U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, Washington 99352

JUN 1 5 2010

10-ESQ-183

Ms. Jane A. Hedges, Program Manager
Nuclear Waste Program
Washington State
Department of Ecology
3100 Port of Benton Blvd.
Richland, Washington 99354

Dear Ms. Hedges:

WITHDRAWAL OF PART B PERMIT APPLICATION FOR IMMOBILIZED HIGH-LEVEL WASTE (IHLW) INTERIM STORAGE UNIT

Reference: WA7890008967, "Dangerous Waste Portion of the Hanford Facility Resource Conservation and Recovery Act Permit for the Treatment, Storage, and Disposal of Dangerous Waste."

The U.S. Department of Energy (DOE), Office of River Protection (ORP), the Washington State Department of Ecology (Ecology), and the Washington River Protection Solutions LLC (WRPS) have agreed that the Hanford Facility Dangerous Waste Part B Permit Application for the IHLW Interim Storage Unit should be withdrawn. The application was originally submitted on June 18, 2003, to fulfill the requirements for Hanford Federal Facility Agreement and Consent Order, Milestone M-20-56.

Ecology has provided a Notice of Deficiencies from their initial review of the application (January 2006). However, shortly thereafter, a decision was jointly made to suspend review and discussions on the application for three primary reasons. First, the start-up date for the Waste Treatment and Immobilization Plant (WTP) was being renegotiated between Ecology and DOE, which meant that the need date for a storage facility would also be pushed out. Second, ORP and WRPS were evaluating other options for the interim storage of IHLW that appear to be more efficient and cost effective than retrofitting of the Canister Storage Building (CSB) as was proposed in the application. The third reason is based on Ecology's current effort to issue a revision to the Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Permit Number WA 7890008967 (Reference). It is our understanding that Ecology has been instructed by the U.S. Environmental Protection Agency to remove any inactive units from the Sitewide Permit. The IHLW application is considered inactive as no activity has been associated with the application or the unit, and none is planned in the immediate future.

ORP is requesting that the IHLW Interim Storage Unit Part A currently in the referenced permit be made a part of that permit's Administrative Record maintained by Ecology, as a placeholder for a future ORP/WRPS submittal of an application to store WTP IHLW product. This action would serve to recognize that the parties had previously agreed to permit interim storage for IHLW product. ORP is also providing the attached document to be placed in the Administrative Record with the IHLW Part A: "An Analysis of the SNF Commitment to NRC Equivalency to Determine W-464 Impacts" dated March 2004. This document evaluated how the CSB would be designed to hold IHLW to meet the "nuclear safety equivalency" comparable to U.S. Nuclear Regulatory Commission licensed facilities. As the CSB currently is used to store only spent nuclear fuel, it is not required to have a dangerous waste permit.

If you have any questions, please contact either of us, or your staff may contact Lori A. Huffman, Director, Environmental Compliance Division, (509) 376-0104.

Shirley J. Olinger, Manager
Office of River Protection

Charles G. Spencer, President
Washington River Protection Solutions LLC

ESQ:LAH

Attachment

cc w/attach:
A. E. Carvo, WRPS
W. T. Dixon, WRPS
A. B. Dunning, WRPS
G. J. Johnson, WRPS
F. R. Miera, WRPS
P. E. Peistrup, WRPS
L. L. Penn, WRPS
S. M. Sax, WRPS
B. R. Thomas, WRPS
D. J. Sommer, North Wind
Administrative Record (S-2-11)
Environmental Portal, LMSI
WRPS Correspondence

Attachment
10-ESQ-183
(43 Pages)

An Analysis of the SNF Commitment to NRC Equivalency to Determine W-464 Impacts

ORIGINAL

CH2M HILL ENGINEERING CHANGE NOTICE

Page 1 of 2 ☒ DM ☐ FM ☐ TM

1a. ECN 721630 R 0

1b. Proj. ECN N/A - - R

2. Simple Modification	3. Design Inputs – For full ECNs, record information on the ECN-1 Form (not required for Simple Modifications)	4. Date
☒ Yes ☐ No		3/17/2004

5. Originator's Name, Organization, MSIN, & Phone No.	6. USQ Number	7. Related ECNs
H. L. Baune Project W-464 H6-19, 372-3393	No. TF - - - R - ☒ N/A ☐ Refer to Work Package	N/A

8. Title	9. Bldg. / Facility No.	10. Equipment / Component ID	11. Approval Designator
An Analysis of the SNF Commitment to NRC Equivalency to Determine W-464 Impacts	N/A	N/A	Q

12. Engineering Documents/Drawings to be Changed (Incl. Sheet & Rev. Nos.)	13. Safety Designation	14. Expedited/Off-Shift ECN?
RPP-11146, Revision 0	☐ SC ☐ SS ☐ GS ☒ N/A	☐ Yes ☒ No

15a. Work Package Number	15b. Modification Work Completed	15c. Restored to Original Status (TM)	16. Fabrication Support ECN?
N/A	N/A Responsible Engineer / Date	N/A Responsible Engineer / Date	☐ Yes ☒ No

17. Description of the Change (Use ECN Continuation pages as needed)

Project W-464 must formally demonstrate how the requirements in HNF-SD-SNF-DB-003, Rev. 4a, "Spent Nuclear Fuel Project Path Forward, Additional NRC Requirements", are affected by the modifications to the Canister Storage Building facility. This document revision to RPP-11146, "An Analysis of the SNF Commitment to NRC Equivalency to Determine W-464 Impacts", updates the evaluation of Project W-464 impacts to the Spent Nuclear Fuel (SNF) Nuclear Regulatory Commission (NRC) equivalency following completion of the detailed design effort. Each of the 29 NRC equivalency items identified in HNF-SD-DB-003, Rev. 4a and HNF-4776, "Canister Storage Building Compliance Assessment SNF Project NRC Equivalency Criteria", were re-reviewed to determine whether any part of Project W-464 has the capablilty to affect the SNF NRC equivalency. It has been determined that Project W-464 will have no impact on the SNF commitment to NRC equivalency.

18. Justification of the Change (Use ECN Continuation pages as needed)

RPP-11146 was updated to satisfy an agreement in the interface control document between the Spent Nuclear Fuels Program and the Immobilized High-Level Waste Interim Storage Project. The Immobilized High-Level Waste Interim Storage Project reassessed impact to the SNF NRC equivalency at completion of detailed design efforts.

Justification for Box 6:
Per TFC-ENG-SB-C-03, REV C-3 a USQ is required only if one of the following conditions are met:
A Temporary or permanent change in the facility, as described in the existing DSA
A Temporary or permanent change in the procedures, as described in the existing DSA
A Test or experiment not described in the existing DSA.
None of these conditions apply to this simple document modification.

19. ECN Category

☒ Direct Revision
☐ Supplemental
☐ Void/Cancel

ECN Type

☐ Supercedure
☐ Revision

20. Distribution

Name	MSIN	Name	MSIN
H. L. Baune	H6-19	W. T. Thompson	S7-70
G. D. Bazinet	S8-06	Project W-464 Files (hard copy)	R1-29
D. D. Carson	H6-19	Central Files (hard copy)	B1-07
K. A. Colosi	H6-19	^CH2M EQRG	
P. R. Garello	S8-03		
G. L. Parsons	H6-19		
G. M. Ramin	H6-60		

Release Stamp

MAR 2 9 2004
DATE:
STA: 15
HANFORD RELEASE
ID: 65

ORIGINAL

CH2M HILL ENGINEERING CHANGE NOTICE	1a. ECN 721630 R 0
Page 2 of 2 ☒ DM ☐ FM ☐ TM	1b. Proj. ECN N/A - - R

21. Revisions Planned (Include a brief description of the contents of each revision)
N/A

Note: All revisions shall have the approvals of the affected organizations as identified in block 11 "Approval Designator," on page 1 of this ECN

22. Design Basis Documents
☐ Yes ☒ No

23. Commercial Grade Item Dedication Numbers (associated with this design change)
N/A

24. Engineering Data Transmittal Numbers (associated with this design change, e g., new drawings, new documents)
N/A

25. Other Non Engineering (not in HDCS)documents that need to be modified due to this change

Type of Document	Document Number	Type of Document	Document Number
N/A			

26. Field Change Notice(s) Used?
☐ Yes ☒ No
If Yes, Record Information on the ECN-2 Form, attach form(s), include a description of the interim resolution on ECN Page 1, block 17, and identify permanent changes.

NOTE: ECNs are required to record and approve all FCNs issued. If the FCNs have not changed the original design media then they are just incorporated into the design media via an ECN. If the FCN did change the original design media then the ECN will include the necessary engineering changes to the original design media.

27. Design Verification Required?
☐ Yes ☒ No
If Yes, as a minimum attach the one page checklist from TFC-ENG-DESIGN-P-17.

28. Approvals

Facility/Project Signatures		Date	A/E Signatures		Date
Design Authority	N/A		Originator/Design Agent	N/A	
Resp. Engineer	H. L. Baune H L. Baune	3/17/2004	Professional Engineer	N/A	
Resp. Manager	W. T. Thompson W.T. Thompson	3/25/04	Project Engineer	N/A	
Quality Assurance	D. D. Carson D.D. Carson	3/18/04	Quality Assurance	N/A	
IS&H Engineer	N/A		Safety	N/A	
NS&L Engineer	N/A		Designer	N/A	
Environ. Engineer	N/A		Environ. Engineer	N/A	
Engineering Checker	K. A. Colosi K.A Colosi	3/18/04	Other	N/A	
Other	G. L. Parsons M L Parsons	3/19/04	Other	N/A	
Other	G. D. Bazinet D.M. Black for	3-23-04	DEPARTMENT OF ENERGY / OFFICE OF RIVER PROTECTION		
Other	P. R. Garello Paul Garello	3-23 04	Signature or a Control Number that tracks the Approval Signature		
Other	N/A		N/A		
Other	N/A		ADDITIONAL SIGNATURES		
Other	N/A		N/A		
Other	N/A		N/A		

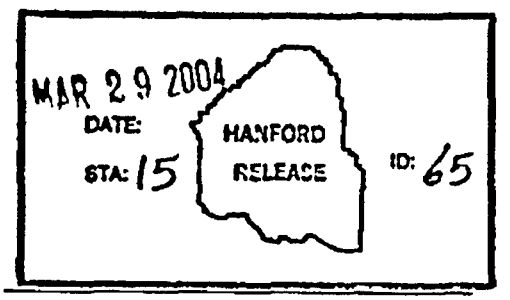
An Analysis of the SNF Commitment to NRC Equivalency To Determine W-464 Impacts

D. J. Ashley
MACTEC, Inc.
Richland, WA 99352
U.S. Department of Energy Contract DE-AC27-99RL14047

EDT/ECN: 721630 R0 UC: 2000
Cost Center: 7P300 Charge Code: 11704, BA32
B&R Code: N/A Total Pages: 41

Key Words: NRC Matrix, SNF, CSB, IHLW, Project W-464, Impact Analysis.

Abstract: This matrix and analysis was prepared by Project W-464 to demonstrate how the requirements in the CSB NRC equivalency matrix are met in the modifications to the CSB for Immobilized High-Level Waste (IHLW) storage.



Nancy A. Foard 3-29-04
Release Approval Date

Release Stamp

Approved For Public Release

RECORD OF REVISION	(1) Document Number RPP-11146	Page 1

(2) Title
An Analysis of the SNF Commitment to NRC Equivalency to Determine W-464 Impacts

Change Control Record

(3) Revision	(4) Description of Change - Replace, Add, and Delete Pages	Authorized for Release	
		(5) Cog. Engr.	(6) Cog. Mgr. Date
0	(7) Initial Release, EDT-625350	G.R. Porter	GL Parsons 6-02
RS 1	ECN-721630 Revision 0, Full Revision	H.L. Baune H L Baune 3/17/04	W.T. Thompson W.T.T., 3/25/04

A-7320-005 (10/97)

AN ANALYSIS OF THE SNF COMMITMENT TO NRC EQUIVALENCY TO DETERMINE W-464 IMPACTS

prepared for

CH2M HILL HANFORD GROUP, INC.

