

0048617

ENGINEERING CHANGE NOTICE

H

1. ECN 641735

Page 1 of 2

Proj.
ECN

2. ECN Category (mark one) Supplemental <input type="checkbox"/> Direct Revision <input checked="" type="checkbox"/> Change ECN <input type="checkbox"/> Temporary <input type="checkbox"/> Standby <input type="checkbox"/> Supersedure <input type="checkbox"/> Cancel/Void <input type="checkbox"/>	3. Originator's Name, Organization, MSIN, and Telephone No. MF Hackworth, WMH, 373-3861 T4-51		4. USQ Required? WRP-98-021 <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No WRP-98-021	5. Date 02/02/98
	6. Project Title/No./Work Order No. N/A		7. Bldg./Sys./Fac. No. WRAP/2336-W	8. Approval Designator SQ (T4.2)
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) HNF-SD-W026-SAR-002 Rev. 0		10. Related ECN No(s). N/A	11. Related PO No. N/A
12a. Modification Work <input type="checkbox"/> Yes (fill out Blk. 12b) <input checked="" type="checkbox"/> No (NA Blks. 12b, 12c, 12d)	12b. Work Package No. N/A	12c. Modification Work Complete N/A Design Authority/Cog. Engineer Signature & Date	12d. Restored to Original Condition (Temp. or Standby ECN only) N/A Design Authority/Cog. Engineer Signature & Date	
13a. Description of Change Chapter 13, Section 13.5.1 WRAP HUMAN FACTORS DESIGN, page 13-4, third paragraph. Currently the last sentence reads "Red flashing lights are provided on each glovebox to indicate glovebox pressure differential problems, and in each area for local and area alarms." Change to "Amber flashing lights are provided on each glovebox to indicate glovebox pressure differential problems. Red flashing lights are provided in each area for local and area alarms."		13b. Design Baseline Document? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
14a. Justification (mark one) Criteria Change <input checked="" type="checkbox"/> Design Improvement <input type="checkbox"/> Environmental <input type="checkbox"/> Facility Deactivation <input type="checkbox"/> As-Found <input type="checkbox"/> Facilitate Const <input type="checkbox"/> Const. Error/Omission <input type="checkbox"/> Design Error/Omission <input type="checkbox"/>				
14b. Justification Details Facility management has set policy on the color of alarm beacons with expected action based on the color. Red means to evacuate that area. Amber means warning of a condition that needs action. The differential pressure alarms for the glovebox enclosures need to be changed to amber to reflect a condition that needs action and not evacuation.				
15. Distribution (include name, MSIN, and no. of copies) RJ Bottenus T4-51 1 copy LW Roberts T4-51 1 copy LD Early S7-41 1 copy RB Swallow T4-51 1 copy MF Hackworth T4-51 1 copy WR Thackaberry T4-52 1 copy JK Kersten T4-52 1 copy DH Watson T4-61 1 copy RJ Koll T4-51 1 copy JR Weidert T4-52 1 copy TK Orgill T4-55 1 copy				RELEASE STAMP FEB 05 1998 DATE: STA: 5 HANFORD RELEASE ID: 12

ENGINEERING CHANGE NOTICE

16. Design Verification Required

Yes
 No

17. Cost Impact

ENGINEERING

Additional \$
Savings \$

CONSTRUCTION

Additional \$
Savings \$

18. Schedule Impact (days)

Improvement
Delay

19. 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 13. Enter the affected document number in Block 20.

