



U.S. Department of Energy
Office of River Protection

P.O. Box 450, MSIN H6-60
Richland, Washington 99352

08-WTP-059

MAR 13 2008


Mr. L. J. Simmons, Project Manager
Bechtel National, Inc.
2435 Stevens Center Place
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Dear Mr. Simmons:

CONTRACT NO. DE-AC27-01RV14136 – TRANSMITTAL FOR DESIGN PRODUCT
OVERSIGHT REPORT, D-08-DESIGN-059, REVIEW OF WASTE TREATMENT AND
IMMOBILIZATION PLANT (WTP) LOW-ACTIVITY WASTE CONTAINER EXPORT
HANDLING SYSTEM (LEH)

This letter transmits the subject Design Product Oversight Report, D-08-DESIGN-059, for the assessment conducted during February 2008. The Design Oversight Team performed a technical assessment of the Bechtel National, Inc. design processes and products associated with the LEH system. The team determined the design is consistent with nuclear codes and standards and system design recommendations. The WTP Contractor design process effectively implements all contract and other applicable technical requirements for the design of the LEH system. If you have any questions, please contact me, or your staff may contact James H. Wicks, Director, WTP Engineering Division, (509) 376-3522.

Sincerely,


For John R. Eschenberg, Project Manager
Waste Treatment and Immobilization Plant Project

WTP:KDT

Attachment

cc w/attach:
BNI Correspondence

U.S. Department of Energy, Office of River Protection

DESIGN PRODUCT OVERSIGHT REPORT

**REVIEW OF WASTE TREATMENT AND IMMOBILIZATION PLANT
(WTP) LOW-ACTIVITY WASTE (LAW) FACILITY CONTAINER
EXPORT HANDLING SYSTEM**

March 7, 2008

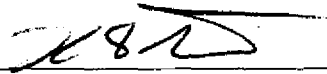
Design Oversight: D-08-DESIGN-059

Team Lead: Kristopher D. Thomas

Team Member: Robert W. Griffith

Submitted by:

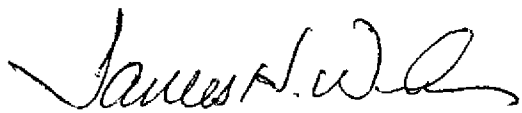
Team Lead:



Kristopher D. Thomas
WTP Engineering Division (WED)

3/10/08
Date

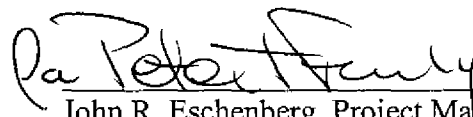
Concurrence:



James H. Wicks, Director, WED

14 Mar 2008
Date

Approval:



John R. Eschenberg, Project Manager
Waste Treatment and Immobilization Plant

13 MAR 08
Date

EXECUTIVE SUMMARY

Engineering staff from the U.S. Department of Energy, Office of River Protection, Waste Treatment and Immobilization Plant (WTP) Project conducted a design oversight on the Low-Activity Waste (LAW) Export Handling System (LEH) to:

1. Verify the adequacy of the design in meeting the design and operational criteria identified in the baseline documentation for the project.
2. Identify and understand the applicable processes, procedures, codes, regulatory requirements, standards etc. used by the Contractor's engineering organization for preparing the design.
3. Review design status at current level of maturity.

The Design Oversight focused on the primary design functions and important-to-safety functions of the LEH. Specific emphasis was placed on flow down of requirements through procurement to vendor documents and interface control processes between the WTP Contractor and the Tank-Farms Contractor.

This Design Oversight identified no open items or adverse findings. The mechanical handling design for LEH is complete. The primary documents are issued for construction. All mechanical handling procurements have been awarded and major equipment has been delivered to WTP. The current construction completion date for the export high bay, which is a major component of the LEH, is December 21, 2009.

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APPENDIX A. LINES OF INQUIRY..... A-1

LIST OF ACRONYMS

ASME	American Society of Mechanical Engineers
BNI	Bechtel National, Inc.
CFR	<i>Code of Federal Regulations</i>
DOE	U.S. Department of Energy
FHA	fire hazards analysis
ICD	interface control document
ITS	important-to-safety
LAW	Low Activity Waste [Facility]
LEH	LAW Container Export Handling System
LFH	LAW Container Finishing Handling System
MH	Mechanical Handling
ORP	Office of River Protection
PSAR	preliminary safety analysis report
SC	seismic category
SCR	safety case reference
SSC	structures, systems, and components
TFC	Tank Farms Contractor
WED	WTP Engineering Division
WTP	Waste Treatment and Immobilization Plant

1.0 INTRODUCTION

A major component of the U.S. Department of Energy (DOE), Office of River Protection (ORP) mission is the design and construction of the Waste Treatment and Immobilization Plant (WTP) in the 200 East Area of the Hanford Site. The design and construction contractor for the WTP is Bechtel National, Inc (BNI). As part of its oversight responsibilities, ORP performs various assessments of BNI activities during the design and construction phase. One type of assessment is the design review of various systems, called a Design Oversight, performed by the WTP Engineering Division (WED). This Design Oversight focused on the design of the Low-Activity Waste (LAW) [Facility] Container Export Handling System (LEH).

The formal phase of the Design Oversight occurred in February 2008 and consisted of meetings with BNI staff, site walkdowns, document reviews, and fact finding. The Design Oversight Team pursued clarification and elaboration of the initial information through the end of February and prepared this report. BNI informally reviewed the preliminary report for factual accuracy before WED issued the final report. There were no open items or adverse findings.