Contract No. 18604
Report No. 031540201-011
Revision 1

March 2004

prepared by

ARES CORPORATION

MACTEC, Inc.

Battelle

AN ANALYSIS OF THE SNF COMMITMENT TO NRC EQUIVALENCY TO DETERMINE W-464 IMPACTS

prepared for

CH2M HILL HANFORD GROUP, INC.

Contract No. 18604
Report No. 031540201-011
Revision 1

March 2004

Prepared by: Dave Ashley

Reviewed by: Bruce D. Groth
Bruce D. Groth

Approved by: R L Fritz
Robert L. Fritz

Date: 3-3-04

Table of Contents

Acronyms

AC	Alternating Current
AISC	American Institute of Steel Construction
ALARA	As Low As Reasonably Achievable
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
CSB	Canister Storage Building
CVD	Cold Vacuum Drying
DBA	Design Basis Accident
DBE	Design Basis Earthquake
DRD	Design Requirements Document
FDI	Fluor Daniel Incorporated
FHA	Fire Hazards Analysis
FRS	Fuel Retrieval Subproject
FSAR	Final Safety Analysis Report
HEPA	High-Efficiency Particulate Air
HF	Human Factors
HVAC	Heating, Ventilation, and Air Conditioning
ICD	Interface Control Document
IEEE	Institute of Electrical and Electronics Engineers, Inc.
IHLW	Immobilized High-Level Waste
MCO	Multi-Canister Overpack
NFPA	National Fire Protection Association
NOC	Notice of Construction
NPH	Natural Phenomena Hazard
NRC	U.S. Nuclear Regulatory Commission
PDSA	Preliminary Documented Safety Analysis
PHMC	Project Hanford Management Contract
QA	Quality Assurance
QAPP	Quality Assurance Program Plan
RAS	Record Air Samplers
SAR	Safety Analysis Report
SNF	Spent Nuclear Fuel
SSC	Systems, Structures, and Components
STD	Standard
UPS	Uninterruptible Power Supply
WAPS	Waste Acceptance Product Specifications
WHC	Westinghouse Hanford Company

1.0 INTRODUCTION AND PURPOSE

The interface control document for the Spent Nuclear Fuels Program and Immobilized High-Level Waste Interim Storage at the Canister Storage Building, RPP-7609, Revision 1 contains, in part, an issue A-12 titled, "SNF Project Path Forward Additional NRC Requirements."

> **ISSUE:** Project W-464 must prepare a matrix that demonstrates how the requirements in HNF-SD-SNF-DB-003, Rev. 4a are met in the modifications to the CSB facility.
>
> **RESOLUTION AND FORECAST CLOSURE DATE:** W-464 will prepare to formally demonstrate how the requirements are met or determined to be non-applicable as part of the design verification process. A matrix will be undertaken at the start of definitive design.

2.0 BACKGROUND

The U.S. Department of Energy (DOE), established in the "K Basin Spent Nuclear Fuel Project - Regulatory Policy," dated August 4, 1995 (hereafter referred to as the Policy), the requirement for new Spent Nuclear Fuel (SNF) Project facilities to achieve "nuclear safety equivalency" to comparable U.S. Nuclear Regulatory Commission (NRC)-licensed facilities. An evaluation was performed to identify any additional NRC requirements needed, in combination with the existing and applicable DOE requirements, to establish nuclear safety equivalency. The results (titled "Actions for Consideration") and process used to identify these NRC requirements were documented in WHC-SD-SNF-DB-002, *Spent Nuclear Fuel Project Path Forward Nuclear Safety Equivalency to Comparable NRC-Licensed Facilities.*

The document, *Spent Nuclear Fuel Project Path Forward, Additional NRC Requirements,* HNF-SD-SNF-DB-003, Rev. 4a presents the SNF Project's position on each Action for Consideration, with exception to the design earthquake, and transforms those identified for implementation into a requirements format. The issue of the appropriate design earthquake is addressed in detail in a separate document, WHC-SD-SNF-DB-004, *Spent Nuclear Fuel Project Seismic Design Criteria, Nuclear Regulatory Commission Equivalency Evaluation Report.* The natural phenomena hazard loads for the CSB were documented in WHC-SD-SNF-DB-009, Rev.4, *Canister Storage Building Natural Phenomena Design Hazards.*

Subsequently, the commitments made in HNF-SD-SNF-DB-003, Rev. 4a were implemented and the results documented in *Canister Storage Building Compliance Assessment SNF Project NRC Equivalency Criteria,* HNF-SD-DB-003 (HNF-4776 Revision 1).

3.0 SCOPE

The SNF efforts identified 29 additional NRC items for consideration and HNF-4776 describes the manner in which they were dispositioned. W-464 activities involve high-level waste and do not deal directly with SNF and therefore NRC equivalency requirements do not directly apply to W-464 activities. Project W-464 has agreed (with the SNF project) to meet NRC equivalency requirements as necessary to avoid adverse impact to the SNF-NRC equivalency commitment. In other words, the W-464 scope is to be reviewed to determine which of the SNF-NRC equivalency requirements are applicable and then to determine what, if any, actions are needed in order not to compromise the SNF-NRC equivalency commitments.

Therefore the scope of this review is to review each of the 29 NRC equivalency items identified in HNF-SD-SNF-DB-003, Rev. 4a, and HNF-4776, Revision 1, and determine whether any part of Project W-464 has the capability to affect the SNF NRC equivalency. If an evaluation determines that W-464 does not have the capability to adversely affect the SNF NRC equivalency then the matrix shall so note with a description of the evaluation that reached the conclusion.

If the evaluation determines that W-464 does have the capability to adversely affect the SNF NRC equivalency then the areas are identified and the appropriate requirements identified as applicable to that design, manufacture, construction and operation, as applicable. The matrix will identify these actions as commitments

As necessary, additional requirements resulting from this analysis will be added to W-464 scope of work to ensure implementation.

4.0 RESULTS

The results of the analysis are contained in Appendix A.

Based upon the detailed review, it is determined that Project W-464 will have no impact on the SNF commitment to NRC equivalency.

Appendix A

Canister Storage Building Compliance Assessment Matrix Project W-464 and the SNF Project NRC Equivalency Criteria

Item No.	HNF-SD-SNF-DB-003, HNF-4776, Rev. 1 – Additional NRC Requirements	Assessment of SNF Compliance for CSB (Note:typograhieal errors have been corrected)	Project W-464 Compliance
1	The final designs of the CSB and CVD facility shall be reevaluated to reconfirm that DOE Orders 5480.7A and 6430.1A provide adequate fire protection requirements to achieve nuclear safety equivalence. Aspects of the designs to reconfirm are the use of a passive cooling system for MCO cooling in the CSB and the lack of safety-class prevention or mitigation systems in the CSB and CVD facility. For additional information, refer to WHC-SD-SNF-DB-002, *Spent Nuclear Fuel Project Path Forward Nuclear Safety Equivalency to Comparable NRC-Licensed Facilities*, Table 5.b, and 10 CFR 50.48, and 10 CFR 50, Appendix R. Further, fire protection requirements considered for incorporation into the design of the CSB and CVD facility should take into account the implementation of 10 CFR 72.122(c) to date for licensed independent spent fuel storage installations. (References: 10 CFR 50.48, "Fire Protection," Part 50, Appendix R, "Fire Protection for Nuclear Power Facilities Operating Prior to January 1, 1979," and 10 CFR 72.122(c), "Protection against Fires and Explosions")	The updated final CSB FHA, WHC-SD-SNF-FHA-002. Rev 2, states that the final design of the CSB has been evaluated and confirms that the CSB fire protection features provide adequate fire protection meeting the requirements of DOE Orders 5480.7A and 6430.1A to achieve NRC equivalency. The results of this fire protection evaluation are also reflected in the CSB FSAR, HNF-3553, Annex A, Rev. 0, Section A11.4. The conclusion of the review was that the requirements of DOE 5480.7A and DOE 6430.1A provide adequate fire protection in consideration of 10CFR50 and 10CFR72. 10CFR50, Appendix R, is applicable to the safe shutdown of power reactors, and 10CFR70 is applicable to nuclear fuel fabrication facilities. Both these documents have limited applicability to the CSB, while 10CFR 72 is applicable to the CSB. The fire protection requirements, located in 10 CFR72.122(c), were considered and incorporated where appropriate into the design of the CSB. In general, these requirements are general and are adequately addressed by DOE 5480.7A and 6430.1A. The NRC issued a Technical Position (TP) titled "*Guidance on Fire Protection for Fuel Cycle Facilities*" in the Federal Register (57FR35607-13), dated August 10, 1992. The 11 positions that were covered by the TP are addressed by mandated DOE Orders and Standards as applicable to the CSB Project is in the area of building construction. The TP considers Type I construction, as classified by NFPA 220, as adequately fire-safe for process buildings. The CSB is designed as a UBC Type II-N construction which does not have the fire resistance rating of NFPA Type I construction. Both construction types use noncombustible materials. Analysis of the fire hazards has shown that Type II-N construction is adequate with regard to safeguarding life and property within DOE fire risk criteria. (Ref: HNF-SD-SNF-FHA-002, Rev. 2, *Final Fire Hazard Analysis for the Canister Storage Building*).	The preliminary fire hazard analysis for Project W-464 (RPP-12364, Rev. 0) contains a summary of CSB fire scenarios in table 5-5. These scenarios are the same as those contained in the original fire hazards analysis performed by the SNF project in FHA-002, Rev 2. FHA-002 also meets the requirements of DOE O 420.1A, *Facility Safety*. The W-464 design is not expected to adversely impact the NRC equivalency committed to by SNF. Current fuel limitations will be included in the Construction Specification and the SA.