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

20. 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
Facility Orientation		
Training 306750, Rev 1		

21. Approvals

	Signature	Date	Signature	Date
Design Authority	JR Weidert <i>JR Weidert</i>	2-5-98	Design Agent	
Cog. Eng.	JR Weidert <i>JR Weidert</i>	2-5-98	PE	
Cog. Mgr.	LW Roberts <i>LW Roberts</i>	2-5-98	QA	
QA	WR Thackaberry <i>WR Thackaberry</i>	2-5-98	Safety	
Safety	RJ Koll <i>RJKoll</i>	2-5-98	Design	
Environ.			Environ.	
Rad Con	RB Swallow <i>RB Swallow</i>	2-5-98	Other	
Operations	RJ Bottenus <i>RJ Bottenus</i>	2/5/98		
Training	DH Watson <i>DH Watson</i>	2/5/98		

DEPARTMENT OF ENERGY

Signature or a Control Number that tracks the Approval Signature

ADDITIONAL

FINAL SAFETY ANALYSIS REPORT (FSAR) FOR WASTE RECEIVING AND PROCESSING FACILITY (WRAP) FACILITY

JR Weidert

Waste Management Federal Services of Hanford, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-96RL13200

EDT/ECN: ECN-641735 UC: 506
Org Code: 32620 Charge Code: A2J1T
B&R Code: EW3130020 Total Pages: 644

Key Words: W-026, Safety, Authorization Basis, Safety Evaluation Report, SER, TSR

Abstract: This safety analysis report provides a summary description of the WRAP Facility, focusing on significant safety-related characteristics of the location and facility design. This report demonstrates that adherence to the safety basis will ensure necessary operational safety considerations have been addressed sufficiently and justifies the adequacy of the safety basis in protecting the health and safety of the public, workers, and the environment.

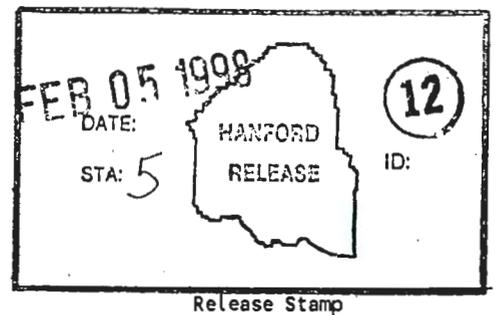
** Drath & Schrader is a registered trademark of Babcock Rohrleitungsbau, GMBH, Germany

TRADEMARK DISCLAIMER. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors.

Printed in the United States of America. To obtain copies of this document, contact: Document Control Services, P.O. Box 950, Mailstop H6-08, Richland WA 99352, Phone (509) 372-2420; Fax (509) 376-4989.


Release Approval

2/5/98
Date



Approved for Public Release

Because of the blast and missile protection afforded personnel by the process enclosures in case of an explosion, the process enclosures are designated as safety significant SSCs. The process enclosures are the only safety significant SSCs in WRAP.

Human-machine interfaces in the control area allow operators to control and supervise the various processes occurring in the facility. These interfaces are mainly human-computer interfaces for the WRAP information and control systems (Table 13-8).

Lastly, human-machine interfaces that allow operators to supervise the process indicators and monitors at various locations throughout the facility are provided (Table 13-9).

13.5 OPTIMIZATION OF HUMAN-MACHINE INTERFACES

A thorough human factors review of the WRAP design was performed to determine whether the human-machine interfaces facilitate safe and effective operations. Equipment and systems drawings, design specifications, and the human factors analysis (WHC-SD-W026-TI-010) were studied to better understand how the capabilities and limitations of the operator have been accounted for in the design.

The major focus of the analysis was to ensure that the facility and equipment could be used safely and effectively by operators ranging in size from a small woman to a large man³. A checklist was created using human factors design criteria and recommendations found in Mil-Std 1472D and NUREG-0700. The analysis was guided by the topical areas that are addressed in DOE Order 6430.1A, Section 1300-12. An independent review of the design drawings concluded, as did the analysis, that the equipment and systems met this requirement.

In summary, an analysis has been performed to ensure that the equipment and systems used by the operators in WRAP meet the human factors criteria in the referenced standards. The design of the SSC as specified meet the criteria. Further, WRAP operations have implemented programs that encourage the use of operator experience, lessons learned, and other behavioral data in the development of its procedures and training. Additional discussion is included in Chapter 17.0 and the following paragraphs.

