COMPLETE

ENGINEERING CHANGE NOTICE

REA 9/5/95

Page 1 of 84

1. ECN 190557

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	3a. USQ Required?	4. Date
Supplemental [] Direct Revision [X] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void []	K. E. Ard, 2C100, X3-85, 6-0973	[] Yes [X] No	08/31/95
	5. Project Title/No./Work Order No.	6. Bldg./Sys./Fac. No.	7. Approval Designator
	PUREX Fuel Transfer, Project A3	105 K West Basin	Q
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.)	9. Related ECN No(s).	10. Related PO No.
	WHC-SD-SNF-FRD-015, Rev. 0	N/A	N/A

11a. Modification Work	11b. Work Package No.	11c. Modification Work Complete	11d. Restored to Original Condition (Temp. or Standby ECN only)
[] Yes (fill out Blk. 11b) [X] No (NA Blks. 11b, 11c, 11d)	N/A (JCB 9/11/95)	N/A (JCB 9/11/95) Cog. Engineer Signature & Date	N/A (JCB 9/11/95) Cog. Engineer Signature & Date

12. Description of Change

Revisions to WHC-SD-SNF-FRD-015 are denoted by a revision bar in the left hand margin of the document. Reference Page 3 of this ECN for a list of specific changes.

13a. Justification (mark one)

Criteria Change	[X]	Design Improvement	[]	Environmental	[]	Facility Deactivation	[]
As-Found	[]	Facilitate Const	[]	Const. Error/Omission	[]	Design Error/Omission	[]

13b. Justification Details

Drawing reviews and the underwater as-built work conducted of the 105 KW South Loadout Pit and Transfer Channel (1K-95-873) have shown that the transfer channel will not accommodate the basket overpack due to interferences from other equipment that is permanently installed in the transfer channel. ~~The basket overpack will be engaged and raised up in the cask using the overpack yoke assembly. The fuel will then be tonged from the basket overpack into MK II canisters.~~ REA 9/5/95

14. Distribution (include name, MSIN, and no. of copies)

See Distribution Sheet

RELEASE STAMP

OFFICIAL RELEASE BY WHC

DATE SEP 11 1995

15 Sta # 19

A-7900-013-2 (11/94) GEF095

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1): 190557

15. Design Verification Required	16. Cost Impact				17. Schedule Impact (days)	
	ENGINEERING	N/A (SCB 9/11/95)	CONSTRUCTION			
[] Yes	Additional	[] $	Additional	[] $	Improvement	[]
[X] No	Savings	[] $	Savings	[] $	Delay	[] N/A

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	[]	Seismic/Stress Analysis	[]	Tank Calibration Manual	[]
Functional Design Criteria	[]	Stress/Design Report	[]	Health Physics Procedure	[]
Operating Specification	[]	Interface Control Drawing	[]	Spares Multiple Unit Listing	[]
Criticality Specification	[]	Calibration Procedure	[]	Test Procedures/Specification	[]
Conceptual Design Report	[]	Installation Procedure	[]	Component Index	[]
Equipment Spec.	[]	Maintenance Procedure	[]	ASME Coded Item	[]
Const. Spec.	[]	Engineering Procedure	[]	Human Factor Consideration	[]
Procurement Spec.	[]	Operating Instruction	[]	Computer Software	[]
Vendor Information	[]	Operating Procedure	[]	Electric Circuit Schedule	[]
OM Manual	[]	Operational Safety Requirement	[]	ICRS Procedure	[]
FSAR/SAR	[]	IEFD Drawing	[]	Process Control Manual/Plan	[]
Safety Equipment List	[]	Cell Arrangement Drawing	[]	Process Flow Chart	[]
Radiation Work Permit	[]	Essential Material Specification	[]	Purchase Requisition	[]
Environmental Impact Statement	[]	Fac. Proc. Samp. Schedule	[]	Tickler File	[]
Environmental Report	[]	Inspection Plan	[]		[]
Environmental Permit	[]	Inventory Adjustment Request	[]		[]