Item No.	HNF-SD-SNF-DB-003, HNF-4776, Rev. 1 – Additional NRC Requirements	Assessment of SNF Compliance for CSB (Note:typograhieal errors have been corrected)	Project W-464 Compliance
		As described in Chapters A2.0 and A3.0 of the CSB FSAR (HNF-3553, Annex A, Rev 0), the supporting CSB Hazards Analysis (HNF-SD-SNF-HIE-001, Rev. 1), and the Fire Hazards Analysis Report (WHC-SD-SNF-FHA-002, Rev 2), the Project's final accident analysis evaluation concludes that fire protection systems within the CSB are adequately classified as general service. No safety class preventive or mitigative systems are required. An analysis of the passive cooling system (CSB-HV-0001, FDI 1996) shows that the maximum expected temperatures for the fuel, MCOs and surrounding equipment are well below temperatures which would a cause a thermal runaway reaction. A thermal runaway reaction has been demonstrated to be a beyond design basis event (BDBA). (Ref: HNF-3553, Annex A, Section A 3.4.2.5, A3.4.2.6, and A3.4.3.1)	
2	Adopt the seismic criteria outlined in WHC-SD-SNF-DB-004, *Spent Nuclear Fuel Project Seismic Design Criteria, Nuclear Regulatory Commission Equivalency Evaluation Report* for the design of the CSB and CVD facility. Incorporate a design basis tornado (including translational velocity, rotational velocity, and pressure differential) and tornado missile for safety-class SSCs into the designs of the CSB and CVD facility taking into consideration the most recent version of NRC Regulatory Guide 1.76, *Design Basis Tornado for Nuclear Power Plants*, SECY-93-087, *Policy, Technical, and Licensing Issues Pertaining to Evolutionary and Advanced Light-Water Reactor (ALWR) Designs*, and NUREG/CR-4461, *Tornado Climatology of the Contiguous United States* (potential revisions to Standard Review Plan 3.5.1.4, Revision 2, *Missiles Generated by Natural Phenomena*). Refer to WHC-SD-SNF-DB-002, *Spent Nuclear Fuel Project Path Forward Nuclear Safety Equivalency to*	The CSB requirements for natural phenomena are implemented in the design by the design requirements documents (HNF-SD-SNF-DB-003 and HNF-SD-SNF-DB-009) and the controlling lower tier design and procurement documentation. The CSB design for natural phenomena, is documented in the CSB FSAR (HNF-3553, Rev. 0) Chapters A1.0 and A2.0 and supporting references (e.g.,HNF-SD-SNF-HIE-001, Rev. 3,). The CSB FSAR, Table A1-1, summarizes natural phenomena loads and applicable DOE, NRC, and national consensus standards applied to CSB for seismic, straight wind (including missiles), tornado, volcanic ash, flooding, lightning, and snow. Implementation of these requirements is consistent with the SNF Project NRC equivalency criteria. The design basis earthquake (DBE) established for the CSB is anchored at 0.35 g free field. This DBE has been evaluated for NRC equivalence. (Ref: WHC-SD-SNF-DB-004, Rev 2). Implementation of this NRC equivalent seismic criteria is demonstrated in the CSB	Seismic requirements are identified in the DRD as being RPP-PRO-097. This has been superceded by TFC-ENG-STD-06. The seismic loads for Performance category 3 are the same as those used by the SNF. (ref. WHC-SD-DB-009 Rev 4A and TFC-ENG-STD-06, table 6). The CSB Operations Area Shelter and support building are designed to resist tornado wind forces (total wind speed

Item No.	HNF-SD-SNF-DB-003, HNF-4776, Rev. 1 – Additional NRC Requirements	Assessment of SNF Compliance for CSB (Note:typograhical errors have been corrected)	Project W-464 Compliance
	Comparable NRC-Licensed Facilities, Table 5.c, and to 10 CFR 72.24 and 72.122, for related information. The designs of (1) the CSB and (2) K Basins and the CVD facility shall ensure that sharing of common utilities and services and physical interaction between the facilities do not impair the capability of either facility to perform its safety functions. Incorporate the ability for ready retrieval of MCOs into the design of the CSB. (References: Title 10, *Code of Federal Regulations*, Sections 72.24, "Contents of application: Technical information," 72.90, "General considerations," 72.92, "Design basis external natural events," 72.102, "Geological and seismological characteristics," 72.122, "Overall requirements," and 72.212, "Conditions of general license issued"; NRC Regulatory Guides 1.60, *Design Response Spectra for Seismic Design of Nuclear Power Plants* [Revision 1], 1.61, *Damping Values for Seismic Design of Nuclear Power Plants* (Revision 0), and 3.48, *Standard Format and Content for the Safety Analysis Report for an Independent Spent Fuel Storage Installation (Dry Storage)* [Revision 1]; and SECY-93-087, *Policy, Technical, and Licensing Issues Pertaining to Evolutionary and Advanced Designs*)	FSAR (Ref: HNF-3553, Rev. 0) for the Operations Area Shelter, the Support Building and the MHM. (Ref:HNF-3553, Annex A, Sections A4.3.1, A4.3.2, A4.3.3, A4.3.6, A4.3.9, A4.3.10, A4.3.14, A4.4.1, and A4.4.4). The CSB Operations Area Shelter and Support Building are designed to resist wind borne missiles and tornado wind forces. Tornado wind forces are transmitted and carried by the CSB below grade vault. Tornado missiles have been eliminated from the CSB design. (Ref: HNF-3553, Annex A, Section 1.4.1.1.4 and Section A4.3.3.4). Equipment inside the CSB, including the MHM, is protected from these NPH events. Implementation of this NRC tornado criteria is demonstrated in the CSB FSAR for the Operations Area Shelter and the Support Building (Ref: HNF-3553, Annex A, Rev. 0, Section A4.3.3.4) The CSB Hazards Analysis (HNF-SD-SNF-HIE-001, Rev. 3) includes consideration of K Basins or CVDF accidents that could impact the CSB. This analysis shows that no accidents, discussed in Chapter A3, at either the K Basins or CVDF would affect safe operation of the CSB. There are no shared utilities between the CSB and the K Basins or CVDF. Interactions between the CSB Operations Area Shelter and the Support Building are eliminated by having both structures designed to resist both the DBE and the tornado. The requirement for design features to readily retrieve MCOs is applicable to the CSB. The design of the CSB requires no special process or equipment, other than the MHM, to retrieve MCOs. The storage tube design ensures that MCOs are readily retrievable. There are no identified long term storage conditions that would make the MCOs less than readily retrievable.	200mph). Project W-464 adds an intake and an exhaust stack to both vaults 2 and 3. The design of these stacks shall meet the same wind (total speed 200mph) loads. The DRD (RPP -7507, Rev. 1) section 3.3 requires compliance with the ICD for control. The ICD (RPP-7609, paragraph 6.5.2 states that the W-464 design must meet the CSB design basis in any areas that may impact vault storage. Vault 1 design basis WHC-SD-SNF-08-009, Table 1 establishes tornado loading that meets the NRC requirement. Structural calculations performed in detailed design (RPP-18681) confirmed the acceptability of the W-464 design. The existing CSB was exempted from the requirement to resist

Item No.	HNF-SD-SNF-DB-003, HNF-4776, Rev. 1 – Additional NRC Requirements	Assessment of SNF Compliance for CSB (Note:typograhieal errors have been corrected)	Project W-464 Compliance
			tornado-borne missiles by showing that the probability of such a missile striking the CSB was less than 4×10^{-9}. The W-464 project estimated construction activities would raise this probability to no more than 4×10^{-9} (letter MACTEC-DD-074).

Item No.	HNF-SD-SNF-DB-003, HNF-4776, Rev. 1 – Additional NRC Requirements	Assessment of SNF Compliance for CSB (Note:typograhieal errors have been corrected)	Project W-464 Compliance
3	In the event that safety-class electrical equipment may be required and may be exposed to harsh environments for the CSB and CVD facility during off-normal or postulated accident conditions, the following are additional NRC requirements. Ensure that the electrical equipment qualification program includes the requirements of 10 CFR 50.49 that are missing from DOE 6430.1A,-HNF-PRO-097, *Engineering Design and Evaluation*, and HNF-PRO-704, *Hazard and Accident Analysis Process*. For safety-class equipment, non-safety class equipment that could, upon failure, adversely impact safety-class equipment in performance of its safety function, and certain post-accident monitoring equipment, as described in NRC Regulatory Guide 1.97, these requirements include (1) review of 10 CFR 50.49(e)(5) and Regulatory Guide 1.89 during the design process to determine the aging requirements for such electrical equipment, and (2) testing requirements provided in 10 CFR 50.49(f)(1-4). For additional information, refer to WHC-SD-SNF-DB-002, *Spent Nuclear Fuel Project Path Forward Nuclear Safety Equivalency to Comparable NRC-Licensed Facilities*, Table 5.b, 10 CFR 50.49, and Attachment A, "Detailed Evaluations, Environmental Qualification of Electrical Equipment." (References: 10 CFR 50.49, "Environmental qualification of electrical equipment," and NRC Regulatory Guides 1.89, *Environmental Qualification of Certain Electrical Equipment Important to Safety for Nuclear Power Plants* [Revision 1], and 1.97, *Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident* [Revision 3]) .	The evaluation of this requirement for the CSB facility has not identified any harsh environments based on the definitions found in IEEE-323, *Qualifying Class IE Equipment for Nuclear Power Generating Stations*. CSB safety-class and safety-significant equipment has been incorporated into the CSB design to prevent DBAs that would create a harsh environment. Environmental qualification for CSB safety-class equipment for mild environments is performed in accordance with IEEE 627. The electrical supply equipment is classified general service. The seismic detection system interlocked with the power supply for both cranes terminates all power to the MHM and the receiving crane after detecting excess seismic motion. No active systems are required during or after the earthquake and there are no further environmental qualification requirements for either the MHM or the receiving crane. No MHM interlocks were determined to be safety class and the IEEE standards have been deleted from Section A4.2.3	The electrical supply added by W-464 is general service. W-464 does not add any harsh environments as defined in IEEE-323. The seismic detection system interlocked with the power supply for both cranes terminates all power to the MHM and the receiving crane after detecting excess seismic motion. The W-464 design will not affect this feature of the MHM. The SA (RPP-11590) sections 4.4.4.1. and 4.4.4.2 conclude that the W-464 design does not affect the MHM functions in the MCO mode. As such, the SNF commitments made regarding IEEE-323 are not compromised.

Item No.	HNF-SD-SNF-DB-003, HNF-4776, Rev. 1 – Additional NRC Requirements	Assessment of SNF Compliance for CSB (Note:typograhieal errors have been corrected)	Project W-464 Compliance
4	Include in the SNF Project Path Forward Integrated *Safety Management Plan or the SAR Preparation Plans*, the requirement for the SARs that address the CSB and CVD facility to evaluate a loss of ac power to the facility. The design of the CSB and CVD facility should respond as needed for accident prevention and mitigation. (References: 10 CFR 50.63, "Loss of all alternating current power")	The SAR criteria document, SNF-3446, includes the requirement *that the CSB facility evaluates the loss of AC power to the* facilities. The CSB FSAR (HNF-3553, Annex A, Rev. 0) and the supporting Hazards Analysis (HNF-SD-SNF-HIE-001, Rev. 3) evaluate a loss of AC power to the CSB. Note that for the CSB no safety functions are performed by the AC electrical power system, which is classified as general service. The CSB has no safety-class electrical power loads. All systems fail safe upon loss of AC power. (CSB FSAR, HNF-3553, Annex A, Rev. 0, Section A2.8.2 and A3.4.2.7.4). The electrical power system does interface with the CSB safety systems to provide normal power; qualified isolation devices are provided to prevent a non-safety system failure from impacting a *safety-class system. No safety class power is required.* Isolation devices comply with IEEE requirements as discussed in item number 7 below. The MHM on loss of power goes into a suspended state. Natural circulation cools any MCO in the turret. After a seismic event, the cranes are manually restarted. Also, during loss-of-power, the hoists may be manually raised or lowered to improve safety of the suspended load.	The W-464 SA addresses the loss of AC power to the facility. The W-464 design will not affect the facility response to a loss of AC power. The W-464 design only takes power from existing power panels. There is no impact to the SNF NRC compliance.
5	For the CSB and CVD facility incorporate the requirements of IEEE Standard 484-1987, *IEEE Recommended Practices for Installation Design and Installation of Large Lead Storage Batteries for Generation Stations and Substations*, into the design and installation of safety-class batteries. (References: NRC Regulatory Guide 1.128, *Installation Design and Installation of Large Lead Storage Batteries for Nuclear Power Plants* [Revision 1])	Not applicable to the CSB. No safety-class battery power is required for CSB; thus, the CSB design does not include any large lead storage batteries to provide safety-class DC power. The UPS system (Ref: HNF-3553, Annex A, Section A2.8.3) is a general service system supplying uninterruptible, reliable power for a short time period if normal power is interrupted.	There is no safety-class battery power in W-464 The UPS system is general service. No compliance actions are required of W-464.