13.5.1 WRAP Human Factors Design

Human factors design engineering facilitates WRAP operation by providing the plant personnel with efficiently designed work stations, a comfortable work environment, and an adequate plant layout. Human factors design engineering topics include :

- System and component displays
- System and component controls
- Alarms

³The body dimension ranges are from the 5th percentile female to the 95th percentile male. These values are taken from WHC-SD-W026-TI-010.

- Labeling
- Communications
- Work environment
- Equipment layout and design
- Lighting
- Noise
- Vibration
- Safety
- Protective equipment
- Aesthetics.

The primary focus of the WRAP human factors design study (WHC-SD-W026-TI-010) was on the operator work station and environment. The operator station design was reviewed to ensure that adequate space, lighting, and equipment were included in the design features to accommodate operators with critical body dimensions ranging from a small woman to a large man.⁴ The general facility design was reviewed to ensure overall compliance with requirements to promote safe, reliable operations in a low-fatigue work environment. The study used a checklist approach that extracted applicable sections from Mil-Std 14720, NUREG 0700, and a set of acceptance criteria to evaluate compliance with each of the human factors design engineering topics listed above.

General Facility Design. System and component displays/controls throughout WRAP are designed to provide operators with displays having clear, complete information and adequate controls to perform the required operational tasks. Control panels are required to meet light and coding standards of applicable guidelines. The layout, labeling, and locations of control panels, keyboards, cathode ray tubes (CRTs) provide easy access to operators ranging from a small woman to a large man.¹ Details of the control area console human factors design are discussed in WHC-SD-W026-TI-010.

WRAP provides emergency audible alarms, local and area alarms, and audio alarms in the control area. All audio alarms are designed to operate at intensities and frequencies compatible with the working environment. Emergency alarms include evacuation and telephone 'crash' alarms. Each alarm is designed to provide easily distinguishable tones and sounds. Amber flashing lights are provided on each glovebox to indicate glovebox pressure differential problems. Red flashing lights are provided in each area for local and area alarms.

WRAP design includes the use of ladders, stairs, ramps, platforms, and emergency doors. Stairs, ladders, ramps and platforms are designed in accordance with applicable building standards (29 CFR 1910) to ensure safe use and prevent personnel injury. Adequate lighting (including emergency lighting) is provided at all workstations and areas. Doors used for personnel exit are designed for easy opening in the direction of travel.

The major contributors to the noise level in WRAP are the HVAC equipment and hydraulic power units in the process area. Sound attenuation and noise transmission calculations were performed for the HVAC equipment. Calculations

⁴The body dimension ranges are from the 5th percentile female to the 95th percentile male. These values are taken from WHC-SD-W026-TI-010.

DISTRIBUTION SHEET

To Distribution	From WRAP Engineering	Page 1 of 1
		Date 02/05/98
Project Title/Work Order HNF-SD-W026-SAR-002, Rev. 0-A, WRAP FINAL SAFETY ANALYSIS REPORT		EDT No. N/A
		ECN No. 641735

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
RJ Bottenus	T4-51	X			
HC Boynton	T4-51	X			
LD Early	S7-41	X			
MS French	S7-55	X			
MF Hackworth	T4-51	X			
WG Jasen	T4-52	X			
JK Kersten	T4-52	X			
SL Kooiker	T4-51	X			
RJ Koll	T4-51	X			
TK Orgill	T4-51	X			
LW Roberts	T4-51	X			
KJ Svoboda	N1-26	X			
RB Swallow	T4-52	X			
WR Thackaberry	T4-52	X			
JD Voice	A5-55	X			
JR Weidert	T4-52	X			
Central Files	B1-07	X			
DPC	A3-94	X			
EDMC	H6-08	X			
WMFSH	L4-97	X			