate construction per NOG-4470 and ASME B30.2 (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 3, Sec 1).
(d)(4)(iii)	Ladders permanently and securely fastened inplace and constructed in compliance with Section 1910.27.	The CSB receiving crane ladders designed in accordance with OSHA per NOG-4470. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 2)

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Section	Performance Requirement	Current Design Compliance
(e)	Stops, bumpers, rail sweeps, and guards-	
(e)(1)	Trolley stops	
(e)(1)(i)	Stops provided at the limit of travel of the trolley.	The CSB receiving crane designed with trolley stops per ASME B30.2. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 2)
(e)(1)(ii)	Stops fastened to resist forces applied when contacted.	The CSB receiving crane designed with trolley stops that are welded to the bridge per ASME B30.2. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 2)
(e)(1)(iii)	Stops engaging the tread of the wheel is of a height at least equal to the radius of the wheel.	The CSB receiving crane designed with trolley stops that engage the tread of the wheel at a height at least equal to the radius of the wheel. (MGW-SVX-452651, Vol 1, Sec 2)
(e)(2)	Bridge bumpers	
(e)(2)(i)	Crane provided with bumpers or other automatic means of effect.	The CSB receiving crane designed with bumpers per ASME B30.2. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 2 and Vol 2, Sec 6)

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Section	Performance Requirement	Current Design Compliance
(e)(2)(i)(a)	Bumpers have sufficient energy absorbing capacity to stop the crane when traveling at a speed of at least 40% of the rated load speed.	The CSB receiving crane bumpers are designed to have sufficient energy absorbing capacity at 40% of the rated load speed per ASME B30.2. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 2, Sec 6)
(e)(2)(i)(b)	Bumpers mounted so no direct shear on bolts.	The CSB receiving crane bumpers designed with mounts with no direct shear on bolts. (MGW-SVX-452651, Vol 1, Sec 2 and Vol 2, Sec 6)
(e)(2)(ii)	Bumpers designed and installed to minimize parts falling from crane from brakeage.	The CSB receiving crane bumpers designed and installed to minimize parts falling from crane from brakeage per ASME B30.2. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 2 and Vol 2, Sec 6)
(e)(3)	Trolley bumpers	
(e)(3)(i)	Trolley provided with bumpers or other automatic means of effect.	The CSB receiving crane designed with bumpers per ASME B30.2. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 2 and Vol 2, Sec 6)
(e)(3)(ii)	When more than one trolley is operated on the same bridge, each is equipped with bumpers or equivalent on their adjacent ends.	Not applicable. The CSB receiving crane does not have more than one trolley. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 2)

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Section	Performance Requirement	Current Design Compliance
(e)(3)(iii)	Bumpers or equivalent designed and installed to minimize parts falling from crane from brakeage.	The CSB receiving crane bumpers designed and installed to minimize parts falling from crane from brakeage per ASME B30.2. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 2 and Vol 2, Sec 6)
(e)(4)	Bridge trucks equipped with sweeps which extend below the top of the rail and project in front of the truck wheels.	Not applicable. The CSB receiving crane bridge trucks are not equipped with sweeps because bridge stops are used in the CSB facility [ASME 30.2, Section 2-1,9(b)]. Bridge stops are provided by the CSB facility. (W-379-P-CSB-14620)
(e)(5)	Guards for hoisting ropes	
(e)(5)(i)	Hoist rope guards provided for running near other parts which could cause fouling or chafing.	The CSB receiving crane main and auxiliary hoist sheave assemblies are designed with sheave guards to prevent fouling or chafing per ASME B30.2. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 17&18)
(e)(5)(ii)	Guard provided to prevent contact between bridge conductors and hoisting ropes (if in contact).	Not applicable. The CSB receiving crane ropes are not in contact with the festooned cables which are located away from the ropes. However, the crane is required to provide guards to prevent contact between bridge conductors and hoisting ropes (if in contact) per ASME B30.2. (W-379-P-CSB-14620)

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Section	Performance Requirement	Current Design Compliance
(e)(6)	Guards for moving parts	
(e)(6)(i)	Exposed moving parts guarded.	The CSB receiving crane designed with chain cover for the main block assembly chain and sprockets, and gear covers for the hoist gearboxes per ASME B30.2. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 6, 9, &17)
(e)(6)(ii)	Guards securely fastened.	The CSB receiving crane guards are designed to be fastened with screws and bolts. (MGW-SVX-452651, Vol 1, Sec 6, 9, &17)
(e)(6)(iii)	Each guard capable of supporting without permanent distortion a 200-pound person unless the guard is located where it is impossible for a person to step on it.	The CSB receiving crane gear cover designs for the hoist gearboxes are capable off supporting a 200 pound person per ASME B30.2. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 6 & 9)

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Section	Performance Requirement	Current Design Compliance
(f)	Brakes	
(f)(1)	Brakes for hoists	
(f)(1)(i)	Each independent hoisting unit of a crane equipped with at least one holding brake and applied directly to the motor shaft or some part of the gear train.	The CSB receiving crane hoists are designed with brakes per ASME B30.2. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 6 & 9)
(f)(1)(ii)	Each independent hoisting unit of a crane (except worm-geared hoists) equipped with control braking means to prevent overspeeding.	The CSB receiving crane hoists are designed with overspeed limit switches that detect over speed and shutdown the hoist motor and control braking applies the brake per ASME B30.2. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 3, Sec 6)
(f)(2)	Holding brakes	
(f)(2)(i)	Holding brakes for hoist motors have no less than following percentage of the full load hoisting torque at the point where the brake is applied.	
(f)(2)(i)(a)	125% when used with a control braking means other than mechanical.	The CSB receiving crane hoists are designed to Type I controlled braking which has a torque rating not less than 125% at full (rated) load hoisting torque at the point of brake application per NOG-5414.1 and NOG-6422.1. (W-379-P-CSB-14620)

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Section	Performance Requirement	Current Design Compliance
(f)(2)(i)(b)	100% when used in conjunction with a mechanical control braking means.	Not applicable. The CSB receiving crane does use mechanical/electrical load control brakes. (W-379-P-CSB-14620)
(f)(2)(i)(c)	100% each if two holding brakes are provided.	The CSB receiving crane is designed to ASME NOG-1, Type 1 (W-379-P-CSB-14620). See (f)(2)(i)(a) above.
(f)(2)(ii)	Holding brakes on hoists have ample thermal capacity for the frequency of operation required by the service.	The CSB receiving crane holding brakes are designed to have thermal ratings for the frequency and duration of the specified operations, and thermal time ratings are equal or greater than corresponding drive motor time rating per NOG-5414.1 and NOG-6421.3. (W-379-P-CSB-14620)
(f)(2)(iii)	Holding brakes on hoists apply automatically when power is removed.	The CSB receiving crane holding brakes designed to apply automatically from loss of power. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 3, Sec 6)
(f)(2)(iv)	Holding brakes provided with adjustable means to compensate for wear.	The CSB receiving crane holding brakes are designed with adjustable means to compensate for wear per NOG-5414.1 and NOG-6421.4. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 5 & 8)
(f)(2)(v)	Wear surfaces of all holding-brake drums or discs are smooth.	The CSB receiving crane holding brake drums or discs designed to be free of defects that interfere with operation per NOG-5414.1, NOG-6421.1 and ASME 30.2. (W-379-P-CSB-14620)

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Section	Performance Requirement	Current Design Compliance
(f)(2)(vi)	Each independent hoisting unit of a crane handling hot metal and having power control braking are equipped with at least two holding brakes.	Not applicable. The CSB receiving crane does not handle hot metal. However, the Type I crane is designed to have two holding brakes for each hoist per NOG-5414.1, NOG-6421.1 and ASME 30.2. (W-379-P-CSB-14620)
(f)(3)	Control braking means	
(f)(3)(i)	Power control braking means capable of maintaining safe lowering speeds of rated loads.	The CSB receiving crane power control braking designed for maintaining safe lowering speeds of the rated loads per NOG-5414.1, NOG-6421.1 and ASME 30.2. (W-379-P-CSB-14620)
(f)(3)(ii)	Control braking means have ample thermal capacity for the frequency of operation required by service.	The CSB receiving crane control braking designed to have ample thermal capacity for the frequency of operation required by service per NOG-5414.1, NOG-6421.1 and ASME 30.2. (W-379-P-CSB-14620)
(f)(4)	Brakes for trolleys and bridges	
(f)(4)(i)	Foot-operated brake application provides a ≤70 pounds force to develop manufacturer's rated brake torque.	Not applicable. The CSB receiving crane does not use mechanical control brakes. (W-379-P-CSB-14620)
(f)(4)(ii)	Brakes may be applied by mechanical, electrical, pneumatic, hydraulic, or gravity means.	The CSB receiving crane brakes designed to apply electrical, hydraulic, and gravity means per ASME 30.2. (W-379-P-CSB-14620)

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Section	Performance Requirement	Current Design Compliance
(f)(4)(iii)	Brakes provided with adjustment means to compensate for wear.	The CSB receiving crane brakes designed with adjusting means to compensate for liner wear per ASME 30.2. (W-379-P-CSB-14620)
(f)(4)(iv)	Wearing surfaces of all brakedrums or discs to be smooth.	The CSB receiving crane brakes drums or discs designed to be free of defects that interfere with operation per ASME 30.2. (W-379-P-CSB-14620)
(f)(4)(v)	Foot-brake pedals are constructed so that the operator's foot will not easily slip off the pedal.	Not applicable. The CSB receiving crane does not use foot-brake pedals. (W-379-P-CSB-14620 and MGW-SVX-452651)
(f)(4)(vi)	Foot-operated brakes equipped with automatic means for positive release when pressure is released from the pedal.	Not applicable. The CSB receiving crane does not use foot-operated brakes. (W-379-P-CSB-14620 and MGW-SVX-452651)
(f)(4)(vii)	Brakes for stopping motion of the trolley or bridge are sufficient size to stop trolley or bridge within a distance in feet equal to 10% of the full load speed in ft/min when traveling at full speed with full load.	The CSB receiving crane brakes for stopping motion of the trolley or bridge (except for emergency braking) are designed of sufficient size to stop trolley or bridge within a distance in feet equal to 10% of the full load speed in ft/min when traveling at full speed with full load per ASME 30.2. (W-379-P-CSB-14620)
(f)(4)(viii)	If holding brakes are provided on the bridge or trolleys, they do not prohibit the use of a drift point in the control circuit.	The CSB receiving crane brakes designed to not prohibit the use of a drift point in the control circuit per ASME 30.2. (W-379-P-CSB-14620)

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Section	Performance Requirement	Current Design Compliance
(f)(4)(ix)	Brakes on trolleys and bridges have ample thermal capacity for the frequency of operation required for the service to prevent impairment of the functions from overheating.	The CSB receiving crane brakes designed to have ample thermal capacity for the frequency of operation required by having ample thermal capacity for the frequency of operation required for the service per ASME 30.2. (W-379-P-CSB-14620)
(f)(5)	Application of trolley brakes	
(f)(5)(i)	Trolley brakes required on cab-operated cranes with cab on trolley [see (f)(4)].	Not applicable. The CSB receiving crane does not have a cab. (W-379-P-CSB-14620)
(f)(5)(ii)	Drag brake may be applied to hold the trolley in a desired position on the bridge and eliminate creep with power off.	The CSB receiving crane is designed with controlled activation of the mechanical/electrical holding brake with power off. (MGW-SVX-452651)
(f)(6)	Application of bridge brakes	
(f)(6)(i)	Bridge brakes required on cab-operated cranes with cab on bridge [see (f)(4)].	Not applicable. The CSB receiving crane does not have a cab. (W-379-P-CSB-14620)
(f)(6)(ii)	Holding type bridge brakes required on cab-operated cranes with cab on bridge.	Not applicable. The CSB receiving crane does not have a cab. (W-379-P-CSB-14620)
(f)(6)(iii)	All floor, remote and pulpit-operated crane bridge drives require non-coasting mechanical drive brakes.	The CSB receiving crane bridge drives designed with an emergency brake per ASME 30.2. (W-379-P-CSB-14620)

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Section	Performance Requirement	Current Design Compliance
(g)	Electric equipment -	
(g)(1)	General	
(g)(1)(i)	Wiring and equipment comply with subpart S.	The CSB receiving crane designed to comply with the NEC, NOG-6000, the construction specification 16610 per W-379-P-CSB-14620.
(g)(1)(ii)	Control circuit voltage ≤600 vac or vdc.	The CSB receiving crane designed for control circuit voltage of ≤600 vac per ASME 30.2. (W-379-P-CSB-14620)
(g)(1)(iii)	Voltage at pendent push-buttons ≤150 vac or ≤300vdc.	Not applicable. The CSB receiving crane does not have a pendent.
(g)(1)(iv)	Suspended push-button station multiple conductor cable supported in some satisfactory manner that will protect the electrical conductors against strain.	Not applicable. The CSB receiving crane does not have a pendent.
(g)(1)(v)	Pendent control boxes constructed to prevent shock and clearly marked for identification of functions.	Not applicable. The CSB receiving crane does not have a pendent.

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Section	Performance Requirement	Current Design Compliance
(g)(2)	Equipment	
(g)(2)(i)	Electrical equipment located or enclosed that live parts will not be exposed to accidental contact under normal operating conditions.	The CSB receiving crane electrical equipment designed to be located or enclosed so that live parts will not be exposed to accidental contact under normal operating conditions per ASME 30.2. (W-379-P-CSB-14620)
(g)(2)(ii)	Electrical equipment protected from dirt, grease, oil, and moisture.	The CSB receiving crane electrical equipment designed to be protected from dirt, grease, and oil per ASME 30.2. (W-379-P-CSB-14620)
(g)(2)(iii)	Guards are substantial and located to prevent deformation and contact with live parts.	The CSB receiving crane guards are designed to be substantial and located to prevent deformation and contact with live parts per ASME 30.2. (W-379-P-CSB-14620)
(g)(3)	Controllers	
(g)(3)(i)	Cranes not equipped with spring-return controllers or momentary contact pushbuttons provided with a device which will disconnect all motors from the line on failure of power and will not permit any motor to be restarted until the controller handle is brought to the off position, or a reset switch or button is operated.	Not applicable. The CSB receiving crane designed with spring-return controllers and momentary contact pushbuttons. (MGW-SVX-452651, Vol 2, Sec 14)

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Section	Performance Requirement	Current Design Compliance
(g)(3)(ii)	Lever operated controllers provided with notch or latch which in the off position prevents the handle from being inadvertently moved to the on position.	Not applicable. The CSB receiving crane is not controlled with Lever operated controllers, and the designed joystick lever controllers return to the off position. (MGW-SVX-452651, Vol 2, Sec 14)
(g)(3)(iii)	Controller operating handle located with convenient reach of the operator.	The CSB receiving crane controller operating handle design locates the handles in convenient reach of the operator per ASME 30.2. (W-379-P-CSB-14620)
(g)(3)(iv)	Movement of each controller handle is the same general directions as the load movements.	The CSB receiving crane design for movement of each controller handle is in the same general directions as the load movements per ASME 30.2. (W-379-P-CSB-14620)
(g)(3)(v)	Control of the bridge and trolley travel located to face the operator in the direction of the travel.	The CSB receiving crane control of the bridge and trolley travel location design is to face the operator in the direction of the travel. (MGW-SVX-452651,Vol 1, Sec 2 and Vol 2, Sec 14)
(g)(3)(vi)	Rope operated, floor-operated crane controller or controllers automatically return to the off position when released by the operator.	The CSB receiving crane floor-operated crane controller or controllers designed to automatically return to the off position when released by the operator per ASME 30.2. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 2)
(g)(3)(vii)	Pushbuttons in pendent stations return to the off position when pressure is released by the crane operator.	Not applicable. The CSB receiving crane does not use a pendent station. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 2)

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Section	Performance Requirement	Current Design Compliance
(g)(3)(viii)	Automatic cranes designed for all motions to fail-safe when malfunction of operations occurs.	The CSB receiving crane designed for all motions to fail-safe when malfunction of operations occurs per ASME 30.2. (W-379-P-CSB-14620 and MGW-SVX-452651,Vol 1, Sec 2
(g)(3)(ix)	Remote-operated cranes function so that if the control signal for any crane motion becomes ineffective the crane motion stops.	The CSB receiving crane design functions so that if the control signal for any crane motion becomes ineffective the crane motion stops per ASME 30.2. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 2)
(g)(4)	Resistors	
(g)(4)(i)	Enclosures for resistors have openings to provide adequate ventilation, and installed to prevent the accumulation of combustible matter near hot parts.	The CSB receiving crane design provides enclosures for resistors that have openings to provide adequate ventilation, and prevents the accumulation of combustible matter near hot parts per ASME 30.2. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 2, Sec 15)
(g)(4)(ii)	Resistor units supported free of vibration.	The CSB receiving crane resistor units designed to be supported and free of vibration per ASME 30.2. (W-379-P-CSB-14620)
(g)(4)(iii)	Provisions made to prevent broken parts or molten metal falling upon the operator or from the crane.	The CSB receiving crane design provisions made to prevent broken parts or molten metal falling upon the operator or from the crane per ASME 30.2. (W-379-P-CSB-14620)

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Section	Performance Requirement	Current Design Compliance
(g)(5)	Switches	
(g)(5)(i)	Power supply to the runway conductor controlled by a switch or circuit braker located on a fixed structure, accessible from the floor, and arranged to be locked in the open position.	Not applicable. The CSB facility to provide circuit breaker for power to the receiving crane per ASME 30.2 (W-379-P-CSB-14620). The CSB receiving crane has secondary protection capability with circuit brakers located on a fixed structure, accessible from the floor. (MGW-SVX-452651, Vol 2, Sec 15)
(g)(5)(ii)	Cab-operated crane enclosed type, switch or circuit breaker provided in the leads from the runway conductors with provisions for locking in the open position.	Not applicable. The CSB receiving crane is not a cab operated crane. (W-379-P-CSB-14620)
(g)(5)(iii)	Floor-operated crane enclosed type, switch or circuit breaker provided in the leads from the runway conductors with provisions for locking in the open position (see following type of disconnects a-c).	The CSB receiving crane control station is designed with switch or circuit breakers in the leads from the runway conductors with provisions for locking in the open position per ASME 30.2. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 2, Sec 15)
(g)(5)(iii)(a)	Floor-operated disconnect type nonconductive rope attached to the main disconnect switch.	Not applicable. The CSB facility to provide circuit breaker for power to the receiving crane. (W-379-P-CSB-14620)

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Section	Performance Requirement	Current Design Compliance
(g)(5)(iii)(b)	Floor-operated disconnect type undervoltage trip for the main circuit breaker operated by an emergency stop button in the pendent push-button in the pendent push-button station.	Not applicable. The CSB receiving crane does not use a pendent station. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 2)
(g)(5)(iii)(c)	Floor-operated disconnect type main line contractor operated by a switch or push-button in the pendent push-button station.	Not applicable. The CSB receiving crane does not use a pendent station. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 2)
(g)(5)(iv)	All electrical traveling crane's hoisting motion provided with an overall limit switch in the hoisting direction.	The CSB receiving crane hoisting motion designed with an overall limit switch in the hoisting direction per ASME 30.2. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 12 and Vol 2, Sec 5)
(g)(5)(v)	All cranes using a lifting magnet have a magnet circuit switch of the enclosed type with provisions for locking in the open position.	Not applicable. The CSB receiving crane does not use lifting magnet.
(g)(6)	Runway conductors of the open type mounted on the crane runway beams or overhead located and so guarded that persons entering or leaving the cab or crane footwalk normally could not come into contact with them.	The CSB receiving crane runway conductors designed with the open type mounted on the crane runway beams or overhead located, and guarded so that persons entering or leaving the cab or crane footwalk normally could not come into contact with them per ASME 30.2. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 1, Sec 16 and Vol 2, Sec 7&8)

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Section	Performance Requirement	Current Design Compliance
(g)(7)	Extension lamp service receptacle provided in the cab or on the bridge of cab-operated cranes grounded with three-prong type permanent receptacle not to exceed 300 volts.	Not applicable. The CSB receiving crane is not cab operated. (W-379-P-CSB-14620)

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Section	Performance Requirement	Current Design Compliance
(h)	Hoisting Equipment	
(h)(1)	Sheaves	
(h)(1)(i)	Sheaves grooves smooth and free from surface defects which could cause rope damage.	The CSB receiving crane sheaves grooves smooth and free from surface defects which could cause rope damage per ASME 30.2. (W-379-P-CSB-14620 and MGW-SVX-452651)
(h)(1)(ii)	Sheaves carrying ropes which can be momentarily unloaded provided with close-fitting guards or other suitable devices to guide rope back into the groove when the load is applied again.	The CSB receiving crane sheaves carrying ropes which can be momentarily unloaded provided with close-fitting guards or other suitable devices per ASME 30.2. (W-379-P-CSB-14620 and MGW-SVX-452651)
(h)(1)(iii)	Sheaves in the bottom block equipped with close-fitting guards to prevent fouling.	The CSB receiving crane sheaves in the bottom block designed with close-fitting guards to prevent fouling per ASME 30.2. (W-379-P-CSB-14620 and MGW-SVX-452651)
(h)(1)(iv)	Pockets and flanges of sheaves used with hoist chains of such dimensions that the chain does not catch or bind during operation.	Not applicable. The CSB receiving crane does not use hoist chains.
(h)(1)(v)	All running sheaves equipped with means for lubrication.	The CSB receiving crane running sheaves designed with means for lubrication per ASME 30.2. (W-379-P-CSB-14620 and MGW-SVX-452651)

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Section	Performance Requirement	Current Design Compliance
(h)(2)	Ropes	
(h)(2)(i)	Crane manufacturer's recommendation followed when using hoisting ropes.	The CSB receiving crane manufacturer's recommendation followed when using hoisting ropes per ASME 30.2. (W-379-P-CSB-14620 and MGW-SVX-452651)
(h)(2)(ii)	Socketing to be done in the manner specified by the manufacturer of the assembly.	The CSB receiving crane socketing to be done in the manner specified by the manufacturer of the assembly per ASME 30.2. (W-379-P-CSB-14620 and MGW-SVX-452651)
(h)(2)(iii)	Rope secured to the drum as follows.	
(h)(2)(iii)(a)	No less than two wraps of rope remain on the drum when the hook is in its extreme low position.	The CSB receiving crane designed for no less than two wraps of rope remain on the drum when the hook is in its extreme low position per ASME 30.2. (W-379-P-CSB-14620 and MGW-SVX-452651)
(h)(2)(iii)(b)	Rope end anchored by a clamp securely attached to the drum or by a socket arrangement approved by the crane or rope manufacturer.	The CSB receiving crane designed with rope end anchored by a clamp securely attached to the drum or by a socket arrangement per ASME 30.2. (W-379-P-CSB-14620 and MGW-SVX-452651)
(h)(2)(iv)	Eye Splices [Reserved]	