Item No.	HNF-SD-SNF-DB-003, HNF-4776, Rev. 1 – Additional NRC Requirements	Assessment of SNF Compliance for CSB (Note:typograhieal errors have been corrected)	Project W-464 Compliance
6	For the CSB and CVD facility, incorporate the requirements of IEEE Standard 535-1986, *IEEE Standard for Qualification of Class 1E Lead Storage Batteries for Nuclear Power Generating Stations*, for the qualification of safety-class lead storage batteries. (References: NRC Regulatory Guide 1.158, *Qualification of Safety-Related Lead Storage Batteries for Nuclear Power Plants* [Revision 0])	Not applicable to the CSB. See item #5 above.	Not applicable. See item 5 above.
7	For the CSB and CVD facility incorporate into the design for safety-class instrumentation and control systems, the requirements of IEEE Standard 603-1991, *IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations.* (References: 10 CFR 50.55a, "Codes and standards," and NRC Regulatory Guide 1.153, *Criteria for Power, Instrumentation, and Control Portions of Safety Systems* [Revision 0])	The hazards analysis for the CSB (HNF-SD-SNF-HIE-001, Rev. 3) identified several safety class instrumentation and control systems: the resolver and interlock system for the receiving crane, interlocks on the MHM which prevent potential damage to the MCOs and pressure safety valves for the helium supply system. However, no electrical systems were identified in the accident analysis, HNF-3553, Rev 0, that needed to be classified as safety class. Therefore, the requirements of IEEE standard 603 do not apply to the CSB. This standard has been removed from Section A4.2.3	W-464 modification to safety significant instrumentation and control systems or electrical systems are required to comply with IEEE standard 603-1991. The MHM control system will be modified without affecting existing safety significant interlocks. Project W-464 does not affect the MHM interlocks for the MCO mode in a functional sense. In HLW mode, certain MCO interlocks will be bypassed.
8	For the CSB and CVD facility incorporate the requirements of ANSI/ANS-8.3-1986, *Criticality Accident Alarm System*, into the design. (Note: using the MCO design, which includes the basket configuration, and the quantities and form of the K Basin fuel, evaluate	For the CSB facility the basis for not requiring a criticality accident alarm system is documented in the safety analysis (CSB FSAR, HNF-3553, Rev.0) and supporting documents (Ref: HNF-SD-SNF-CSER-005). All potential criticality situations analyzed for the CSB show that the k_{eff} is less than the criticality safety limit, even for the	For W-464, the basis for not requiring a criticality accident alarm is documented in the SA. (RPP-11590).

Item No.	HNF-SD-SNF-DB-003, HNF-4776, Rev. 1 – Additional NRC Requirements	Assessment of SNF Compliance for CSB (Note:typograhieal errors have been corrected)	Project W-464 Compliance
	these features as a basis for not incorporating criticality accident alarm systems in the CSB and CVD facility based on demonstrating through safety analyses documented in the associated SARs that criticality is not possible. As the design progresses, reconfirm the evaluation results.) Refer to WHC-SD-SNF-DB-002, *Spent Nuclear Fuel Project Path Forward Nuclear Safety Equivalency to Comparable NRC-Licensed Facilities*, Table 6.a, and NRC Regulatory Guide 8.12 for additional information. (References: NRC Regulatory Guides 8.5, *Criticality and Other Interior Evacuation Signals* [Revision 1], and 8.12, *Criticality Accident Alarm Systems* [Revision 2], and 10 CFR 70.24, "Criticality accident requirements," and *10 CFR 72.124, "Criteria for nuclear criticality safety"*)	double contingency accidents analyzed (Ref: HNF-3553, Rev.0, Chapter A6.0). The analyses conclude that a criticality accident is incredible. Therefore, there is no need for installation of criticality instrumentation in the CSB and none is provided in the design. The exclusion of criticality instrumentation is provided by ANSI/ANS-8.3-1997, Criticality Accident Alarm System, and DOE Order 5480.24, paragraph 7.b(3).	There is no impact to the SNF NRC equivalency.
9	For the CSB and CVD facility review the NRC guidance of NUREG-0700 and Standard Review Plan 18.1 against DOE 6430.1A, Section 1300-12.4 and the DOE draft standard, *Human Factors Engineering Design Criteria: Volume I, General Criteria*, to identify appropriate additional NRC guidance for design of these facilities. The reviews should give consideration to the differences in complexity between power reactor control rooms and those of the CSB and CVD facility. (References: NUREG-0700, *Guidelines for Control Room Design Reviews*, and Standard Review Plan 18.1, *Control Room* [Revision 0])	The primary function of the CSB control room is monitoring of health physics instruments. SRP 18.1 is directed at a control room and specifies a review process for upgrades to existing reactor control rooms, primarily, with emphasis on emergency actions. There are no safety class mitigation actions or recovery procedures required for the operator from the control console. No NRC equivalency requirements for operator emergency actions are necessary. The CSB safety class components (hard-wired interlocks and other electrical components) are designated important-to safety. NUREG-0700 and Standard Review Plan, Section 18.1, were utilized for the human factors evaluation of the CSB (Ref: HNF-3553, Annex A, Rev 0, Section A13.4 and Table A13.1). The MHM also has an operator control console. NUREG 0700 and Mil STD 1472D guidance were applied in designing the MHM control panel. The MHM vendor completed a human factors engineering plan and human factors review of the MHM systems	W-464 will add no new control panels to CSB. The only control system changes will involve adding relay panels that will not require additional operator interfaces beyond that already in the facility. Currently, no adverse impact is seen to the SNF NRC equivalency approach. The changes impact the hoist weight and depth systems and a mode switch. However, if the vendor design changes this approach, then a

Item No.	HNF-SD-SNF-DB-003, HNF-4776, Rev. 1 – Additional NRC Requirements	Assessment of SNF Compliance for CSB (Note:typograhical errors have been corrected)	Project W-464 Compliance
		using man-machine interface criteria. A review was conducted of the control console design and layout and suggestions were incorporated to improve ease of operation and minimize the potential for mis-operation. The receiving crane also has an operator console. The design of the receiving crane operator console was reviewed against the guidance of NUREG 0700 and Mil STD 1472D. The results of the HF evaluation for the CSB including the MHM and receiving crane is documented in the FSAR (Ref: HNF-3553, Annex A, Rev 0, Section A13.4 and Table A13.1).	review of the design must be done for impacts to the NRC equivalency. The receiving crane load path with the HLW cask will be to the FFTF pit which does not effect NRC equivalency.
10	For the CSB and CVD facility use NRC Regulatory Guide 1.26 to assist in assigning the appropriate code class to *ASME Boiler and Pressure Vessel Code*, Section III systems and components. (References: NRC Regulatory Guide 1.26, *Quality Group Classifications and Standards for Water, Steam, and Radioactive-Waste-Containing Components of Nuclear Power Plants* [Revision 3])	NRC Regulatory Guide 1.26 was used in selecting the code class for four CSB components. Three components of the CSB were required to be designed to ASME Section III; the overpack storage tubes, the overpack storage tube bellows, the overpack storage tube plugs. Chapter A4.0 of the CSB FSAR summarizes the functional requirements that provided for application of ASME Section III, Subsection NC, for the overpack storage tubes and the overpack storage tube plugs. For continuity of design, the overpack storage tube bellows are also designed to ASME Section III, Division 1, Article NC. NRC Regulatory Guide 1.26 was used in selecting code class ANSI/ASME B31.3 for the helium supply rupture disk (PSE-1) summarized in chapter A 4.0.	The SA concludes that the requirements of ASME do not apply to W-464 components (RPP-11590). The tube spec requires design and fabrication to ANSI/AISC N690. No impact is seen to the SNF NRC equivalency commitment.
11	For the CSB and CVD facility review the NRC positions in Regulatory Guides 1.84 and 1.85 on ASME *Boiler and Pressure Vessel Code*, Section III code cases before using such code cases for safety-class applications. The NRC positions on applicable code cases should be used in the designs. Where no NRC position is stated in regards to	The CSB safety class mechanical components; standard and overpack storage tubes, and standard and overpack tube base assemblies have been designed, fabricated and installed meeting Section III of the ASME Boiler and Pressure Vessel Code or have been demonstrated to be equivalent to Section III or ANSI/AISC N690-94. NRC positions on ASME code cases in R.G. 1.84 and	A similar response to item 10 above applies here. The SA concludes that ASME codes are not applicable to the design of the

Item No.	HNF-SD-SNF-DB-003, HNF-4776, Rev. 1 – Additional NRC Requirements	Assessment of SNF Compliance for CSB (Note:typograhleal errors have been corrected)	Project W-464 Compliance
	the acceptance of a code case, that code case may be used as approved by the code committee. (References: NRC Regulatory Guides 1.84 and 1.85 [both Revision 30], *Design and Fabrication Code Case Acceptability ASME Section III, Division 1, and Materials Code Case Acceptability ASME Section III, Division 1*)	1.85 were reviewed for applicability to these CSB components (Section A4.2.3). These code cases were not used in the design of these components. Ref. Addendum 2 of Attachment 1 to FDH-9761261 R4.	tubes because no pressure vessels were identified.
12	For the CSB and CVD facility ensure the requirements of ANSI/ANS N509-1989, *Nuclear Power Plant Air-Cleanup Units and Components*, and ANSI/ANS N510-1989, *Testing of Nuclear Air Treatment Systems*, are incorporated into the design of safety-significant and non-safety class HVAC systems used to achieve onsite radiological limits or to implement the principals of ALARA. (References: NRC Regulatory Guide 1.140, *Design, Testing, and Maintenance Criteria for Normal Ventilation Exhaust System Air Filtration and Adsorption Units of Light-Water-Cooled Nuclear Power Plants* [Revision 1])	These two standards (ANSI/ANS N509-1989 and ANSI/ANS N510-1989) are both imposed on the CSB facility HVAC systems by the performance specifications. The main HVAC system is classified general service; the sampling weld station HVAC system is safety significant up to the HEPA on the discharge of the exhauster, AH-006. Implementation is through the applicable procurement specifications and testing documents. The MHM extract system contains HEPA filters. The system draws air over the MCO and through the hoist enclosure during normal operation. The filters provide a general-service confinement function for postulated releases from the MCO. They are designed to N509 and tested to methods in N510 per the MHM performance specification.	The SA (RPP-11590) demonstrated no need for HVAC changes based upon source terms. Project W-464 adds no new HVAC systems necessary to the control of radiological inventory nor directly modifies any existing systems. No adverse impact is seen to the SNF NRC equivalency approach.
13	For the CSB and CVD facility, incorporate the design requirements of ANSI/ANS-57.1, *Design Requirements for Light Water Reactor Fuel Handling System*, and ANSI/ANS-57.2, *Design Requirements for Light Water Reactor Spent Fuel Storage Facilities at Nuclear Power Plants*. (This only applies to new facilities that will include the capabilities to lift MCOs or MCO casks, not to K Basins.) (References: NRC Standard Review Plan 9.1.5, *Overhead Heavy Load Handling Systems* [Revision 0]; NUREG-	A detailed comparison of these standards for the CSB equipment including the MHM was previously transmitted with FDH-9855462 dated July 2, 1998. The MHM design is based on ASME NOG-1 which is commonly regarded as the nuclear version of CMAA-70. The Receiving Crane is also designed to ASME NOG-1. The CSB crane design compliance with the guidance of standards ANSI/ANS 57.1 and 57.2 was included in Addendum 2 of Attachment 1 to FDH-9761261 R4 dated January 20, 1998. The CSB Receiving Crane evaluation focused on compliance with Section 5.0 of 57.1 and 57.2, "System Functional Description", and	Project W-464 includes a new MHM grapple and a new IHLW cask-lifting fixture. These are not used with SNF. No structural load path modifications are made above the MHM grapple. The load path is changed on the receiving crane but this