2.0 BACKGROUND

The LEH provides mechanical handling equipment to remove the filled, sealed, and decontaminated LAW product container from the LAW Container Finishing Handling System (LFH) finishing line and place the container onto the Tank Farms Contractor (TFC) supplied transport vehicles.

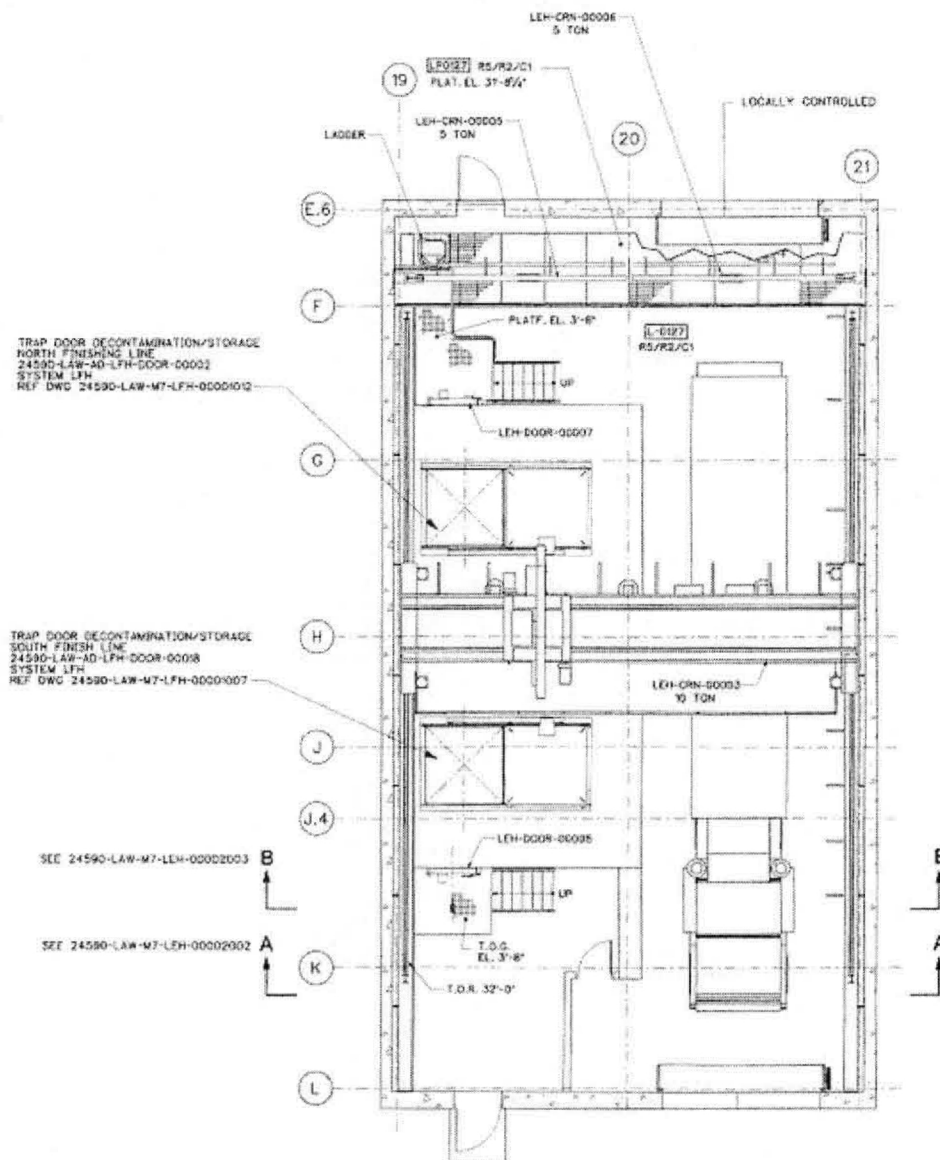
The LEH is located in the export high bay at the far east end of the LAW Facility. The LEH is composed of two areas at the 0'-0" elevation and a crane maintenance platform on approximately the 32' elevation. The export high bay is a drive-through, truck bay sized to accommodate a combination tractor/trailer up to 68 feet long. (Figure 1) The export high bay is designated an R5 radiation area during container-handling operations and an R2 area when no container is present. The high bay is uncontrolled for contamination and is maintained to have contamination levels consistent with C1 requirements at all times. The crane maintenance platform is located on the north end of the export high bay and shares the same radiological designations. The export operations office area is located adjacent to the export high bay. This area is shielded and controlled to R2 and C1 radiological levels. This area provides a shielded area for operations personnel and the truck driver during container loading operations.

The following equipment is associated with the LEH:

- Export High Bay Crane (24590-LAW-MJ-LEH-CRN-00003) is the overhead crane located in the export high bay and provides lifting capabilities in the export high bay. The export high bay crane is used to transfer LAW product containers from the LFH finishing line to the TFC-provided transport.
- Export Maintenance Jib Cranes (24590-LAW-MJ-LEH-CRN-00005 West and 24590-LAW-MJ-LEH-CRN-00006 East) are located on each end of the crane