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Section	Performance Requirement	Current Design Compliance
(h)(2)(v)	Rope clips attached with U-bolts have the U-bolts on the dead or short end of the rope.	The CSB receiving crane designed with rope clips attached with U-bolts have the U-bolts on the dead or short end of the rope per ASME 30.2. (W-379-P-CSB-14620 and MGW-SVX-452651)
(h)(2)(vi)	Swaged or compressed fittings applied as recommended by the rope or crane manufacturer.	The CSB receiving crane swaged or compressed fittings applied as recommended by the rope or crane manufacturer per ASME 30.2. (W-379-P-CSB-14620)
(h)(2)(vii)	Whenever exposed to temperatures, at which fiber cores would be damaged, use rope having an independent wirerope or wire-strand core, or other temperature-damage resistant core.	Not applicable. The CSB receiving crane not in a extremely high or low temperature building atmosphere. (W-379-P-CSB-14620)
(h)(2)(viii)	Replacement rope to be the same size, grade, and construction as the original rope furnished by the crane manufacturer, unless otherwise recommended by a wire rope manufacturer due to actual working condition requirements.	Not applicable. The CSB receiving crane is a new crane assembly. The CSB facility design criteria for replacement rope should be the same size, grade, and construction as the original rope furnished by the crane manufacturer, unless otherwise recommended by a wire rope manufacturer due to actual working condition requirements per ASME 30.2. (W-379-P-CSB-14620)
(h)(3)	If a load is supported by more than one part of rope, the tension in the parts is equalized.	The CSB receiving crane rope design, If a load is supported by more than one part of rope, the tension in the parts is equalized per ASME 30.2. (W-379-P-CSB-14620)

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Section	Performance Requirement	Current Design Compliance
(h)(4)	Hooks meet the manufacturer's recommendations and not overloaded.	Not applicable. The CSB receiving crane hooks are part of the new crane assembly. The CSB facility should procure additional or new hooks that meet the manufacturer's recommendations and are not overloaded per ASME 30.2. (W-379-P-CSB-14620)

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Section	Performance Requirement	Current Design Compliance
(i)	Except for floor-operated cranes, a gong or other effective warning device provided for each crane equipped with a power traveling mechanism.	The CSB receiving crane warning lights and horns designed for bridge and trolley per ASME 30.2. (W-379-P-CSB-14620 and MGW-SVX-452651, Vol 2, Sec 13)

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Section	Performance Requirement	Current Design Compliance
(j)	Inspection	
(j)(1)	Inspection Classification	
(j)(1)(i)	Prior to use of all new and altered cranes, cranes to be inspected to insure compliance with the provisions of this section.	Not applicable. The CSB receiving crane Inspection procedure for crane manufacture is per NOG-7000. The CSB facility should inspect the receiving crane prior to operation to insure compliance per ASME 30.2. (W-379-P-CSB-14620 and MGW-SVX-45651)
(j)(1)(ii)	Inspection procedure for cranes in regular service is divided into two general classifications based on the intervals at which inspection should be performed.	See (j)(1)(i) above.
(j)(1)(ii)(a)	Frequent inspection interval (Daily to monthly).	See (j)(1)(i) above.
(j)(1)(ii)(b)	Periodic inspection interval (1 to 12-month).	See (j)(1)(i) above.
(j)(2)	Frequent inspections are items inspected for defects at daily to monthly intervals or as specially indicated for any defects which might appear between regular inspections for the following deficiencies.	
(j)(2)(i)	All functional operating mechanisms for maladjustment interfering with proper operation inspected daily.	See (j)(1)(i) above.

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Section	Performance Requirement	Current Design Compliance
(j)(2)(ii)	Deterioration or leakage in lines, tanks, valves, drain pumps, an other parts of air or hydraulic systems inspected daily.	See (j)(1)(i) above.
(j)(2)(iii)	Hooks with deformations or cracks visually inspected daily and monthly which includes monthly inspection certification records.	See (j)(1)(i) above.
(j)(2)(iv)	Hoist chains, including end connections, visually inspected daily for excessive wear, twist, distorted links interfering with proper function, or stretch beyond manufacturer's recommendations.	See (j)(1)(i) above.
(j)(2)(v)	[Reserved]	
(j)(2)(vi)	All functional operating mechanisms for excessive wear of components inspected daily to monthly.	See (j)(1)(i) above.
(j)(2)(vii)	Rope reeving for noncompliance with manufacturer's recommendations inspected daily to monthly.	See (j)(1)(i) above.
(j)(3)	Periodic inspections are complete inspections of cranes performed at 1 to 12-month intervals depending upon its activity, severity of service, and environment or as specifically indicated as follows.	See (j)(1)(i) above.
(j)(3)(i)	Periodic inspection for deformed, cracked, or corroded members.	See (j)(1)(i) above.

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Section	Performance Requirement	Current Design Compliance
(j)(3)(ii)	Periodic inspection for loose bolts or rivets.	See (j)(1)(i) above.
(j)(3)(iii)	Periodic inspection for cracked or worn sheaves and drums.	See (j)(1)(i) above.
(j)(3)(iv)	Periodic inspection for worn, cracked or distorted parts such as pins, bearings, shafts, gears, rollers, locking and clamping devices.	See (j)(1)(i) above.
(j)(3)(v)	Periodic inspection for excessive wear on brake system parts, linings, pawls, and ratchets.	See (j)(1)(i) above.
(j)(3)(vi)	Periodic inspection of load, wind, and other indicators over their full range, for any significant inaccuracies.	See (j)(1)(i) above.
(j)(3)(vii)	Periodic inspection of gasoline, diesel, electric, and other powerplants for improper performance or noncompliance with applicable safety requirements.	See (j)(1)(i) above.
(j)(3)(viii)	Periodic inspection for excessive wear of drive sprockets and excessive chain stretch.	See (j)(1)(i) above.
(j)(3)(ix)	[Reserved]	
(j)(3)(x)	Periodic inspection of electrical apparatus, for signs of pitting or any deterioration of controller contactors, limit switches and push-button stations.	See (j)(1)(i) above.

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Section	Performance Requirement	Current Design Compliance
(j)(4)	Cranes not in regular use.	
(j)(4)(i)	Crane idle for a period of ≥1 to <6 months is inspected per (j)(2) and (m)(2).	See (j)(1)(i) above.
(j)(4)(ii)	Crane idle for period of over 6 months is inspected per (j)(2), (j)(3) and (m)(2).	See (j)(1)(i) above.
(j)(4)(iii)	Standby cranes inspected at least semi-annually per (j)(2) and (m)(2).	See (j)(1)(i) above.

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Section	Performance Requirement	Current Design Compliance
(k)	Testing	
(k)(1)	Operational tests	
(k)(1)(i)	Prior to initial use of all new and altered cranes, cranes tested to insure compliance with this section including the following functions.	Not applicable. The CSB receiving crane test procedure for crane manufacture is per NOG-7000. The CSB facility should test the receiving crane prior to operation to insure compliance per ASME 30.2. (W-379-P-CSB-14620 and MGW-SVX-45651)
(k)(1)(i)(a)	Hoisting and lowering.	See (k)(1)(i) above.
(k)(1)(i)(b)	Trolley travel.	See (k)(1)(i) above.
(k)(1)(i)(c)	Bridge travel.	See (k)(1)(i) above.
(k)(1)(i)(d)	Limit switches, locking and safety devices.	See (k)(1)(i) above.
(k)(1)(ii)	Trip setting of hoist limits switches determined by tests with an empty hook traveling in increased speeds up to the maximum speed.	See (k)(1)(i) above.

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Section	Performance Requirement	Current Design Compliance
(k)(2)	Rated load test tests loads to be more than 125% of the rated load unless otherwise recommended by the manufacturer.	See (k)(1)(i) above.

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Section	Performance Requirement	*Current Design Compliance*
(l)	Maintenance	
(l)(1)	Establish a preventive maintenance program based on the crane manufacturers recommendations.	Not applicable. The CSB facility should provide maintenance program per ASME 30.2. (W-379-P-CSB-14620)
(l)(2)	Maintenance procedure.	
(l)(2)(i)	Before adjustments and repairs are started on a crane the following precautions are taken:	
(l)(2)(i)(a)	Crane to be repaired to run to a location where it will cause the least interference with other cranes and operations in the area.	See (l)(2)(i) above.
(l)(2)(i)(b)	All controllers in the off position.	See (l)(2)(i) above.
(l)(2)(i)(c)	Main or emergency switch to be open and locked in the open position.	See (l)(2)(i) above.
(l)(2)(i)(d)	Warning or out of order signs to be placed on the crane, also on the floor beneath or on the hook where visible from the floor.	See (l)(2)(i) above.
(l)(2)(i)(e)	Where other cranes are in operation on the same runway, rail stops or other suitable means to be provided to prevent interference with the idle crane.	See (l)(2)(i) above.

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Section	Performance Requirement	Current Design Compliance
(l)(2)(ii)	After adjustments and repairs have been made, the crane is NOT to be operated until all guards have been reinstalled, safety devices reactivated, and maintenance equipment removed.	See (l)(2)(i) above.
(l)(3)	Adjustments and repairs.	
(l)(3)(i)	Any unsafe conditions disclosed by the inspection requirements of paragraph (j) to be corrected before operation of the crane is resumed.	See (l)(2)(i) above.
(l)(3)(ii)	Adjustments to be maintained to assure correct functioning of components (examples as follows).	See (l)(2)(i) above.
(l)(3)(ii)(a)	All functional operating mechanisms.	See (l)(2)(i) above.
(l)(3)(ii)(b)	Limit switches.	See (l)(2)(i) above.
(l)(3)(ii)(c)	Control systems.	See (l)(2)(i) above.
(l)(3)(ii)(d)	Brakes.	See (l)(2)(i) above.
(l)(3)(ii)(e)	Power plants.	See (l)(2)(i) above.

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Section	Performance Requirement	Current Design Compliance
(l)(3)(iii)	Repairs or replacements provided promptly as need for safe operation (examples as follows).	See (l)(2)(i) above.
(l)(3)(iii)(a)	Crane hook showing defects described in paragraph (j)(2)(iii) to be discarded.	See (l)(2)(i) above.
(l)(3)(iii)(b)	Load attachment chains and rope slings showing defects described in (j)(2)(iv) and (v).	See (l)(2)(i) above.
(l)(3)(iii)(c)	All critical parts which are cracked, broken, bent, or excessively worn.	See (l)(2)(i) above.
(l)(3)(iii)(d)	Pendent control stations to be kept clean and function labels kept legible.	See (l)(2)(i) above.

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Section	Performance Requirement	Current Design Compliance
(m)	Rope Inspection.-	Not applicable. The CSB receiving crane Inspection procedure for crane manufacture is per NOG-7000. The CSB facility should inspect the receiving crane periodically during operation to insure compliance per ASME 30.2. (W-379-P-CSB-14620 and MGW-SVX-45651)
(m)(1)	Running ropes are thoroughly inspected at least once a month and certification record kept on file (conditions are as follows).	See (m) above.
(m)(1)(i)	Reduction of rope diameter below nominal diameter due to loss of core support, internal or external corrosion, or wear of outside wires.	See (m) above.
(m)(1)(ii)	Number of broken outside wires and the degree of distribution or concentration of such broken wires.	See (m) above.
(m)(1)(iii)	Worn outside wires.	See (m) above.
(m)(1)(iv)	Corroded or broken wires at end connections.	See (m) above.
(m)(1)(v)	Corroded, cracked, bent, worn, or improperly applied end connections.	See (m) above.
(m)(1)(vi)	Severe kinking, crushing, cutting, or unstranding.	See (m) above.

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Section	Performance Requirement	Current Design Compliance
(m)(2)	Other ropes which have been idle for a period of a month or more from shutdown or storage of the crane on which it was installed to be given a thorough inspection before it is used.	See (m) above.

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Section	Performance Requirement	Current Design Compliance
(n)	Handling the load	Not applicable. The CSB facility should operate receiving crane per ASME 30.2 and CMAA 70. (W-379-P-CSB-14620)
(n)(1)	Size of load for the crane NOT to be loaded beyond its rated load except for test purposes per paragraph (k).	See (n) above.
(n)(2)	Attaching the load.	
(n)(2)(i)	Hoist chain or hoist rope free of kinks or twists, and NOT wrapped around the load.	See (n) above.
(n)(2)(ii)	Load attached to the load block hook by means of slings or other approved devices.	See (n) above.
(n)(2)(iii)	Care taken to make certain that the sling clears all obstacles.	See (n) above.
(n)(3)	Moving the load.	
(n)(3)(i)	Load well secured and properly balanced in the sling or lifting device before its is lifted more than a few inches.	See (n) above.
(n)(3)(ii)	Before starting to hoist the following conditions to be noted:	
(n)(3)(ii)(a)	Hoist rope NOT kinked.	See (n) above.

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Section	Performance Requirement	Current Design Compliance
(n)(3)(ii)(b)	Multiple part lines NOT twisted around each other.	See (n) above.
(n)(3)(ii)(c)	Hook brought over the load in such a manner to prevent swinging.	See (n) above.
(n)(3)(iii)	During Hoisting care taken as follows:	
(n)(3)(iii)(a)	No sudden acceleration or deceleration of the moving load.	See (n) above.
(n)(3)(iii)(b)	Load does NOT contact any obstructions.	See (n) above.
(n)(3)(iv)	Cranes NOT used for side pulls except when specifically authorized by a responsible person who has determined crane stability and stress on the crane.	See (n) above.
(n)(3)(v)	While any employee is on the load or hook, there is no hoisting, lowering, or traveling.	See (n) above.
(n)(3)(vi)	Employer requires that the operator avoid carrying loads over people.	See (n) above.
(n)(3)(vii)	Operator tests the brakes each time a load approaching the rated load is handled.	See (n) above.
(n)(3)(viii)	Load NOT lowered below the point where less than two full wraps of rope remain on the hoisting drum.	See (n) above.

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Section	Performance Requirement	Current Design Compliance
(n)(3)(ix)	When two or more cranes are used to lift a load, one qualified, responsible person shall be in charge of the operation.	See (n) above.
(n)(3)(x)	Employer insures that the operator does NOT leave his position at the controls while a load is suspended.	See (n) above.
(n)(3)(xi)	When starting a bridge and when the load or hook approaches near or over personnel, the warning signal is to be sounded.	See (n) above.
(n)(4)	Hoist limit switch.	
(n)(4)(i)	At the beginning of each operator's shift, the upper limit switch of each hoist to be tried out under no load.	See (n) above.
(n)(4)(ii)	Hoist limit switch which controls the upper limit of travel of the load block are never to be used as an operating control.	See (n) above.

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Section	Performance Requirement	Current Design Compliance
(o)	Other requirements, general	Not applicable. The CSB facility should be operated per ASME 30.2. (W-379-P-CSB-14620)
(o)(1)	Ladders	
(o)(1)(i)	Employer insures that hands are free from encumbrances while personnel are using ladders.	See (o) above.
(o)(1)(ii)	Articles which are to large to be carried in pockets or belts to be lifted and lowered by hand line	
(o)(2)	Cabs.	
(o)(2)(I)	Necessary clothing and personal belongings to be stored in such a manner as to not interfere with access or operation.	Not applicable. The CSB receiving crane does not provide a cab. (W-379-P-CSB-14620)
(o)(2)(ii)	Tools, oil cans, waste, extra fuses, and other necessary articles to be stored in the tool box, and NOT to be permitted to lie loose in or about the cab.	Not applicable. The CSB receiving crane does not provide a cab. (W-379-P-CSB-14620)
(o)(3)	Employer insures that operators are familiar with the operation and care of provided fire extinguishers.	Not applicable. The CSB facility will provide operating requirements. However, the CSB receiving crane should be operated per ASME 30.2. (W-379-P-CSB-14620)

ATTACHMENT 5

ANSI 57.9

COMPLIANCE MATRIX

SECTION 5.1 TRANSPORTATION PACKAGING HANDLING AREA

Section	Performance Requirement	Current Design Compliance
5.1.1	RECEIVING AND SHIPPING	
5.1.1.1	Provide for washdown of the transportation package for Design Event I.	Not in the CSB design-to-cost. Refer to FDH Letter FDH-9761261, Addendum 3 of Attachment 1 (FRF-2792).
5.1.1.2	Provide drainage from washdown areas near the flood drain for Design Event I.	Not in the CSB design-to-cost. (FRF-2792)
5.1.1.3	Provide equipment for off-loading and loading of transportation package for Design Event I.	The CSB facility designed a receiving crane for unloading/loading the MCO shipping casks transportation package, and the MHM (design by others) to transfer MCOs to the storage tubes per Sections 2.5.1 and 2.5.1.1. Refer to the Canister Storage Building Safety Analysis Report HNF-SD-SNF-RPT-004, Rev 7B (HNF-SD-SNF-RPT-004, Rev 7).
5.1.1.4	Provide auxiliary cooling (if required) to facilitate loading and off-loading for loaded packages for Design Event I.	Not applicable. The CSB facility does not require auxiliary cooling to facilitate loading and off-loading for loaded packages. (HNF-SD-SNF-RPT-004, Rev 7)
5.1.1.5	Provide restraints to prevent horizontal vehicle motion for vehicles being loaded or off-loaded for Design Event I.	Not applicable. The CSB facility does not require restraints to prevent horizontal vehicle motion for vehicles being loaded or off-loaded. (HNF-2793 and HNF-SD-SNF-RPT-004, Rev 7)

SECTION 5 - PERFORMANCE REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
5.1.2	DECONTAMINATION	
5.1.2.1	Provide thermal shielding to protect operators while decontaminating transportation packages for Design Events I and II.	Not applicable. The Cask temperature is determined to be 42° C (108° F) at the CSB facility per HNF-SD-TP-SARP-017, Rev 0. The CSB facility does not require decontaminating transportation packages. (HNF-SD-SNF-RPT-004, Rev 7)
5.1.2.2	Provide for drainage of wastewater and cleaning solutions for Design Events I and II.	Not in the CSB design-to-cost. (FRF-2792)
5.1.2.3	Provide radiological protection in accordance with 5.13.	The CSB facility radiological protection exposure limits are ALARA per Section 2.7.4 and 2.9 (HNF-SD-SNF-RPT-004, Rev 7) and CSB Design Basis Document FDI 80460200, Section 12.3.2 (DBD FDI 80460200).
5.1.3	MAINTENANCE	
5.1.3.1	Provide radiological protection in accordance with 5.13.	The CSB facility is designed for radiological protection means for maintenance per Sections 2.4 and 2.5. (HNF-SD-SNF-RPT-004, Rev 7)
5.1.3.2	Provide contamination control for open packages for Design Events I and II.	The CSB facility designed the mobile service station enclosure to confine contamination during operations at the MCO service station pit per Section 2.5.1.3. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 5 - PERFORMANCE REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
5.1.3.3	Provide lifting devices to handle package heads and package internals for Design Event I and to fail safe for Design Events II and III.	The CSB facility designed receiving crane transport cask lifting yoke and the MHM's MCO and shield plug grapples (designed by others) per Section 2.5. (HNF-SD-SNF-RPT-004, Rev 7)
5.1.3.4	Provide decontamination facilities for package components, tools, and system support equipment for Design Event I.	Not in the CSB design-to-cost. (FRF-2792)
5.1.3.5	Provide for control and disposal of radioactive material from the cleaning of package internals for Design Event I.	The CSB facility designed the mobile service station enclosure to confine contamination during operations at the MCO service station pit per Section 2.5.1.1. (HNF-SD-SNF-RPT-004, Rev 7)
5.1.4	PREPARATION	
5.1.4.1	Provide working structures for Design Event I that will allow ready access to the transportation package, with consideration for personnel as low as reasonably achievable (ALARA) requirements.	The CSB facility designed the mobile service station enclosure to confine contamination and ALARA concerns during operations at the MCO service station pit per Section 2.5.1.1 (HNF-SD-SNF-RPT-004, Rev 7), Section 12.3.1 (DBD FDI 80460200), and Drawing TN-3 (HNF-SD-TP-SARP-017).
5.1.4.2	Provide devices for handling secondary heads, heavy impact loads, or stud tensioners, for Design Event I.	The CSB facility designed impact absorbers for MCO shipping cask and MCOs per Sections 2.4.3 and 2.5.1.3; Figures 2-12 and 4-3. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 5 - PERFORMANCE REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
5.1.4.3	Provide systems required for cavity sampling, flushing, and off-gassing for Design Event I.	The CSB facility designed the mobile service station enclosure to confine contamination during off-gassing operations at the MCO service station pit per Section 2.5.1.2. (HNF-SD-SNF-RPT-004, Rev 7)
5.1.5	TRANSPORTATION PACKAGE HOLDING & TRANSFER	
5.1.5.1	Provide an area for the temporary storage of transportation packages for Design Event I.	Not applicable. The CSB facility does not provide temporary storage for the MCO shipping cask.
5.1.5.2	Provide transportation equipment to transfer the transportation package within the package handling area and into the fuel unit handling area for Design Event I and subsequent to Design Events II, III and IV.	The CSB facility designed the receiving crane and the MHM (designed by others) for transportation of the MCOs per Section 2.5.1. (HNF-SD-SNF-RPT-004, Rev 7)
5.1.5.3	Provide visual capability to allow observation of all operations in the package handling area for Design Event I.	Not applicable. The CSB facility does not provide visual capability to allow observation of all operations in the package handling area per Section 2.5. However, the CSB facility provides leaded window to allow observation by the receiving crane operator in the package handling area during MCO shipping cask operations, and the package handling area is a wide open area for observation of activities per Section 2.5.1.1 and Figure 4-6. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 5 - PERFORMANCE REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
5.1.5.4	Provide a system for transportation package placement and removal that does not require that the package pass over any other package and that minimizes the passing of one package close to another at the same level for Design Event I.	The CSB facility designed as a load-in/load-out area, receiving area, and vault operating area minimizes the passing of one package close to another at the same level per Section 2.5 and Figure 4-6. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 5.2 FUEL UNIT HANDLING AREA

Section	Performance Requirement	Current Design Compliance
5.2.1	LOADING AND UNLOADING	
5.2.1.1	Provide radiological protection in accordance with 5.13.	The CSB facility designed for radiological protection means for loading and unloading per Section 2.5. (HNF-SD-SNF-RPT-004, Rev 7)
5.2.1.2	Provide controls, interlocks, and alarms on shielded cell entryways to help prevent inadvertent or unauthorized entry into the shielded cell for Design Events I, II, and III.	Not applicable. The CSB facility does not provide any shielded cells. (HNF-SD-SNF-RPT-004, Rev 7)
5.2.1.3	Provide necessary capabilities for preliminary decontamination and packaging of contaminated equipment that is to be removed from the shielded cell for Design Event I.	Not in the CSB design-to-cost. (FRF-2792)
5.2.1.4	Provide visual capability, through lighting and shielded windows, to allow observation of all operations for Design Event I.	Not applicable. The CSB facility does not provide visual capability to allow observation of all operations per Section 2.5. However, the CSB facility provides a leaded window to allow observation by the receiving crane operator in the package handling area during MCO shipping cask operations, and the package handling area is a wide open area for observation of activities per Section 2.5.1.1 and Figure 4-6. (HNF-SD-SNF-RPT-004, Rev 7)
5.2.1.5	Provide ventilation of shielded cell for Design Events I, II, and III.	Not applicable. The CSB facility does not provide any shielded cells. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 5 - PERFORMANCE REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
5.2.1.6	Provide for remote handling of fuel units for Design Events II, III, and IV.	The CSB facility design provides for the MHM (provided by others) for remote handling of MCOs per Section 2.5. (HNF-SD-SNF-RPT-004, Rev 7)
5.2.1.7	Provide protection of the fuel units from damage for Design Events I and II. Criteria for the protection of fuel units during rod consolidation are contained in ANSI/ANS-57.10-1987.	Not applicable. The CSB facility handles MCOs with dry spent fuel baskets stored inside. (HNF-SD-SNF-RPT-004, Rev 7)
5.2.1.8	Provide the capability for special tooling to handle structurally damaged fuel units subsequent to Design Events II, III, and IV.	Not applicable. The CSB facility does not handle structurally damaged fuel units.
5.2.1.9	Provide capability to maintain fuel rod temperatures within allowable temperature-time relationships as required by 5.2.1.9.1 and 5.2.1.9.2 for Design Events I, II, III, and IV.	Not applicable. The CSB facility does not maintain fuel rod temperatures. However, the SNF MCO temperatures are maintained by the storage vault cooling air inlet and outlet components per Sections 2.3.3, 2.4, and 2.5. (HNF-SD-SNF-RPT-004, Rev 7)
5.2.1.9.1	Limit the fuel handling and storage temperature history of the fuel rods in unlimited air for Design Events I, II, and III such that no damaged fuel (see Section 2, Definitions) will occur by oxidation of the fuel pellets to U_3O_8. For Design Event IV, provide the capability of restoring sufficient cooling to prevent damage of the fuel rods that precludes retrievability.	Not applicable. The CSB facility designed for interim storage of damaged fuel rods scrapes (SNF) for future processing, and the MCO (designed by others) does not expose the stored fuel to air per HNF-SD-SNF-SARR-005.

