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REMOTE-HANDLED WASTE FACILITY AT THE WEST VALLEY DEMONSTRATION PROJECT

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ABSTRACT

West Valley Demonstration Project personnel have developed detailed plans for the safe processing of highly contaminated and/or high-dose radioactive waste. Project planning, development of conceptual designs, investigation of available options, and the use of Value Engineering techniques resulted in a conceptual design of a new facility, called the Remote-Handled Waste Facility, for processing large, oversized containers of high-activity waste at a substantial reduction in cost. Descriptions of the waste to be processed and related containers are identified. The main areas of the Remote-Handled Waste Facility are described, including the receiving area, buffer cell, waste processing and packaging areas, load out, containment, and administration facilities

INTRODUCTION

Facility decontamination activities at the West Valley Demonstration Project (WVDP), sponsored by the Department of Energy (DOE) and the New York State Energy Research and Development Authority (NYSERDA) and operated by West Valley Nuclear Services Co. (WVNS), have resulted in the removal of a wide variety of high-dose and/or highly contaminated vessels, piping, and equipment that are currently stored on site. Future decontamination and facility deactivation activities will result in the generation of additional wastes. Because of high dose rates and high contamination levels, these wastes must be processed in a facility that has been designed for remote handling.

The purpose of the Remote-Handled Waste Project (RHWP) is to process high dose and/or highly contaminated WVDP wastes for off-site disposal. The conceptual design of a Remote-Handled Waste Facility (RHWF) was initiated in October 1997, and issued in June 1998. The design provided the capability for processing all remote-handled waste streams in a single, standalone facility. The total design and construction cost for this facility was estimated to be $55 million. Recognizing that some waste materials could be processed within existing facilities, an alternative approach was developed. For this new facility, referred to as the rescoped Remote-Handled Waste Facility, the functional requirements were revised based on a reduction in the number of waste streams to be processed. Using the following methodology, a scaled back facility was conceptually designed to process only those wastes that required a new facility:

- Other facilities within the USA and abroad were benchmarked. As a result of these benchmarking efforts, innovative technologies and building layouts were incorporated into the facility design.
- An independent Value Engineering study of the RHWF was performed by industry experts with DOE as its sponsor. The Value Engineering recommendations were incorporated into the revised conceptual design.
- Engineering studies and safety evaluations of the areas identified for improvement in the original RHWF conceptual design were performed and the results were incorporated.

The resultant RHWF is expected to cost $31M for design and construction and will have to operate for seven years vs. eleven years for the original concept. These cost and schedule reductions were achieved by utilizing existing facilities for processing 11 of the 24 waste streams, with minimal additional capital expenditure required for modifications to these existing facilities. Other innovative ideas and approaches, such as issuing a firm, fixed-price contract for design, construction, and startup of the RHWF, were used to reduce the overall project cost.

The following is a brief overview of the RHWF. It covers waste streams, waste processing and examination activities, and key facility features. The overview is followed by a discussion of the approach that is being used to manage the RHWP.

OVERVIEW

Waste Characteristics

Physical parameters of the waste streams to be processed in the RHWF are provided in Tables I and II. It should be noted that although the incoming waste may have radionuclide distributions similar to spent nuclear fuel (SNF) or high-level waste (HLW), this does not imply that the incoming waste will be classified as such. In fact, the bulk of the processed waste for shipment is expected to be classified as low-level waste (LLW), with small quantities of contact-handled transuranic (CH-TRU) and remote-handled transuranic (RH-TRU) wastes.

Table I. Typical Physical Parameters of the Waste Streams to be Processed in the RHWF at the WVDP