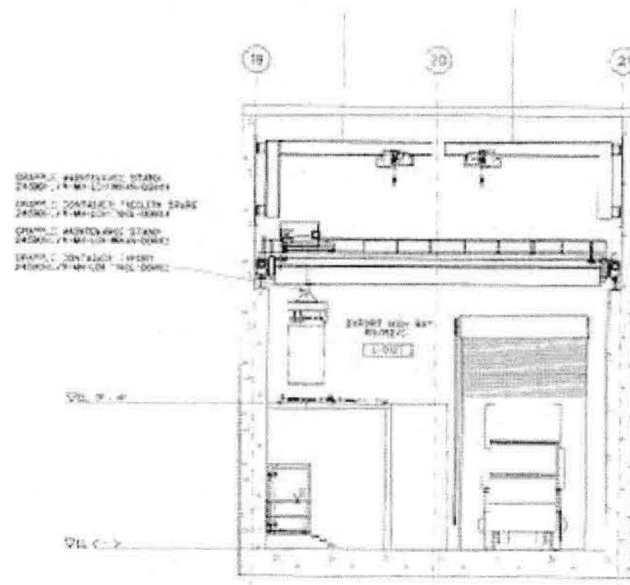
maintenance area and facilitate maintenance on the export high bay crane.
The maintenance jib cranes can lift tools and crane components.

Figure 1. Plan View of the LAW Container Export Handling System



- Container Grapple (24590-LAW-MH-LEH-TOOL-00002) is mounted to the hook of the export high bay crane (Figure 2). The grapple is designed to grab onto the top flange of the LAW container. The grapple is mechanically actuated, double set-down to release. The grapple works such that once engaged the first time tension is relieved on the bail the grapple will index but not open preventing inadvertent release during a collision. The second time tension is relieved the grapple will open releasing the container.

Figure 2. Section View of LAW Container Export Handling System



- Spare Container Grapple (24590-LAW-MH-LEH-TOOL-00003) functions as a back-up in case of a malfunction or damage.
- Container Grapple Stand (24590-LAW-MH-LEH-MHAN-00002) safely stores the container grapple when it is not in use.
- Spare Container Grapple Stand (24590-LAW-MH-LEH-MHAN-00009) safely stores the spare container grapple.
- Shielded Personnel Access Doors (SPAD) (24590-LAW-AD-LEH-DOOR-00005 South and 24590-LAW-AD-LEH-DOOR-00007 North) provide access to the north and south finishing lines to facilitate maintenance of the LFH.

Note: The hatches providing access to the north and south finishing line are part of the LFH.

3.0 OBJECTIVES, SCOPE, AND APPROACH

3.1 Objectives

WTP Engineering staff conducted a design oversight on the LEH to:

1. Verify the adequacy of the design in meeting the design and operational criteria identified in the baseline documentation for the project.
2. Identify and understand the applicable processes, procedures, codes, regulatory requirements, standards etc. used by the Contractor's engineering organization for preparing the design.
3. Review design status at current level of maturity.

3.2 Scope

This oversight was conducted within the guidelines of ORP M 220.1, *Integrated Assessment Program*, Rev. 5, and the WTP DI 5.2, "Conduct of Design Oversight," Rev. 0.

This design oversight included review of the design processes and the design products produced to date in support of the topic under review. This included drawings, specifications, test results, calculations, deliverables, and other documents that describe the applicable processes and products. The assessment focused on the primary and important-to-safety (ITS) functions of the LEH as described in the system description.

3.3 Approach

This design oversight reviewed BNI design processes and products for the flow-down of requirements for the design of the LEH. These requirements are captured within the following project documents and industry codes and standards:

- LEH system description
- Equipment specifications
- Design proposal drawings
- Mechanical handling diagrams
- Vendor submittals
- Shop/receipt inspections, etc.

The primary functions of the LEH are defined as follows:

- Receive an empty shipping container on the TFC-supplied combination trailer from DOE.
- Retrieve the filled, sealed, and decontaminated LAW container through the north or south finishing line hatches using the export high bay crane and container grapple.
- Transfer the LAW container to the TFC-supplied combination trailer using the export high bay crane.
- Place the LAW container into the empty shipping container located on the TFC-supplied combination trailer.
- Secure LAW container to the TFC-supplied combination trailer.

The ITS functions of the LEH are defined as follows:

- Provide protection from radiological contamination during a container drop scenario (CSD-LLEH/N0008).
- Provide protection of the facility worker from contamination in container drop scenario (CSD-LLEH/N0010).
- Provide protection of the worker/public from a seismic event (CSD-LLEH/N0011).

4.0 RESULTS

The Design Oversight Team performed a technical assessment of the BNI design processes and products associated with the LEH. This assessment involved document reviews (see Section 6.0) and lines of inquiry addressed by cognizant BNI personnel (see Appendix A). The following sections discuss the significant conclusions reached during the course of the assessment and focus on areas crucial to the LEH to carry out its function. The Mechanical Handling (MH) design for LEH is complete. The primary documents, mechanical handling diagrams and mechanical sequence diagrams, are issued for construction. All MH procurements have been awarded and major equipment (crane and jibs) has been delivered to WTP. The current construction completion date for the export high bay is December 21, 2009.

4.1 Completion of Export High Bay Crane Procurement

Unidynamics, Inc., the company under contract to deliver the export high bay crane (24590-LAW-MJ-LEH-CRN-00003), filed for Chapter 11 bankruptcy on April 28, 2006. At that time, the crane had completed factory acceptance testing and still had a few minor punchlist items open for resolution. A settlement was reached and the bankruptcy court allowed the WTP Contractor (BNI) to take possession of the crane and associated hardware; BNI approved a provisional release to ship authorization (24590-WTP-PRTS-MGT-06-00001) on June 12, 2006.