SECTION 5 - PERFORMANCE REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
5.2.1.9.2	Limit the fuel handling and storage history of the fuel in a limited air or nonoxidizing atmosphere for Design Events I, II, and III such that no damaged fuel (see Section 2, Definition) will occur. For Design Event IV, provide the capability of restoring sufficient cooling or the nonoxidizing environment (if lost) to prevent damage of the fuel rods that precludes retrievability of fuel. This case requires an analysis be performed to demonstrate that fuel damage will not result from reactions with the amount of oxygen or other corrosive elements permitted by design in the storage atmosphere (see Section 2, Definitions).	The CSB facility designed for air cooled, storage vaults for contained, airtight MCOs with SNF for future processing per Section 2.5. (HNF-SD-SNF-RPT-004, Rev 7)
5.2.1.10	If required, provide lag storage capability for fuel units removed from the transportation package for Design Events I, II, III, and IV.	Not applicable. The CSB facility is not designed for lag storage. However, provisions exist to off-load MCOs in storage tubes awaiting sampling or welding.

SECTION 5.3 FUEL UNIT TRANSFER AREA

Section	Performance Requirement	Current Design Compliance
5.3.1	Provide protection of the fuel units from damage for Design Events I, II, and III.	The CSB facility design provides the storage tube and MCO service station pit impact absorbers, MCO shipping cask (design by others), and MHM (design by others) to protect the fuel during transfer per Section 2.5, Drawing H-2-120902, and Figure 2-10. (HNF-SD-SNF-RPT-004, Rev 7)
5.3.2	Provide for the transfer of fuel units between the fuel handling area and the storage area for Design Event I.	The CSB facility designed the receiving crane and the MHM (designed by others) for transportation of the MCOs per Sections 2.5.1 and 2.5.1.1. (HNF-SD-SNF-RPT-004, Rev 7)
5.3.3	Provide the capability to load into or remove fuel units from the transfer machine or the storage area for Design Event I.	The CSB facility provides the MHM (designed by others) for transportation of the MCOs for storage per Section 2.5. (HNF-SD-SNF-RPT-004, Rev 7)
5.3.4	Provide the capability to receive fuel units from or return fuel units to the fuel handling area for Design Event I.	The CSB facility provides the MHM (designed by others) for transportation of the MCOs for storage per Section 2.5. (HNF-SD-SNF-RPT-004, Rev 7)
5.3.5	Provide the capability to retrieve fuel units from the storage area subsequent to Design Events II, III, and IV.	The CSB facility provides the MHM (designed by others) for transportation of the MCOs for storage and retrieval per Section 2.5. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 5 - PERFORMANCE REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
5.3.6	Limit the fuel cladding temperature in accordance with 5.2.1.9.	Not applicable. The CSB facility does not maintain fuel rod temperatures. However, the SNF MCO temperatures are maintained by the storage vault cooling air inlet and outlet components per Sections 2.3.3, 2.4, and 2.5. (HNF-SD-SNF-RPT-004, Rev 7)
5.3.7	Provide radiological protection measures consistent with 5.13.	The CSB facility designed for radiological protection measures for the operating area shelter per Sections 2.4.4.2, 2.5.1.2, and 2.6.1.1. (HNF-SD-SNF-RPT-004, Rev 7)
5.3.8	Provide capability to confine dislodged fuel crud during all fuel unit movements in the fuel unit transfer area and during transfers to or from the storage area for Design Events I, II, and III and provide capability to clean up dislodged crud for Design Event I.	Not applicable. The dislodged fuel crud is stored in the MCOs.
5.3.9	Maintain integrity of at least one confinement boundary for Design Event IV.	The CSB facility provides impact absorbers for the MCOs (designed by others) to protect the confinement boundary per Sections 2.5.1, Drawing H-2-120902, and Figure 2-10. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 5.4 FUEL UNIT STORAGE AREA

Section	Performance Requirement	Current Design Compliance
5.4.1	CLOSURE	
5.4.1	Provide radiological protection measures consistent with requirements of 5.13 during closure placement and removal operations for Design Events I, II, and III.	The CSB facility designed for radiological protection measures during closure placement per Sections 2.5.1 and 2.5.1.6. (HNF-SD-SNF-RPT-004, Rev 7)
5.4.2	STORAGE MONITORING	
5.4.2.1	If the limited air or nonoxidizing option is used, provide means for determining that the integrity of the confinement seal has not been impaired for Design Events I, II, III, and IV.	The CSB facility sample station and weld station are designed to test the MCO mechanical seals per Section 2.5.1.2. (HNF-SD-SNF-RPT-004, Rev 7)
5.4.2.2	Provide monitoring outside containment for airborne radioactivity for Design Events I, II, and III and subsequent to Design Event IV.	Not in the CSB design-to-cost. (FRF-2792)
5.4.2.3	Provide capability to conduct a periodic physical inventory check of all storage modules during Design Event I.	The CSB facility is designed to conduct periodic physical testing of storage modules per Sections 2.5 and 2.8.2. (HNF-SD-SNF-RPT-004, Rev 7)
5.4.2.4	Provide selected storage modules with capability of being periodically monitored for temperature to confirm the thermal calculations for Design Event I.	The CSB facility is designed to conduct periodic physical testing of storage modules per Sections 2.5 and 2.8.2. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 5 - PERFORMANCE REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
5.4.3	STORAGE HEAT REMOVAL	
5.4.3	Provide heat removal capability sufficient to limit the fuel cladding temperatures in accordance with 5.2.1.9.	Not applicable. The CSB facility does not maintain fuel rod temperatures. However, the SNF MCO temperatures are maintained by the design of the storage vault cooling air inlet and outlet components. (HNF-SD-SNF-RPT-004, Rev 7)
5.4.4	STORAGE CONFINEMENT	
5.4.4.1	Provide a storage system structure and associated internals such that the configuration or performance as required for confinement would be sustained during Design Events I, II, III, and IV.	The CSB facility designed the storage system structure and associated internals such that the configuration provides confinement per Section 2.4. (HNF-SD-SNF-RPT-004, Rev 7)
5.4.4.2	Provide radiological protection measures consistent with 5.13.	The CSB facility is designed to provide radiological protection measures during staging, servicing, and interim storage of MCOs per Section 2.6. (HNF-SD-SNF-RPT-004, Rev 7)
5.4.4.3	Provide capability for inspection for loss of secondary confinement barrier during Design Event I and subsequent to Design Events II, III, and IV.	The CSB facility design for stack monitoring and CAMs per Section 2.7.4. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 5 - PERFORMANCE REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
5.4.5	STORAGE FOUNDATION	
5.4.5	Provide engineering foundations for storage area structures, taking into account the potential for soil liquefication during a Design Event IV occurrence. If soil liquefaction cannot be eliminated as a possible consequence of a Design Event IV occurrence at the site, provide foundations that might include engineered fill to compensate for undesirable virgin soil characteristics. This requirement does not apply to storage system modules that can continue to provide confinement and shielding independently of a storage foundation failure.	Not applicable. The CSB facility soil does not have potential for liquefication per Section 10.7 (DBD FDI 80460200).
5.4.6	SPECIFIC REQUIREMENTS	
5.4.6.1	CASK/SILO	Not applicable. The CSB facility is drywell.
5.4.6.2	VAULT/CANYON	Not applicable. The CSB facility is drywell.
5.4.6.3	DRYWELL/CAISSON	
5.4.6.3.1	If uncanistered spent fuel is stored, provide a level of confinement integrity consistent with the radiological protection measures of 5.13.	Not applicable. The CSB facility does not store uncanistered spent fuel.
5.4.6.3.2	Provide interface alignment between the transfer machine and the storage area for loading and unloading for Design Events I. II, and III and subsequent to Design Event IV.	The CSB facility is designed to provide interface alignment between the transfer machine and the storage area for loading and unloading per Section 2.5. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 5.5 HEATING, VENTILATION AND AIR CONDITIONING

Section	Performance Requirement	Current Design Compliance
5.5.1	Provide for prevention of ventilation backflow from areas subject to airborne contamination to other areas not potentially contaminated (or less contaminated) for Design Events I and II.	The CSB facility design is zoned, and provides a building operating area exhaust system which maintains confinement with a negative pressure in the building operating area and draws the exhaust into the HEPA filters and out through a monitored stack to the atmosphere; the support area uses a forced-air ventilation system to maintain confinement and draws the exhaust into the HEPA filters and out through a monitored stack to the atmosphere; and the MCO vault ventilation system is isolated from the building exhaust with a passive intake and outlet structures into an monitored exhaust stack per Sections 2.4.4, 2.4.4.3, 2.6, and 2.7.3. (HNF-SD-SNF-RPT-004, Rev 7)
5.5.2	Provide for control of interior ambient temperatures within design limits for Design Event I.	The CSB facility HVAC design provides temperature control and monitoring of the heating and cooling subsystems of the HVAC system to maintain the operating area ambient temperatures per Sections 2.4.2 and 2.7.3. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 5 - PERFORMANCE REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
5.5.3	Provide for collection of airborne particulate radioactive material within the area containing the source for Design Event I.	The CSB facility design provides a building operating area exhaust system which maintains confinement with a negative pressure in the building operating area and draws the exhaust into the HEPA filters and out through a monitored stack to the atmosphere; the support area uses a forced-air ventilation system to maintain confinement and draws the exhaust into the HEPA filters and out through a monitored stack to the atmosphere; during servicing operations in the MCO service station, air flow from the operating area through the service station enclosure's HEPA filter system; and confinement in the storage tube is maintained by the MHM's on-board, HEPA-filtered, exhaust vent system during MCO handling per Sections 2.4.4, 2.4.4.3, 2.6, and 2.7.3. (HNF-SD-SNF-RPT-004, Rev 7)
5.5.4	Make provisions for monitoring of effluents from potentially contaminated areas during Design Events I, II, III and subsequent to Design Event IV.	The CSB facility HVAC design provides monitored exhaust stacks per Sections 2.4.4, 2.4.4.3, and 2.7.3. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 5.6 BUILDINGS

Section	Performance Requirement	Current Design Compliance
5.6.1	Protect the structures, systems and components that are important to confinement from the effects of adverse external environmental conditions for Design Events I, II, and III.	The CSB facility design provides flood, rain, snow, wind, tornado, and earthquake protection for the building structures per Sections 2.3.2 and 2.4. (HNF-SD-SNF-RPT-004, Rev 7)
5.6.2	Provide for the control of access to and the prevention of the spread of contamination from areas that are potential sources of surface contamination of Design Events I, II, and III.	The CSB facility design provides controlled access at all doors into the various areas within the receiving, operating, and support areas per Section 2.4.4.2. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 5.7 RADWASTE TREATMENT

Section	Performance Requirement	Current Design Compliance
5.7.1	Provide for collection, treatment, and preparation for disposal of all potentially contaminated liquid effluents for Design Event I.	Not in the CSB design-to-cost. (FRF-2792)
5.7.2	Provide for containment and allow monitoring of potentially contaminated liquid wastes for Design Events I, II, III, and IV.	Not in the CSB design-to-cost. (FRF-2792)
5.7.3	Provide for collection, preparation for shipment, and delivery to transport vehicles of all solidified liquid wastes and other solid radwaste material for Design Event I.	Not in the CSB design-to-cost. (FRF-2792)

SECTION 5.8 ELECTRICAL POWER, I&C AND COMMUNICATIONS

Section	Performance Requirement	Current Design Compliance
5.8.1	Provide power for all electrically operated components for Design Event I.	The CSB facility design provides power for all electrically operated components per Sections 2.8.1 and 2.8.2. (HNF-SD-SNF-RPT-004, Rev 7)
5.8.2	Provide for monitoring of process systems, effluent, and area radiation levels for direct radiation, gaseous, and airborne particulate activity for anticipated ranges for Design Events I, II, and III.	The CSB facility design provides monitoring of process systems, effluent, and area radiation levels for direct radiation, gaseous, and airborne particulate activity for anticipated ranges per Section 2.7.4. (HNF-SD-SNF-RPT-004, Rev 7)
5.8.3	Provide the instrumentation and alarms necessary for each process system to ensure that loss of system function can be detected so the systems can be placed in a safe condition for Design Events I and II.	The CSB facility design provides the instrumentation and alarms necessary for each process system to ensure that loss of system function can be detected so the systems can be placed in a safe condition per Section 2.7.4. (HNF-SD-SNF-RPT-004, Rev 7)
5.8.4	Provide on-site communications for the ISFSI for Design Event I.	The CSB facility design provides on-site communications for the ISFSI per Section 2.9. (HNF-SD-SNF-RPT-004, Rev 7)
5.8.5	Provide on-site emergency communications for the ISFSI for Design Events II, III, and IV.	The CSB facility design provides on-site emergency communications for the ISFSI per Section 2.9. (HNF-SD-SNF-RPT-004, Rev 7)
5.8.6	Provide interior and exterior lighting for Design Event I.	The CSB facility design provides interior and exterior lighting per Section 2.81 and Figure 2-15. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 5 - PERFORMANCE REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
5.8.7	Provide the minimum interior and exterior lighting required for personnel safety for Design Events II and III.	The CSB facility design provides interior and exterior lighting per Section 2.8.1 and Figure 2-15. (HNF-SD-SNF-RPT-004, Rev 7)
5.8.8	Provide the capability, if not otherwise available, to determine the severity of natural design phenomena for Design Events I, II, III, and IV.	Not in the CSB design-to-cost. (FRF-2792)
5.8.9	Provide capability to check and recalibrate monitoring equipment and all other equipment that are important to confinement during Design Event I.	The CSB facility design provides capability to check and recalibrate monitoring equipment and all other equipment that are important to confinement per Sections 2.7.4 and 2.8.2. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 5.9 FIRE PROTECTION

Section	Performance Requirement	Current Design Compliance
5.9.1	Provide for the detection of fire and explosion in those areas of the building that are important to confinement, where the potential for fires and explosion exists, for Design Events I and II.	The CSB facility design provides for the detection of fire, smoke, and explosion in those areas of the building that are important to confinement, where the potential for fires and explosion exists per Sections 2.7.2, 2.7.3, and 2.8.2. (HNF-SD-SNF-RPT-004, Rev 7)
5.9.2	Provide the capability to extinguish fires during Design Events I, II, and III.	The CSB facility design provides capability to extinguish fires per Section 2.7.2. (HNF-SD-SNF-RPT-004, Rev 7)
5.9.3	Protect against adverse effects to structures, systems and components that are important to confinement because of operation of fire protection equipment for Design Events I, II, III, and IV.	The CSB facility design protects against adverse effects to structures, systems and components that are important to confinement because of operation of fire protection equipment per Section 2.7.2. (HNF-SD-SNF-RPT-004, Rev 7)
5.9.4	Provide suitable barriers to impede the spread of fires to systems and equipment that are important to confinement for Design Events I, II, III, and IV.	The CSB facility design provides suitable barriers to impede the spread of fires to systems and equipment that are important to confinement per Section 2.7.2. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 5.10 PHYSICAL PROTECTION - CSB facility

Section	Performance Requirement	Current Design Compliance
5.10.1	Provide on-site communications, physical barriers, access control facilities, intrusion detection equipment, surveillance equipment, security lighting, and alarm systems for Design Events I, II, and III.	The CSB facility design provides on-site communications and health protection systems per Sections 2.7.4 and 2.9. (HNF-SD-SNF-RPT-004, Rev 7)
5.10.2	Provide off-site communications for Design Events I, II, III, and IV.	Not in the CSB design-to-cost (FRF-2792). However, the CSB facility communication system design incorporates the Hanford area and plant-wide alarms for security, fire alarm and detection, radiation and hazards alarms, evacuation alarms, and crash alarms per Section 2.9 (HNF-SD-SNF-RPT-004, Rev 7).

SECTION 5.11 ACCOUNTABILITY

Section	Performance Requirement	Current Design Compliance
5.11.1	Provide the capability to determine fuel unit identification numbers such that positive verification of shipping records is achievable and initial data entry into accountability records is provided for Design Event I.	Not applicable. The CSB facility should provide the capability to determine MCO identification numbers such that positive verification of shipping records is achievable and initial data entry into accountability records is provided during operations.
5.11.2	Provide the capability to conduct fuel unit inventory for Design Events I and II and subsequent to Design Events III and IV.	Not applicable. The CSB facility should be capable of conducting fuel unit inventory during operations.
5.11.3	Provide equipment and systems necessary to operate and maintain a nuclear material control and accounting system.	Not applicable. The CSB facility should provide equipment and systems necessary to operate and maintain a nuclear material control and accounting system during operations.

SECTION 5.12 NUCLEAR CRITICALITY SAFETY

Section	Performance Requirement	Current Design Compliance
5.12.1	Provide design features and demonstrate by analysis that the fuel unit transfer, fuel unit handling, and storage areas remain subcritical for Design Events I, II, III, and IV. For those areas that require a criticality alarm system, ensure that the system remains operational for Design Events I, II, and III.	The CSB facility has demonstrated by analysis that it would be incredible for the dry MCO to produce a criticality incident from a drop or storage accident, and that the MCOs will stay subcritical during handling and storage in the facility per Section 2.7.4 (HNF-SD-SNF-RPT-004, Rev 7 and HNF-SD-SNF-CSER-005, Rev 3). Note that criticality alarm is not required by 10 CFR 72.124(c).