19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision
1K-95-00867		
Practice/Training Run		
PUREX Fuel Tranfer		

20. Approvals

	Signature	Date
OPERATIONS AND ENGINEERING		
Cog. Eng. K. E. Ard	K E Ard	9/5/95
Cog. Mgr. M. J. Wiemers	M J Wiemers	9/5/95
QA G. M. Davis	G M Davis	9/5/95
Safety		
Environ. C. Defigh-Price	C. Defigh-Price	9/5/95
Other M. J. Langevin	M. J. Langevin	9/5/95

	Signature	Date
ARCHITECT-ENGINEER		
PE		
QA		
Safety		
Design		
Environ.		
Other		
DEPARTMENT OF ENERGY		
Signature or a Control Number that tracks the Approval Signature		
ADDITIONAL		

SPECIFIC CHANGES

SECTION 4.0

General Requirement 2
WAS:
- Space in the elevator area within the transfer channel of the South Loadout Pit

NOW READS:
- Access through the Transfer Channel of the South Loadout Pit

SECTION 5.0

Interface Requirement 3
WAS:
...K Basins cask...
CHANGED TO:
...Well Car Shipping Cask...

Interface Requirement 4
WAS:
...K Basins cask...
CHANGED TO:
...Well Car Shipping Cask...

Interface Requirement 5
WAS:
...K Basins Cask...
...submersed...
CHANGED TO:
...Well Car Shipping Cask...
...submerged...

Interface Requirement 6
WAS:
...K Basins cask...
CHANGED TO:
...Well Car Shipping Cask...

Interface Requirement 7
WAS:
...2,536 lb...
CHANGED TO:
...2,000 lb...

Interface Requirement 8
WAS:
The Overpack Yoke Assembly (H-1-80551) shall fit within the South Loadout Pit and Transfer Channel and connect to the monorail/trolley/hoist assembly.
DELETED

SPECIFIC CHANGES CONT.

Interface Requirement 9
WAS:
The Overpack Yoke Assembly shall engage a Slug Bucket Overpack (H-2-821814) while under water and be rated to lift at least of 2,258 lb. and be load tested to 125% of the maximum working load.
DELETED

Interface Requirement 10
WAS:
When attached to the monorail/trolley/hoist, the Overpack Yoke Assembly shall be capable of moving a Basket Overpack between the K Basins cask, while located in the South Loadout Pit, and the Transfer Channel.
DELETED

Interface Requirement 11 (Renumbered - Interface Requirement 8)
WAS:
Newly designed or existing fuel handling equipment and tools, such as the Overpack Yoke Assembly and hoist, shall be designed to mechanically prevent fuel to within 10 ft of the basin water surface. (Reference K Basins Process Standard, C-303)
CHANGED TO:
Newly designed or existing fuel handling equipment and tools, such as the tongs, shall be designed to mechanically prevent fuel from approaching to within 10 ft of the basin water surface. (Reference K Basins Process Standard, C-303)

Interface Requirement 15 (Renumbered - Interface Requirement 12)
ADDED:
Note: Then N Reactor SNF will be stored in Mark II canisters designated for 1.25% enrichment.

Interface Requirements 12, 13, 14 were renumbered to 9, 10, 11 respectively.

SECTION 6.0

DELETED: H-1-80551, *Overpack Yoke Assembly*

RELEASE AUTHORIZATION

Document Number:	WHC-SD-SNF-FRD-015, REV 1
Document Title:	Functions and Requirements for the Purex Fuel Transfer Project, Project A.3
Release Date:	9/6/95

This document was reviewed following the procedures described in WHC-CM-3-4 and is:

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:

Kara M. Broz 9/6/95

SUPPORTING DOCUMENT

1. Total Pages 78 (SEB 9/11/95)

2. Title	3. Number	4. Rev No.
Functions and Requirements for the Purex Fuel Transfer Project, Project A.3	WHC-SD-SNF-FRD-015	1

5. Key Words	6. Author
Purex Fuel Transfer Project, Spent Nuclear Fuel, 105 K West Basin	Name: K. E. Ard Signature Organization/Charge Code 2G000/LJ10A

7. Abstract

This document establishes the functions and requirements for the Purex Fuel Transfer Project.