A Project Close-Out white paper on purchase order 24590-CM-POA-MJKG-00003 was issued on June 13, 2006. The purpose of the white paper was to demonstrate the minimal risks to the project in taking possession of the export high bay crane. The white paper also summarized the open items from the factory acceptance testing which ranged from chipped and scratched paint to updating as-built documentation. The construction deficiency report (CDR) process was used to disposition the open items. Forty-seven open items were dispositioned by 24590-WTP-CDR-CON-06-0115, which included 46 original items and 1 additional item identified upon receipt of the crane at the Marshalling Yard. The additional item identified at the Marshalling Yard was the size of fillet welds on the lifting lugs. Per American Society of Mechanical Engineers (ASME)-NOG-1, *Rules for Construction of Overhead and Gantry Cranes (Top Running Bridge, Multiple Girder)*, fillet welds on the lifting lugs of the crane were required to be 3/8-inch. 24590-WTP-CDR-CON-06-0115, CDR item 46, documented and dispositioned this condition.

An additional original open item was dispositioned by 24590-WTP-CDR-CON-06-0116. The Underwriter's Laboratory (UL) inspection of the crane had been performed at the time of the factory acceptance testing but due to the bankruptcy of Unidynamics, Inc., a label could not be attached. 24590-WTP-CDR-CON-06-0116 dispositioned the testing of the crane by a nationally recognized testing laboratory.

All open items identified by the factory acceptance testing were minor in impact to the overall function and safety of the crane. The assessors found the disposition of all open items adequate.

4.2 Export High Bay Crane Recovery System

The export high bay is not accessible during container-handling operations due to the radiation dose rate from the container and is designated as a R5 radiation area. Therefore, any malfunction of the export high bay crane must be able to be overcome remotely. The export high bay crane is

equipped with a recovery system in case of a component failure. Recovery from component failure is accomplished by using redundant drive systems to place the container into the TFC-supplied combination trailer or back into the LFH. The following drive systems are equipped with recovery systems:

- Hoist – The recovery hoist system consists of a second hoist drum, motor, gearbox, and brake. The recovery hoist can be operated independent of the main hoist.
- Trolley – Each side of the trolley is driven by a separate drive system. In the event that a drive system fails, “jack down” wheels can raise the problem side off the rails and the remaining drive system can position the container.
- Bridge – Each of the wheels on the bridge are driven by a separate drive system. The system is equipped with “jack down” wheels and can recover in a similar manner to the trolley.

The assessors found the design of the Export High Bay Crane Recovery System adequate. The use of redundant components in the design of the export high bay crane ensures that operations can continue to the point where the container is placed in a safe location so maintenance personnel can enter the area and perform repairs.

4.3 WTP and TFC Interface (Interface Control Document [ICD] 15)

The primary interface issue associated with the LEH is securing the LAW container to the TFC-supplied combination trailer. Securing the container is a primary function of the LEH and is a WTP Contractor operation. Design of the securing mechanism is the responsibility of the TFC as defined by ICD 15, Table 1, Line Item 1. ICD 15 states further that load-locking devices shall conform to the requirements of Title 49, *Code of Federal Regulations* (CFR) Part 173.441, “Radiation level limitations and exclusive use provisions” (49 CFR 173.441) (ICD 15, paragraph 3.1.3). The primary requirement of 49 CFR 173.441 is associated with securing packages in transport is “The package is secured within the vehicle so that its position remains fixed during transportation.” To date, the WTP Contractor has not reviewed a final design for the TFC-supplied combination trailer. ICD 15, Table 1, Line Item 2 states it is the responsibility of the TFC to provide the WTP Contractor with updated technical information for the transport vehicle transportation container. In addition, Action Item A15-2 is referenced, which is part of Appendix B, “Out-Year Action Items,” in ICD 15. The last time the action item was updated was July 25, 2003, with a completion date of to be determined (TBD).

The assessors found the interface control between the TFC and WTP Contractor to be adequate. Actions related to the LEH are appropriately documented. ICD 15 has not been updated since 2003 and would benefit from a revision to reflect current schedule for facility completion.

4.4 Review of ITS Features of the LEH System

Review of the LAW Facility Preliminary Safety Analysis Report (PSAR) (24590-WTP-PSAR-ESH-01-002-03, Rev. 2b) identified the following discussion and requirements for the LEH.

Section 2.4.14.1.7, Adjacent Structures

“The ILAW export high-bay to the east of the main building has major equipment for handling and exporting finished containers. This includes an overhead bridge crane for loading containers onto a truck for export. This export crane has its own maintenance area with a platform for crane access and maintenance cranes to lift components and equipment.”

Section 2.5.5.4, LAW Container Export Handling System (LEH):

“The LEH prepares ILAW containers for export before they are transferred to a Hanford Site treatment, storage, and disposal unit. The LEH is in the ILAW container export high-bay. Containers are loaded onto transport trucks in the export area after the containers are sealed and confirmed to meet radiological criteria.

Under normal operation, an ILAW container is received through a hatch after lidding, decontamination, swabbing, and monitoring (LFH). The ILAW container contamination and radiation dose limits are verified to be within required limits. An operator records the container’s identification and position as the container is placed into a shipping cask on a semi-tractor. The container is then transported to the Hanford Site treatment, storage, or disposal unit.

The ILAW container export high-bay and equipment within it were designed with the effects of temperature, shielding, and environmental conditions in mind. The export crane area has CCTV cameras for surveillance.”

Section 3.3.3.3, LAW Container Mechanical Handling Systems:

“No hazardous situations were postulated that would result in more than SL-4 consequences to receptors outside the facility or more than a “low” hazard to facility workers. Localized effects of a glass spill in the facility pour cave are discussed in Section 2.4.3.9.4. The event does not impair the credited safety functions of the facility structure.”