SECTION 5.13 RADIOLOGICAL PROTECTION

Section	Performance Requirement	Current Design Compliance
5.13.1	Limit occupational exposure to ALARA levels based upon accepted principles of dose reduction for Design Events I and II.	The CSB facility provides limits for occupational exposure to ALARA levels based upon accepted principles of dose reduction during operations. (FDI ALARA Analysis No. 8)
5.13.2	Radiological exposure limits shall be based on 10 CFR 72 for Design Events I, II, and III.	The CSB facility design provides radiological exposure limits based on 10 CFR 835 for planned operations per Section 12.3.1. (DBD FDI 80460200)

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

SECTION 6.1 TRANSPORTATION PACKAGING HANDLING AREA

Section	Performance Requirement	Current Design Compliance
6.1.1	RECEIVING AND SHIPPING	
6.1.1.1	CONDITIONS OF DESIGN	
6.1.1.1.1	The transportation package handling equipment should be designed to accept all of the transportation packages expected to be handled at the ISFSI.	The CSB facility receiving crane designed for unloading/loading the MCO shipping casks transportation package, and the MHM (design by others) to transfer MCOs to the storage tubes per Sections 2.5.1 and 2.5.1.1. Refer to the Canister Storage Building Safety Analysis Report HNF-SD-SNF-RPT-004, Rev 7B (HNF-SD-SNF-RPT-004, Rev 7).
6.1.1.1.2	Insofar as is practical, the need to reverse direction of the vehicle within the area, between entrance and egress, should be avoided.	The CSB facility is designed to back a transport tractor trailer into the trailer vestibule area which controls the transfer of MCO shipping casks into the operating area shelter receiving and shipping area per Section 2.4.4.2. (HNF-SD-SNF-RPT-004, Rev 7)
6.1.1.1.3	The floor surface upon which highway vehicles are loaded and unloaded should be flat and level. Any surface between railroad tracks, except for flange grooves, should be at the same level as the rails and surrounding floor.	The CSB facility design is a concrete floor surface upon which highway vehicles are loaded and unloaded on a flat and level surface per Section 2.4.2 and Figure 4-6. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.1.1.1.4	Equipment whose function are classified as important to confinement shall be located or protected so that a loss of design function is not caused by the movement of the transportation package.	The CSB facility design has located equipment ITC out of the transportation area per Figure 4-6. (HNF-SD-SNF-RPT-004, Rev 7)
6.1.1.1.5	A system shall be provided for the washdown of road dirt from transportation packages and the transportation package carrier. This system shall have provisions to collect, monitor, and dispose of all wash water that may contain low-level radioactive contamination.	Not in CSB design-to-cost. Refer to FDH Letter FDH-9761261, Addendum 3 of Attachment 1 (FRF-2792).
6.1.1.1.6	Drain piping shall be designed to minimize the number of traps, loops, and flanges that might accumulate radioactive particles.	Not applicable. The CSB facility does not provide contaminated waste piping. The CSB facility design provides process sumps for potentially contaminated runoff per Section 2.4.2.3. (HNF-SD-SNF-RPT-004, Rev 7)
6.1.1.2	INTERFACES	
6.1.1.2	Adequate storage space should be provided for special tools, unique to each transportation package being received, including lifting yokes, slings, and piping connections. Storage space should also be provided for transportation package appurtenances that must be removed while the transportation package is in the loading and unloading cycle.	The CSB facility design provides adequate space in the trailer vestibule per Figure 4-6. (HNF-SD-SNF-RPT-004, Rev 7)
6.1.1.3	TESTING, INSPECTION & MAINTENANCE	

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.1.1.3.1	Safe access shall be provided to all packages, transportation vehicles, and installed components for purposes of testing, inspection, and maintenance.	The CSB facility and transportation designs provide safe access to all packages, transportation vehicles, and installed components for purposes of testing, inspection, and maintenance per Figure 4-6 (HNF-SD-SNF-RPT-004, Rev 7) and HNF-SD-TP-SARP-017.
6.1.1.3.2	Installed components requiring testing, inspection, or maintenance shall be designed for easy decontamination.	The CSB facility design for components requiring testing, inspection, or maintenance provides easy decontamination per Section 16.3.1. (HNF-SD-SNF-RPT-004, Rev 7)
6.1.1.3.3	Cranes and other equipment shall be designed to be tested, maintained, and inspected in accordance with industry consensus standards and OSHA requirements.	The CSB facility cranes and other equipment shall be designed to be tested, maintained, and inspected in accordance with industry consensus standards and OSHA requirements per Procurement Specifications W-379-P-CSB-14620 and W-379-C-CSB-14320.
6.1.2	DECONTAMINATION	
6.1.2.1	CONDITIONS OF DESIGN	
6.1.2.1.1	Means shall be provided to decontaminate external surfaces only of the transportation package, including ancillary equipment, as required to meet the contamination limits of 49 CFR 173, Subpart I, "Radioactive Materials."	Not in CSB design-to-cost (FRF-2792).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.1.2.1.1 (1)	If impact cleaning is provided, it should be housed in an enclosed decontamination station. Equipment and capabilities for cleaning up the decontamination agents for possible reuse should be provided.	Not in CSB design-to-cost (FRF-2792).
6.1.2.1.1 (2)	Waste generated by decontamination operations shall be collected for treatment and disposal.	Not in CSB design-to-cost (FRF-2792).
6.1.2.1.1 (3)	Drain piping shall be designed to minimize the number of traps, loops, and flanges that might accumulate radioactive particles.	Not applicable. There is no wash-down or decontamination station in the CSB design-to-cost per CSB design basis document, Section 1.2, Rev 2 (DBD FDI 80460200). The CSB facility does not provide contaminated waste piping. The CSB facility design provides process sumps for potentially contaminated runoff per Section 2.4.2.3. (HNF-SD-SNF-RPT-004, Rev 7)
6.1.2.2	INTERFACE	
6.1.2.2	The arrangement of this area shall not restrict the normal flow of operations within the transportation package handling area; it shall provide for ease of transfer of the package into and out of the decontamination area, or to bypass the station if its services are not required. Instruments and equipment for evaluating the degree of contamination should be accessible.	The CSB facility design provides unrestricted access near the MCO service station of the load-in/load-out area per Section 2.4.3 and Figures 2-1 and 4-6. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.1.2.3	TESTING INSPECTION & MAINTENANCE	
6.1.2.3.1	Cranes and other equipment shall be designed to be tested, maintained, and inspected in accordance with industry consensus standards and OSHA requirements.	The CSB facility cranes and other equipment are designed to be tested, maintained, and inspected in accordance with industry consensus standards and OSHA requirements per Procurement Specifications W-379-P-CSB-14620 and W-379-C-CSB-14320.
6.1.2.3.2	Systems used for transfer of radioactive wastes or effluents shall incorporate provision for flushing to permit maintenance.	Not in CSB design-to-cost (FRF-2792). The CSB facility does not provide contaminated waste piping. Also, the CSB facility design provides process sumps for potentially contaminated runoff per Section 2.4.2.3. (HNF-SD-SNF-RPT-004, Rev 7)
6.1.3	MAINTENANCE	
6.1.3.1	CONDITIONS OF DESIGN	
6.1.3.1.1	Means shall be provided to decontaminate equipment.	Not in CSB design-to-cost (FRF-2792). However, the mobile service station enclosure (design by others) prevents uncontrolled releases of contamination, and the concrete deck is covered with a coating that can be decontaminated per Section 16.3.1.1. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.1.3.1.2	Appropriate equipment and space should be provided for ease and expediency of maintenance operations.	The CSB facility design provides appropriate equipment and space for ease and expediency of maintenance operations per Figures 2-7 and 4-6. (HNF-SD-SNF-RPT-004, Rev 7)
6.1.3.1.3	Remote operating capabilities shall be provided for routine maintenance jobs that result in higher than normal radiation doses to operators (e.g., changing fuel baskets).	The CSB facility design provides mobile service station to provide remote maintenance activities per Section 2.5.1.2. (HNF-SD-SNF-RPT-004, Rev 7)
6.1.3.1.4	Provision for collection, treatment, and disposal of contaminated waste shall be provided.	Not in CSB design-to-cost (FRF-2792). The CSB facility does not provide contaminated waste piping. However, the CSB facility design provides process sumps for potentially contaminated runoff per Section 2.4.2.3. (HNF-SD-SNF-RPT-004, Rev 7)
6.1.3.1.5	Drain piping shall be designed to minimize traps, loops, and flanges to avoid accumulating radioactive particles.	Not applicable. No wash-down or decontamination station in current design-to-cost. The CSB facility does not provide contaminated waste piping. However, the CSB facility design provides process sumps for potentially contaminated runoff per Section 2.4.2.3. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.1.3.2	INTERFACE	
6.1.3.2	The arrangement of the maintenance area should ensure that activities within the area do not interfere with normal operations in the transport package handling area.	The CSB facility design provides adequate space in the trailer vestibule and load-in/load-out area for expected maintenance per Figure 4-6. (HNF-SD-SNF-RPT-004, Rev 7)
6.1.3.3	TESTING, INSPECTION & MAINTENANCE	
6.1.3.3.1	Systems designed for transport of radioactive wastes or effluent shall incorporate provisions for flushing.	Not applicable. No wash-down or decontamination station in CSB design-to-cost. The CSB facility does not provide contaminated waste piping. However, the CSB facility design provides process sumps for potentially contaminated runoff per Section 2.4.2.3. (HNF-SD-SNF-RPT-004, Rev 7)
6.1.3.3.2	Cranes and other equipment shall be designed to be tested, maintained, and inspected in accordance with industry consensus standards and OSHA requirements.	The CSB facility cranes and other equipment are designed to be tested, maintained, and inspected in accordance with industry consensus standards and OSHA requirements per Procurement Specifications W-379-P-CSB-14620 and W-379-C-CSB-14320.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.1.4	PREPARATION	
6.1.4.	CONDITIONS OF DESIGN	
6.1.4.1.1	Sufficient space shall be provided in the preparation area for the free passage of operating personnel around scaffolds or elevated platforms used to reach the upper parts of the transportation package.	Not applicable. The CVD facility provides the preparation area for the free passage of operating personnel around scaffolds or elevated platforms used to reach the upper parts of the transportation package for shipment to the CSB facility per HNF-SD-TP-SARP-017. The transporter is provided with scaffolds and ladder per Drawing 3035-1. The CSB facility is not required to provide scaffolds or elevated platforms to reach the upper parts of the transportation package per Figure 2-1. (HNF-SD-SNF-RPT-004, Rev 7)
6.1.4.1.2	Provisions shall be made for the inspection and monitoring of variables such as transportation package temperatures, pressures, radiation levels of surfaces and coolants, and seal integrity that are required for the safe handling and transport of transportation packages.	Not applicable. The CVD facility provides for the inspection and monitoring of variables. The CSB facility design provides the MCO service station and the service station portable ventilation enclosure to inspect the MCO shipping cask for excessive pressure which would indicate temperature or gas leakage from the MCO per Section 2.5.1. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.1.4.1.3	Provisions shall be made for cooling, sampling of gas, and liquid analyzing samples from, venting, flushing, draining, and filling the transportation package cavity as required for the subsequent unloading or shipping of transportation package.	Not applicable. The CVD facility provides certification of these parameters before shipment to the CSB facility per Section 2.5.1 (HNF-SD-SNF-RPT-004, Rev 7). The CSB facility unloads the MCO shipping cask into the MCO service station pit for inspection and removal of the MCO, and replaces an empty MCO for return to the K-Basins. There are no activities related to preparation of the cask for unloading or shipping out of the CSB facility.
6.1.4.1.3 (1)	Provisions for collection, treatment, and disposal of contaminated waste shall be provided.	Not in CSB design-to-cost (FRF-2792). This is a CVD facility function.
6.1.4.1.3 (2)	An off-gas system shall be provided to handle airborne radioactive materials that may be contained in the transportation package cavity on receipt at the facility.	Not applicable. The CVD facility provides these systems. The CSB facility design provides the service station portable ventilation enclosure and monitored HEPA filtered exhaust to capture airborne radioactive materials that may be contained in the MCO shipping cask cavity on receipt at the facility per Sections 2.5.1 and 2.5.1.2. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.1.4.2	INTERFACE	
6.1.4.2	The transportation package preparation area will include many utilities common to both the decontamination and maintenance areas and should be planned accordingly. This area may simultaneously handle packages being prepared for fuel unloading, for empty shipment, or for loaded shipment. Therefore, access to or egress from this area for a given operation should not impede the flow of other operations. This station should be located as near as practical to the fuel unit handling area.	The CSB facility design includes utilities common to both decontamination and maintenance. However, the trailer vestibule is designed for only one trailer at a time for unloading or loading the MCO shipping cask, and access to or egress from the area does not impede the flow of other operations per Section 2.5.1. The load-in/load-out area is located as near as practical to the fuel unit handling area per Figure 2-1. (HNF-SD-SNF-RPT-004, Rev 7)
6.1.4.3	TESTING, INSPECTION & MAINTENANCE	
6.1.4.3.1	Safe access shall be provided to all side and top surfaces of each transportation package.	The CSB facility design provides safe access on all sides and top surfaces of the MCO shipping cask in the trailer vestibule and load-in/load-out area per Figures 2-1 and 4-6. (HNF-SD-SNF-RPT-004, Rev 7)
6.1.4.3.2	Replacement of valves, seals, and other components shall not be performed unless special provision is made for radiation control. Package internals shall not be examined or exchanged in this area.	Not applicable. The CSB facility operations should provide this operational requirement.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.1.5	TRANSPORTATION PACKAGE HOLDING & TRANSFER	
6.1.5.1	CONDITIONS OF DESIGN	
6.1.5.1.1	The requirements for package holding are determined primarily by the design philosophy of the individual ISFSI. In each installation, transportation packages will move from one station to the next with the time duration at each varying from zero (in effect, a bypass) to several hours. If holding areas are not provided, the queue ahead of a given station will immediately block the preceding station, and operating efficiencies will suffer. If the ISFSI design includes only one station of each type and expects a fairly high transportation package receiving rate, multiple holding areas might be required and should be located near the next step to minimize transportation package handling. If the busier stations are duplicated (triplicated, quadrupled, or so on), then fewer holding areas serving more than one station may suffice.	The CSB facility design provides one trailer vestibule for off loading the MCO shipping cask into the load-in/load-out area. The cask is transported by the receiving crane to the MCO service station pit for MCO removal and transfer to the operating area for tube storage of the MCO per Section 2.5.1. (HNF-SD-SNF-RPT-004, Rev 7)
6.1.5.1.2	The transfer equipment and its support systems shall be designed to withstand all design loadings, including the design phenomena, while remaining in place. The transfer equipment may lose its function, but this loss of function shall not result in a loss-of-load incident. Design methods, loadings, and so forth shall be in accordance with 6.17.	The CSB facility transportation equipment are designed to withstand all design loadings, including the design phenomena, while remaining in place, and the receiving crane is designed to not result in a loss-of-load from loss of function. (W-379-P-CSB-14620 and HNF-SD-TP-SARP-017)

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.1.5.1.3	Design of the structure should provide for ease of transfer equipment maintenance including provisions for decontamination.	The CSB facility structure is designed for ease of equipment maintenance per Figure 4-6, and maintenance provides easy decontamination per Section 16.3.1. (HNF-SD-SNF-RPT-004, Rev 7)
6.1.5.1.4	Building area layout should be designed to minimize transfer travel during the course of transportation package movement. Transport of the transportation package over fuel units or equipment that are important to confinement shall be precluded by design.	The CSB facility building design minimizes transfer travel during the course of MCO shipping cask travel, and travel over the operating area is precluded per Figure 2-1. (HNF-SD-SNF-RPT-004, Rev 7)
6.1.5.2	INTERFACE	
6.1.5.2	The transportation package transfer system interfaces with the other areas 6.1.1 through 6.1.5 in the transportation package handling area.	The CSB facility design of the Operating area shelter provides an interface with the trailer vestibule, load-in/load-out area, and the operating area per Sections 2.4.2.2 and 2.5.1, and Figure 2-1. (HNF-SD-SNF-RPT-004, Rev 7)
6.1.5.3	TESTING, INSPECTION & MAINTENANCE	
6.1.5.3	Transfer equipment shall be designed to be tested, maintained, and inspected in accordance with accepted consensus standards and OSHA requirements.	The CSB facility receiving crane designed to be tested, maintained, and inspected in accordance with accepted consensus standards and OSHA requirements per W-379-P-CSB-14620.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.1.7	CODES AND STANDARDS	
6.1.7	In addition to commercial codes and standards, the design of concrete and structural steel portions of the transportation package handling area shall conform to the following American National Standards: (1) Code Requirements for Nuclear Safety Related Concrete Structures, ANSI/ACI 349-85; and (2) Specifications for the Design, Fabrication, and Erection of Steel Safety Related Structures for Nuclear Facilities, ANSI/AISC N690-1984.	The CSB facility concrete and structural steel portions are designed to ANSI/ACI 349 and ANSI/AISC N690 per Section 10.2 (DBD FDI 80460200) and HNF-SD-SNF-RPT-004, Rev 7.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

SECTION 6.2 FUEL UNIT HANDLING AREA

Section	Performance Requirement	Current Design Compliance
6.2.1	FUEL UNIT LOADING/UNLOADING	
6.2.1.1	CONDITIONS OF DESIGN	
6.2.1.1.1	Materials shall withstand the cumulative effect of radiation exposures anticipated over their design life.	Not applicable. The CSB facility materials are designed to withstand the cumulative effect of radiation exposures anticipated over their design life per the CSB design basis document (DBD FDI 80460200 and HNF-SD-SNF-RPT-004, Rev 7).
6.2.1.1.2	Capability for emergency shutdown of the lifting and handling equipment power supply (i.e., manual disconnect) shall be incorporated into the equipment design, independent of and physically separated from the normal controls, but located within the planned work area and readily accessible.	Not applicable. The CSB facility is designed to provide emergency shutdown of the lifting and handling equipment power supply per Figure 2-15. (HNF-SD-SNF-RPT-004, Rev 7)
6.2.1.1.3	Handling and process equipment and other support equipment located within the shielded cell shall be designed to function in or be appropriately shielded from high radiation field produced by unshielded fuel units.	Not applicable. The CSB facility handling and process equipment are not located within a shielded cell, and are designed for their environments per W-379-P-CSB-14620, W-379-C-CSB-14320, WHC-S-0468, WHC-S-0425, and DBD FDI 80460200.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.2.1.1.4	If provisions for remote maintenance is not made, handling equipment for fuel units and transportation package closure lid(s) shall have sufficient redundancy so that no single failure in the handling system will preclude returning unshielded fuel units to shielded storage locations or returning the closure lid(s) to the transportation package.	Not applicable. The spent fuel elements will not be removed from MCOs in the CSB facility.
6.2.1.1.5	Grapples, lifting attachments, and handling equipment for fuel units and transportation package closure lid(s) shall be designed for remote operation, and active lifting components shall be designed to retain their load in the event of loss of actuating power. An independent, remote means shall be provided for disengagement of any grapple in the cell in the event an active grapple component fails to operate. Grapple operating envelopes shall be designed to be compatible with all interfacing storage and transportation systems.	Not applicable. The CSB facility design for the MHM (designed by others) provides a remote operation, and active lifting components which retain their load in the event of loss of actuating power per WHC-S-0425 and Section 2.5.1 (HNF-SD-SNF-RPT-004, Rev 7).
6.2.1.1.6	Grapples and lifting fixtures for handling fuel units or transportation package closure lid(s) shall be designed to provide positive engagement during a lift, and the grapples and associated controls shall be designed to minimize the potential for inadvertent disengagement. A means shall be provided to indicate that positive engagement has been achieved and to indicate the disengaged position.	Not applicable. The CSB facility design for grapples (designed by others) and lifting fixture (designed by others) for MCOs and MCO shipping cask handling is used to convey the cask to the MCO service station pit per WHC-S-0425, HNF-SD-SNF-FDR-003, and Section 2.5.1 (HNF-SD-SNF-RPT-004, Rev 7).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.2.1.1.7	Grapples and tools shall be designed to facilitate decontamination, nondestructive testing, maintenance, handling, and storage. Cracks or crevices likely to collect contamination should be avoided.	Not applicable. The CSB facility design for the grapples (designed by others) and lifting fixtures (designed by others) for MCOs or MCO shipping cask designed to facilitate decontamination, nondestructive testing, maintenance, handling, and storage per WHC-S-0425 and HNF-SD-SNF-FDR-003.
6.2.1.1.8	Process cranes shall employ redundant limit switches and interlocks to prevent excessive horizontal movement that could affect operation or cause damage to the units being handled, as well as to prevent excessive vertical movement including double blocking. Redundant means of disconnecting power to the cranes shall be available to the operator. Redundant means of braking vertical travel shall be provided. Braking of horizonal motion should be provided as necessary to facilitate the required positioning precision.	Not applicable. The CSB facility design for the MCO loading/unloading is provided by the MHM (designed by others) [WHC-S-0425]. The CSB facility design for the receiving crane provides redundant limit switches, interlocks, power disconnecting means, and braking per Section 2.5.1.1 (HNF-SD-SNF-RPT-004, Rev 7), W-379-P-CSB-14620, and MGW-SVX-452651.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.2.1.1.9	Process fixtures, temporary storage locations, fuel unit containers, and similar devices should be designed with lead-ins and chamfers to facilitate fuel unit insertion and removal. If the possibility exists for fuel units to catch lips or protrusions during lifting or lowering, the lifting equipment shall have interlocks to sense an unacceptable change (either an increase or a decrease) in hoisting force and automatically stop further travel.	Not applicable. The fuel unit scrap baskets are preloaded into the MCOs before they shipped to the CVD and CSB facilities (HNF-SD-SNF-SARR-005), and the MCOs are loaded into storage tubes located in the CSB storage vaults per Section 2.4.3 (HNF-SD-SNF-RPT-004, Rev 7). The CSB facility storage tubes are designed to accept the MCO (designed by others) which are designed with lead-ins and chamfers to facilitate insertion and removal per Section 2.4.3 (HNF-SD-SNF-RPT-004, Rev 7 and HNF-SD-SNF-SARR-005.
6.2.1.1.10	Shielded viewing windows and remote viewing equipment (e.g., closed circuit television, periscopes) shall be incorporated into the design of the shielded cell to assist operators in performing required normal process operations and recovery from off-normal events. Adequate lighting shall be provided in the cells to facilitate the remote operation and to permit accurate identification and thorough visual inspection of fuel units for conformance to requirements of the storage area acceptance criteria.	Not applicable. There are no requirements for hot cells in CSB design-to-cost per Section 1.2. (DBD FDI 80460200)
6.2.1.1.11	Remote handling equipment shall be incorporated into the design of the area to permit performance of normal process operations. Particular attention shall be given in the design to methods and equipment required to recover from equipment failures, off-normal events, and accidents.	Not applicable. The MCO loading/unloading is provided by the MHM (designed by others) [WHC-S-0425].

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.2.1.1.12	Interior surfaces of the shielded cell shall be coated or lined to facilitate decontamination.	See 6.2.1.1.10 above.
6.2.1.1.13	Facilities for putting on and taking off anti-contamination clothing and personnel monitoring (frisking) devices should be provided adjacent to access doors to the shielded cell.	See 6.2.1.1.10 above.
6.2.1.1.14	Use of combustible material in the shielded cell should be minimized.	See 6.2.1.1.10 above.
6.2.1.1.15	Use of water in the shielded cell should be restricted if water can come in direct contact with hot spent fuel rods (flashing of water to steam can cause airborne dispersal of radioactive crud from the cladding surface).	See 6.2.1.1.10 above.
6.2.1.1.16	Design methods, loadings, and so forth shall be in accordance with 6.17. The handling equipment may lose its function, but functional failure shall not result in loss of load incident or inability to recover from the failure.	Not applicable. The MCO loading/unloading is provided by the MHM (designed by others). The MHM is designed to retain load under loss of function (e.g. loss of power) during loading and unloading operations in the CSB storage facility. (WHC-S-0425)

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.2.1.1.17	The influence of transient loadings of handling equipment on supporting and surrounding systems and structures shall be included in the design of these systems and structures.	Not applicable. The MCO loading/unloading is provided by the MHM (designed by others) [WHC-S-0425]. The CSB vault and operating deck over which the MHM travels is designed for its weight per Section 10.4 (DBD FDI 80460200). However, interlocks and switches provide indication to the receiving crane to stop when the MHM is in operation or interior load-in/load-out area door is not open per W-379-P-CSB-14620 and MGW-SVX-452651.
6.2.1.1.18	The special procedures for handling damaged fuel or damaged fuel units should be anticipated and provisions made in the design.	Not applicable. The CSB facility operation procedures should require that a dropped MCO be returned to the K Basins for inspection and repacking the MCO.
6.2.1.1.19	If damaged fuel is received by the ISFSI for storage, it shall be canned, and provisions shall be made for handling and temporary storage of these containers within the fuel handling area.	Not applicable. All fuel is canned in MCOs, and any damaged MCO is returned to K-Basin in a MCO shipping cask.
6.2.1.1.20	Each lag storage cavity shall be designed with sufficient clearance and lead-in capability to permit insertion and removal during handling operations without damaging the fuel unit. The design shall include allowances for fuel unit and storage location distortions.	Not in CSB design-to-cost (DBD FDI 80460200). All spent fuel is transported in MCOs to the CSB facility for storage.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.2.1.1.21	Each lag storage cavity shall be designed to support and guide the fuel unit into position to resist damage from the design loads imposed during fuel unit handling and lag storage, including that resulting from a credible dropped load incident.	Not applicable. The CSB facility operation procedures should require that a dropped MCO be returned to the K Basins for inspection and repacking the MCO.
6.2.1.1.22	All surfaces contacting the fuel units shall be free of burrs, sharp corners, edges, and weld beads that could damage the fuel unit.	Not applicable. The CSB facility design for the MCOs (designed by others) provides surfaces contacting the spent fuel crap baskets which are free of burrs, sharp corners, edges, and weld beads per HNF-SD-SNF-SARR-005.
6.2.1.1.23	A permanent identification of each lag storage location shall be provided.	Not in CSB design-to-cost (DBD FDI 80460200). The CSB facility operation procedures should require permanent identification of each MCO.
6.2.1.1.24	The lag storage locations should be shielded sufficiently to allow operator entry into the cell and to minimize radiation exposure to the cell components.	Not in CSB design-to-cost (DBD FDI 80460200). There are no requirements for lag storage or hot cells in the CSB facility.
6.2.1.1.25	The temporary storage locations shall be designed for cooling adequate to maintain the fuel units within the temperature limitation of 5.2.1.9; the cooling system shall be designed to minimize the transfer of particulate matter within the cell and its ventilation system.	Not applicable. The CSB facility does not provide temporary storage locations. However, the CSB facility is designed for natural convection cooled interim storage of spent fuel and scrap for future removal and processing or long term storage.