8. RELEASE STAMP

OFFICIAL RELEASE
BY WHC
DATE SEP 1 1 1995
15
Sta# 19

RECORD OF REVISION	(1) Document Number WHC-SD-SNF-FRD-015	Page 1

(2) Title

Functions and Requirements for the PUREX Fuel Transfer Project, Project A.3

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 Issue 7/21/95 - EDT 140367	K. E. Ard	M. J. Wiemers
1 RS	General Revision - ECN 190557	K. E. Ard	M. J. Wiemers 9/6/95

Table of Contents

ACRONYMS

ALARA	As Low As Reasonably Achievable
DOE	U.S. Department of Energy
KW	K West
MTU	Metric Tons Uranium
PUREX	Plutonium Uranium Extraction Plant
SNF	Spent Nuclear Fuel
SPR	Single Pass Reactor

FUNCTIONS AND REQUIREMENTS FOR THE PUREX FUEL TRANSFER PROJECT PROJECT A.3

1.0 INTRODUCTION

Spent Nuclear Fuel (SNF) presently stored in the Plutonium Uranium Extraction (PUREX) Plant will be shipped to the 105 K West (KW) Basin in support of PUREX deactivation work. Additionally, it is necessary to consolidate the Hanford Site's inventory of SNF as part of the path forward plan, the justification of which is documented in WHC-SD-SNF-SD-003, *Spent Nuclear Fuel Project Technical Baseline Document, Fiscal Year 1995 Volume II, Supporting Data*, "Forecast of SNF Receipts from PUREX" (4.1.1.8.2).

The original purpose of the 105 KW Fuel Storage Basin was to serve as a collection, transfer, and storage area for irradiated fuel elements discharged from the 105 KW reactor. The irradiated fuel was held to allow for decay of short-lived radionuclides prior to reprocessing. After shut down of the 105 KW reactor operations, the 105 KW Basin was reactivated for short-term storage of N Reactor fuel that awaited reprocessing at the PUREX Plant.

Shipments of Single Pass Reactor (SPR) fuel elements were received at 105 KW Basin during past SPR deactivation efforts. Spent Nuclear Fuel from past SPR deactivation work is now stored in 105 KW Basin. Presently the 105 KW Basin is used for interim storage of encapsulated SNF and will continue in this state until the new storage location is complete.

2.0 PURPOSE AND SCOPE

2.1 PURPOSE

This document establishes the functions and requirements for the 105 KW Basin facilities that are necessary to support the PUREX Fuel Transfer Project.

2.2 SCOPE

The scope of this document includes the 105 KW Basin facilities and utilities necessary to support the PUREX Fuel Transfer Project, beginning with receipt of the SNF shipment at the K Basins fence line and ending with storage of Mark II canisters in 105 KW Basin. Fuel transportation and packaging requirements are not covered in the scope of this document, but may be referenced in WHC-SD-TP-PDC-028, *PUREX Fuel Shipment Packaging Design Criteria*.

3.0 FUNCTION

The 105 KW Basin will function as the receiving, repackaging, and storage facility for approximately 0.4 Metric Ton Uranium (MTU) of N Reactor fuel that will be received in four Mark II canisters, and approximately 3.0 MTU of SPR fuel that will be received in four Slug Bucket Overpacks.

4.0 GENERAL REQUIREMENTS

1. All operations necessary for receipt, repackaging, and storage of fuel at KW Basin shall meet the operational requirements of K Basins Process Standards.