ITS structures, systems, and components (SSC) and/or functions described in the LAW PSAR included:

- Emergency egress lighting (additional protection class [APC]) is provided to ensure that facility workers can evacuate following a loss of power (3.3.4, Common Mode and Common Cause Failures).
- Table 3A-36, LAW Glass Container Drops – Description and Maximum Heights:
 - Drop ID G – Export bay crane drop from export monitoring station – drop height 31 ft (24590-LAW-M0D-LEH-00014, Rev. 5).
- Table 3A-43 – Unmitigated Radiological Consequences for Glass Container Drops:
 - Drop ID G – maximum drop height 31 ft. – 944.9 cm – rounded to 1,000 cm – public receptor dose (rem) 3.46E-05; co-located worker dose (rem) 3.27E-02.

While not all of the above ITS functions (e.g., emergency lighting) could be confirmed during the facility walkdown due to a lack of construction completion, the assessors found the physical

facility (e.g., LEH high-bay area) system requirements, as described in the applicable system description (24590-LAW-3YD-LEH-00001, Rev. 0), and the descriptions and requirements specified in applicable engineering specifications and procurement documents associated with material requisitions (24590-CM-MRA-MJJKG-00003 and 24590-CM-MRA-MJKH-00002), consistent with the ITS functions and requirements described in the LAW PSAR. (See Section 6.2 for a complete list of documents reviewed). No discrepancies were identified. The consistency of ITS requirements and functional descriptions throughout the hierarchy of documents can be seen from the following descriptions from the LEH system description.

Section 3.3, Important to Safety Functions:

- Protection from radiological contamination during container drop scenario (CSD-LLEH/N0008):
 - Full LAW container is dropped from full lift height by the export high bay crane in the export high bay or export monitoring station due to crane malfunction while the facility worker is in the export high bay.
 - SCR-LADM-/N0047 – CSE Requirement – Access to C5 and R5 areas will be controlled in accordance with the Radiation Protection Program (including surveys and dosimetry, radiological work permits, and job hazard analyses).
- Protection of facility worker from contamination in container drop scenario (CSD-LLEH/N0010):
 - Trap door closes on crane rope, grapple, or container during container movement.
 - SCR-LADM-/N0047 – CSE Requirement – Access to C5 and R5 areas will be controlled in accordance with the Radiation Protection Program (including surveys and dosimetry, radiological work permits, and job hazard analyses).
- Protection of worker/public from seismic event (CSD-LLEH/N0011):
 - Seismic event during container movement.
 - SCR-LADM-/N0047 – CSE Requirement – Access to C5 and R5 areas will be controlled in accordance with the Radiation Protection Program (including surveys and dosimetry, radiological work permits, and job hazard analyses).

Section 3.4, Not Important to Safety Functions:

- Protection from direct radiation exposure in high bay (CSD-LLEH/N0006):
 - Container is lifted from north or south export/monitoring station while facility workers are present in export high bay.
 - Control strategy:
 1. Administrative controls to prevent the export high bay crane from picking containers while workers are present in export high bay.
 2. Buzzer and light will alert workers in the area to export high bay crane movements. The indications would alert workers to exit or not enter the export high bay.

Review of WTP LAW Container Export Handling System (D-08-DESIGN-059)

3. Administrative control prevents workers from accessing the area while the export hatch is open and an LAW container is present in the north or south export/ monitoring station.
 4. Room containing the export high bay crane local operator interface is shielded. Doors to the room are located out of shine paths or shielded.
- Protection from direct radiation exposure outside high bay (CSD-LLEH/N0007):
 - Container is pulled from north or south export monitoring stations while facility workers are outside the facility, near export high bay roller shutter doors.
 - Control strategy:
 1. A fence will surround the export bay at a distance that will limit dose from shine through the export bay doors to less than 0.05 mR/hr, or R1 levels.
 2. Administrative controls prevent workers from accessing the fenced area, which is a radiologically controlled area.
 3. Walls of the export high bay provide shielding down to R1 levels.
 - Protection from radiological contamination during container drop scenario (CSD-LLEH/N0008):
 - Full LAW container is dropped from full height by the export bay high crane in the export high bay due to crane malfunction while the facility worker is in the export high bay.
 - The safety case reference (SCR) for this control strategy development (CSD) are ITS and identified above.
 - Control strategy:
 1. The grapple is double set-down design and constructed to a high reliability.
 2. Crane is classified as CMAA 70.
 3. The truck will be parked in the area during container transfers. Therefore, there is a small possibility that the dropped container would miss the export monitoring station and the truck to sustain an unimpeded full drop.
 4. The container is sealed and will provide partial confinement of radioactive material.
 5. Export high bay exhaust fan will not run during container movements in the export high bay.
 6. Crane motors have high temperature alarms to alert operators of crane malfunction.
 - Protection of facility worker from direct radiation exposure (CSD-LLEH/N0009):
 - Reintroduction of LAW container to export during manned access.
 - Control strategy:

Review of WTP LAW Container Export Handling System (D-08-DESIGN-059)