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Section	Performance Requirement	Current Design Compliance
6.2.1.2	INTERFACES	
6.2.1.2.1	The fuel unit loading/unloading system interfaces with the transportation package handling system, the HVAC system, and either the fuel unit transfer area or the fuel unit preparation area.	Not applicable. The CSB facility design for the MHM interfaces with the load-in/load-out area, receiving crane, operating area, HVAC system, and service station enclosure and gantry crane per Section 2.5. (HNF-SD-SNF-RPT-004, Rev 7)
6.2.1.2.2	The lag storage locations interface directly with the fuel unit handling systems.	Not applicable. The CSB facility does not provide lag storage.
6.2.1.2.3	Cranes interface with a variety of grapples for various transportation lids, fuel assemblies, and canisters.	Not applicable. There is only one type MCO loading/unloading provided by the MHM (designed by others) [WHC-S-0425].
6.2.1.3	TESTING, INSPECTION & MAINTENANCE	
6.2.1.3.1	Cranes shall be designed to be tested, maintained, and inspected in accordance with industry consensus standards and OSHA requirements.	Not applicable. The MCO loading/unloading is provided by the MHM (designed by others) [WHC-S-0425].
6.2.1.3.2	Safe access to perform necessary testing, inspection, and maintenance shall be provided (e.g., ladders, catwalks, and guard rails).	See 6.2.1.3.1 above.
6.2.1.3.3	Grapples and tools shall be designed to facilitate decontamination, nondestructive testing, maintenance, handling, and storage.	See 6.2.1.3.1 above.
6.2.1.3.4	Remote viewing apparatus and associated lights shall be readily removable and reinstalled.	See 6.2.1.3.1 above.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.2.1.3.5	Equipment intended to be tested or maintained by removal from the shielded cell shall be designed to facilitate decontamination. Appropriate means shall be provided in the hot cell to perform the preliminary decontamination.	Not applicable. There are no requirements for hot cells in the CSB design-to-cost per Section 1.2. (DBD FDI 80460200)
6.2.1.3.6	Mockups of all remote handling equipment should be provided, and the equipment and handling procedures should initially be tested in these mockups to verify the design and operational procedures, as well as to train operating personnel.	Not applicable. ("cold" testing to be done in-situ).
6.2.1.3.7	All remote handling and process equipment should be designed to facilitate maintenance, overhaul, and inspection, and such overhaul and inspection should be conducted periodically at intervals consistent with the level of usage and the expected design life of the components.	See 6.2.1.3.1 above.
6.2.2	FUEL UNIT PREPARATION	
6.2.2.1	CONDITIONS OF DESIGN	
6.2.2.1.1	GENERAL	
6.2.2.1.1. (1)	Provisions should be made for removal of a spent fuel assembly from a container damaged by the maximum credible drop, as determined from the area physical arrangement and handling system vertical hoisting capabilities for the operation being performed.	Not applicable. (damaged MCOs returned to K-Basin).

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Section	Performance Requirement	Current Design Compliance
6.2.2.1.1 (2)	The decay heat level of fuel units shall be verified to be below the design maximum assumed in the design of the storage system. This may be accomplished by measurement or by approved calculations taking into account fuel burnups, initial enrichment, reactor operational history, and decay time. If this verification is accomplished by measurement, the equipment shall be provided.	Not applicable. (verification provided by WHC; not an A/E design requirement).
6.2.2.1.1 (3)	If rod consolidation is to be performed in the ISFSI, conditions of design for the consolidation equipment can be found in ANSI/ANS-57.10-1987.	Not applicable. The K Basins will provide this activity.
6.2.2.1.1 (4)	The requirements of 6.2.1.1 are applicable to the fuel unit preparation area.	Not applicable. The K Basins will provide this activity.
6.2.2.1.2	SEALED CONTAINERS	
6.2.2.1.3	UNSEALED CONTAINERS	
6.2.2.1.3 (1)	The [unsealed] container shall comply with the requirements of 6.2.2.1.2(2) through 6.2.2.1.2(8) and 6.2.2.1.2.(17).	Not in CSB design-to-cost (FRF-2792). The MCO shipping cask (designed by others) and MCO (designed by others) arrives sealed at the CSB facility per Section 2.3.2 (HNF-SD-SNF-SARR-005) and Section 2.5.1 (HNF-SD-SNF-RPT-004, Rev 7).

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Section	Performance Requirement	Current Design Compliance
6.2.2.1.3 (2)	The [unsealed] container shall be designed to meet the requirement of 6.2.2.1.2(16) regarding mechanical integrity, deformation, and retrievability following a dropping accident from the maximum credible height in the ISFSI and in the orientation in which it is normally handled.	Not in CSB design-to-cost (FRF-2792). The MCO (designed by others) is a sealed container per Section 2.3.2 (HNF-SD-SNF-SARR-005) and Section 2.5.1 (HNF-SD-SNF-RPT-004, Rev 7).
6.2.2.2	INTERFACES	
6.2.2.2.1	The fuel unit preparation area interfaces with the fuel handling are unloading/loading system.	Not applicable. The K Basins will provide this activity.
6.2.2.2.2	The fuel unit preparation area interfaces with the fuel unit transfer area.	Not applicable. The K Basins will provide this activity.
6.2.2.2.3	Fuel unit handling tools interface with all types of fuel units anticipated to be received at or prepared by the ISFSI.	Not applicable. The K Basins will provide this activity.
6.2.2.3	TESTING, INSPECTION & MAINTENANCE	
6.2.2.3	The requirements of 6.2.1.3 are applicable to the fuel unit preparation area.	Not applicable. The K Basins will provide this activity.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.2.3	CODES AND STANDARDS	
6.2.3	In addition to commercial codes and standards, the design and materials shall conform to the following sections of American National Standard ANSI/ASME Boiler and Pressure Vessel Code (B&PVC): (1) Section IX, "Welding and Brazing Qualifications," for welding of sealed containers, and (2)Section III, "Nuclear Power Plant Components," or VIII, "Pressure Vessels," for sealed container pressure boundaries.	Not applicable. The MCO (designed by others) is designed to ANSI/ASME Section IX and Section III per Section 3.1.1. (HNF-SD-SNF-SARR-005)

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

SECTION 6.3 FUEL UNIT TRANSFER AREA

Section	Performance Requirement	Current Design Compliance
6.3.1	CONDITIONS OF DESIGN	
6.3.1.1	The fuel unit transfer area equipment shall be designed to bear all design loads and allow recovery of a fuel unit. It is not a requirement that this equipment remain functional; however, failure should not result in a fuel unit dropping incident. Design methods, loadings, and so forth shall be in accordance with 6.17.	Not applicable. The CSB facility does not provide a fuel unit transfer area.
6.3.1.2	The fuel unit transfer area shall be designed to ensure subcriticality in accordance with 6.12.	Not applicable. The K Basins provides this feature. The MCO is subcritical per Section 5.2 (HNF-SD-SNF-CSER-005).
6.3.1.3	Means shall be provided for the positive identification of each fuel unit identification number as it is loaded in the transfer machine system for the accountability system.	Not applicable. The K Basins will provide this act feature.
6.3.1.4	Nonremote transfer machines shall be automatically annunciated when in motion.	Not applicable. The K Basins will provide this feature.
6.3.1.5	Capability for emergency shutdown of the power supply (i.e., manual disconnect) shall be incorporated into the equipment design. The means shall be independent of, and physically separated from, the normal controls, but conveniently located within the planned work area.	Not applicable. The K Basins will provide this feature.

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Section	Performance Requirement	Current Design Compliance
6.3.1.6	Grapples employed for handling the fuel unit into and out of the transfer machine shall conform to the design criteria set forth in 6.2.1.1.5, 6.2.1.1.6, and 6.2.1.1.7.	Not applicable. The K Basins will provide this feature.
6.3.1.7	The fuel unit grapple shall, in the event of loss of its normal activation force (electric, hydraulic, or pneumatic) fail in a safe manner, i.e., in the "latched" state.	Not applicable. The K Basins will provide this feature.
6.3.1.8	Handling equipment used for handling fuel units shall have interlocks actuated upon an unacceptable change (either increase or decrease) in hoisting force to prevent further travel.	Not applicable. The MCO loading/unloading is provided by the MHM (designed by others) [WHC-S-0425].
6.3.1.9	The loaded transfer machine shall be capable of withstanding the impact resulting from the maximum credible drop without breach of confinement.	Not applicable. The MCO loading/unloading is provided by the MHM (designed by others) [WHC-S-0425].
6.3.1.10	Fuel crud released during handling should be considered for determining potential activity release levels during normal or off-normal situations.	Not applicable. The CSB facility design for the MCO (designed by others) contains the spent fuel scrap baskets.
6.3.1.11	Equipment that is important to confinement shall be located or protected so as to not be endangered by the movement of the transfer machine.	Not applicable. The MCO loading/unloading is provided by the MHM (designed by others) [WHC-S-0425].
6.3.1.12	The transfer machine shall conform to the criterion of 6.4.1.8.	Not applicable. The MCO loading/unloading is provided by the MHM (designed by others) [WHC-S-0425].

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Section	Performance Requirement	Current Design Compliance
6.3.1.13	The internal surfaces of the loading/unloading equipment shall be free of burrs, sharp corners, edges, or weld beads that could cause snagging or damage during fuel unit transfer.	Not applicable. The K-Basin facility provides the loading equipment for the MCO (designed by others) per Section 1.1 (HNF-SD-SNF-SARR-005). The CSB facility MCO loading/unloading is provided by the MHM (designed by others) [WHC-S-0425].
6.3.1.14	Internal clearances for fuel units in the loading/unloading equipment shall be sufficient for easy insertion and removal for the expected geometric distortions (e.g., fuel unit bowing). In addition, provisions shall be made for proper alignment between the loading/unloading equipment and the storage cavities to ensure that these clearances are maintained.	Not applicable. The MCO (designed by others) provides the clearances for insertion of SNF scrap baskets per Section 1.2 (HNF-SD-SNF-SARR-005). The CSB facility MCO loading/unloading is provided by the MHM (designed by others) [WHC-S-0425].
6.3.2	INTERFACES	
6.3.2.1	The fuel unit transfer area interfaces with the fuel unit handling area and its handling equipment.	The CSB facility design for the MHM (designed by others) interfaces with the load-in/load-out area, receiving crane, operating area, HVAC system, and service station enclosure and gantry crane per Section 2.5. (HNF-SD-SNF-RPT-004, Rev 7)
6.3.2.2	The fuel unit transfer are interfaces with the storage area and may include elements of the storage area.	The CSB facility design for the MHM (designed by others) interfaces with the operating area per Section 2.5. (HNF-SD-SNF-RPT-004, Rev 7)
6.3.2.3	The transfer machine shall maintain the orientation of the fuel unit to allow correct interfacing with the storage area systems.	Not applicable. The MCO loading/unloading is provided by the MHM (designed by others) [WHC-S-0425].

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.3.3	TESTING, INSPECTION & MAINTENANCE	
6.3.3.1	Cranes and other equipment shall be designed to be tested, maintained, and inspected in accordance with industry consensus standards and OSHA requirements.	Not applicable. The MCO loading/unloading is provided by the MHM (designed by others) [WHC-S-0425].
6.3.3.2	The fuel unit transfer area shall have provisions for recovery of failed remote handling equipment to a point in the system where maintenance, replacement, or repair can be carried out in accordance with ALARA.	Not applicable. The MCO loading/unloading is provided by the MHM (designed by others) [WHC-S-0425].
6.3.4	CODES AND STANDARDS	
6.3.4	In addition to commercial codes and standards, the design and materials shall conform to ANSI/ASME B&PVC, Section III or VIII for sealed container pressure boundaries.	The CSB facility storage tubes are designed to ANSI/ASME B&PVC, Section III (ASME 1995), or ANSI/AISC N690-94, or have been demonstrated to be equivalent to Section III (ASME 1995) per Section 2.4.3 (HNF-SD-SNF-RPT-004, Rev 7), and the MCO (designed by others) is designed to ANSI/ASME B&PVC, Section III per Section 3.1 (HNF-SD-SNF-SARR-005). The MHM (designed by others) is designed per WHC-S-0425.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

SECTION 6.4 STORAGE AREA

Section	Performance Requirement	Current Design Compliance
6.4.1	CONDITIONS OF DESIGN (ALL CONCEPTS)	
6.4.1.1	The storage system shall be designed to bear all design loads, including those arising from design phenomena, without impairing capability to perform the confinement, heat removal, monitoring, and loading and unloading functions considered as important to confinement. Design methods, loading, and so forth shall be in accordance with 6.17.	The CSB facility storage system is designed to bear all design loads, including those arising from design phenomena, without impairing capability to perform the confinement, heat removal, monitoring, and loading and unloading functions considered as important to confinement per Sections 10.4, 10.5, and 10.7 (DBD FDI 80460200).
6.4.1.2	Allowances for radiation, or thermal degradation, or both, over the intended design life shall be considered in selecting materials used in the storage area.	The CSB facility design consider selection of materials based on the design life of the facility which addresses radiation and thermal degradation per Sections 1 - 13 (DBD FDI 80460200).
6.4.1.3	The fuel unit decay heat generation rate shall be directly measured or calculated. If the latter approach is selected, it shall be based on approved calculational methods taking into account fuel burnups, initial enrichment, reactor operation history, and decay time.	Not applicable. (data provided by Client).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.4.1.4	Sealed confinement barriers shall be designed to a minimum pressure level equivalent to that which would be developed if 100% of the fuel tubes rupture and the gases released to the confinement barrier at the design temperature.	The MCO (designed by others) provides sealed confinement barriers designed to a minimum pressure level equivalent to that which would be developed if 100% of the fuel tubes rupture and the gases released to the confinement barrier at the design temperature per Section 2.3.3.1 (HNF-SD-SNF-SARR-005), and the overpack storage tube design provides sealed confinement barriers per Section 2.4.3 (HNF-SD-SNF-RPT-004, Rev 7).
6.4.1.5	The design temperature condition for sealed confinement barriers shall be the maximum predicted operating temperature.	The CSB facility design for the storage tubes and MCOs (designed by others) base their maximum temperature from the maximum heat generation per Section 6.4.1.4 above. (HNF-SD-SNF-RPT-004, Rev 7, and HNF-SD-SNF-SARR-005)
6.4.1.6	Added to the wall thickness calculated by reference to 6.4.1.3 and 6.4.1.4 shall be appropriate corrosion allowance based on expected environmental conditions during storage and intended design life.	The CSB facility storage tube design is for a 40-year design life within their environments per Section 2.1 (HNF-SD-SNF-RPT-004, Rev 7), and the MCO design (designed by others) is for a 40-year design life within their environments per Section 2.2.6.1 (HNF-SD-SNF-SARR-005).
6.4.1.7	Each storage location shall be identified by a unique, permanent, and visible number.	The CSB facility design contains identification for MCO storage locations per Figure 2-13 (HNF-SD-SNF-SARR-005).
6.4.1.8	In all storage modes, storage systems design shall ensure that the system remain subcritical in accordance with 6.12.	The CSB facility will remain subcritical during all handling and storage conditions per HNF-SD-SNF-CSER-005.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.4.1.9	The storage area shall be designed to avoid fuel unit damage; however, provisions should be considered to accommodate special recovery operations of damaged fuel.	Not applicable. The MCO loading/unloading is provided by the MHM (designed by others) [WHC-S-0425].
6.4.1.10	All surfaces of the storage system likely to become contaminated should be designed to prevent conditions (such as crevices) where contaminants could accumulate.	The CSB facility operating deck is designed to prevent conditions (such as crevices) where contaminants could accumulate per Section 16.3.1. (HNF-SD-SNF-RPT-004, Rev 7)
6.4.1.11	The storage area shall be designed to handle crud dislodges from spent fuel assemblies during loading and inloading operations and storage.	Not applicable. Any dislodged crud will be contained in the MCO.
6.4.1.12	The storage area heat removal systems shall meet their performance requirements under extreme climatic conditions, including solar heat loads.	The CSB facility natural convection cooling system is designed to meet the performance requirements under extreme climatic conditions, including solar heat loads per Sections 2.3.3, 2.4.4.1, 2.7.3, and 2.8.2, and Figure 4-3. (HNF-SD-SNF-RPT-004, Rev 7)
6.4.1.13	The storage cavity shall be designed to be loaded and unloaded without breaching confinement of the fuel unit and shall not result in bypassing the confinement of other fuel units.	The CSB facility storage tube is designed to be loaded and unloaded without breaching confinement of the MCO and does not result in bypassing the confinement of other MCOs in the storage tube per Figure 4-3. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.4.1.14	The internal surfaces of the storage cavity shall be free of burrs, sharp corners, edges, or weld beads that could cause snagging or damage during transfer.	The CSB facility storage tube is designed to be free of burrs, sharp corners, edges, or weld beads for ease of installation and to prevent damage to the MCO during installation per FDF-102.
6.4.1.15	Internal clearances of the storage cavity shall be sufficient for easy insertion and removal for the expected geometric distortions (e.g., twist and bowing). In addition, provision shall be made for proper alignment between the loading and inloading equipment and the storage cavities to ensure that these clearances are maintained.	The CSB facility storage tube is designed for the MCO taking consideration for bowing and twisting per FDF-102. The MHM (designed by others) is aligned to the storage tube per WHC-S-0425.
6.4.2	CASK (SILO) These requirements apply to a silo storage design.	Not applicable. The CSB facility is not a silo storage design.
6.4.3	DRYWELL (CAISSON) These requirements apply to a caisson storage design.	Not applicable. The CSB facility is not a caisson storage design.
6.4.4	VAULT (CANYON)	
6.4.4.1	CONDITIONS OF DESIGN	
6.4.4.1.1	The heat removal system shall meet the performance requirements for the fully loaded vault of maximum heat rated fuel units and all partially loaded configurations.	The CSB facility design for heat removal from the storage vaults is based on fully loaded vault of maximum heat rated fuel units and all partially loaded configurations per Sections 2.3.3 and 2.4.4.1, and Figure 4-3. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.4.4.1.2	Air outlet temperatures of the heat removal system shall be consistent with the properties of structural materials used to duct the exhaust air.	The CSB facility design air outlet temperatures of the heat removal system are consistent with the properties of structural materials used to duct the exhaust air per Sections 2.3.3, 2.4.4.1, and 2.7.3, and Figure 4-3. (HNF-SD-SNF-RPT-004, Rev 7)
6.4.4.1.3	Heat removal systems using environmental air shall incorporate, within air inlets and outlets, provisions for preventing ingress of birds, vermin, insects, rain, snow, and so forth.	The CSB facility design for the environmental air intake structure and exhaust stack provide screens to prevent ingress of birds and vermin (except for insects at the vault air inlet), and covers to prevent ingress of rain and snow per drawings addressed in Section 2.4.4.1. (HNF-SD-SNF-RPT-004, Rev 7)
6.4.4.1.4	Heat removal systems using environmental air shall have the air inlets and outlets arranged to prevent unacceptable blockage and flooding during extremes of design climatic conditions.	The CSB facility design for the environmental air intake structure and exhaust stack provide protection from unacceptable blockage and flooding during extremes of design climatic conditions per drawings addressed in Section 2.4.4.1. (HNF-SD-SNF-RPT-004, Rev 7)
6.4.4.1.5	Heat removal systems drawing air directly from the environment shall either incorporate provisions to remove airborne particulates at the inlet or incorporate provisions for removing particulate accumulation from the interior of the cooling air plenum.	Not applicable. The CSB facility design for heat removal from the vaults is a passive system which ventilates the vault area by convection per Figure 4-1. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.4.4.1.6	The internal arrangement of the storage vault should be designed to minimize the spread of airborne radioactive particulates within the fuel unit confinement volume.	The CSB facility storage vault design provides low pressure, inert atmosphere storage tubes to store the MCOs which maintains a steel and atmosphere barrier in the vault area, and steel and sealed barrier in the operating deck area from airborne radioactive particulates per Sections 2.4.2 and 2.4.3. (HNF-SD-SNF-RPT-004, Rev 7)
6.4.4.1.7	Surfaces of the vault structure subject to contamination should be designed to facilitate decontamination.	Not applicable. The CSB facility vault design provides sealed storage tubes which prevent contamination from escaping and maintain a inert atmosphere per Section 16.3.1.3. (HNF-SD-SNF-RPT-004, Rev 7)
6.4.4.1.8	Structural materials used within the storage vault as containment barriers, air flow guides for the heat removal system, or seismic restraints for the storage cells shall be protected from corrosive effects of the cooling air flow or shall incorporate corrosion allowances consistent with the design life of the component such that no loss of function occurs.	The CSB facility storage vault design for containment barrier's structural materials is based on the 40-year design life of the facility per Section 2.1 (HNF-SD-SNF-RPT-004, Rev 7) and Section 10.0 (DBD FDI 80460200).
6.4.4.1.9	Thermal analysis of the heat removal system shall take into account heat loads from sources other than spent fuel, such as lighting, motors, and ambient conditions.	Not applicable. The CSB facility storage vault does not have any other heat sources.
6.4.4.1.10	Confinement integrity of the loading and inloading subsystems shall be compatible with the vault storage system confinement if, during loading or unloading of fuel units, the two confinements are connected.	Not applicable. The MCO loading/unloading confinement integrity is provided by the MHM (designed by others) [WHC-S-0425].