Waste Stream Designator I.D. + and Description		Number of Waste Containers or Items	Max.* Length or Diameter (ft)	Max.* Width (ft)	Max.* Height (ft)	Max.* Wt. on Hook (lbs)	Total Waste Wt. in all Containers (lbs)	Total Waste Volume (ft^3)
12	Chemical Process Cell (CPC) Jumper Boxes (TRU)	4	12.96	6.92	6.96	3,900	15,500	1,700
13	CPC Jumper Boxes (LLW)	8	12.96	6.92	6.96	3,900	31,000	3,500
14	CPC Dissolver Vessel Boxes	2	19.88	11.79	11.22	35,900	71,700	5,300
15	CPC Vessel Boxes (TRU)	2	13.72	8.42	8.96	9,900	15,800	1,400
16	CPC Vessel Boxes (LLW)	6	16.58	11.44	11.02	21,100	15,800	8,600
17	Vent Filter Boxes	53	6.33	7.50	6.00	13,300	>200,000	>4,500
18	Vent Filter (in grout) Boxes	4	6.33	7.33	9.50	53,800	191,300	1,700
19	Shield Boxes in CPC-Waste Storage Area (WSA)	13	12.50	6.50	6.50	9,600	32,200	5,300
20	Shielded Boxes with Dry Active Waste (DAW)	28	12.00	6.00	6.00	10,500	139,500	5,400
21	Shielded Boxes (Resins)	10	6.00	6.00	4.00	2,000	20,000	300
22	Shielded Drums	25	3.00	2.00	3.00	1,400	15,900	200
23	Waste Tank Farm (WTF) Transfer & Decant Pumps	17	50.00	4.00	4.00	8,000	41,700	4,000
24	Main Plant Closure Wastes	35	43.00	9.00	12.00	9,800	72,300	4,400

* The dimensions are the largest for all containers in a group, and weights shown are for the largest container, if more than one container with different sizes exist.

\+ Waste stream numbers 1 through 11 will be processed separately in existing facilities.

Table II. Selected Physical Parameters of the Waste Streams to be Processed in the RRHWF at the WVDP

Waste Boxes ▪ Various sizes ranging up to 20' x 12' x 11' ▪ Boxes for HLW pumps, ranging up to 4' x 4' x 50' ▪ Boxes constructed of up to 12 gauge carbon steel, welded construction ▪ Boxes are reinforced with 1/4" flat bar, 3/4" rod, and 1/4" to 1/2" channels ▪ Some boxes are lined with 1" to 2" of lead shielding
Waste Box Contents ▪ Cylindrical vessels (see below) ▪ Jumpers (see below) ▪ Waste Tank Farm High-Level Waste (WTF HLW) pumps (see below) ▪ High-efficiency particulate air (HEPA) filters encased in grout (4 boxes) ▪ Spent demineralizer resins ▪ Scrap metal and floor debris ▪ Wooden cribbing and framing (various sizes) ▪ Sheets of Herculite®
Cylindrical Vessels ▪ Range in size up to 8' dia. x 16' long ▪ Pulsation columns from the Main Plant up to 11" dia. x 43' long ▪ Constructed of 300 series stainless steel ▪ Wall thickness ranges from 1/4" to 3/4" ▪ Dissolver vessels have interior structures including 15" dia. baskets and 2" dia. pipes ▪ Dissolver vessels have three-ply walls of 1/2" steel, totaling 1-1/2" in thickness
Jumpers (pipes rigged for remote installation) ▪ Range in size up to 10' long and bent at angles up to 6' across ▪ Constructed of 300 series stainless steel ▪ 1-1/2" to 4" schedule 40 and 1/2" to 6" schedule 80 pipe ▪ Counterweights of lead-encased stainless steel, flanges, and other fittings attached
WTF HLW Pumps ▪ Constructed of stainless steel ▪ Shaft diameter of 2" ▪ Pump diameter of 3'

Facility Description

The RHWF provides for remote sorting, segregation, size reduction, and repackaging of remote-handled waste inside a well-ventilated enclosure surrounded by thick concrete walls. Figure 1 shows the general floor plan of the facility. Figure 2 shows an exterior view based on the revised-scope conceptual design. The concrete shield walls provide adequate shielding for processing the majority of the waste. For special cases, temporary shielding will be provided to address one-of-a-kind, higher-dose waste streams. The ventilation system, equipped with HEPA filters, protects workers from exposure to airborne radioactive material by confining the material to the unmanned work areas and preventing its release to the atmosphere.

The five main areas of the RHWF that directly support waste processing operations are the Receiving Area, Buffer Cell, Work Cell, Waste Packaging Area, Load Out/Truck Bay, and Operating Aisle. The other areas of the facility that perform support functions are the heating, ventilation, and air conditioning (HVAC) Areas, Contact Maintenance Area, Sample Packaging and Screening Area, Secondary Waste Collection System, and Offices. Each area is described briefly below.