Item No.	HNF-SD-SNF-DB-003, HNF-4776, Rev. 1 – Additional NRC Requirements	Assessment of SNF Compliance for CSB (Note:typograhieal errors have been corrected)	Project W-464 Compliance
	0554, *Single Failure Proof Cranes for Nuclear Power Plants*; and NUREG-0612, *Control of Heavy Loads at Nuclear Power Plants, Resolution of Generic Technical Activity A-36*)	"Facility Performance Requirements" respectively, and with compliance to Section 6.0 of 57.1 and 57.2, "Design Requirements". A review of the MHM and receiving crane review packages revealed that some of the NRC requirements identified were already included as features in the vendor's design either due to inclusion by the procurement documents or required by ASME NOG-1 design guidance. The evaluation concluded that the MHM and receiving crane (FDH-9761261 R4) fully meet the design requirements of ANSI/ANS 57.1 and 57.2. Updated ANSI/ANS-57.1 and 57.2 compliance matrices, Attachments 2 and 3 of SNF-5790, *Design Compliance Matrices to ANSI and OSHA*, were prepared and provide justification that the CSB design compliance statements were provided for all issues and additional requirements identified in the earlier evaluations.	has no impact on the SNF-NRC Equivalency. As a result, no adverse impact is seen to the SNF NRC equivalency approach i.e., when the MHM is used with MCOs.
14	For the CSB and CVD facility incorporate applicable design requirements of NRC Generic Letters 88-14, 89-10 and 89-13 into safety-class instrument air systems, motor-operated valves, and open-cycle cooling water systems, respectively. (References: NRC Generic Letters 88-14, *Instrument Air Supply System Problems Affecting Safety-Related Equipment*; 89-10, *Safety-Related Motor-Operated Valve Testing and Surveillance 10 CFR 50.54(f)*, with supplements; and 89-13, *Service Water System Problems Affecting Safety-Related Equipment*)	The CSB does not possess safety class instrument air systems, motor-operated valves or open-cycle cooling water systems. Incorporation of these NRC Generic Letters is not required by the CSB design.	W-464 does not include safety class instrument air systems, motor-operated valves or open-cycle cooling water systems. Therefore, incorporation of these NRC Generic letters is not required in the W-464 design. No adverse impact is seen to the SNF NRC equivalency approach by W-464.
15	For the CSB and CVD facility incorporate a requirement	Safety class purchasing requirements in HNF-PRO-259 and HNF-	CH2M HILL

Item No.	HNF-SD-SNF-DB-003, HNF-4776, Rev. 1 – Additional NRC Requirements	Assessment of SNF Compliance for CSB (Note:typograhieal errors have been corrected)	Project W-464 Compliance
	into safety-class procurement specifications that requires *suppliers to report defects and noncompliances in items or* services. The requirement should be similar to the following. Safety-class equipment and/or services furnished under this order are subject to reporting of defects. If equipment and/or services contain defects that could cause a substantial safety hazard, then immediate reporting to the Buyer is required unless the Seller has actual knowledge that the Buyer has been adequately informed of such defect. The Seller shall evaluate identified or suspected defects. *If the Seller's evaluation determines a defect does exist* that could cause a substantial safety hazard, then the Seller shall notify the Buyer as soon as practicable and, in all cases, within 5 working days following completion of the evaluation. If the Seller determines that it does not have the capability to perform the evaluation, the Seller may request the buyer to cause an evaluation to be performed. Seller's request shall be effected within 5 working days of this determination. If the Seller elects to have the Buyer perform the evaluation, then all necessary and pertinent information and correspondence shall be sent to the Buyer. *Results of evaluations by the Buyer will be* transmitted to the Seller. (References: 10 CFR 21, "Reporting of Defects and Noncompliance")	PRO-3144 specify that purchasing of safety class and safety *significant items comply with the ANSI/ASME NQA-1* requirements. The NQA-1, Section XV, Control of Nonconforming Items, requirement is: Items that do not conform to specified requirements shall be controlled to prevent inadvertent installation or use. Controls shall provide for identification, documentation, evaluation, segregation when practical, disposition of nonconforming items, and for notification to affected organizations. In addition, the following clause, included in SNF procurement documents, incorporates 10 CFR 21 provisions for "Reporting of Defects and Noncompliance." The Seller shall evaluate identified or suspected defects. If the Seller's evaluation determines a defect does exist that could cause a substantial safety hazard, then the Seller shall notify the Buyer as soon as practical, and in all cases, within 5 working days following completion of the evaluation. If the Seller determines that it does not have the capability to perform the evaluation, the Seller may request the buyer to cause an evaluation to be performed. Seller's request shall be effected within 5 working days of this determination. If the Seller elects to have the Buyer perform the evaluation, then all necessary and pertinent information and correspondence shall be sent to the Buyer. Results of evaluations by the Buyer will be transmitted to the Seller.	procurements for Safety-Class and Safety-Significant items will require compliance with NQA-1, Section XV, Control of Nonconforming items and the additional 10 CFR 21 requirements for reporting of Defects and Noncompliance. These latter requirements are contained in the CH2M HILL procurement document "On Site Special Work Provisions" This will maintain the SNF-NRC equivalency commitment.
16	Before implementation, the DOE-Richland Operations Office will review and approve any changes to WHC-SP-1131, *Quality Assurance (QA) Program and*	The CSB FSAR (Ref: HNF-3553, Annex A, Rev. 0) in Chapter A14.0 "Quality Assurance" defines the QA requirements for the CSB subproject including a requirement related to the QA rule	The issue in this item is to show compliance with 10 CFR 50.54(a)

Item No.	HNF-SD-SNF-DB-003, HNF-4776, Rev. 1 – Additional NRC Requirements	Assessment of SNF Compliance for CSB (Note:typograhieal errors have been corrected)	Project W-464 Compliance
	Implementation Plan, for the SNF Project that could be interpreted as decreasing the Quality Assurance Program's existing commitments for the SNF Project. (Note: HNF-SP-1228, *Quality Assurance Program Implementation Plan for Nuclear Facilities*, is in the process of being revised for subsequent approval by DOE-RL. Nuclear facility lists and descriptions from WHC-SP-1131 are being relocated to ES&H nuclear safety documents. WHC-SP-1131 remains in effect until DOE-RL approval is secured for HNF-SP-1228 and facility lists and descriptions are relocated to ES&H nuclear safety documents.) (References: 10 CFR 50.54(a), "Conditions of licenses *[Quality Assurance Provisions]*")	(10CFR830.120) implementation plan. This plan, which describes how the QA rule is implemented at Hanford and its subprojects, requires DOE approval prior to changing it. This approval prior to implementation is similar to the NRC requirement 10 CFR 50.54(a). HNF-SP-1228 has been updated to require RL review and approval for any changes that could be interpreted as decreasing the SNF Project QA Program's existing commitments.	that requires, in part, a QA Program in accordance with 10 CFR 50.Appendix B and to keep the NRC advised of Program changes. The CH2M HILL W-464 Quality Program is reviewed by DOE-ORP and is compliant with TFC-PLN-02 which is approved by DOE-ORP. TFC-PLN-02 is compliant with NQA-1 which was derived from 10 CFR 50 appendix B. DOE-ORP (CH2M HILL's regulator) is kept apprised of all changes to the QA Program. No adverse impact is seen to the SNF-NRC equivalency approach.
17	Implement the PHMC Occurrence Reporting System for the design and construction of the CSB and CVD facility. (References: 10 CFR 50.55(e), "Conditions of construction permits")	Reporting of SNF Project occurrences during the design and construction phase is implemented by Administrative Procedure AP 2-15. This procedure applies to K Basins, CVDF, and CSB and implements the requirements of DOE Order 232.1A. For the CSB design, reporting of unusual occurrences is provided by the Architect Engineer's corrective action system invoked in Section 16 "Corrective Action" of FDIs QAPP.	CH2M HILL handles Occurrences by its procedure TFC-OPS-OPER-C-24, Rev. A2, *Occurrence Reporting and Processing of Operations Information*. This

Item No.	HNF-SD-SNF-DB-003, HNF-4776, Rev. 1 – Additional NRC Requirements	Assessment of SNF Compliance for CSB (Note:typograhleal errors have been corrected)	Project W-464 Compliance
		For the MHM design and construction the PHMC Occurrence Reporting system is in effect. For the CSB construction, reporting of unusual occurrences is provided by implementation of the constructor's quality assurance program plan (QAPP) Section 16 "Corrective Action" and Section 15 "Control of Nonconforming Items".	procedure complies with DOE-M 231.1-2 Occurrence Reporting and Processing of Operations Information. CH2M HILL will inform CSB Operations of unusual occurrences in design/construction.
18	For the CSB, CVD facility, and K Basin FRS and post-FRS fuel handling activities, ensure the appropriate quality requirements in existing PHMC procedures and instructions remain in effect (e.g., in SNF Project-specific documents). These procedures and instructions and the subject requirements are identified in WHC-SD-SNF-DB-002, *Spent Nuclear Fuel Project Path Forward Nuclear Safety Equivalency to Comparable NRC-Licensed Facilities*, Attachment A, "Detailed Evaluations, Quality Assurance Criteria." (References: 10 CFR 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," and 10 CFR 72, Subpart G, "Quality Assurance")	WHC-SD-SNF-DB-002 identified QA items such as QA organizational freedom, QA program identification of safety related items, graded approach to design, supplier QA program requirements, supplier qualifications, inspection of fabrication and installation, and status tagging for installation and inspection have been maintained in the PHMC and SNF Project QA programs. Attachment A of HNF-SD-SNF-DB-002, Rev.2, contains a detailed evaluation that PHMC procedures and instructions are equivalent to the requirements of 10 CFR 72, Subpart G and 10 CFR 50, Appendix B. The revised HNF-SD-SNF-DB-002 is being circulated for approval.	Project W-464 has an approved QA Program compliant with TFC-PLN-02 that is consistent with NQA-1. NQA-1 meets the requirements of 10 CFR 72, subpart G. No adverse impact is seen to the SNF NRC equivalency approach by the W-464 QA Program.

Item No.	HNF-SD-SNF-DB-003, HNF-4776, Rev. 1 – Additional NRC Requirements	Assessment of SNF Compliance for CSB (Note:typograhieal errors have been corrected)	Project W-464 Compliance
19	Institute a process to identify safety-class equipment that has been identified in the commercial nuclear power industry, via NRC Inspection and Enforcement Bulletins and Notices, as being potentially defective. Ensure the areas of vendor and subcontractor quality assurance records and control of safety-class purchased material, equipment, and services receive emphasis during SNF Project audits, surveillances, and assessments. (References: IEN 95-29 and a number of NRC Inspection and Enforcement Bulletins and Notices addressing procurement of potentially defective equipment)	The SNF Project has documented a review of NRC Inspection and Enforcement bulletins and notices for the purpose of identifying potentially defective safety-class equipment or components. (Ref. Internal memo 99-SNF/DMB-001, D. M. Black to G. D. Bazinet, CSB Review of NRC Equivalency Item No. 19 by reviewing Information Notices and Bulletins with potential applicability to the CSB and reporting the results.) An ongoing program has been established in engineering procedure EN-6-020, "Spent Nuclear Fuel Project Procurement of Safety Class Items and Management of Spares," that "institute a process to identify safety-class equipment that has already been identified in the commercial power industry, via NRC Inspection, Enforcement Bulletins and Notices, as being potentially defective." For the MHM, the appropriate QA and procurement clauses have been invoked on the contract. Purchased parts have been reviewed against known defects, (e.g., counterfeit bolts). Project Hanford procedures HNF-PRO-268, *Control of Purchased Items and Services, and* HNF-PRO-3144, *Supplier Quality Assurance Program Evaluation,* provide instructions for ensuring the areas of vendor and subcontractor quality assurance records and control of safety-class purchased material, equipment, and services receive emphasis during SNF Project audits, surveillances, and assessments.	An issue, number 16 was added to the interface control document between the SNF Program and IHLW Interim Storage (RPP-7609 Rev. 1). The resolution of interface issue 16, as documented in RPP-7609, Rev. 1 is that it is closed. The basis for closure is that ongoing W-464 design reviews by CSB engineering staff will continue to ensure compliance with this NRC equivalency requirement.
20	For the CSB and CVD facility, incorporate control devices for access to high-radiation areas that conform to the requirements of 10 CFR 20.1601. 10 CFR 20.1601 requires control devices to all high-radiation areas, defined in Section 20.1003 to be 0.1 rem in 1 hour at 30 cm, whereas 10 CFR 835 does not require incorporation of control devices until the dose rate in an accessible area reaches 1 rem in 1 hour at 30 cm. Control devices are hardware features, such as alarms or locked entryways, as opposed to administrative controls.	Radiation dose rates in the accessible areas of the CSB will not be high enough to require control devices under application of either the NRC or DOE criteria. Areas of the CSB where radiation levels are expected to be high, such as the below grade vault, are not accessible to personnel. The MHM is provided with interlocks to protect the worker from exposure to the MCO should the MHM shield skirt not be lowered. (Ref: HNF-3553, Annex A, Rev 0, Section A4.4.13). The MHM dose rates to the facility workers are determined by	The W-464 shielding analyses (RPP-18681) concludes that W-464 does not impact any shielding for the SNF within the CSB and therefore will not impact the NRC Equivalency of the dose rates in accessible areas