1. Procedure prevents reintroduction of LAW container into the LAW Facility.
 2. The hatch and access doors to the export area are interlocked. Procedurally, no one may enter the export area when the access door is closed.
- Protection of facility worker from contamination in container drop scenario (CSD-LLEH/N0010):
 - Trap door closes on crane rope, grapple or container during container movement.
 - Control strategy:
 1. Interlock prevents the hatch from closing unless the grapple is at travel height.
 2. The grapple is double set-down design and constructed to a high reliability.
 3. The container is sealed and will provide partial confinement of radioactive material.
 4. Export high bay exhaust fan will not run during container movements in the export high bay.
 - Protection of worker/public from seismic event (CSD-LLEH/N0011):
 - Seismic event during container movement.
 - Control strategy:
 1. Crane is designed to survive a seismic category (SC)-III event intact.
 2. The grapple is double set-down design and constructed to a high reliability.
 3. Crane is classified as CMAA 70.
 4. The truck will be parked in the area during container transfers. Therefore, there is a small possibility that the dropped container would miss the export monitoring station and the truck to sustain an unimpeded full drop.
 5. The container is sealed and will provide partial confinement of radioactive material.
 6. Export high bay exhaust fan will not run during container movements in the export high bay.

The assessors concluded there was consistency between the detailed requirements of the LEH system description and the ITS requirements and functional descriptions for the LEH and described in the LAW PSAR. No discrepancies were identified.

4.5 Review of LAW Fire Hazards Analysis

In support of the review of the ITS requirements and functional descriptions for LEH SSCs, the assessors also review the LAW Fire Hazards Analysis (FHA) (24590-LAW-RPT-ESH-01-001, Rev. 2) for the LAW Facility fire area housing these SSCs. This fire area (LV111) consists of an export office, container export bay, and the export high bay. The export high bay is an enclosed truck-loading bay for loading full containers into a shielded transport truck. There is an office

from where the crane for loading the container into the transport truck is controlled. There is also the final room in the finishing line; the container will be picked out of here using the gantry crane and set on the trailer. This fire area will be separated from adjacent fire areas by fire barriers with a minimum fire rating of two hours.

The west wall that separates the truck bay from the main process building is constructed of reinforced concrete and structural steel construction with rated fire doors and penetration seals. The exterior walls are constructed of reinforced concrete and will have a rated 1-hour metal roof. Structural steel members supporting fire barriers in the truck bay will be fireproofed to withstand a fire. This fire area extends from the 0 ft to 50 ft elevation. Container will be loaded and unloaded in this fire area. Low-activity waste process and container handling operations will be controlled or monitored from the export high bay control room.

Fire area LV111 will be provided with an automatic sprinkler system. Standpipe hose connections and portable fire extinguishers will be provided as described in 24590-WTP-RPT-05-005, Section 3.6. There will be manual fire alarm pull boxes on all LAW Facility elevations.

There are two means to egress on the 3 ft level, via doors located in the northwest and southwest of the fire area (for life safety considerations). The doorways discharge to the outside of the LAW Facility. To access the crane maintenance platform on the 38 ft, 8 in. elevation, a compliant exterior fire escape stairway will be provided. The egress pathways, illumination, travel distances, and exit signage will be in accordance with the requirements of National Fire Protection Association (NFPA) 101, *Life Safety Code*.

There are no SSCs required to achieve and maintain safe state in this fire area.

Based on the LAW Facility walkdown performed, the assessors concluded that fire protection features installed to date (i.e., the reinforced concrete walls) are consistent with the descriptions and assumptions documented in the LAW FHA. Construction and equipment installation for the high-bay roof, sprinkler system, structural steel fireproofing, standpipe hose connections, portable fire extinguishers, manual fire alarm pull boxes, and fire escape stairway have not been completed, so the physical/as-built adequacy of these fire protection features could not be confirmed during the assessment. The means of egress from the LEH high-bay area were found to be consistent with the LAW FHA and, although the egress doors have not yet been installed, the procurement specifications for these doors were also found to be consistent with the LAW FHA descriptions and assumptions. No deficiencies were identified.

5.0 OPEN ITEMS AND RECOMMENDATIONS

There are no findings, open items, observations, or recommendations. The design is consistent with nuclear codes and standards and system design recommendations. The WTP Contractor design process effectively implements all contract and other applicable technical requirements for the design of the LEH.

6.0 REFERENCES

6.1 General

24590-WTP-SRD-ESH-01-001-02, 2007, *Safety Requirements Document Vol. II*, Rev 4, Bechtel National, Inc.

ASME-NOG-1, 2004, *Rules for Construction of Overhead and Gantry Cranes (Top Running Bridge, Multiple Girder)*, American Society of Mechanical Engineers, New York, New York

NFPA 101, 2006, *Life Safety Code*, National Fire Protection Association, Quincy, Massachusetts

ORP M 220.1, 2007, *Integrated Assessment Program*, Rev. 5, U.S. Department of Energy, Office of River Protection

WTP DI 5.2, "Conduct of Design Oversight," Rev. 0, U.S. Department of Energy, Office of River Protection

6.2 Review Documents

6.2.1 BNI System Description

24590-LAW-3YD-LEH-00001, *System Description for System LEH LAW Container Export Handling*

6.2.2 BNI Supporting Documents

24590-WTP-SED-ENS-03-002-03, *Safety Envelope Document; LAW Facility Specific Information*

24590-WTP-PSAR-ESH-01-002-03, *Preliminary Safety Analysis Report to Support Construction Authorization, LAW Facility Specific Information*, Rev. 2b,

24590-WTP-RPT-ENS-05-005, *WTP Preliminary Fire Hazards Analysis General Information*

24590-WTP-DB-ENG-01-001, *Basis of Design*

6.2.3 BNI Calculations

24590-LAW-M0C-LRH-00004, *LAW Production Container Volume, Weight, and Center of Gravity*