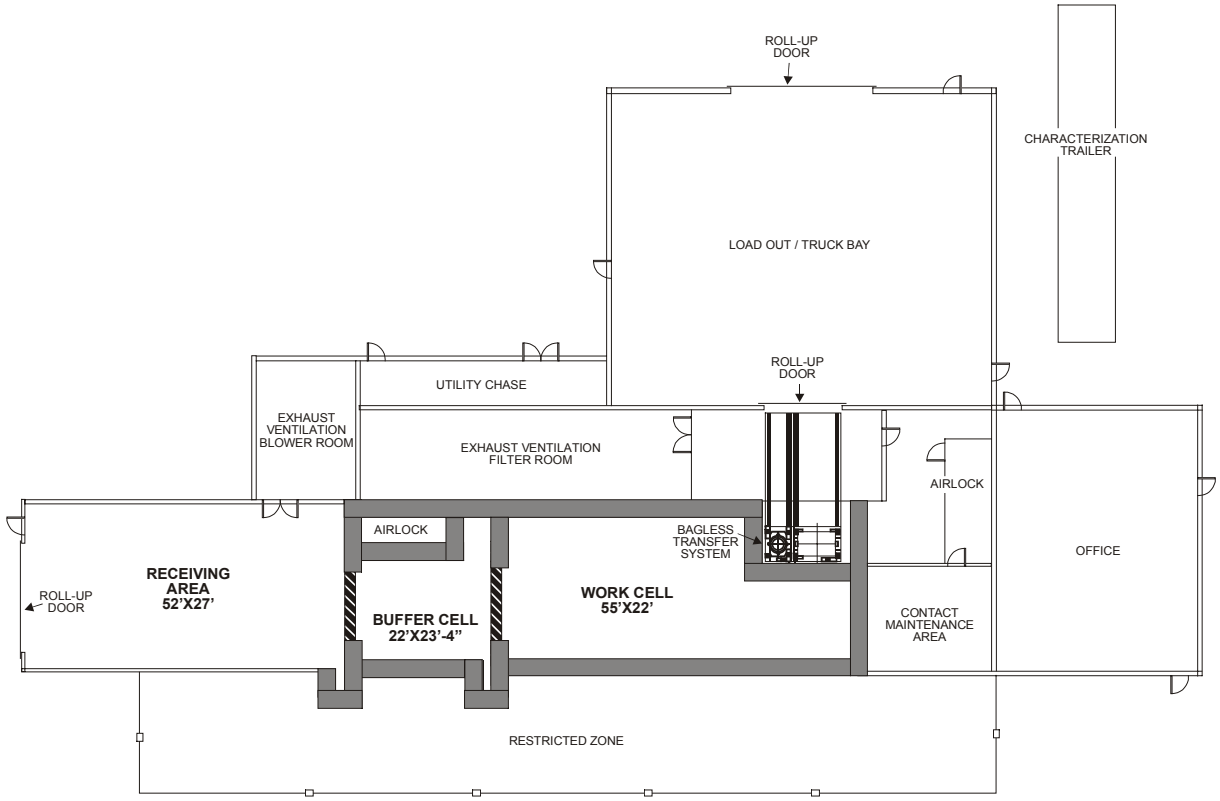

Figure 1. RHWF - General Floor Plan

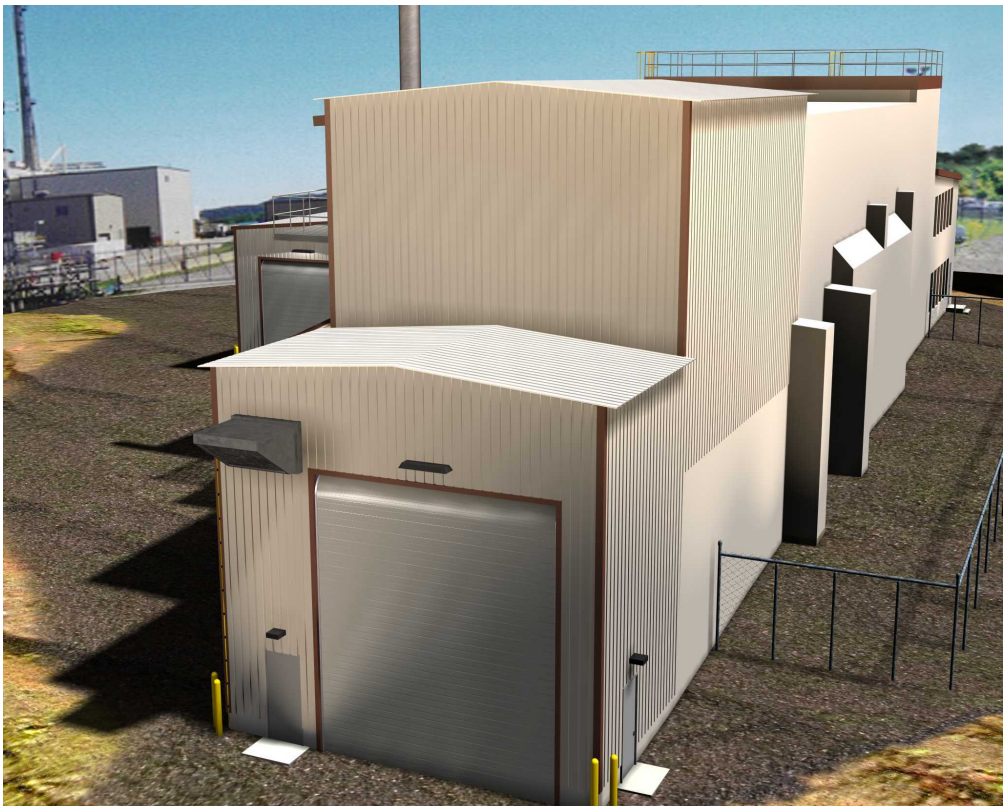

Figure 2. RHWF - Exterior Southeast View

Receiving Area

This area receives incoming containers of waste and provides weather protection for the transport vehicle during unloading operations. The Receiving Area is a buffer zone that provides confinement of radioactive contamination during the movement of waste containers into the Buffer Cell via powered roller conveyors. The area is normally radiologically clean. This area is also equipped with a 20-ton commercial bridge crane to use as a backup for the powered roller conveyors.

Buffer Cell

The Buffer Cell acts as an air lock between the Receiving Area and the highly contaminated Work Cell. The Buffer Cell provides shielding and confinement of radioactive contamination during the movement of waste containers into the Work Cell. This cell may also be used as a radiologically controlled area for remote-handled operations such as removing over-packing or loading out boxes larger in size than the B-25s® that are filled with processed waste. Radiological contamination levels as high as 10^4 to 10^6 dpm/100cm^2 may be present. Powered roller conveyors can be adjusted to accommodate the width of the various waste boxes. The 20-ton commercial bridge crane is also capable of servicing this area.

Work Cell