Item No.	HNF-SD-SNF-DB-003, HNF-4776, Rev. 1 – Additional NRC Requirements	Assessment of SNF Compliance for CSB (Note:typograhieal errors have been corrected)	Project W-464 Compliance
	For the CSB and CVD facility, incorporate into the design the 10 CFR 20.1301 hourly dose limit of 0.002 rem to the public for any unrestricted area from external sources during normal operations and anticipated occurrences. (References: 10 CFR 20, "Standards for Protection Against Radiation," and 10 CFR 72.126, "Criteria for radiological protection")	shielding analyses to be ALARA. The MHM does not result in exposures to the public. Shielding and ALARA analyses for the CSB, which have recently been updated for the welding/sample station addition, have been performed. Dose levels in the service station and sample stations have been calculated at less than 10 mrem/hr at 0.3 meter from the top of the MCO.(Ref: HNF-3779) Regarding the 2 mrem/hr public dose, DOE requirements limit the maximum radiological doses to the exposed individual members of the public to 10 mrem/yr from normal operations. For normal operations and anticipated events associated with the CSB activities, no periodic dose levels of 10mrem/yr or higher are planned or expected. Consequently, the 2 mrem/hr public dose criterion will not be exceeded.	from SNF. As a result, no adverse impact is seen to the SNF NRC equivalency approach by W-464.
21	Apply the radiological exposure criteria of 10 CFR 72.104 to the design and safety analyses of the CSB and CVD facility. These criteria apply during normal operations and anticipated occurrences to any real individual of the public. These annual dose-equivalent criteria are 25 mrem to the whole body, 75 mrem to the thyroid, and 25 mrem to any other critical organ. (Note: existing DOE requirements are 25 mrem to the whole body and 75 mrem to any critical organ.) (References: 10 CFR 72.100, "Defining potential effects of the ISFSI or MRS on the region"; 10 CFR 72.104, "Criteria for radioactive materials in effluents and direct radiation from an ISFSI or MRS"; and 10 CFR 72.126, "Criteria for radiological protection")	The radiation control program for the SNF Project has incorporated into the design and safety analyses the Title 10, *Code of Federal Regulations*, Part 20, "Standards for Protection Against Radiation," Section 20.1301, "Dose Limits for Individual Members of the Public" (10 CFR 20.1301), hourly dose limit of 0.002 rem (2.0×10^{-5} Sv) to the public from external sources for any unrestricted area during normal operations and anticipated occurrences. The radiological exposure annual dose criteria of Title 10, *Code of Federal Regulations*, Part 72," Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste", Section 72.104, "Criteria for Radioactive Materials in Effluents and Direct Radiation from and ISFSI or MRS" (10 CFR 72.104), also have been incorporated. These criteria apply to design measures to protect any real individual of the public (offsite) during normal operations and anticipated occurrences. These annual dose equivalent criteria are 25 mrem (0.25 mSv) to the whole body, 75 mrem (0.75 mSv) to the thyroid, and 25 mrem (0.25 mSv) to any other critical organ. (Note that specific mention of a thyroid dose limit is not included in the	The W-464 design is to be in accordance with 10 CFR 835, "Occupational Radiation Protection," and 10 CFR 20, "Standards for Protection Against Radiation." 10 CFR 72 is applicable for exposures following a DBA. The W-464 design does not affect the SNF NRC equivalency commitment.

Item No.	HNF-SD-SNF-DB-003, HNF-4776, Rev. 1 – Additional NRC Requirements	Assessment of SNF Compliance for CSB (Note:typograhleal errors have been corrected)	Project W-464 Compliance
		current DOE requirements of 25 mrem [0.25 mSv] to the whole body and 75 mrem [0.75 mSv] to any other critical organ.) The estimated annual dose-equivalent exposure from normal operation and anticipated occurrences at CSB is well below both the DOE and NRC criteria of 10 CFR 72.104 (See DOE/RL-98-30, *Radioactive Air Emissions Notice of Construction, Canister Storage Building, (Revised Sealing Configuration for Spent Nuclear Fuel) Project W-379,* dated June 1998). The normal operation dose equivalent for the maximum exposure individual is estimated in the Notice of Construction at 1.58×10^{-2} mrem/yr.	
22	This additional NRC requirement was deleted because of changing how the "important to safety" criteria of 10 CFR 72, are applied. Refer to item 29.	No compliance assessment required.	No compliance assessment needed
23	For the CSB and CVD facility, incorporate the requirements of NRC Regulatory Guide 8.8 into the design. (Note: DOE 6430.1A-1540-99.0.6 references Regulatory Guide 8.8 for piping design considerations for systems that carry radioactive material.) (References: NRC Regulatory Guide 8.8, *Information Relative to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations Will be as Low as Reasonably Achievable* [Revision 3])	The CSB FSAR (HNF-3553, Annex A, Rev. 0, Section A7.4) discusses the ALARA policy and program applied for CSB design including application of Regulatory Guide 8.8. which provides guidelines for the implementation of ALARA at nuclear power plants. The design of the CSB includes features to protect the facility worker from excessive doses of radiation. Design features that protect the worker from radiation can be found in the service station, sampling/weld station, receiving crane, and the MHM. The shielding on the MHM is specified based on ALARA considerations and analysis. RG 8.8 requirement C.2.b. (9) and others require designs to provide features to minimize personnel dose in servicing of equipment. The MHM service pit provides maintenance equipment and facilities to minimize exposure to personnel. The CSB design has been reviewed for ALARA compliance at each design change. The weld station design change is evaluated in	Project W-464 is committed to compliance with NRC Regulatory Guide 8.8 (See DRD 3.3.6.1.1) No changes are being made to the service station, sampling/weld station, and the receiving crane. Shielding is to be added to the MHM grapple for dose considerations. The transition ring in the FFTF pit utilizes the Regulatory Guide 8.8 in the design.

Item No.	HNF-SD-SNF-DB-003, HNF-4776, Rev. 1 – Additional NRC Requirements	Assessment of SNF Compliance for CSB (Note:typograhieal errors have been corrected)	Project W-464 Compliance
		ALARA Analysis 09.	No impact is seen on the SNF NRC equivalency commitment.
24	Include in the SNF Project Path Forward Integrated Safety Management Plan the requirement to provide for the CSB SAR the information called for in 10 CFR 72.24 and NRC Regulatory Guide 3.48 that is not required in DOE 5480.23 and DOE-STD-3009-94 and that is unique to spent nuclear fuel storage. For further information, refer to WHC-SD-SNF-DB-002, *Spent Nuclear Fuel Project Path Forward Nuclear Safety Equivalency to Comparable NRC-Licensed Facilities*, Table 5.c, and 10 CFR 72.24. Further, as the Hanford Site evolves, public health and safety must be revisited, and probable uses of Hanford Site lands in the future should be considered in the design bases of the CSB and CVD facility at this time. Include in the SNF Project Path Forward Integrated Safety Management Plan the requirement to provide for the CVD facility SAR, in consideration of conditioning processes and safety features, relevant information called for in NRC Regulatory Guide 3.26 that is not required in DOE 5480.23 and DOE-STD-3009-94 and that is unique to the conditioning processes. (The review to identify any additional applicable information for the CVD facility SAR should not occur until the associated processes and safety features are better defined.) (References: 10 CFR 50.34, "Contents of an application:	The SNF Project Path Forward Integrated Safety Management Plan (Ref: HNF-SD-SNF-PLN-012, Rev 0) includes the requirement to provide in the CSB FSAR the information called for in 10 CFR 72 24 and NRC RG 3.48. Implementation of this requirement is ensured through a lower tier document (HNF-SD-SNF-SP-012, Rev. 0, *Additional Guidance for Including Nuclear Safety Equivalency in the Canister Storage Building and Cold Vacuum Drying Facility Final Safety Analysis Reports*) that specifically identifies information called for in RG 3.48 that is to be included in the CSB FSAR. WHC-SD-SNF-SP-012 was used in the preparation of the CSB FSAR (HNF-3553, Annex A, Rev. 0), to ensure inclusion of the required items from NRC Regulatory Guide 3.48 and 10 CFR 72.24. The CSB FSAR discussion of MHM design features and operation was also made compliant against the content requirements of WHC-SD-SNF-SP-012. As the Hanford Site evolves, public health and safety must be revisited, and probable uses of Hanford Site lands in the future should be considered in the design bases of the CSB and CVD facility at this time.	The decision to use the CSB for interim IHLW Storage considered the probable use of Hanford Site lands in the future (WHC-SD-WM-TA-183). The W-464 design does not affect the FSAR commitments made in the SNF NRC equivalency commitment.

Item No.	HNF-SD-SNF-DB-003, HNF-4776, Rev. 1 – Additional NRC Requirements	Assessment of SNF Compliance for CSB (Note:typograhieal errors have been corrected)	Project W-464 Compliance
	Technical information"; NRC Regulatory Guide 3.26, *Standard Format and Content of Safety Analysis Reports for Fuel Reprocessing Plants* [Revision 0]; NRC Regulatory Guide 3.48, *Standard Format and Content for the Safety Analysis Report for an Independent Spent Fuel Storage Installation (Dry Storage)* [Revision 1]; and 10 CFR 72.24, "Contents of an application: Technical information," and 10 CFR 72.98, "Identifying regions around an ISFSI or MRS site")		
25	For the CSB and CVD facility, review the effluent monitoring requirements of, for example 10 CFR 20, 10 CFR 70.59 and 10 CFR 835, to provide the necessary monitoring instrumentation. (For the CSB, this may apply as a result of MCOs being vented at any time while in the CSB.) (References: 10 CFR 50.36a, "Technical specifications on effluents from power reactors," and 10 CFR 70, "Domestic Licensing of Special Nuclear Material")	The sealed MCO produces essentially no effluents for monitoring. The CSB effluent monitoring instrumentation (revised CSB Rad air NOC) as described in HNF-3553, Annex A, Rev. 0, Section A2.7.4, was approved by the EPA on 8/26/98. Washington DOH approval was received earlier on 7/30/98. The Health Physics System, rather than the MHM, provides directly connected instrumentation for monitoring effluent from the MHM ventilation system. There is also non-safety class effluent monitoring from the building in the building stack.	Project W-464 requires that the requirements of 10 CFR 20, 10 CFR 70.59, and 10 CFR 835 (See DRD para. 3.2.4.7.2.2) are reviewed to provide the necessary monitoring instrumentation. The W-464 Project will have no impact on emissions associated with the SNF portion of the facility (vault 1). No impact is seen to the SNF NRC equivalency commitment.