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.4.4.1.11	Air filtration systems that are used in conjunction with storage systems for uncanistered fuel for confinement of radioactive particulates shall be designed with sufficient redundancy to meet specified performance requirements.	Not applicable. The fuel unit scrap baskets are contained in the MCOs. However, the operating area shelter is provided with negative exhaust into a HEPA filter system per Section 2.7.3. (HNF-SD-SNF-RPT-004, Rev 7)
6.4.4.1.12	Air filtration equipment shall be instrumented and monitored to detect the buildups of radioactive material with appropriate alarms to signal a high buildup level.	See 6.4.4.1.11 above.
6.4.4.1.13	Forced air cooling systems shall be designed with sufficient redundancy to meet specified performance requirements.	Not applicable. The CSB facility storage vault cooling system is a passive cooling system.
6.4.4.1.14	The sizing of forced air cooling systems shall consider maximum cooling requirements of all heat sources, velocity head, and frictional losses in the air path.	Not applicable. The CSB facility storage vault cooling system is a passive cooling system.
6.4.4.2	INTERFACES	
6.4.4.2	The vault storage system loading and unloading subsystem interfaces with the fuel unit transfer area.	The CSB facility storage vault system interfaces with the operating area and the load-in/load-out area per Figure 2-1. (HNF-SD-SNF-RPT-004, Rev 7)
6.4.4.3.1	Safe access to perform necessary testing, inspection, and maintenance shall be provided (e.g., ladders, catwalks, and guard rails).	Not applicable. The CSB facility will not provide access to the canister storage vaults after MCO installation.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.4.4.3.2	Air filtration and forced air cooling systems shall be designed to facilitate access for maintenance and testing.	Not applicable. The CSB facility storage vault cooling system is a passive cooling system.
6.4.4.3.3	TESTING, INSPECTION & MAINTENANCE	
6.4.4.3.3	Components of the loading and unloading subsystem subject to routine testing, inspection, or maintenance should be located outside the confinement barriers.	Not applicable. The MCO loading/unloading is provided by the MHM (designed by others) [WHC-S-0425]. However, the storage tube plug is subject to routine testing, inspection, or maintenance which is located outside the confinement barriers per Figure 2-6. (HNF-SD-SNF-RPT-004, Rev 7)
6.4.4.3.4	The internals of the loading and unloading subsystem subject to become contaminated should incorporate provision for decontamination.	Not in CSB design-to-cost (FRF-2792). However, the storage tube provides provisions for decontamination per 16.3.1.3. (HNF-SD-SNF-RPT-004, Rev 7)
6.4.4.4	CODES AND STANDARDS	
6.4.4.4	In addition to commercial codes and standards, the design and materials shall conform to the following American National Standards as applicable: (1) ANSI/AWS D1.1-1990; (2) ANSI/ACI 349-85, for important to confinement concrete structures; and (3) ANSI/AISC N690-1984, for important to confinement steel structures.	The CSB facility storage vault concrete and structural steel portions are designed to ANSI/ACI 349 and ANSI/AISC N690 per Section 10.2 (DBD FDI 80460200) and HNF-SD-SNF-RPT-004, Rev 7.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

SECTION 6.5 HEATING, VENTILATION AND AIR CONDITIONING

Section	Performance Requirement	Current Design Compliance
6.5	The HVAC system shall consist of subsystems whose design and performance criteria are based on the level of potential for airborne radioactivity. A pressure differential shall be maintained between subsystems such that the air will always travel from the areas of lesser to the greater potential for airborne radioactivity/ Such subsystems may be identified according to the following examples: (1) Personnel building subsystem - for areas with no potential for airborne radioactivity such as administration areas and warehouses. (2) Main building subsystem - for areas with low potential for airborne radioactivity such as the transportation package handling area. (3) Process subsystem - for areas with a higher potential for airborne radioactive contamination such as the fuel unit handling, fuel unit preparation with rod consolidation, radwaste treatment, and those storage areas served by a building ventilation system.	The CSB facility design is designed with two zoned subsystems, operating area shelter and support building, which have their own air supplies per Section 6.1 (DBD FDI 80460200) and Section 2.7.3 (HNF-SD-SNF-RPT-004, Rev 7).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.5.1	CONDITIONS OF DESIGN	
6.5.1.1	GENERAL	
6.5.1.1.2	The subsystems should be designed to provide for filtration of inlet air to prevent accumulation of dust in the facility and to reduce load on other filters that might be used.	The CSB facility HVAC subsystems are designed to prevent accumulation of dust, and reduce load on other filters with pre-filters per Section 2.7.3 and Drawing H-2-129416. (HNF-SD-SNF-RPT-004, Rev 7)
6.5.1.1.3	The subsystems shall be designed to provide for flow of air from area of low potential for radioactive contamination to areas of higher potential for radioactive contamination.	The CSB facility is designed with for a negative pressure in the operating area, and a positive pressure in the support area per Section 2.7.3. (HNF-SD-SNF-RPT-004, Rev 7)
6.5.1.1.4	The subsystems shall be designed to preclude the flow of air from areas of high potential from radioactive contamination to areas of low potential for radioactive contamination; interfaces with the process subsystem should be provided with positive backflow prevention devices to preclude flow reversals, which could transport contamination from the process areas to areas of low contamination potential.	The CSB facility is designed with airlocks and backdraft dampers between HVAC zones per Section 2.7.3. (HNF-SD-SNF-RPT-004, Rev 7)
6.5.1.1.5	Effluent air from areas with significant potential radioactive contamination shall be filtered prior to being exhausted. Concentrations of effluents shall result in compliance with 10 CFR 20, "Standards for Protection Against Radiation," covering releases to unrestricted areas.	The CSB facility is designed with HEPA filters, exhaust fans and a stack to the atmosphere per Section 2.7.3 and Drawing H-2-129416. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.5.1.1.6	The individual building areas shall be thermostatically controlled to maintain temperature and humidity within limits defined by equipment and personnel requirements.	The CSB facility is designed for individual building areas thermostatically controlled to maintain temperature and humidity within limits per Section 2.7.3. (HNF-SD-SNF-RPT-004, Rev 7)
6.5.1.1.7	High-efficiency particulate air (HEPA) filters shall be designed and located to facilitate replacement under conditions leading to low personnel radiation exposure. A modular design should be considered.	The CSB facility is designed and located to facilitate replacement under conditions leading to low personnel radiation exposure per Drawing H-2-129416. (HNF-SD-SNF-RPT-004, Rev 7)
6.5.1.1.8	The HVAC system design shall include automatic fire dampers to impede the spread of fire from one zone to another.	The CSB facility HVAC system is designed with automatic fire dampers to impede the spread of fire from one zone to another per Section 2.7.3. (HNF-SD-SNF-RPT-004, Rev 7)
6.5.1.1.9	The HVAC system shall include provision to automatically protect filters from exposure to fires.	The CSB facility HVAC design provides dampers upstream of the HEPA filters to stop exposure to fires per Drawing H-2-129416. (HNF-SD-SNF-RPT-004, Rev 7)
6.5.1.1.10	The HVAC system design shall provide the capability to filter the building exhausts and remove smoke after suppression of a fire.	Not in CSB design-to-cost. Refer to FDH Letter FDH-9761261, Addendum 3 of Attachment 1 (FRF-2792). However, if the fire dampers are shut from excessive heat, the dampers can be manually opened to allow fan operation and HEPA filtration for smoke removal after suppression of a fire per Section 2.7.3 (HNF-SD-SNF-RPT-004, Rev 7).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.5.1.2	SUBSYSTEMS	
6.5.1.2.1	PERSONNEL BUILDING SUBSYSTEM	
6.5.1.2.1	This subsystem [Personnel Building Subsystem] shall be designed solely to provide comfort conditioning. Recirculation of the air within the subsystem may be used.	The CSB facility support building HVAC system is designed to provide comfort conditioning per Section 2.7.3 (HNF-SD-SNF-RPT-004, Rev 7).
6.5.1.2.2	MAIN BUILDING SUBSYSTEM	
6.5.1.2.2	This subsystem [Main Building Subsystem] shall be designed primarily to provide comfort conditioning, particularly humidity.	Not applicable. The CSB facility support building HVAC system designed with change room and office area per Section 2.7.3. (HNF-SD-SNF-RPT-004, Rev 7)
6.5.1.2.2 (1)	Air from this system may be exhausted through the process subsystem covered in 6.5.1.2.3.	The CSB facility support building HVAC system is designed for HEPA filtration exhaust per Section 2.7.3. (HNF-SD-SNF-RPT-004, Rev 7)
6.5.1.2.2 (2)	In recirculating systems recirculated air shall be filtered through an HEPA filter to prevent buildup of radioactive particulates in the air.	The CSB facility support building HVAC system is designed for recirculating air per Figure 2-17 (HNF-SD-SNF-RPT-004, Rev 7). However, The recirculating air is not filtered before being returned, and 50% or more is exhausted through the HEPA filtered exhaust system during air recirculation of the operating area per Section 2.7.3 (HNF-SD-SNF-RPT-004, Rev 7).
6.5.1.2.2 (3)	In once through systems, the air may be exhausted through a building stack without filtration.	The CSB facility support building HVAC system designed for HEPA filtration exhaust.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.5.1.2.3	PROCESS SUBSYSTEM	
6.5.1.2.3 (1)	The process subsystem shall be designed for once-through air flow. Supply air may be drawn from the main building subsystem. Exhaust air shall be filtered through 90% American Society of Heating Refrigerating, and Air-Conditioning Engineers (ASHRAE) prefilters and 99.97% HEPA filters in series.	Not applicable. The CSB facility operating area does not have a subsystem. However, the mobile service station enclosure provides a HEPA filtered exhaust unit which discharges to the operating area exhaust stack per Section 2.7.3 (HNF-SD-SNF-RPT-004, Rev 7).
6.5.1.2.3 (2)	The process subsystem shall be designed to ensure static pressure of at least 1/4-inch water column or less than that in the main building subsystem or the outside area.	Not applicable. The CSB facility design provides portable HEPA filtered ventilation with the tube vent and purge cart per Section 2.5.1.6 (HNF-SD-SNF-RPT-004, Rev 7), and the operating area shelter has a less contamination potential and the Zone III criteria may not be maintained with the outer doors open per Section 6.1 (DBD FDI 80460200). Also, the mobile service station enclosure provides a HEPA filtered exhaust unit which discharges to the operating area exhaust stack per Section 2.5.1.2 (HNF-SD-SNF-RPT-004, Rev 7).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.5.1.2.3 (3)	The process subsystem air cleaning equipment shall be equipped with instrumentation for monitoring the buildup of radioactivity with appropriate alarms to signal high activity and power-actuated dampers to isolate that areas that fail-close on loss of power. Alternatively, parallel treating systems may be provided, equipped with automatic changeover of airflow to a standby treating system on a high level alarm.	The CSB facility design for the HEPA filter systems provides continuous monitoring for contamination per Section 2.7.3. (HNF-SD-SNF-RPT-004, Rev 7)
6.5.1.2.3 (4)	Airborne radioactive monitoring systems shall be located such that gaseous effluents having the potential for carrying radioactivity are monitored with appropriate alarms to signal high activity levels.	The CSB facility airborne activity monitor design provides CAM, radioactive gas monitor, radioactive particulate sampling, and effluent monitoring that are located in strategic areas throughout the facility and in the exhaust stacks per Sections 2.7.3 and 2.7. 4 (HNF-SD-SNF-RPT-004, Rev 7).
6.5.2	INTERFACES	
6.5.2.1	The personnel building subsystem is a completely separate system. Its interface with the main building is through personnel access doors.	The CSB facility support building design provides airlocks, change room and personnel monitoring which separates the building from the operating area shelter per Sections 2.4.4.2, 2.4.4.3, and 2.7. 4. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.5.2.2.	The main building subsystem has only nominal interface with the personnel building subsystem but may furnish the supply air to the process subsystem.	The CSB facility support building design provides airlocks, change room and personnel monitoring which separates the building from the operating area shelter per Sections 2.4.4.2, 2.4.4.3, and 2.7. 4 (HNF-SD-SNF-RPT-004, Rev 7), and the mobile service station enclosure draws its air supply from the operating area per Section 2.5.1.2 (HNF-SD-SNF-RPT-004, Rev 7).
6.5.2.3	The process subsystem interfaces only with the main building subsystem from which it receives supply air.	The CSB facility design is designed with zoned subsystems for the operating area shelter and the support building which have their own air supplies per Section 6.1 (DBD FDI 80460200) and Section 2.7.3 (HNF-SD-SNF-RPT-004, Rev 7), and the mobile service station enclosure provides a HEPA filtered exhaust unit which discharges to the main operating area exhaust stack per Section 2.5.1.2 (HNF-SD-SNF-RPT-004, Rev 7).
6.5.2.4	The overall HVAC system interfaces with the I&C system. Provisions will be necessary for automatic operation of certain systems for control of radioactive material and for other functional requirements of the HVAC system.	The CSB facility design provides a distributive control system to interface with the stack monitoring, operating area, diesel generator tanks and engine, air compressor, air dryer, and HVAC pump, vault intake flow, vault intake, vault outlet temperature, and MCO servicing per Section 2.8.2. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.5.3	TESTING, INSPECTION & MAINTENANCE	
6.5.3.1	All HEPA filter installations shall be designed for in-place testing of filter pressure drop and filtering efficiency.	The CSB facility design provides in-place testing ports for filter pressure drop and filtering efficiency testing per Drawing H-2-129416. (HNF-SD-SNF-RPT-004, Rev 7)
6.5.3.2	All filter mounts shall be designed for ready access and visual inspection of gaskets and seals.	The CSB facility design provides filter mounts designed for ready access and visual inspection of gaskets and seals per Drawing H-2-129416. (HNF-SD-SNF-RPT-004, Rev 7)
6.5.3.3	Provisions shall be made on the exhaust side of all HEPA filters for monitoring airborne radioactivity in the filtered exhaust air.	The CSB facility design provides stack monitoring per Sections 2.7.3 and 2.8.2. (HNF-SD-SNF-RPT-004, Rev 7)
6.5.4	CODES AND STANDARDS	
6.5.4	In addition to commercial standards, the design and materials shall conform to the following as applicable: (1) American National Standard for Nuclear Power Plant Air Cleaning Units and Components, ANSI/ASME N509-1989; (2) American National Standard for Testing of Nuclear Air-Cleaning Systems, ANSI/ASME N510-1989; (3) Military Standard MIL-F-51068C, Filter: Particulate High Efficiency, Fire Resistant; and (4) Military Standard MIL-F-51079A, Filter Medium: Fire Resistant, High Efficiency.	The CSB facility design standards for the HVAC system are ANSI/ASME N509-1989 and ANSI/ASME N510-1989 per Section 6.2 (DBD FDI 80460200). The CSB facility design does not provide HEPA filters per MIL-F-51068C and MIL-F-51079A which are provided by the operating contractor.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

SECTION 6.6 BUILDINGS

Section	Performance Requirement	Current Design Compliance
6.6.1	CONDITIONS OF DESIGN	
6.6.1.1	If the collapse of the building and internal structure, systems, and components can damage stored fuel units or equipment that are important to confinement within the ISFSI, the building foundation and superstructure shall be designed for all loads and loading combinations, including seismic and design wind loads, applicable to the specific area of the ISFSI under consideration, in accordance with 6.17.	The CSB facility building foundation and superstructure design is designed for all loads and loading combinations, including seismic and design wind loads, applicable to the specific area of the facility per Section 10.4 (DBD FHI 80460200) and Section 2.3.3 (HNF-SD-SNF-RPT-004, Rev 7).
6.6.1.2	The buildings shall be provided with controlled sumps and drains interfacing the radwaste system to prevent uncontrolled or unmonitored releases of radioactive liquid wastes to the environment.	Not applicable. The CSB facility does not provide contaminated waste piping. The CSB facility design provides process sumps for potentially contaminated runoff per Section 2.4.2.3. (HNF-SD-SNF-RPT-004, Rev 7)
6.6.1.3	Building layout shall reflect application of the ALARA principles regarding all fuel handling operations and required personnel access.	The CSB facility design applies the ALARA principles per Section 12 (DBD FDI 80460200).
6.6.1.4	Building layout shall [be] compatible with the requirements of physical security in accordance with 6.10.	The CSB facility design of the building layout provides physical security per Section 2.9. (HNF-SD-SNF-RPT-004, Rev 7)

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Section	Performance Requirement	Current Design Compliance
6.6.1.5	Building layout and structure shall be compatible with equipment operation, personnel, and maintenance activities expected and required in each area of the ISFSI under both normal and off-normal conditions that may be due to facility operations, environmental conditions, or man-made as well as natural phenomena.	The CSB facility design of the building layout and structure is compatible with the equipment operation, personnel, and maintenance activities expected and required in each area of the facility per Section 10 (DBD FDI 80460200) and Figures 2-1 and 4-6 (HNF-SD-SNF-RPT-004, Rev 7).
6.6.1.6	Building layout shall provide space and equipment for laydown and storage of fuel handling equipment and tools and other peripheral equipment required within specific areas of the ISFSI.	The CSB facility design provides adequate space and equipment for laydown and storage of fuel handling equipment per Figures 2-1 and 4-6 (HNF-SD-SNF-RPT-004, Rev 7).
6.6.1.7	Building layout shall accommodate industrial and radiological safety systems and components, e.g., breathing apparatus, radiation monitors, and radioactive waste drains.	The CSB facility design of the building layout accommodates industrial and radiological safety systems and components per Figure 2-18. (HNF-SD-SNF-RPT-004, Rev 7).
6.6.2	INTERFACES	
6.6.2	There are no special interface requirements imposed on other ISFSI systems.	Not applicable.
6.6.3	TESTING, INSPECTION & MAINTENANCE	
6.6.3	There are no special testing, inspection or maintenance requirements unique to the ISFSI buildings.	Not applicable.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.6.4	CODES AND STANDARDS	
6.6.4	In addition to commercial codes and standards, the design and materials shall conform to the following American National Standards as applicable: (1) ANSI/ACI 349-85, for important to confinement concrete structures; and (2) ANSI/AISC N690-1984, for important to confinement steel structures.	The CSB facility is designed to ANSI/ACI 349 and ANSI/AISC N690 per Section 10.2 (DBD FDI 80460200) and HNF-SD-SNF-RPT-004, Rev 7.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

SECTION 6.7 RADWASTE TREATMENT

Section	Performance Requirement	Current Design Compliance
6.7.1	CONDITIONS OF DESIGN	
6.7.1.1	The radwaste treatment system shall be designed to collect, monitor, and process all liquid and solid radioactive wastes including flushing or operation of the fire protection system in those areas with the potential of radioactive contamination. An objective of the design shall be to minimize the exposure of operating and maintenance personnel through proper selection of readily ~~decontaminatible materials, coating, and finishes and~~ through minimization of traps, pockets, and crevices where radioactive materials may accumulate.	Not in CSB design-to-cost. Refer to FDH Letter FDH-9761261, Addendum 3 of Attachment 1 (FRF-2792).
6.7.1.2	Shipment of liquid radwaste off site shall be unacceptable. Means shall be provided for processing or the complete solidification of liquid radwastes. The design shall provide for the packaging requirements of the burial site and for the requirements of 10 CFR 71 and 49 CFR 173, Subpart I.	Not in CSB design-to-cost (FRF-2792). The CSB design/operations do not generate liquid radwaste.
6.7.1.3	Airborne effluents from the radwaste treatment systems shall be monitored for airborne particulates and the effluent filtered prior to discharge to the environs.	Not applicable. (there is no radwaste treatment system).

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Section	Performance Requirement	Current Design Compliance
6.7.1.4	Consideration should be given to reduction of the volume of solid radwaste requiring off-site disposal (e.g., clothing, wipes, plastics, failed equipment) by means of incineration or compaction. The method of volume reduction selected should be based on an evaluation of engineering, economics, and environmental concerns.	Not applicable. The CSB facility provides method of volume reduction selected based on an evaluation of engineering, economics, and environmental concerns.
6.7.1.5	The arrangement of the radwaste treatment system within the installation shall be designed to prevent the spread of radioactive materials to normally uncontaminated areas.	Not applicable. (there is no radwaste treatment system).
6.7.2	INTERFACE	
6.7.2	There are no special requirements imposed on other ISFSI systems by the radwaste treatment system.	Not applicable. (there is no radwaste treatment system).
6.7.3	TESTING, INSPECTION & MAINTENANCE	
6.7.3.1	Pumps, valves, filters, and other components shall be laid out to provide accessibility.	Not applicable. (there is no radwaste treatment system).
6.7.3.2	Components of the system that could accumulate radioactive materials should be shielded and flushable to facilitate decontamination and in-place maintenance.	Not applicable. (there is no radwaste treatment system).
6.7.3.3	Radioactivity monitoring equipment shall be provided for monitoring the effectiveness of radioactive waste processing equipment. Monitoring may be periodic, depending on the expected volumetric flow rate and concentration of radioactivity.	Not applicable. (there is no radwaste treatment system).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.7.3.4	Continuous radioactivity monitoring shall be provided on all effluent streams (airborne or liquid) that discharge directly to the environment. Provisions shall be made to automatically interrupt the release before the radioactivity levels reach allowable limits.	Not applicable. (there is no radwaste treatment system).
6.7.3.5	Equipment that requires contact maintenance and may become contaminated shall be designed to be readily decontaminated.	Not applicable. (there is no radwaste treatment system).
6.7.4	CODES AND STANDARDS	
6.7.4	In addition to commercial codes and standards, the design and materials shall conform to the following American National Standards as applicable: (1) Solid Radioactive Waste Processing System for Light Water Cooled Reactor Plants, ANSI/ANS-55.6-1993; and (2) Liquid Radioactive Waste Processing Systems for Light Water Reactor Plants, ANSI/ANS-55.6-1993.	Not applicable. (there is no radwaste treatment system).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

SECTION 6.8 ELECTRICAL POWER, I&C AND COMMUNICATIONS

Section	Performance Requirement	Current Design Compliance
6.8.1	CONDITIONS OF DESIGN	
6.8.1.1	System components that are important to confinement shall be qualified to operate within environmental (including seismic) limits established for their location within the installation, including, but not limited to, temperature, humidity, and radiation levels. Ability to meet the applicable performance requirements of Section 5, ISFSI Performance Requirements, under the expected ambient conditions shall be verified by demonstration or by reference to applicable prior experience.	The CSB facility design provides system components that are important to confinement that are qualified to operate within environmental (including seismic) limits established for their location within the installation, including, but not limited to, temperature, humidity, and radiation levels per Section 3, 5, 8, 9,10, 11, and 12 (DBD FDI 80460200).
6.8.1.2	The ISFSI I&C system shall be designed with due consideration of the human interface.	The CSB facility design considered human interface per Figures 2-1, 2-18, and 4-6. (HNF-SD-SNF-RPT-004, Rev 7)
6.8.1.3	ON-SITE/OFF-SITE POWER	