The Work Cell is the primary work zone within the RHWF for remote handling, surveying, sampling, sorting, segmenting, decontaminating, segregating, and re-packaging of waste. Details of the Work Cell are shown in Figures 3 and 4 that show plan views of the first and second levels, and their corresponding elevation section views. It is 55 feet long by 22 feet wide by 37 feet high. Space is allocated to remotely operate up to three work stations, although only two are initially planned. There is also space for staging incoming waste containers and the temporary storage of waste disposal drum and box liners. Radiological contamination levels greater than 10^{12} dpm/100 cm^2 are expected in this cell. There is a dedicated 30-ton bridge crane with rails extending the full length of the Work Cell. The bridge crane trolley supports a telescoping tube that is the attachment point for various end-effectors used to perform remote-handling operations. The overhead bridge crane is also equipped with a 10-ton hoist. There are also two wall-mounted jib cranes that support telescoping tubes. The interchangeable end-effectors include lifting and handling fixtures, heavy-duty cutting equipment, and powered dexterous manipulators (PDM). The PDMs and crane hoists are used to operate a full range of fixtures and tools for all remote operations.

The storage space for empty box and drum liners is built as three pull-out drawers, each large enough to hold one box liner and three drum liners. If needed, processed waste that is ready for packaging can be temporarily stored in liners in these drawers prior to being transferred out of the Work Cell through the Bagless Transfer System in the Waste Packaging Area.