6.2.4 BNI Drawings

24590-LAW-P1-P01T-00002, *LAW Vitrification Building General Arrangement Plan at El. 3'-0"*

24590-LAW-P1-P01T-00003, *LAW Vitrification Building General Arrangement Plan at El. 22 ft - 0 in'*

24590-LAW-P1-P01T-00004, *LAW Vitrification Building General Arrangement Plan at El. 28'-0"*

24590-LAW-P1-P01T-00008, *LAW Vitrification Building General Arrangement Section D-D, E-E, F-F, and T-T*

24590-LAW-P1-P01T-00009, *LAW Vitrification Building General Arrangement Section G-G, H-H, and J-J*

24590-LAW-M0-20-00006002, *LAW Vitrification Design Proposal Drawing LAW Grapple Stand Detail*

24590-LAW-M0-20-00005, *LAW Vitrification Design Proposal Drawing Product Container Grapple*

24590-CM-POA-MJKG-00003-08-00121, Sheet 1, *LAW Vitrification System LEH Unidynamics, Installation DWG Interface LEH Container Storage Crane*

24590-CM-POA-MJKG-00003-08-00122, Sheet 2, *LAW Vitrification System LEH Unidynamics, Installation DWG Interface LEH Container Storage Crane*

6.2.5 BNI Purchase Order Submittal

24590-CM-POA-MJKG-00003, Unidynamics, Inc. purchase order

24590-WTP-PRTS-MGT-06-00001, *Provisional Release to Ship Authorization, Unidynamics, Inc., June 12, 2006*

6.2.6 BNI Engineering Specification

24590-LAW-3PS-MJKG-T0001, *Top Running, Overhead Process Cranes Low-Activity Waste Vitrification Facility*

24590-LAW-3PS-MJKH-T0001, *Commercial Quality Monorail Hoists, Jib Cranes, and Under-Running Single Girder Cranes*

24590-WTP-3PS-MQL0-T0003, *Special Grapples and Lifting Devices*

24590-LAW-3PS-MX00-T0002, *LAW Shielded Personnel Access Doors – Common Items*

6.2.7 BNI Mechanical Handling Data Sheets

24590-LAW-M0D-LEH-00014, 24590-LAW-MJ-LEH-CRN-00003 – *LEH Crane Export High Bay with Recovery, 10 ton*

24590-LAW-M0D-LEH-00021, 24590-LAW-FH-LEH-TOOL-00002 – *Grapple Container*

24590-LAW-M0D-LEH-00022, 24590-LAW-FH-LEH-TOOL-00003 – *Grapple Container*

Review of WTP LAW Container Export Handling System (D-08-DESIGN-059)

24590-LAW-M0D-LEH-00041, *24590-LAW-AD-LEH-DOOR-00005 - Shielded Personnel Access Door (SPAD) to the South Finishing Line from the LEH High-Bay*

24590-LAW-M0D-LEH-00042, *24590-LAW-AD-LEH-DOOR-00007 - SPAD - North Finish Line Export*

6.2.8 BNI Mechanical Handling Diagram

24590-LAW-M7-LEH-00002001, *LAW Vitrification System LEH Mechanical Handling Diagram Container Export Handling System*

6.2.9 BNI Mechanical Sequence Diagram

24590-LAW-M1-LEH-00001, *Mechanical Sequence Diagram (MSD) for LAW Vitrification System LEH – MSD Detailing LAW Export Handling*

6.3 Interface Control Document

ICD 15, *Immobilized Low-Activity Waste*

6.4 Supplier Deviation Disposition Requests

24590-WTP-SDDR-PROC-03-0005, American Crane & Equipment Corporation, January 9, 2003

24590-WTP-SDDR-PROC-03-0006, Unidynamics Inc., February 5, 2003

24590-WTP-SDDR-PROC-03-0189, Unidynamics Incorporated, July 17, 2003

24590-WTP-SDDR-PROC-04-00088, Unidynamics Inc., July 28, 2004

Appendix A. Lines of Inquiry

1. Is design of the LEH system complete?

The Mechanical Handling (MH) design for System LEH is complete. The primary documents, Mechanical Handling Diagrams and Mechanical Sequence Diagrams, are Issued for Construction. The System Description is at numeric revision. All MH procurements have been awarded and major equipment (crane & jibs) has been delivered to WTP.

2. What is the current schedule for finishing construction of the LEH system?

The current Construction completion date for the Export Bay is December 21, 2009.

3. What is the status of the LEH Export High Bay Crane procurement and resolution of open items as documented by 24590-WTP-PRTS-MGT-06-00001 and CCN 140700?

The purchase order for the LEH Export Bay Crane has been closed. Resolution of open items is resolved by two construction deficiency reports (24590-WTP-CDR-CON-06-0115 and 24590-WTP-CDR-CON-06-0116) and an approved trend for construction (TN-24590-06-02972). Currently, Construction has initiated rework on the lifting lugs, while other actions are waiting receipt of materials that were ordered

4. Verify the LEH Export High Bay Crane has not been identified for storage and maintenance issues and returned to a vendor for repair.

The C&T maintenance planner has confirmed that there are open work requests on LEH-CRN-00003, but the work requests are within C&T's realm of corrective actions. The vendor is bankrupt and no possibility exists to return to the vendor.

5. One of the primary functions of the LEH system is to secure the LAW container to the TFC supplied combination trailer. While BNI documentation and ICD 15 acknowledge the function they provide no further information on how it will be performed. Is design complete and documented for this function?