Item No.	HNF-SD-SNF-DB-003, HNF-4776, Rev. 1 – Additional NRC Requirements	Assessment of SNF Compliance for CSB (Note:typograhieal errors have been corrected)	Project W-464 Compliance
26	During final design of the CVD facility, review (1) the conclusions of Attachment A, "Detailed Evaluations," to WHC-SD-SNF-DB-002, *Spent Nuclear Fuel Project Path Forward Nuclear Safety Equivalency to Comparable NRC-Licensed Facilities*, and (2) the general design criteria of 10 CFR 50, Appendix A, to determine whether NRC nuclear safety equivalency is achieved without application of any of the general design criteria of 10 CFR 50, Appendix A. (References: 10 CFR 50, Appendix A, "General Design Criteria for Nuclear Power Plants")	Not applicable for the CSB.	SNF has determined this requirement to be NOT applicable to the CSB.
27	Incorporate a criticality safety value of 0.95 for k_{eff}. (This requirement applies at the point the spent fuel, in an MCO basket, is placed in an MCO.) (References: NRC Standard Review Plan 9.1.2, *Spent Fuel Storage* [Revision 3], and NUREG-0612, *Control of Heavy Loads at Nuclear Power Plants, Resolution of Generic Technical Activity A-36*)	A criticality k_{eff} value of 0.95 is incorporated for the MCO upon loading at K-Basins, and during all CSB handling steps through interim storage. (Ref: HNF-3553, Annex A, Rev. 0, Section A6.3.4 and supporting documents).	Project W-464 will comply with the WAPS, that requires k_{eff} to be at least a 5% margin below unity. Criticality analyses confirming this are presented in the SA (RPP-11590).
28	For the CSB, review ANSI/ANS-57.9-1992, *Design Criteria for an Independent Spent Fuel Storage Installation (Dry Type)*, to identify any additional requirements that would need to be incorporated into the design to demonstrate nuclear safety equivalency. (References: NRC Regulatory Guide 3.60, *Design of an Independent Spent Fuel Storage Installation (Dry Storage)* [Revision 0])	The design criteria contained in ANSI/ANS-57.9, dated 1992 has been reviewed for implementation in the CSB design. An application evaluation against the requirements of standard ANSI/ANS-57.9 was included in Addendum 3 of Attachment 1 to FDH-9761261 R4 dated January 20, 1998. The information provided a listing of those ANSI 57.9 items relevant to nuclear safety which are not in the CSB design, and justification for not including them, and a listing of 57.9 items which were included as criteria independently of ANSI 57.9. An earlier review of ANSI 57.9 identified an additional requirement from section 6.17.1.1(1) to increase the dead load of structures by +5%. An updated ANSI/ANS-57.9, dated 1992 compliance matrix, Attachment 5 of SNF-5790, *Design Compliance Matrices to ANSI and OSHA*, was prepared and provides justification that the CSB design complies with the criteria in ANSI/ANS-57.9. Design compliance statements	Addendum 3 of attachment 1 to FDH-9761261 has been reviewed. See the attachment to this document that analyzes the W-464 position regarding SNF compliance with ANSI 57.9. A structural analysis of the Vaults 2 and 3 intake and exhaust stacks included design loads in

Item No.	HNF-SD-SNF-DB-003, HNF-4776, Rev. 1 – Additional NRC Requirements	Assessment of SNF Compliance for CSB (Note:typograhieal errors have been corrected)	Project W-464 Compliance
		were provided for all issues and additional requirements identified in the earlier evaluation. The MHM design was found to be consistent with requirements of the ANSI/ANS-57.9 standard as noted above in SNF-5790 and FDH-9755210 R1.	accordance with ANSI 57.9 (RPP-18681) and confirmed the adequacy of the design.
29	Identify SSCs important to safety in accordance with 10 CFR 72.3. Once SSCs are identified as having a function meeting the definition of important to safety, impose the requirements for SSCs important to safety specified in 10 CFR 72. A graded approach is applied to an SSC important to safety by using the guidance provided in NUREG/CR-6407, *Classification of Transportation Packaging and Dry Spent Fuel Storage Systems*, as follows. • **Category A – Critical to Safe Operation** SSCs in this category include those whose failure or malfunction could directly result in a condition adverse to public health and safety. Important to safety SSCs in this category are classified as safety class as defined by DOE Order 6430.1A, with the additional requirements therein. • **Category B - Major Impact on Safety** SSCs in this category include those whose failure or malfunction could indirectly result in a condition adversely affecting co-located worker health and safety. Note that from the definition of Category C, Category B is understood to include events that could significantly damage the MCO without severe impact to public health and safety. SSCs in this category are classified as safety significant as defined in DOE-STD-3009-94.	The CSB FSAR HNF-3553, Annex A, Rev. 0 in Chapter A4.0, Tables A4-1 "Safety Class SSCs", and Table A4-9 "Safety Significant SSCs" reflect the NRC equivalency important-to-safety classifications for CSB SSCs per the definitions contained in HNF-SD-SNF-DB-003, Rev. 4A. Important to Safety features for the CSB are the receiving crane hook and position interlocks (Category A), and all of the reinforced concrete construction for the below grade vault and at grade and above grade structures whose function is to ensure cooling and criticality array (including tubes). Category B items are those associated with cask lid removal. See CSB FSAR HNF-3553, Annex A, Rev. 0, Tables A4-1 "Safety Class SSCs" and Table A4-9 "Safety Significant SSCs" for a complete listing. Important-to-safety Category C features are also identified in the CSB FSAR HNF-3553, Annex A, Rev. 0, chapter A2.0. Important-to-safety features on the MHM are the seismic trip panel, the interlocks preventing shear and collisions, the MCO hoist and the MCO grapple. The overall machine is structurally important to safety (ITS Category B) to prevent a collapse impacting the deck.	The SNF SAR HNF – 3553 Annex A Chapter A4.0 identifies the safety class SSCs and safety significant SSCs in tables A4-1 and A4-9. These tables include the NRC equivalency important to safety (ITS) classifications. The SA, RPP-11590 summarizes the existing SC SSCs, the impact W-464 has on them, and any additional SC SSCs provided by W-464. RPP-11590 provides a similar summary for safety significant SSCs. No impact is seen to the NRC equivalency commitment.

Item No.	HNF-SD-SNF-DB-003, HNF-4776, Rev. 1 – Additional NRC Requirements	Assessment of SNF Compliance for CSB (Note:typograhieal errors have been corrected)	Project W-464 Compliance
	• **Category C - Minor Impact on Safety** SSCs whose failure or malfunction would not significantly reduce the containment and would not be likely to create a situation adversely affecting public or co-located workers' health and safety. Address worker safety issues through the use of DOE orders and standards. (References: 10 CFR *72.3, "Definitions," 10 CFR 72.106, "Controlled area of an ISFSI or MRS," and 10 CFR 72.122, "Overall requirements")*		

Appendix B

W-464 Compliance for SNF-NRC Equivalency Item #28

ANSI/ANS-57.9-1992 was reviewed by SNF to identify any additional requirements that would need to be incorporated into the design to demonstrate safety equivalency. The analysis performed by SNF identified those ANSI 57.9 items relevant to nuclear safety which are not in the CSB design, and justification for not including them, and a listing of ANSI 57.9 items which were included as criteria independently of ANSI 57.9. This analysis is included in addendum 3 of attachment 1 to FDH-9761261 R4. The analysis was attached to a May 15 1996 letter FRF-2792 from Fluor Daniel, Inc. to WHC and is included in this appendix (pages B-5 through B-10).

This report addresses the position taken by FDH on each item of ANSI 57.9. The following are the ANSI 57.9 criteria not implemented by SNF and the W-464 position taken not to affect the NRC equivalency:

1. Washdown Facilities. SNF did not include washdown facilities at the CSB and took exception to this ANSI 57.9 requirement. W-464 also does not include washdown facilities and therefore does not affect the SNF NRC equivalency. Any washdown required for IHLW canisters will be conducted at the Vitrification Plant prior to moving the canister to the CSB. Due to the decontamination of the canisters, it is not expected the gross decontamination provided by a washdown facility would be needed for the IHLW transportation equipment.

2. Decontamination Facilities. SNF chose not to have CSB decontamination facilities. W-464 also does not have CSB decontamination facilities and therefore does not affect the SNF NRC equivalency. Decontamination of IHLW canisters will be conducted at the Vitrification Plant. Decontamination of handling equipment such as the IHLW Canister Cask and the MHM can and will be performed in the CSB with swipes and small quantities of decontamination solutions.

3. Radwaste Treatment Facilities. SNF chose not to have CSB decontamination facilities. During the life of the facility, only very small quantities of liquid radioactive waste will normally be generated (e.g., potentially contaminated lube oil). These wastes will be containerized and transported to treatment facilities. The small amount of generated solid waste will be packaged for transport to solid waste treatment facilities. W-464 expects to generate similar volumes and types of waste and, as a result, chose not to have CSB radwaste treatment facilities and, thus, W-464 does not affect the SNF NRC equivalency.

4. Emergency Communications. W-464 will not alter the communication system designed by SNF. Operational procedures will provide for continuity of emergency communications capability.

5. Effluent Monitoring after DBAs. W-464 does not affect the design of the SNF airborne effluent monitor system and therefore does not affect the SNF NRC equivalency.

6. Natural Phenomena Monitors. SNF chose not to establish a new NPH measuring facility for CSB, relying on existing Hanford facilities. W-464 does not affect this SNF approach and will rely upon existing Hanford data collection facilities for comparison with design bases.

7. Unsealed Containers. W-464 has no unsealed containers and therefore does not affect the SNF NRC equivalency position. The IHLW canisters provide primary containment for the waste.

8. HVAC System Protection after Fires. SNF took the position that the CSB combustible loading is designed to be very low and that nuclear safety equivalency exists. W-464 does not compromise this position and is committed to the same or lower combustible material loadings, and therefore does not affect the SNF NRC equivalency.

The following are those specific ANSI 57.9 criteria implemented by SNF and the position adopted by W-464 in order not to compromise the NRC equivalency:

1. Radiological Protection. W-464 is to be designed in accordance with the same requirements as used by SNF (i.e., 10 CFR 835 and an ALARA plan.) Therefore, W-464 does not affect the SNF NRC equivalency.

2. Nuclear Criticality Safety. W-464 follows the same approach as SNF in that the facility is designed to always remain sub critical, including during and following all DBAs. W-464, therefore does not affect the SNF NRC equivalency.

3. HVAC. W-464 will not modify the existing HVAC systems and does not add additional loadings and therefore does not affect the SNF NRC equivalency.

4. Stored Fuel Allowable Temperature and Storage Conditions. W-464 does not affect the SNF compliance with this requirement that does not apply to IHLW. Storage of IHLW is subject to separate WAPS requirements for canister centerline temperature. Compliance with these requirements is a part of W-464 design.

5. Confinement Boundaries. W-464 does not affect the SNF confinement boundaries for spent fuel in the CSB. IHLW is stored in vaults 2 and 3 in a similar manner to SNF. Therefore W-464 does not affect the SNF NRC equivalency.

6. Fire Protection. W-464 does not modify the existing fire protection systems, adds little or no additional combustible loading, and therefore does not affect the SNF NRC equivalency.

7. Structural Design. The CSB vault design was reanalyzed by SNF to the requirements of section 6.17.1.1 (1) of ANSI 57.9 in order to take into consideration an additional 5% loading for dead load and considering the effect of tornado loads and associated superstructure hardening on the vault structure. The resulting analyses confirmed the adequacy of the existing design. W-464 performed a structural analysis of the Vaults 2 and 3 intake and exhaust stacks that confirmed that the additional loads, caused by the storage of IHLW in vaults 2 and 3, did not adversely affect the conclusions reached in the SNF analysis (RPP-18681, *Project W-464*

Detailed Design Calculations and Analyses). The SNF NRC equivalency is maintained.