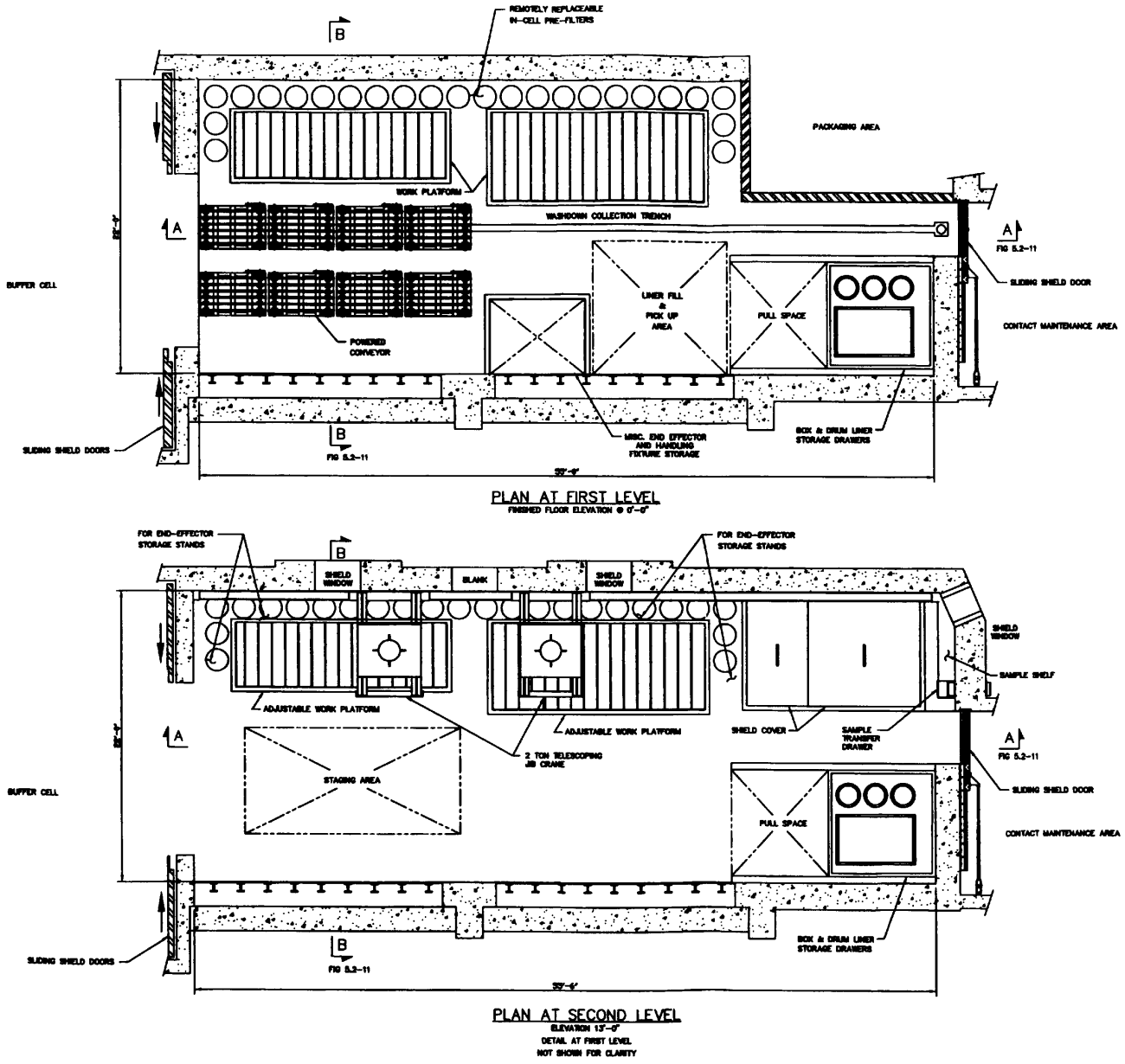

Figure 3. RHWF Work Cell - Plan Views, First and Second Levels

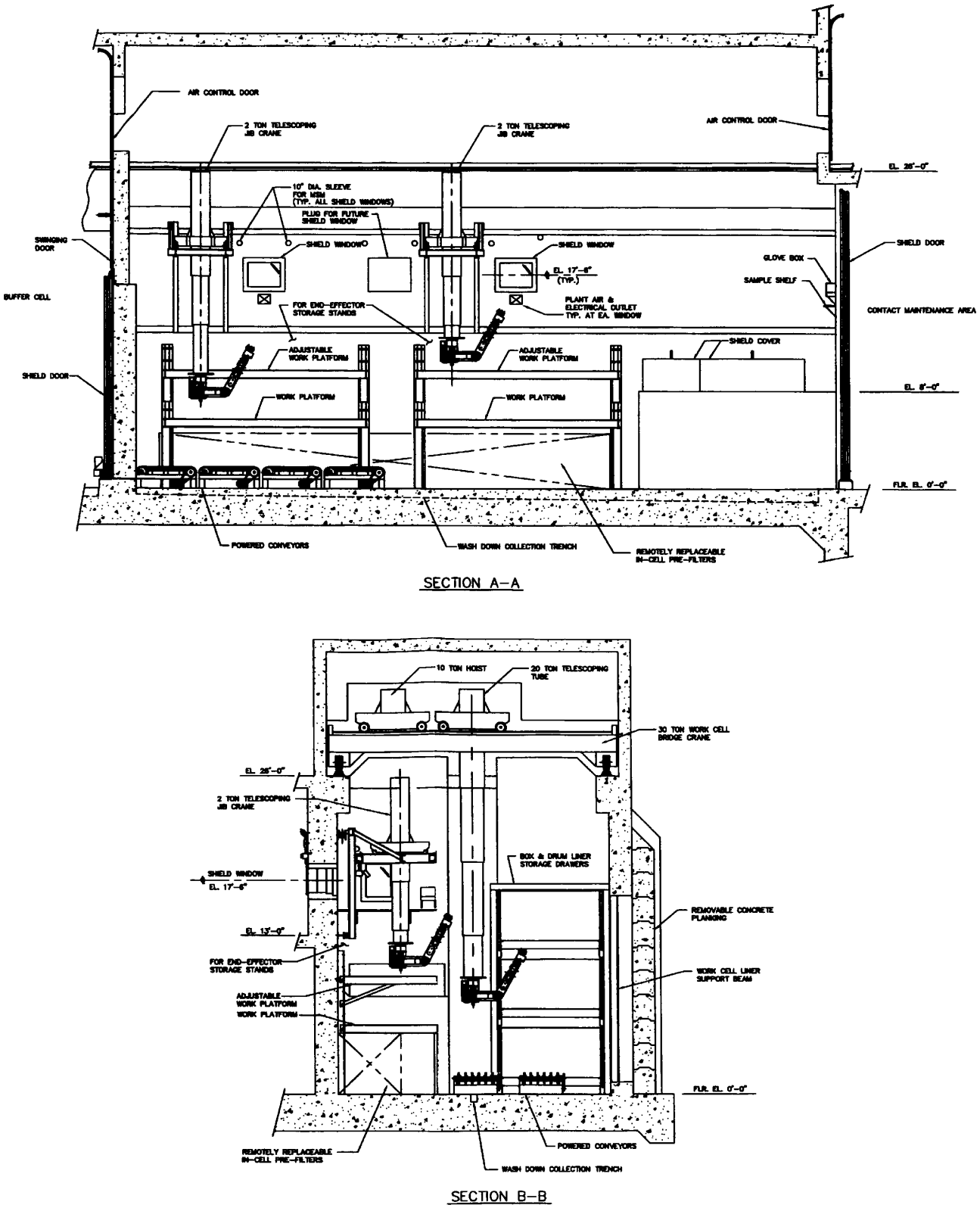

Figure 4. RHWF Work Cell - Elevation Section Views

Waste Packaging Area

The Waste Packaging Area is a shielded, contamination control area that provides for the efficient loading of liners filled with waste into a 55-gallon drum or a B-25® box. Two Bagless Transfer Systems (one for drums and one for boxes) installed in the Waste Packaging Area provide the physical boundaries necessary to bring waste with radiological contamination levels greater than 10^{12} dpm/100 cm^2 out of the Work Cell, while maintaining the exterior of the drums and boxes, as well as the Waste Packaging Area itself, free of radiological contamination. The Waste Packaging Area is equipped with two trolley carts on tracks for moving drums and boxes underneath the Bagless Transfer Systems. A shielded forklift and a monorail transfer hoist will also be used for removing filled drums and boxes from the trolley cart.

Load Out/Truck Bay

Receipt and storage of empty waste disposal containers and the load-out of filled waste disposal containers is performed inside an all-weather enclosure called the Load Out/Truck Bay. The Load Out/Truck Bay is a clear-span, pre-engineered metal building (approx. 60 feet by 50 feet). A shielded forklift may be used to load packaged waste containers onto trucks parked inside this area as part of the WVDP's policy to maintain operators exposures at levels that are as low as reasonably achievable (ALARA).

Operating Aisle

Because of the radiation levels expected, all operations are performed remotely (i.e., hands off). Two portable operator work stations in the Operating Aisle can be positioned at any of the three shield windows installed in the Work Cell shield walls. From these locations, operators can safely operate cranes and manipulate PDMs to remotely process waste.