2. The 105 KW Basin shall provide the operating facilities listed below.

   - Railroad lines from the outer gate to the 105 KW Basin.
   - 30 Ton Crane
   - South Loadout Pit and Transfer Channel
   - Mark II Canister Decapping Station with functioning Mark II canister rack, nitrogen purge system, and corrosion inhibitor injection system
   - Mark II Canister racks presently located in the transfer channel of the South Loadout Pit (capable of holding two Mark II canisters)
   - Access through the Transfer Channel of the South Loadout Pit

- Storage within the 105 KW Basin, capable of storing up to thirty (30) Mark II canisters
- North-South monorail, trolley, and hoist, and other fuel canister handling equipment over the 105 KW Basin, West Bay, Center Bay, and East Bay.
- General work area lighting

3. The 105 KW Basin shall provide the utilities listed below

- Compressed Air (90 PSI) for Pneumatic Tongs
- Electrical Power - No additional power requirements beyond that necessary to operate general facilities, such as the 30 ton crane, hoist, and lights.

5.0 INTERFACE REQUIREMENTS

1. A train consisting of a locomotive and up to four railroad cars shall have access to and from the west side of the 105 KW Building via the 105 KW railroad line.

2. The 105 KW railroad line into the 105 KW Basin and the 105 KW Basin transfer area building entrance shall permit access of one well car (H-2-55563, H-2-3983211), pushed by a locomotive, to within the working limits of the 30 ton crane.

3. The 30 ton crane shall lift the Well Car Shipping Cask (H-1-34671) out of the well car and place it in the bottom of the 105 KW South Loadout Pit.

4. The 30 ton crane shall lift the Well Car Shipping Cask out of the 105 KW Basin South Loadout Pit and place it in the well car.

5. The Well Car Shipping Cask shall fit within the KW Basin South Loadout Pit (H-1-44930) and be capable of being submerged to the bottom of the South Loadout Pit and positioned within the limits of the South Loadout Pit monorail/trolley/hoist system.

6. The monorail/trolley/hoist shall be capable of removing a Mark II canister (H-1-46215) from a Well Car Shipping Cask and place it in the decapping station.

7. The monorail/trolley/hoist shall be rated for lifting a working load of at least 2,000 lb., and be load tested to at least 125% of the maximum working load.

8. Newly designed or existing fuel handling equipment and tools, such as the tongs, shall be designed to mechanically prevent fuel from approaching to within 10 ft of the basin water surface. (Reference K Basins Process Standard, C-303)

9. Movement of Single Pass Reactor (SPR) fuel elements (WHC-SD-SNF-TI-001) from the Basket Overpack into Mark II canisters shall be accomplished at a rate that ensures that personnel radiation exposure is As Low As Reasonably Achievable (ALARA).

10. A Mark II canister shall fit in the decapping station canister rack for gas purging and injection of corrosion inhibitor in accordance with K Basins Process Standards, C-303.

11. The North-South monorail/trolley/hoist, and other fuel canister handling equipment over the 105 KW Basin, West Bay, Center Bay, and East Bay shall be capable of placing a Mark II canister in storage.

12. Spent Nuclear Fuel (SNF) shall be stored in Mark II canisters in accordance with K Basins Process Standard, C-303. Note: The N Reactor SNF will be stored in Mark II canisters designated for 1.25% enrichment.

6.0 REFERENCES

H-1-44930, *MKII Canister Decap Station KW General Assembly*

H-1-34671, *Shipping Cask Assembly*

H-1-46215, *Fuel Encapsulation MKII Canister Assembly*

H-2-821814, *Slug Bucket Overpack*

H-2-55563, *Three Compartment Car Well*

H-2-3983211, *Three Well Cask Car Lid Modification Assembly*

WHC-SD-SNF-TI-001, Rev. 1, *Hanford Spent Fuel Inventory Baseline*, K. H. Bergsman

WHC-SD-SNF-SD-003, *Spent Nuclear Fuel Project Technical Baseline Document, Fiscal Year 1995 Volume II, Supporting Data*

WHC-SD-SNF-PMP-010, *Project Management Plan for the PUREX Fuel Transfer Project*

K Basins Process Standards, Westinghouse Hanford Company

WHC-SD-TP-PDC-028, *PUREX Fuel Shipment Packaging Design Criteria*