BNI's design for transporting/placing the ILAW Container into/onto the TFC supplied transportation trailer is complete. BNI has not reviewed a final design for the TFC supplied transportation trailer. The means for securing the ILAW Containers during transport will be integrated into the TFC transportation trailer design.

6. Has the combustible loading associated with the LEH bridge crane and jib cranes been factored into the LAW FHA and, if so, are the results for this fire area still acceptable?

Equipment combustible loadings were factored into the Fire Hazard Analysis, reference document 24590-LAW-RPT-ESH-01-001. The LAW Export Bay is protected with a Fire Suppression System (sprinklers), reference drawing 24590-CM-HC1-PY21-00002-10-00013.

Task# ORP-WTP-2008-0063

E-STARS^R Report
Task Detail Report
03/14/2008 1200

TASK INFORMATION			
Task#	ORP-WTP-2008-0063		
Subject	(Concur 08-WTP-059) TRANSMITTAL FOR DESIGN PRODUCT OVERSIGHT REPORT, D-08-DESIGN-059, REVIEW OF WASTE TREATMENT AND IMMOBILIZATION PLANT (WTP) LOW-ACTIVITY WASTE (LAW) CONTAINER EXPORT HANDLING SYSTEM (LEH)		
Parent Task#		Status	CLOSED 03/14/2008
Reference		Due	
Originator	Licht, Sarah (Licht, Sarah)	Priority	High
Originator Phone	(509) 376-6611	Category	None
Origination Date	03/10/2008 1348	Generic1	
Remote Task#		Generic2	
Deliverable	None	Generic3	
Class	None	View Permissions	Normal
Instructions	<p>Hard copy of the correspondence is being routed for concurrence. Once you have reviewed the correspondence, please approve or disapprove via E-STARS and route to the next person on the list. Thank you.</p> <p>bcc: MGR RDG file WTP OFF file WTP RGD file M. K. Barrett, AMD T. M. Williams, AMD J. R. Eschenberg, WTP K. D. Thomas, WTP J. H. Wicks, WTP</p>		
ROUTING LISTS			
1	Route List		Inactive
	<ul style="list-style-type: none"> ● Thomas, Kristopher D - Review - Concur - 03/10/2008 1413 <i>Instructions:</i> ● Wicks, James H - Review - Cancelled - 03/14/2008 1200 <i>Instructions:</i> ● Eschenberg, John R - Approve - Approved with comments - 03/13/2008 0657 <i>Instructions:</i> 		
ATTACHMENTS			
Attachments	<ol style="list-style-type: none"> 1. 08-WTP-059.KDT.Attach.doc 2. 08-WTP-059.KDT.Simmons.doc 		
COLLABORATION			
			RECEIVED
			MAR 14 2008
COMMENTS			

DOE-ORP/ORPCC

Task# ORP-WTP-2008-0063	
Poster	Eschenberg, John R (Perez, Anez) - 03/13/2008 0603
	Approve
	Pete Furlong approved for John Eschenberg 3/13/08.
TASK DUE DATE HISTORY	
<i>No Due Date History</i>	
SUB TASK HISTORY	
<i>No Subtasks</i>	

-- end of report --

Task# ORP-WTP-2008-0063

E-STARS[®] Report
 Task Detail Report
 03/10/2008 0151

TASK INFORMATION			
Task#	ORP-WTP-2008-0063		
Subject	(Concur 08-WTP-059) TRANSMITTAL FOR DESIGN PRODUCT OVERSIGHT REPORT, D-08-DESIGN-059, REVIEW OF WASTE TREATMENT AND IMMOBILIZATION PLANT (WTP) LOW-ACTIVITY WASTE (LAW) CONTAINER EXPORT HANDLING SYSTEM (LEH)		
Parent Task#		Status	Open
Reference		Due	
Originator	Licht, Sarah (Licht, Sarah)	Priority	High
Originator Phone	(509) 376-6611	Category	None
Origination Date	03/10/2008 1348	Generic1	
Remote Task#		Generic2	
Deliverable	None	Generic3	
Class	None	View Permissions	Normal
Instructions	Hard copy of the correspondence is being routed for concurrence. Once you have reviewed the correspondence, please approve or disapprove via E-STARS and route to the next person on the list. Thank you. bcc: MGR RDG file WTP OFF file WTP RGD file M. K. Barrett, AMD T. M. Williams, AMD J. R. Eschenberg, WTP K. D. Thomas, WTP J. H. Wicks, WTP		
ROUTING LISTS			
1	Route List		Active
	<ul style="list-style-type: none"> Thomas, Kristopher D - Review - Awaiting Response - Due Date <i>KDT 3/11/08</i> <i>Instructions:</i> 		
	<ul style="list-style-type: none"> Wicks, James H - Review - Awaiting Response - Due Date <i>11 Mar 2008</i> <i>Instructions:</i> 		
	<ul style="list-style-type: none"> Eschenberg, John R - Approve - Awaiting Response - Due Date <i>13 Mar 2008</i> <i>Instructions:</i> 		
ATTACHMENTS	<i>pcv</i> <i>3/10/08</i> <i>pcv</i>		
Attachments	1. 08-WTP-059.KDT.Attach.doc 2. 08-WTP-059.KDT.Simmons.doc		
COLLABORATION			
COMMENTS			

Task# ORP-WTP-2008-0063
<i>No Comments</i>
TASK DUE DATE HISTORY
<i>No Due Date History</i>
SUB TASK HISTORY
<i>No Subtasks</i>

-- end of report --