HVAC Areas

The primary functions of the HVAC system are to confine airborne radioactive material and provide a comfortable work environment for operating personnel. The Mechanical Equipment Area houses the air handling system that provides conditioned air which is distributed to the stairwells and operating spaces within the RHWF. Contaminated areas, such as the Work Cell, are maintained at a pressure lower than that of the surrounding work areas to ensure the flow of clean air from operating areas into contaminated areas. Exhaust blowers draw air from the Work Cell through HEPA filters before releasing the air into the atmosphere through a continuously monitored exhaust stack.

Contact Maintenance Area

The Contact Maintenance Area provides a shielded area isolated from the Work Cell where workers can safely perform contact maintenance on the crane, PDMs, and other equipment removed from the Work Cell and brought remotely into this area. The first floor of the Contact Maintenance Area contains a lay-down area and storage shelves for the end-effectors. A workbench and tool storage area is also provided for hands-on maintenance of the heavy-duty and light-duty end-effectors, jib cranes, and crane telescoping tubes. The upper floor of the Contact Maintenance Area facilitates access to the overhead bridge crane for contact maintenance.

Sample Packaging and Screening Area

This area provides for the removal of samples from the Work Cell. The samples are removed from a transfer drawer inside a sample transfer glove box. The contained samples can be transferred out of the glove box to a shielded container used for transporting samples to a laboratory for analysis or directly into a sample hood, which is located

adjacent to the sample transfer glove box. Samples can be pre-screened and counted for gross beta and alpha activity using counting equipment in the sample hood. A dumbwaiter is installed to lower the shielded sample to the first floor for transfer out of the RHWF to a laboratory.

Secondary Waste Collection System

It is anticipated that limited quantities of liquid waste will be generated during decontamination of the cranes, PDMs, and other equipment that was used for maintenance. Although not anticipated, there may be a need to perform aggressive liquid decontamination of some waste components. A secondary waste collection and disposition system has been designed to address these needs. The liquid waste collected in tanks will be either treated and discharged through existing permitted waste discharge facilities or a subcontractor would be engaged to treat the waste and make it disposal-ready.

Offices

This area provides a radiologically clean, low-dose rate area adjacent to the RHWF for performing administrative functions. It is a two-story office facility with about 2,000 sq ft of floor space for crew offices, meeting rooms, a lunch room, and sanitary facilities. Personnel Contamination Monitors (PCM) are located on all access routes from the RHWF to the offices.

Waste Processing Activities

The following major waste processing functions will be performed on the remote-handled waste streams to prepare them for transportation off site for storage or disposal:

On-Site Transfer to the RHWF

The waste streams to be processed in the RHWF are currently being temporarily stored at several locations on the WVDP site. The bulk of these items are stored in the Chemical Process Cell/Waste Storage Area (CPC/WSA). Some of the higher dose rate waste streams may require additional shielding during on-site transfer to the RHWF.

Survey and Sample

Incoming waste containers will be remotely surveyed upon arrival in the Work Cell to help estimate the amount of radioactivity present in the waste. After the container is opened in the Work Cell, samples will be obtained as the contents are removed to help determine the type of radionuclides present. This information will be used to support sorting, segregating, and segmentation operation decisions.

Sort and Segregate

Waste containers contain items that vary significantly in their size, waste type, and materials. Waste components will be sorted based on the radionuclide concentration as possible LLW or TRU waste. Higher dose TRU waste will be separated from contact-handled TRU. Some waste components may contain regulated hazardous constituents that will be sorted out and segregated as hazardous or mixed waste for processing in a separate facility.

Segment (size reduction)

Large, bulky waste items may be cut into smaller pieces before they are loaded into a waste container liner. Segmenting may also allow segregation of TRU waste from LLW.

Stabilization/Void Filling

Selected LLW disposal containers may require stabilization to meet shallow-land disposal requirements. Most LLW containers to be generated at the RHWF will require filling the voids present in the container.

Characterization for Shipment

Surveys and assays will be performed on final waste disposal containers to support characterization of the radioactive waste for shipment and disposal.

PROJECT MANAGEMENT APPROACH

Project Management Plan

A wide variety of technical, administrative, and programmatic requirements apply to a project of the size, scope, and complexity of the RHWP. Defining, planning, and managing the way in which the project meets these requirements contributes directly to overall project success. Examining the requirements early during the project planning phase is proactive and allows the establishment of the project's technical, cost, and schedule baselines.