This report was prepared by D. Ashley, MACTEC, on April 10, 2002 and was modified on November 19, 2003, on December 11, 2003, and also on February 20, 2004 in response to comments received during detailed design.

FLUOR DANIEL, INC.
1200 Jadwin Ave., Suite 120W
Richland, WA 99352

May 15, 1996

SNF Canister Storage Building
WHC P.O. TVW-SVV-370252
Fluor Contract 4602

FRF-2792

Mr. M. K. Mahaffey
Westinghouse Hanford Company
P. O. Box 1970
(MSIN B4-55)
Richland, WA 99352

Dear Mr. Mahaffey:

ANSI 57.9

Response Due: N/A

Responds To: WHC Letter G. D. Bazinet to E. R. Jacobs, "Spent Nuclear Fuel/Canister Storage Building - Nuclear Regulatory Commission Equivalency Implementation (Supplementary Information) and Additional Safety Guidance," letter number 9651879, dated April 24, 1996 (RFF-1851)

Reference: Fluor Daniel, Inc., letter FRF-2753, Subject "Compliance Review of ANSI 57.9, Design Criteria and Independent Spent Nuclear Fuel Storage Installation (Dry Type)," dated February 21, 1996.

Fluor Daniel, Inc., has reviewed our referenced previous letter regarding the application of American National Standards Institute (ANSI) 57.9, and has re-assessed the criteria for "Nuclear Safety" requirements. Attached is the product of the assessment and presents, first, a listing of those ANSI 57.9 criteria items relevant to Nuclear Safety" which are not in the Canister Storage Building (CSB) design and justification for not recommending them as CSB criteria. Second, the list gives items for ANSI 57.9 of "Nuclear Safety" relevance either already included as criteria independently of ANSI 57.9, or against which the CSB design has been measured.

This task was completed based on the verbal understanding reached in the April 30, 1996 Technical Coordination meeting that only "Nuclear Safety" items were to be assessed, and that no further statement regarding compliance or non-compliance is required. If you have questions or require clarification, please contact Ted Koppenaal at (714) 975-4769 or Doug Black at 376-8157.

Sincerely,

Edward R. Jacobs
Project Director

ERJ:PJB:DMB:jre
Attachment

cc: G. D. Bazinet, WHC-RL, w/1
M. D. Talbot, WHC-RL, w/1
J. R. Zullo, WHC-RL, w/1

Attachment
FRF-2792

Response to WHC Letter 961879

1.0 ANSI 57.9 Requirements Not Implemented

The items in this section include criteria given in ANSI 57.9 which are not being implemented in the design of the SNF-CSB facility. In each case, technical justifications are presented to demonstrate that the nuclear safety of the facility has not been impaired due to the non-implementation.

1.1 Washdown Facilities

Sections 5.1.1.1, 5.1.1.2, and 6.1.1.1.5 require washdown facilities for transportation packages. Transportation washdown facilities have been intentionally omitted from the design per WHC direction. Washdown of transportation packages to be received at the SNF-CSB will probably take place at the K-Basins area. This omission appears reasonable if it is assumed that the relatively short time/distance from the K-Basins to the SNF-CSB facility makes washdown at the K-Basins equivalent to washdown at the SNF-CSB facility.

This requirement was included in ANSI 57.9 to ensure that contamination from the outside of a transportation package does not spread to the storage facility. The washdown facilities can be located at either the sending or receiving end, and with the specific time/distance transportation considerations expected at Hanford, equivalent nuclear safety exists.

1.2 Decontamination Facilities

Sections 5.1.2.2., 5.1.3.4, 5.2.1.3, 6.1.2.1.1, 6.1.2.1.1(1), 6.1.3.1.1, 6.4.4.3.4, 6.9.1.2.3(2), 6.13.4, and 6.14.2 require decontamination facilities. Dedicated CSB decontamination facilities have been omitted from the CSB design at WHC direction. The type and extent of decontamination specified in these sections can likely be achieved by either utilizing temporary decontamination facilities or packaging contaminated equipment for transfer to other Hanford decontamination facilities. Either of these methods of handling the projected infrequent decontamination needs for the SNF-CSB appear to provide nuclear safety equivalent to a dedicated in-house CSB. decontamination facility.

1.3 Radwaste Treatment Facilities

Sections 5.2.1.3; 5.7, 6.1.2.1.1.(2), 6.1.2.3.2, 6.1.3.1.4, 6.1.4.1.3(1), 6.7, 6.9.1.2.3(2), 6.9.2.2, require radwaste treatment facilities. At the direction of WHC, the SNF-CSB facility has been designed without capabilities for routine decontamination. During the life of the facility, only extremely small amounts of liquid radwastes will normally be generated (e.g., potentially contaminated lube oil, tube vent and purge cart coolant, etc.). These wastes will be containerized and transported to treatment facilities within Hanford. As a result, there are no radwaste tanks, sumps, drains or piping in the facility and dedicated radwaste treatment facilities appear to be unnecessary.

The small amount of generated solid contaminated wastes (e.g., wipes, old plug

seals, filters, etc.) will be packaged for transport to Hanford solid waste treatment facilities.

Off-normal decontamination activities can probably be performed within CSB, if needed, using temporary facilities -- or, items can be packaged for decontamination away from the CSB.

Considering these two features/procedures, equivalent nuclear safety is maintained.

1.4 Emergency Communications

Sections 5.8.5 and 5.10.2 require provisions for emergency communications during normal operations and following DBAs. A facility telephone system which is supported by a UPS would continue to be available following most DBAs. FDI assumes that primary responsibility for off-site communications of formally declared emergencies will continue to be a non-CSB function and a dedicated emergency communications center is not required. Operational procedures can provide for continuity of emergency communications capability by requiring placement of portable equipment (e.g., battery powered two-way radios) in the CSB control room, thereby establishing nuclear safety equivalency.

1.5 Effluent Monitoring After DBAs

Sections 5.4.2.2 and 5.5.4 require provisions for monitoring outside containment for airborne radioactivity and for monitoring of effluents subsequent to DBAs. The continuous airborne effluent monitor (CAEM) system design of the facility includes redundant non-safety class continuous area. monitors (CAMs) and record air samplers (RASs) for continuous monitoring of effluents from the CSB operating floor. These systems are designed as non-safety class, and operational procedures can be established to monitor effluents after DBAs with equivalent nuclear safety.

1.6 Natural Phenomena Monitors

Sections 5.8.8 and 6.8.1.4.9 require that the capability be provided, if not otherwise available, to determine the intensity of natural design phenomena which may occur for comparison with design bases used for the facility. FDI assumes that the required instrumentation and analytical capability will continue to be provided elsewhere within the Hanford site, and nuclear safety equivalency is thereby established without the need for a new NPH measuring facility just for the CSB.

1.7 Unsealed Containers

Sections 6.2.2.1.3(1) and 6.2.2.1.3(2) specify design requirements for "unsealed containers;" the MCOs meet the definition of an unsealed container prior to sealing after hot vacuum conditioning. Since the MCOs are being designed by others, FDI is not in a position to establish equivalence or compliance with these requirements. However, WHC Safety Analysis personnel assure us that the MCO design will provide primary confinement, and on that

basis FDI assumes that the MCO is in compliance with these requirements.

1.8 HVAC System Protection After Fires

Section 6.5.1.1.10 contains requirements for the capability of HVAC systems to filter building exhaust and remove smoke after suppression of a fire. In the SNF-CSB facility, the building exhaust filters are non-safety class and no provision for smoke removal is made. Combustible loading in the CSB operating area is very low, no sprinklers (wet or dry type) are anticipated to be required. The CSB HEPA filters (non-Safety Class) as designed will continue to filter smoke until the pressure drop becomes excessive. Because of low combustible loading and local rather than building safety class radiation filtration, nuclear safety equivalency exists.

2.0 ANSI 57.9 Criteria Considered Implemented

The following is a partial list of the criteria in ANSI 57.9 that are being implemented in the design of the SNF-CSB facility. All the items listed would have been implemented from other SNF-CSB design criteria independent of ANSI 57.9 criteria. All currently applicable ANSI 57.9 criteria not specifically omitted as explained above are met when compared to the CSB design. This list contains the criteria that we judged to be especially important to nuclear safety.

2.1 Radiological Protection

Numerous sub-sections require radiological protection in accordance with Section 5.13. The CSB facility is designed in accordance with DOE 6430.1A and includes an ALARA plan and program. Radiation exposure limits are established in accordance with 10 CFR 20, and 10 CFR 835. Off-site exposures consequences are assessed to WHC-CM-4-46 requirements (for pre-Hot Conditioning) and to 10 CFR 72 (for post-Hot Conditioning).

2.2 Nuclear Criticality Safety

The CSB facility has been designed to always remain subcritical, including during and following all design basis accidents. This feature meets the requirements in Section 5.12.

2.3 HVAC

Section 5.5 contains several requirements for fuel storage facility HVAC systems. The design of the CSB facility HVAC system has been made in accordance with DOE 6430.1A, and the design measures up to the criteria in Section 5.5 of ANSI 57.9. HVAC design assumes the MCOs provide primary confinement and the tubes secondary confinement of the SNF in the CSB. The operating structure is currently tertiary non-safety class confinement and the building HVAC is neither SC-1 or SC-2.

2.4 Stored Fuel Allowable Temperatures and Storage Conditions

Several subsections (e.g., 5.2.1.9, 5.2.1.9.2) require maintaining the stored

fuel within allowable temperature limits in limited oxygen atmosphere for normal and accident conditions. The design of the CSB facility provides natural convection cooling for the stored fuel, and all the structures that will maintain this cooling are Safety Class 1. MCOs containing SNF will be filled with inert gas.

2.5 Confinement Boundaries

Various subsections (e.g., 5.3.9, 5.4.2.1, 5.4.4, 5.4.6.3.1, 5.6.1, 6.3.1.9, 6.3.1.11, 6.4.1.1, 6.4.1.4, 6.4.1.13, and 6.4.4.1.10) require maintaining the integrity of at least one confinement boundary for the fuel (stored or being transported) during all events including DBAs. At each stage of fuel transfer or storage, as well as for DBAs, the fuel is separated from the environment by at least one confinement boundary. The MCO is assumed to provide primary confinement, and the tube secondary. The operating area shelter is tertiary, non-safety class, confinement. The CSB design compares favorably with the criteria of ANSI 57.9 relative to confinement.

2.6 Fire Protection

Several fire protection requirements are listed in Section 5.9. The design of the CSB facility fire protection system is in accordance with 6430.1A, and all pertinent requirements in Section 5.9 are thereby met for the CSB facility. The CSB operating area is projected to be exempted from requirement for fire protection sprinklers due to low combustible loading.

2.7 Structural Design

Section 6.17 provides design guidance regarding structural requirements associated with fuel storage concepts. 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 being applied to the design of the SNF-CSB. Section 6.17.1 gives criteria for normal operating loads, natural phenomena loads, off-normal operating and accident loads, and deformation. Structural criteria currently in place for the CSB design are equivalent (except for tornado and earthquake criteria) to that offered in ANSI 57.9, but comes from other sources, such as 6430.1A and SDC 4.1 (a Hanford site document). Additional NPH criteria is expected from WHC in the form of the SNF-CSB project specific NPH guidance of WHC-SD-SNF-DB-009, "Canister Storage Building Natural Phenomena Design Hazards."

The CSB vault design has been measured against the criteria of Section 6.17.1.1 (1) to add 5% when evaluating the dead load of the structure and attachments and considering the effect of tornado loads and associated superstructure hardening on the vault structure. No problems with the existing vault design were identified as a result of this exercise.