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.8.1.3	The on-site electric power system shall be designed to provide emergency electrical supply to essential instrumentation, emergency lighting, emergency communications, and physical security systems. Consideration should be given to the need for an on-site power generation capability to serve fuel unit cooling and HVAC system, particularly those employing force circulation cooling.	The CSB facility design provides backup electrical power per Sections 2.8.1.2 and 2.8.1.3 (HNF-SD-SNF-RPT-004, Rev 7). Backup power is not required for fuel unit cooling.
	The on-site electric power system shall be designed to accommodate the physical protection system requirements of 6.10.	The CSB facility on-site electrical power design provides physical protection system requirements per Section 5 (DBD FDI 80460200).
6.8.1.4	INSTRUMENTS AND CONTROLS (I&C)	
6.8.1.4.1	Accuracy limits of the I&C system should be consistent with those of normal industrial systems.	The CSB facility design provides accuracy limits of the I&C system consistent with normal industrial systems per Section 7.6.7 (DBD FDI 80460200).
6.8.1.4.2	The placement and selection of indicators, recorders, and gauges should be such that they are readily visible in the equipment operating locations, which in turn should be located in areas of lowest radiation exposure.	The CSB facility design provides I&C locations as close to the process being monitored and still accessible for ease of maintenance and calibration per Section 7.6.4 (DBD FDI 80460200).
6.8.1.4.3	Radiation detection instrumentation shall be provided for measuring the direct radiation levels in and around areas containing radiological [sources and] alarms shall be provided to warn operating personnel of radiation and airborne radioactivity levels above set limits.	The CSB facility airborne activity monitor design provides CAM, radioactive gas monitor, and radioactive particulate sampling that are located in strategic areas throughout the facility per Section 2.7. 4. (HNF-SD-SNF-RPT-004, Rev 7)

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.8.1.4.4	Instrumentation shall be provided to monitor air temperature in fuel unit storage areas, where appropriate.	The CSB facility design provides a distributive control system to interface with the vault intake flow, vault intake, vault outlet temperature, and MCO servicing per Section 2.8.2. (HNF-SD-SNF-RPT-004, Rev 7)
6.8.1.4.5	Precision position indicating I&C on remotely operated equipment should be provided to ensure proper alignment of such equipment.	Not applicable. The CSB facility does not provide remote operated equipment with precision position indicating I&C.
6.8.1.4.6	In areas containing equipment or components that are important to confinement where the potential for explosion exists, instrumentation shall be provided to detect an explosion and give an alarm.	Not applicable. The CSB facility will provide TSRs for surveillance of storage tube pressure and operability requirements for the tube vent and purge cast hydrogen monitor per Section 3.4.2.4 (HNF-SD-SNF-RPT-004, Rev 7).
6.8.1.4.7	Instrumentation shall be provided to detect and alarm both high and low differential pressure across filters in the HVAC system.	The CSB facility is designed to allow inplace testing of HEPA filters and continuous monitoring per Section 6.3.4 (DBD FDI 80460200) and Section 2.7.3 (HNF-SD-SNF-RPT-004, Rev 7).
6.8.1.4.8	Instrumentation shall be provided to initiate isolation of the HVAC system filters in the event of fire detection.	The CSB facility design provides smoke detectors to shutdown the air handlers to isolate the HEPA filter from the air flow per Section 2.7.3 (HNF-SD-SNF-RPT-004, Rev 7).
6.8.1.4.9	Instrumentation shall be provided to determine the intensity of natural design phenomena that may occur for comparison with the design basis of structures, systems, and components that are important to confinement.	Not in CSB design-to-cost. Refer to FDH Letter FDH-9761261, Addendum 3 of Attachment 1 (FRF-2792).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.8.1.5	COMMUNICATIONS	
6.8.1.5.1	The communication system components shall be designed to function during the normal and off-normal ambient environmental conditions expected to exist at their particular location.	The CSB facility communication system is designed for interior and exterior locations per Section 5.20 (DBD FDI 80460200) and Section 2.9 (HNF-SD-SNF-RPT-004, Rev 7).
6.8.1.5.2	If a portable radio system is utilized, the system shall be capable of operating satisfactorily in the facility environment; i.e., structural shielding interference shall be taken into account. Selection of frequency with respect to outside interference shall also be taken into account.	Not applicable.
6.8.1.5.3	Communication equipment shall incorporate adjustable volume control to a minimum of 10 dBA higher [than] the average ambient noise level to facilitate being heard.	The CSB facility design does not provide adjustable control, and is designed for each personnel location per Section 5.20.3 (DBD FDI 80460200).
6.8.1.5.4	Background noise should be considered when locating permanent receivers and jacks. Soundproofing or shielding, or both, should be provided.	The CSB facility design considered for coverage of each location per Section 5.20.3 (DBD FDI 80460200).
6.8.1.6	ALARMS (LOCAL AND REMOTE) AND RADIATION AREA ACCESS CONTROL	
6.8.1.6	Background environmental conditions shall be considered in determining audio and light intensity levels for alarms and radiation area access control devices.	The CSB facility design considered background environmental conditions per Section 5.20.4 (DBD FDI 80460200).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.8.2	INTERFACES, ON-SITE/OFF-SITE POWER	
6.8.2	The on-site electric power system interfaces with an off-site transmission system. Suitable transformers and isolation equipment shall be provided to regulate voltage to the facility and prevent damage. The off-site electric power system interfaces with the on-site electric power system and each ISFSI system that requires control or status monitoring and may interface with an on-site emergency power system.	The CSB facility design interfaces with an off-site transmission system per Section 5.8 (DBD FDI 80460200) and Section 2.8.1 (HNF-SD-SNF-RPT-004, Rev 7).
6.8.3	TESTING, INSPECTION & MAINTENANCE	
6.8.3.1	Electrical power system components shall be designed for periodic inspection, testing and maintenance.	The CSB facility design for the electrical power system components provides for the capability for periodic inspection, testing and maintenance defined in ANSI C2 and NFPA 70 per Section 5.2 (DBD FDI 80460200).
6.8.3.2	Both normal and emergency lighting systems shall be designed for periodic inspection, testing, and maintenance.	The CSB facility design for normal and emergency lighting system components provides for the capability for periodic inspection, testing, and maintenance defined in ANSI C2 and NFPA 70 per Section 5.2 (DBD FDI 80460200).
6.8.3.3	Communication systems shall be designed for periodic testing and maintenance.	The CSB facility design for communication system components provides for periodic testing and maintenance defined in ANSI C2 and NFPA 70 per Section 5.2 (DBD FDI 80460200).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.8.3.4	Alarm systems shall be designed for periodic inspection, testing and routine maintenance.	The CSB facility design for alarm system components provides for periodic inspection, testing and routine maintenance defined in ANSI C2 and NFPA 70 per Section 5.2 (DBD FDI 80460200).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

SECTION 6.9 FIRE PROTECTION

Section	Performance Requirement	Current Design Compliance
6.9	For the format of this standard, the fire protection system is divided into subsystems based upon the level of fire protection in the various areas of the ISFSI. In addition, consideration is given to the potential for airborne radioactive material contamination in the event of a fire. The subsystem designations are as follows: (1) Personnel building subsystem - for areas with no potential for airborne radioactivity but with high fire potential, such as administration areas and warehouses. (2) Main building subsystem - for areas of low fire potential and low potential for airborne radioactivity such as the transportation package handling area subsystems and receiving and inspection and decontamination. (3) Site subsystem - for areas with low fire potential and no airborne radioactivity such as the areas surrounding the ISFSI.	The CSB facility fire protection design is divided into the support building (sprinkled) subsystem, and the operating area subsystem with smoke detection and fusible link fire dampers for control of contamination and fire walls per Sections 2.7.2 and 2.7.3 (HNF-SD-SNF-RPT-004, Rev 7).
6.9.1	CONDITIONS OF DESIGN	
6.9.1.1	GENERAL	
6.9.1.1.1	Because dry storage modes covered by this standard differ in design, the specific fire protection system design requirements may be different for each storage mode.	The CSB facility design for fire protection in the operating area is the same for MCO shipping cask handling, MCO load-in/load-out, and MCO tube storage per Section 2.7.2 (HNF-SD-SNF-RPT-004, Rev 7).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.9.1.1.2	Fire extinguishing systems utilizing a gas discharge shall be designed such that storage containers, discharge piping, and detector systems are located near the protected hazard area to avoid long runs of discharge piping. Portable fire extinguisher shall be installed locally throughout the facility in accordance with requirements of the following American National Standards as applicable: (1) Portable Fire Extinguisher, ANSI/NFPA 10-1990; (2) Carbon Dioxide Extinguishing Systems, ANSI/NFPA 12-1989; (3) Fire Extinguishing Systems - Halon 1301, ANSI/NFPA 12A-1989; and (4) Fire ~~Extinguishing Systems - Halon~~ 1211, ~~ANSI/NFPA~~ 12B-1990. These standards supplement sprinkler and standpipe hose systems in occupied areas.	Not applicable. The CSB facility does not provide a gas discharge fire protection system.
6.9.1.1.3	Fire or smoke detector systems shall be designed so that the detectors are located principally at room ceilings or building roofs and at intermediate levels as may be required by specific features of design and fire hazard such as ventilation ducts or other obstructions. Spacing shall be in accordance with American National Standard for Automatic Fire Detectors, ANSI/NFPA 72E-1990 with proper evaluation for physical factors that might affect their operation.	The CSB facility smoke detector system design provides smoke detectors located in the operating area and support area HVAC ducts per Section 2.7.3 (HNF-SD-SNF-RPT-004, Rev 7) and design to the requirements of NFPA 72E per Section 11.2.2 (DBD FDI 80460200).

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Section	Performance Requirement	Current Design Compliance
6.9.1.1.4	The water suppression supply system shall be designed such that the fire suppression capability would not be precluded if any single portion of the system were not functional.	The CSB facility wet-pipe sprinkler system is designed to provide a looped grid type, two-way flow, water distribution system as defined NFPA 24 per Section 11.8.1 (DBD FDI 80460200), and a standpipe with a siamese hose connection for alternate water supply as defined in NFPA 14 per Section 11.8.2 (DBD FDI 80460200).
6.9.1.1.5	Sprinkler systems should be wet pipe systems. Selection of specific type system shall take into account speed of operation vis-a-vis the nature of the fire hazard, ambient temperature, nuclear critically potential, drainage, and optimum use of water. System design and installation shall be in accordance with American National Standard for Installation of Sprinkler Systems, ANSI/NFPA 13-1989.	The CSB facility support building wet-pipe sprinkler system has no special fire suppression restriction due to the nature of the fire or criticality potential, and drainage of fire water is to the exterior of the facility per Section 2.7.2 (HNF-SD-SNF-RPT-004, Rev 7). The sprinkler system is designed to NFPA 13 per Section 11.8.3 (DBD FDI 80460200).
6.9.1.1.6	The fire protection system and associated structures shall be designed to ensure that the level of neutron moderation in any fuel unit handling or storage area affected by the operation of any element of the fire protection systems does not exceed that assumed for the purpose of the nuclear criticality analysis under 6.12.	The CSB facility fire protection design does not allow water suppression or runoff in the operating area per Section 2.7.2 (HNF-SD-SNF-RPT-004, Rev 7).
6.9.1.1.7	The standpipe shall be a wet pipe system with the hose stations provided in accordance with American National Standard for Installation of Standpipe and Hose Systems, ANSI/NFPA 14-1990, for Class II service.	The CSB facility standpipe design with a siamese hose connection as defined in NFPA 14 per Section 11.8.2 (DBD FDI 80460200).

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Section	Performance Requirement	Current Design Compliance
6.9.1.1.8	Yard hydrants shall be UL listed "break-off" compression-type units. Each hydrant shall be provided with an underground shutoff valve on the supply from the main.	The CSB facility hydrants are designed to NFPA 24 per section 11.8.1 (DBD FDI 80460200).
6.9.1.1.9	Total flooding gas systems with Halon or inert gas shall e provided in areas with fire potential where other fire suppression agents such as water would not be suitable. These systems should be actuated automatically by detectors with the capability of manual override.	Not applicable. The CSB facility does not provide a gas discharge fire protection system.
6.9.1.1.10	Extinguisher shall be selected for the specific class or classes of hazards to be controlled in accordance with ANSI/NFPA 10-1990.	The CSB facility fire extinguishers are designed to NFPA 10 per Section 11.2.2 (DBD FDI 80460200).
6.9.1.1.11	Fire protection system components used in areas of potential radioactive contamination shall be designed for ease of decontamination.	Not applicable. The CSB facility fire protection system extinguishers and detectors are of commercial grade and replaceable.
6.9.1.1.12	Upon detection of fire in areas protected by Halon or inert gas systems, the ventilation flow to those areas shall be shut down unless ventilation is required to maintain confinement, in which case only the supply connections to the space blowers shall be shut down. Ventilation equipment for all other areas shall continue to operate in the event of a fire.	Not applicable. The CSB facility does not provide a gas discharge fire protection system.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.9.1.2	SUBSYSTEMS	
6.9.1.2.1	PERSONNEL BUILDING SUBSYSTEM	
6.9.1.2.1	This subsystem [Personnel Building] shall be designed solely to provide fire protection for personnel.	The CSB facility support building is designed as a sprinkled area based on the MPFL total loss of $11.72 million per WHC-SD-SNF-FHA-002, Rev 2 (WHC-SD-SNF-FHA-002) and Section 2.7.2 (HNF-SD-SNF-RPT-004, Rev 7).
6.9.1.2.2	MAIN BUILDING SUBSYSTEM	
6.9.1.2.2	This subsystem [Main Building] shall be designed to provide fire protection for potential hazards such as electrical fires or minor spills.	The CSB facility support building is designed as a sprinkled area based on the MPFL total loss of $11.72 million per WHC-SD-SNF-FHA-002, Rev 2 (WHC-SD-SNF-FHA-002) and Section 2.7.2 (HNF-SD-SNF-RPT-004, Rev 7).
6.9.1.2.2 (1)	Provision shall be made for both hose stations and fire extinguisher, conveniently located around workstations.	The CSB facility fire protection design provides extinguishers located as defined in NFPA 10 per 11.2.2 (DBD FDI 80460200).
6.9.1.2.2 (2)	Whenever sprinklers are used, they shall be of close-head (wet) type.	The CSB facility wet-pipe sprinkler system is designed to NFPA 13 per Section 11.8.3 (DBD FDI 80460200).

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Section	Performance Requirement	Current Design Compliance
6.9.1.2.3	PROCESS SUBSYSTEM	
6.9.1.2.3	This subsystem [Process] shall be designed for fire protection for potential hazards due primarily to electrical fires. However, rod consolidation presents some special considerations due to the pyrophoric nature of Zirconium fines. Refer to ANSI/ANS-57.10-1987 for guidance.	The CSB facility operating area is designed for extinguishers only based on WHC-SD-SNF-FHA-002 per Section 2.7.2 (HNF-SD-SNF-RPT-004, Rev 7).
6.9.1.2.3 (1)	In the fuel handling area, the use of Halon should be considered instead of sprinkler system.	Not applicable. There is no fuel handled in the CSB facility, and the CSB does not require a gas discharge fire protection system.
6.9.1.2.3 (2)	Fire protection system shall have the capability of decontamination by being flushed to the radwaste system.	Not in CSB design-to-cost. Refer to FDH Letter FDH-9761261, Addendum 3 of Attachment 1 (FRF-2792).
6.9.1.2.3 (3)	Fire protection system piping into areas in which radioactive particulate contamination is expected to be present should be equipped with backflow prevention devices to preclude internal contamination of the system.	The CSB facility operating area is designed for extinguishers only based on WHC-SD-SNF-FHA-002 , and there is no fire protection piping into areas where radioactive particulate contamination is expected in the CSB facility per Section 2.7.2 (HNF-SD-SNF-RPT-004, Rev 7).
6.9.1.2.4	SITE SUBSYSTEM	
6.9.1.2.4	This subsystem [Site] shall be provided with reliable water supply and adequate distribution and coverage.	The CSB facility fire protection yard piping is designed as defined in NFPA 24 per section 11.8.1 (DBD FDI 80460200).

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Section	Performance Requirement	Current Design Compliance
6.9.2	INTERFACES	
6.9.2.1	BUILDINGS	
6.9.2.1	The fire protection system interfaces with the building. The building design shall provide isolation of a fire zone during a fire. In those areas of potential radioactive contamination, sufficient liquid retention capability is required to contain liquids discharged from the fire protection system during a fire or fire system flush.	The CSB facility fire protection system interfaces with the building, and the building design provides isolation of a fire zone during a fire, and there is no fire protection piping into areas where radioactive particulate contamination is expected in the CSB facility per 2.7.2 and Figure 2-16 (HNF-SD-SNF-RPT-004, Rev 7).
6.9.2.2	RADWASTE TREATMENT SYSTEM	
6.9.2.2	The fire protection system interfaces with the radwaste system. The radwaste treatment system shall have the capability of treating liquids collected during operation or flushing of the fire protection system in areas where the potential for radioactive contamination exists.	Not in CSB design-to-cost (FRF-2792). There is no radwaste treatment system.
6.9.2.3	HVAC SYSTEMS	
6.9.2.3	The fire protection system interfaces with the HVAC system. The HVAC shall have the capability of filtering particulates after suppression of a fire in areas where the potential for the presence of radioactive particulate material exists.	The CSB facility fire protection system interfaces with the HVAC system per Section 2.7.3 (HNF-SD-SNF-RPT-004, Rev 7). However, if the fire dampers are shut from excessive heat, the dampers can be manually opened to allow fan operation and HEPA filtration for smoke removal after suppression of a fire per Section 2.7.3 (HNF-SD-SNF-RPT-004, Rev 7).

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Section	Performance Requirement	Current Design Compliance
6.9.3	TESTING, INSPECTION & MAINTENANCE	
6.9.3.1	All fire protection systems and components shall be tested and inspected on an established schedule. Functional testing of the systems shall be performed to ensure that they are operational and that supply water pressure is adequate.	Compliance is provided by established operational requirements.
6.9.3.2	Design and installation of pumps, valves, sprinkler heads, and other components shall provide adequate accessibility for inspection, testing, and maintenance functions.	The CSB facility fire protection system provide adequate accessibility for inspection, testing, and maintenance per Section 11.3 (DBD FDI 80460200).
6.9.4	In addition to commercial codes and standards, the design and materials shall conform to the following: (1) MIL-F-5106C and (2) MIL-F-51079A.	The CSB facility fire protection system was not designed to these standards per Section 11.2.2 (DBD FDI 80460200).

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SECTION 6.10 PHYSICAL PROTECTION

Section	Performance Requirement	Current Design Compliance
6.10.1	CONDITIONS OF DESIGN	
6.10.1.1	On-site communication systems shall be provided between each routinely manned station or area (e.g., transportation package handling, fuel unit handling, fuel unit transfer, maintenance, etc.) and a central security station. This communication system shall be fixed (i.e., not radio), totally located within barriers provided for access control, and provided with a standby power supply.	The CSB facility design considered for coverage of each location per Section 5.20.3 (DBD FDI 80460200).
6.10.1.2	A public address system should be provided using a speaker system, which is totally contained within barriers provided for access control. This system should be audible at all locations on the site. This system should be capable of being activated at any routinely manned station.,	The CSB facility design considered for coverage of each location per Section 5.20.3 (DBD FDI 80460200).
6.10.1.3	Short range, portable, radio communication shall be provided to allow mobile patrols to report to a central security station.	Compliance may be provided by Hanford patrol/security requirements.
6.10.1.4	Redundant and diverse off-site communication shall be provided. Such communication shall connect the central security station with local or regional authorities in accordance with the site emergency response plan.	Not applicable. The CSB facility is connected to the Hanford emergency phone system.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.10.1.5	At least one physical barrier shall be provided between areas accessible to the public and areas in which any of the ISFSI functions are performed. This barrier shall be of sufficient height and strength to hinder unauthorized access. It shall have a 20-ft clear zone on either side and shall be provided with means for the detection of attempts to breach the barrier (intrusion).	Not applicable. The CSB facility design provides at least one barrier to onsite workers only.
6.10.1.6	The physical barrier and clear spaces shall be provided with suitable lighting installation as required to provide an illumination of no less than 0.2 fc, measured horizontally at ground level.	The CSB facility lighting designed for 10 fc for non-work areas per Section 5.11.4 (DBD FDI 80460200).
6.10.1.7	An audible alarm system shall be provided capable of being actuated at each routinely manned station or area, as well as other locations selected to provide activation of the alarm system in a security emergency (e.g., at perimeter defense positions). Such alarms shall employ varied audible signals to identify site emergencies such as intrusions, fuel handling accidents, fire, and so forth. Alarms shall annunciate at locations in accordance with the site emergency response plan.	The CSB facility communication system design provides an audible alarm system which has the capability of being actuated at each routinely manned station or area, as well as other locations selected to provide activation of the alarm system in a security emergency per Section 5.20.4 (DBD FDI 80460200) and Section 2.9 (HNF-SD-SNF-RPT-004, Rev 7).
6.10.1.8	Intrusion detection equipment shall be provided to monitor the physical barrier.	The CSB facility design provides security and safeguards protection with closed circuit television cameras in the operating area, special access hardware, special doors, concrete curbs, and intrusion barriers per Section 2.9 (HNF-SD-SNF-RPT-004, Rev 7).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.10.2	INTERFACES	
6.10.2	Physical security systems shall be independent of other facilities. Communications shall be provided between various offsite locations and the site as established in the site emergency response plan.	The CSB facility communication system design incorporates the Hanford area and plant-wide alarms for security, fire alarm and detection, radiation and hazards alarms, evacuation alarms, and crash alarms per Section 2.9 (HNF-SD-SNF-RPT-004, Rev 7).
6.10.3	TESTING, INSPECTION & MAINTENANCE	
6.10.3	Suitable provision for testing, inspection, and maintenance shall be provided to ensure that all physical security systems (e.g., alarms, communications, etc.) are maintained in an operable and effective condition.	Compliance is provided by establishing operational requirements.
6.10.4	CODES AND STANDARDS	
6.10.4	The equipment for the physical protection system shall be designed in accordance with applicable commercial codes and standards. Performance requirements shall be based on Title 10, "Energy," CFR, Part 73, "Physical Protection of Plants and Materials," Section 73.45, "Performance Capabilities for Fixed Site Physical Protection Systems."	The CSB facility security & safeguards systems for physical protection is designed to comply with DOE STD.5632.1C, DOE Order 6430.1A, and all applicable orders contained therein.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

SECTION 6.11 ACCOUNTABILITY

Section	Performance Requirement	Current Design Compliance
6.11	The ISFSI shall be designed to accommodate accountability and control of special nuclear materials.	Designed for spent nuclear fuel; "special nuclear materials" not defined in specification.
6.11.1	There shall be provided a record-keeping system, preferably computerized, to document the receipt, storage, and off-site shipment of fuel units. "Hard-copy" records shall be maintained such that accountability cannot be lost as a result of a single computer failure. Duplicate records shall be maintained in a separate storage location in accordance with the requirements of 10 CFR 72, Subpart D, "Records, Reports, Inspections, and Enforcement," Section 72.72, "Materials Balance, Inventory, and Records Requirements for Stored Materials."	Compliance is provided by establishing operational requirements.
6.11.2	The accountability system shall be capable of providing information on the location of fuel units within the facility during all movements or transfers.	Compliance is provided by establishing operational requirements.
6.11.3	The fuel units shall be provided with unique identification, *such as fuel assembly serial numbers or other* identification tags.	Compliance is provided by establishing operational requirements.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.11.4	For those storage concepts where visual accountability of the fuel units is not practicable, a "unique seal" shall be provided to indicate the continued presence of fuel units in storage. The "unique seal" shall be designed to ensure that an inventory of the fuel units can be taken at any time.	The CSB facility design provides unique seals on the MCO (designed by others) and the storage tube per Section 3.5.1.3 (HNF-SD-SNF-SARR-005), and Section 2.4.3 and Figure 2-6 (HNF-SD-SNF-RPT-004, Rev 7).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

SECTION 6.12 NUCLEAR CRITICALITY SAFETY

Section	Performance Requirement	Current Design Compliance
6.12.1	CONDITIONS OF DESIGN (GENERAL)	
6.12.1	General nuclear criticality safety requirements for the ISFSI are given in American National Standard Criticality Safety Criteria for the Handling, Storage, and Transportation of LWR Fuel Outside Reactors, ANSI/ANS-8.17-1984(R1989).	Not applicable. The CSB facility storage remains subcritical during handling and storage of MCOs per HNF-SD-SNF-CSER-005, and no special design requirements are required per Section 3.3.2.3.3 (HNF-SD-SNF-RPT-004, Rev 7). However, the CSB facility operation will be governed by the requirements as defined in ANSI/ANS-8.19 per Section 6.2.2 (HNF-SD-SNF-RPT-004, Rev 7).
6.12.2	CONDITIONS OF DESIGN (SPECIFIC)	
6.12.2.1	ISFSI systems shall be designed to provide a sufficient factor of safety to require at least two unlikely, independent, and concurrent changes in conditions before a criticality accident is possible.	The CSB facility storage design calculations determined that the design configuration was bellow the k_{eff} and subcritical per calculation CSB-SH-1005, and this is substantiated by HNF-SD-SNF-CSER-005, and no special design requirements are required per Section 3.3.2.3.3 (HNF-SD-SNF-RPT-004, Rev 7).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.12.2.1	If the assumption is made that water moderation of stored fuel units is not credible, then the nuclear criticality safety analysis shall include a discussion of the basis for this assumption.	The CSB facility storage remains subcritical during handling and storage of MCOs per CSB-SH-1005 and HNF-SD-SNF-CSER-005. For dry MCOs in the CSB, the reactivity is low. Only adding water can increase the reactivity. Analysis of adding water and even misloading an MCO with one contingency of higher enriched fuel does not exceed allowables. The passage of an MCO from the MHM to the storage tube was analyzed. For each material as reflector, the MCO was within limits for dry and flooded conditions per Section 5.1 (HNF-SD-SNF-CSER-005).
6.12.3	CODES AND STANDARDS	
6.12.3.1	General criticality safety practices are contained in American National Standard for Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors, ANSI/ANS-8.1-1983(R1988).	Not applicable. The CSB facility storage remains subcritical during handling and storage of MCOs per HNF-SD-SNF-CSER-005. However, the CSB facility operation will be governed by the requirements as defined in ANSI/ANS-8.1 per Section 6.2.2 (HNF-SD-SNF-RPT-004, Rev 7).
6.12.3.2	General nuclear criticality safety requirements for the ISFSI are contained in ANSI/ANS-8.17-1984(R1989).	Not applicable. The CSB facility storage remains subcritical during handling and storage of MCOs per HNF-SD-SNF-CSER-005. However, the CSB facility operation will be governed by the requirements as defined in ANSI/ANS-8.19 per Section 6.2.2 (HNF-SD-SNF-RPT-004, Rev 7).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.12.3.3	Guidance to establish the need for and use of a criticality alarm system for personnel protection is contained in American National Standard for a Criticality Accident Alarm System, ANSI/ANS-8.3-1986.	Not applicable. The CSB facility storage remains subcritical during handling and storage of MCOs per HNF-SD-SNF-CSER-005, and criticality alarms are not provided per HNF-SD-SNF-RPT-004, Rev 7. However, the CSB facility operation will be governed by the requirements as defined in ANSI/ANS-8.3 per Section 6.2.2 (HNF-SD-SNF-RPT-004, Rev 7).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

SECTION 6.13 RADIOLOGICAL PROTECTION

Section	Performance Requirement	Current Design Compliance
6.13.1	Structures, systems, and components for which operation, maintenance, and required inspections involving exposure to radiation shall be designed, fabricated, located, shielded, controlled, and tested so as to control external and internal radiation exposure to on-site personnel and the public to levels that are consistent with ALARA principles.	The CSB facility design is based on ALARA principles per Section 12 (DBD FDI 80460200), and evaluated in ALARA Analysis 07 (FDF-047). Shielding testing is specified in the Pre-Operational Test Procedure VS-001 (FDP-126).
6.13.2	The system design shall be based on an analysis the considers personnel safety and the confinement of radioactive material.	The CSB facility design is based on analysis (provided by others) per Section 12 (DBD FDI 80460200) , and evaluated in ALARA Analysis 07 (FDF-047).
6.13.3	All releases of radioactive materials in liquid or airborne effluents to unrestricted areas shall meet the requirements of 10 CFR 20 and any pertinent requirement of 10 CFR 72.	No release of liquid or airborne effluents to the unrestricted areas are expected. The CSB facility is under negative pressure ventilation (Zone III), and its discharge is HEPA filtered and monitored before discharging through the stack to the atmosphere per Section 2.7.3. (HNF-SD-SNF-RPT-004, Rev 7).
6.13.4	Design provisions shall be incorporated in the ISFSI to prevent or minimize the accumulation of radioactive material in normally occupied areas and to decontaminate those systems to which nonroutine access is required.	Not in CSB design-to-cost. Refer to FDH Letter FDH-9761261, Addendum 3 of Attachment 1 (FRF-2792).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.13.5	The ISFSI design shall incorporate provisions to reduce to the extent practicable the time required to perform work (including maintenance work) in the radioactive environments in the ISFSI.	The CSB facility design is based on ALARA principles with provisions to reduce to the extent practicable the time required to perform work (including maintenance work) in the radioactive environments in the facility per Section 12 (DBD FDI 80460200), and evaluated in ALARA Analysis 07 (FDF-047).
6.13.6	Radiation and decontamination areas of the installation should be defined and zoned according to the anticipated levels of radiation or contamination in each area. Provisions shall be made in the design for control of access, monitoring, limitation of the spread of radioactive contamination, and control of direct radiation levels appropriate with the zoning.	The CSB facility design provides two zoned areas which are the operating area and the support building with airlocks and radiation detection equipment per Sections 2.4.4.2, 2.4.4.3 and 2.7.4, and Figures 2-1 and 2-18 (HNF-SD-SNF-RPT-004, Rev 7).
6.13.7	Estimates of dose rates that would arise because of buildup of contamination in the installation shall be based on the least favorable radiation and contamination conditions that can be anticipated during the life of the installation.	The CSB facility design is based on analysis (provided by others) per Section 12 (DBD FDI 80460200), and evaluated in ALARA Analysis 07 (FDF-047).
6.13.8 (1)	Special precautions shall be taken in the design of shielding and equipment to avoid the following: The incidence of localized high levels of radiation due to streaming.	The CSB facility design provides the vault shield walls, north shield wall, tube plugs, receiving crane operator shielding, and radiation shield doors to reduce the effects of radiation streaming per Section 2.4.1, 2.4.2, 2.4.3, 2.4.4.2. and 2.5.1.1, and Figures 2-1 and 2-6 (HNF-SD-SNF-RPT-004, Rev 7).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.13.8 (2)	Unplanned or uncontrolled movement of shielding.	Not applicable. The CSB facility design does not rely on this feature.
6.13.8 (3)	High doses to the extremities of on-site personnel during access to and manipulation of radioactive sources.	The CSB facility design is based on analysis (provided by others) per Section 12 (DBD FDI 80460200)
6.13.8 (4)	Loss of liquid used a shielding material; a suitable means shall be provided for detecting changes in liquid level as well as an alarm to indicate an unsafe condition.	Not applicable. (no liquid shielding in CSB).
6.13.9	Access to regions behind shielding shall be controlled by specific measures such as interlocks, lockable doors, and alarms designed to prevent access to any areas where a high radiation level exists. Prompt egress by any person from such a high radiation area shall not be inhibited by any feature of the design.	The CSB facility design provides two zoned areas which are the operating area and the support building with airlocks and radiation detection equipment, and high radiation zones in the CSB facility are accessible per Sections 2.4.4.2, 2.4.4.3 and 2.7.4, and Figures 2-1 and 2-18 (HNF-SD-SNF-RPT-004, Rev 7).
6.13.10	Design of the ISFSI should provide for control of particulate radioactive materials by local confinement, ventilation, and atmospheric cleanup systems.	The CSB facility design provides for control of particulate radioactive materials by local confinement, ventilation, and atmospheric cleanup systems per Sections 2.4.1, 2.4.2, 2.4.3, 2.4.4, 2.5.1.3, 2.5.1.6, 2.6, 2.7.3, and 2.7.4 (HNF-SD-SNF-RPT-004, Rev 7).
6.13.11	The design of the personnel radiation protection plan for the handling of closed casks shall be based on the maximum radiation levels for casks permitted by 49 CFR 173, Subpart I.	Not applicable. The CSB facility will provide a personnel radiation plan to comply with this requirement.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.13.12	The background environment shall be considered in determining audio and light intensity levels to be specified for radiation alarms and access control devices.	The CSB facility communication system is designed for interior and exterior locations per Section 5.20 (DBD FDI 80460200), and the radiation alarm annunciation provides a red rotating beacon and audible alarm (95 dba at 2 ft) for the personnel and operational communication.
6.13.13	All fuel unit handling grapples, tools, and equipment shall be designed to minimize crevices where contamination could accumulate. Where cavities are unavoidable, parts should be designed to be disassembled to facilitate decontamination.	The CSB facility receiving crane is designed to minimize crevices where contamination could accumulate per receiving crane procurement specification W-379-P-CSB-14620 and operating, parts, and maintenance manual MGW-SVX-452651. There are no fuel handling requirements at the CSB facility per Section 2.5.1 (HNF-SD-SNF-RPT-004, Rev 7).
6.13.14	Provisions shall be made in the design for monitoring groundwater in the vicinity of the storage area for radioactive contamination.	Not applicable. The Hanford site provides ground monitoring near the operating facilities, and the CSB facility will not introduce any contaminated liquid effluents into the vicinity of the storage area.
6.13.15	Provisions shall be made for monitoring of areas where the potential for airborne radioactive particulate exists.	The CSB facility airborne activity monitor design provides CAM, radioactive gas monitor, and radioactive particulate sampling that are located in strategic areas throughout the facility per Section 2.7. 4 and Figure 2-18 (HNF-SD-SNF-RPT-004, Rev 7).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

SECTION 6.14 DECOMMISSIONING

Section	Performance Requirement	Current Design Compliance
6.14	The design of the ISFSI shall incorporate features to facilitate decommissioning. Provisions shall be made to facilitate decontamination of structures and equipment, minimize the quantity of radioactive wastes and contaminated equipment, and facilitate the removal of radioactive wastes and contaminated materials at the time the ISFSI is permanently decommissioned. Examples of such design features include the following:	The CSB facility design provides major equipment which are not positioned in contaminated areas, above grade structures, and no contaminated drains which will contribute to the ease of decommissioning the facility per Section 16.3.3 (HNF-SD-SNF-RPT-004, Rev 7).
6.14 (1)	Coat concrete surfaces with an impervious material to minimize the contamination of the concrete,	The CSB facility design provides concrete sealer or coatings per Section 16.3.1.11 (HNF-SD-SNF-RPT-004, Rev 7) and Section 4.14 (DBD FDI 80460200).
6.14 (2)	Design sections of the radioactive liquid waste piping systems and drains that are in concrete so that such piping and drains can be decontaminated in place or removed from the concrete structure without extensive demolition of the concrete structure itself.	Not in CSB design-to-cost. Refer to FDH Letter FDH-9761261, Addendum 3 of Attachment 1 (FRF-2792). There is no liquid radwaste piping or sleeves to facilitate decontamination and demolition.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.14 (3)	Arrange the facility such that activities that involve the handling of uncontained radioactive materials do not require transport of such materials in areas where surfaces are not lined or provided with impervious coating.	The CSB facility design provides two zoned areas, operating area and support building, with airlocks and radiation detection equipment per Sections 2.4.4.2, 2.4.4.3 and 2.7.4, and Figures 2-1 and 2-18 (HNF-SD-SNF-RPT-004, Rev 7). There are no uncontained radioactive materials in the CSB facility per Section 1.2 (HNF-SD-SNF-SARR-005).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

SECTION 6.15 QUALITY ASSURANCE

Section	Performance Requirement	Current Design Compliance
6.15.1	REQUIREMENTS	
6.15.1.1	A quality assurance (QA) program based upon criteria in 10 CFR 72, Subpart G, "Quality Assurance," shall be established and implemented for the structures, systems and components of an ISFSI that are important to confinement. The application of the QA program should be commensurate with the important to confinement features of identified activities and individual structures, systems and components.	The CSB facility design provides a QA program plan (QAPP FDI 80460200) as required per 10 CFR 830.120, 10 CFR 72, ASME NQA-1, and WHC-SD-W379-QAPP-001 per Project Plan FDI 80460200.
6.15.1.2	Appropriate records of the design, fabrication, erection, testing and maintenance of structures, systems and components that are important to confinement shall be maintained through the life of the ISFSI.	The CSB facility design will provide documentation to the facility for retention by the CSB operating contractor per Section 17.0 (QAPP FDI 80460200).
6.15.2	APPLICATION	
6.15.2.1	Systems important to confinement requiring a QA program, as defined in American National Standard Quality Assurance Program Requirements for Nuclear Power Plants, ANSI/ASME NQA-1-1989, should include the following: (1) Transportation package unloading equipment; (2) Storage area structures; (3) Fuel unit handling and transfer equipment; (4) Effluent and direct radiation monitoring equipment; and (5) HVAC systems serving potentially contaminated areas.	The CSB facility design QAPP includes the (1) Transportation package unloading equipment; (2) Storage area structures; (3) Fuel unit handling and transfer equipment; (4) Effluent and direct radiation monitoring equipment; and (5) HVAC systems serving potentially contaminated areas per Section iv (QAPP FDI 80460200) and Chapter 14 (HNF-SD-SNF-RPT-004, Rev 7).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.15.2.2	A QA program, as prescribed in ANSI/ANS-55.1-1992 and ANSI/ANS-55.6-1993 should be applied to the radwaste system.	Not in CSB design-to-cost. Refer to FDH Letter FDH-9761261, Addendum 3 of Attachment 1 (FRF-2792).

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

SECTION 6.16 INTERFACES FOR AN ISFSI LOCATED ON AN EXISTING NUCLEAR FACILITY SITE

Section	Performance Requirement	Current Design Compliance
6.16	Various services, systems, or subsystems of the ISFSI may be interconnected with, or use components of, existing on-site systems at a co-located facility. Such sharing of systems shall require design review and reanalysis of the existing systems to ensure independence of the existing facility and the ISFSI with respect to support services that are important to confinement. The following criteria are to be applied to each system or service being shared to establish independence.	Not applicable. The CSB facility is not connected with, or use components of, existing on-site systems at a co-located facility to support services that are important to confinement of the MCOs.
6.16.1	It shall be demonstrated that there is sufficient capacity for the shared system or service to meet the requirements, with suitable margins under each design condition, considered separately and in appropriate combination for both the ISFSI and the collocated facility.	See 6.16 above.
6.16.2	The design shall provide that neither facility that is relying on a shared system or service that is important to confinement will have the unilateral capability to terminate the service to the other facility. Each facility shall have the capability to ensure independence control over those utilities or services it is obtaining from a shared system.	See 6.16 above.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.16.3	The design shall provide sufficient isolation of the subsystem served by a shared source such that (1) an off-normal condition in one of the facilities cannot affect the reliability of that shared system in the other facility, or (2) the subsystems can be isolated at the interface in the event of an off-normal condition in one facility that might otherwise comprise the effectiveness of the shared system in the other facility.	See 6.16 above.
6.16.4	Shared systems that are not important to confinement should be designed to the same standards set forth in 6.16.2 and 6.16.3.	See 6.16 above.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

SECTION 6.17 STRUCTURAL DESIGN

Section	Performance Requirement	Current Design Compliance
6.17	Load combinations and design limits for reinforced concrete and steel structures associated with ANSI/ACI 349-85 for concrete and ANSI/AISC N690-1984 for structural steel are provided in those American National Standards.	The CSB facility design load combinations and design limits for reinforced concrete and steel structures associated with ANSI/ACI 349-85 for concrete and ANSI/AISC N690-1984 for structural steel are provided in those American National Standards per Sections 10.2, 10.4, and 10.5 (DBD FDI 80460200) and Chapter 4 (HNF-SD-SNF-RPT-004, Rev 7).
6.17.1	SPECIFIC LOADS TO BE EVALUATED	
6.17.1.1	NORMAL OPERATING LOADS	
6.17.1.1	All permanent and transient loads that could exist or be developed during normal operating of the ISFSI shall be included. In particular, the following loads shall be evaluated:	The CSB facility designed for all permanent and transient loads that could exist or be developed during normal operating of the facility are per Sections 10.2, 10.4, and 10.5 (DBD FDI 80460200) and Chapter 4 (HNF-SD-SNF-RPT-004, Rev 7).
6.17.1.1 (1)	D - Dead load of the structure and attachments including permanent equipment and piping. In simulating the most adverse loading condition, this load should be varied by +5% from the estimated value.	The CSB facility designed for structural steel complies with ANSI 57.9 per Section 10.5.3 (DBD FDI 80460200) and Chapter 4 (HNF-SD-SNF-RPT-004, Rev 7).

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Section	Performance Requirement	Current Design Compliance
6.17.1.1 (2)	L - Live loads include snow, rain, operational loads including impact, vibratory and design transient loads due to operating equipment. This load should be varied between 0 and 100% of the estimated load to simulate the most adverse conditions for the structure. Live loads assumed concurrent with earthquake are taken as 25% of the estimated load. Guidance for determining design live loads is provided in American National Standard Minimum Design Loads for Buildings and Other Structures, ANSI/ASCE 7-88.	The CSB facility designed for live loads is based on ANSI/ASCE 7-88 per Sections 10.2, 10.4.2, and 10.5 (DBD FDI 80460200) and Chapter 4 (HNF-SD-SNF-RPT-004, Rev 7).
6.17.1.1 (3)	T - Thermal loads during operation - directly on a structure because of restraint condition and reaction of the structure from equipment, piping, and environs. The thermal loads may be neglected when it is shown that their resultant stresses are secondary and self-limiting in nature and when the response of the structure is ductile.	The CSB facility designed for thermal loads during operation per Section 10.4.4 6. (DBD FDI 80460200) and Chapter 4 (HNF-SD-SNF-RPT-004, Rev 7).
6.17.1.1 (4)	H - Lateral soil pressure and, as applicable, buoyancy forces and groundwater effects. To simulate the most adverse condition, a full range of credible loads from these pressures shall be evaluated.	The CSB facility designed for lateral soil pressure and, as applicable, buoyancy forces and groundwater effects per Sections 10.4.2 5., 10.7.3, and 10.7.10 (DBD FDI 80460200) and Chapter 4 (HNF-SD-SNF-RPT-004, Rev 7).
6.17.1.2	NATURAL PHENOMENA LOADS	

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.17.1.2 (1)	**E** - Loads generated by the design earthquake (DE). ANSI/ANS-2.19-1981(R1990) provides guidance for determining the design earthquake loads. In the application of ANSI/ACI 349-85 and ANSI/AISC N690-1984, the earthquake designated as the safe shutdown earthquake shall be assumed equivalent to the DE.	The CSB facility designed for loads generated by the design basis earthquake (DBE) and near-field earthquake (NFE) per Sections 10.4.4 1. and 10.4.4 2. (DBD FDI 80460200) and Chapter 4 (HNF-SD-SNF-RPT-004, Rev 7).
6.17.1.2 (2)	**W** - Loads generated by the design basis wind at a 100-yr reoccurrence level. ANSI/ASCE 7-88 provides guidance for determining the design basis wind.	The CSB facility designed for loads generated by the design basis wind (DBW) per Section 10.4.4 4. (DBD FDI 80460200) and Chapter 4 (HNF-SD-SNF-RPT-004, Rev 7).
6.17.1.2 (3)	W_T - Loads generated by the specified design tornado. In the application of ANSI/ACI-349-85 and ANSI/AISC N690-1984, the tornado-induced loads shall include associated wind pressure, differential pressures, and missiles, as developed in American National Standard for Estimating Tornado and Extreme Wind Characteristics at Nuclear Power Sites, ANSI/ANS-2.3-1983.	The CSB facility designed for loads generated by the specified design basis tornado (DBT) per Section 10.4.4 3. (DBD FDI 80460200) and Chapter 4 (HNF-SD-SNF-RPT-004, Rev 7).
6.17.1.3	OFF-NORMAL OPERATING AND ACCIDENT LOADS	
6.17.1.3 (1)	T_a - Loads due to a temperature rise resulting from the loss of cooling air for an extended period of time or loads resulting from the maximum anticipated heat load.	The CSB facility designed for the design basis temperatures per Section 10.4.4 6. (DBD FDI 80460200) and Section 3.4.2.5.2 (HNF-SD-SNF-RPT-004, Rev 7).
6.17.1.3 (2)	**A** - Loads due to a drop of a heavy load, as described in Structural Analysis and Design of Nuclear Plant Facilities, ASCE Manual No. 58.	The CSB facility designed for loads due to a drop of a heavy load per Sections 10.4.2 6. And 10.4.5 (DBD FDI 80460200) and CSB-S-0061.

SECTION 6 - DESIGN REQUIREMENTS - CSB FACILITY

Section	Performance Requirement	Current Design Compliance
6.17.2	DEFORMATION	
6.17.2	The deformation of both concrete and steel structures and structural components under design load conditions shall be computed to ensure that the fuel unit and, as appropriate, other structures, systems, and components affected by these deformations are designed to accommodate these deformations multiplied by the appropriate margin of safety as designated in the applicable standards.	The CSB facility design provides this requirement. Refer to the SER for the CSB SAR, Phase 3, Page 24.