A Project Management Plan (PMP) was written expressly for the RHWP. The primary focus of this PMP is on the next phase of the RHWP, particularly the next two years of project execution. It has been prepared as a dynamic project plan, to be updated and expanded as the RHWP moves forward.

The Project Management Plan for the Remote-Handled Waste Project:

- Summarizes the RHWP in terms of its mission and problems to be solved
- Presents a technical approach and strategy to accomplish the RHWP mission
- Presents core information for the RHWP's technical, cost, and schedule baselines
- Presents organizational responsibilities and interfaces
- Identifies requirements applicable to the RHWP in key areas and presents approaches to satisfy them
- Discusses major risks and plans to mitigate them
- Presents the path forward for the RHWP.

The PMP for the RHWP also includes reference and background information, and serves as the central vehicle to transmit key design and planning documents for the RHWF to the Department of Energy-Ohio Field Office, West Valley Demonstration Project (OH/WVDP).

Lessons learned from the past two years of project planning and development follow.

LESSONS LEARNED

One of the requirements of a strong project management culture is to document and disseminate the lessons learned from the management of individual projects, with the long-term goal of overall improvement in project performance. The RHWP has benefited from this lessons-learned process. Now it is the RHWP's turn to "payback" future projects by passing along the following lessons learned from the planning phase of this project:

Value Engineering

The purpose of Value Engineering (VE) analysis is to identify and eliminate unnecessary cost wherever it is found. VE is a methodology used to develop alternatives for review by decision-makers that will satisfy the user's needs at the lowest life-cycle cost, without sacrificing safety, quality, functionality, or service life. Through the use of VE techniques, WVNS was able to reduce the total estimated cost for design and construction by over $24 million,

without sacrificing functionality.

The original conceptual design for the RHWF, proposed in June 1998, was designed to handle all 24 of the currently identified waste streams. However, the price tag of $55 million associated with providing this flexibility exceeded the project's targeted cost. For example, the concrete shield walls surrounding the Work Cell were required to be 3-1/2 feet thick just to process the two highest dose waste boxes. Similarly, the cranes inside the facility were designed with a lifting capability of 30 tons to handle the heaviest waste boxes.

An alternatives study was conducted to extensively evaluate options for processing each of the remote-handled waste streams. These studies showed that of the 24 waste streams, 11 could be processed in their existing locations and/or by using existing facilities, leaving only 13 for processing in the new facility.
The two boxes of waste that had previously driven the shield wall thickness could still be processed in the RHWF. However, temporary shielding will be used, if necessary, to maintain operator dose rates below exposure limits during processing of these wastes. Containers of waste weighing more than 20 tons could be processed in another location, allowing the capacity of the overhead bridge cranes in the RHWF to be reduced.

The above evaluations were based on reducing the cost of the RHWF by either finding alternative means to process waste streams that were controlling the design, or by accommodating unique, one-of-a-kind waste streams using temporary means. WVNS and DOE worked closely together to identify the best path forward. Then, a Value Engineering Team was brought in to validate what WVNS had already accomplished and examine ways of further reducing the estimated cost for design and construction.

The VE Team examined every aspect of the process to develop initial alternatives before recommending the following enhancements related to material handling, optimization of HVAC operations, and shield door improvements for implementation:

Materials Handling and Manipulators

The concept for the RHWF used two 20-ton nuclear-grade cranes, one servicing the Receiving Area and Buffer Cells, and the other servicing the Work Cell. Powered roller conveyors were used throughout the cells.

The VE Team recommended using a 20-ton commercial-grade crane in the Receiving Area and Buffer Cells, which served as backup for the Work Cell crane. Powered roller conveyor modules were alternated with non-powered modules, which still allow the loads to move along on the rollers.

HVAC Operations

The previous concept used four banks of primary filters located in the Work Cell. Ductwork mounted on the wall of the Work Cell ran from the bottom of the Work Cell to the third floor of the RHWF where the blowers were located.

The VE concept has the primary filter housing located at the Work Cell wall interface. The blowers are re-located to the ground floor. Ductwork is located outside the Work Cell and is much shorter.

Shield Door Improvements

The concept for the original RHWF had two shield doors 13 feet wide by 27 feet high. The shield doors are located between the Receiving Area and Buffer Cell, and between the Buffer and Work Cells. The height of the shield door (i.e., 27 feet) allowed continuous travel for cranes to carry loads the full length of the facility. This plan furnished backup support in the event of failure of the powered roller conveyors or the crane in the Work Cell.

The VE Team recommended using two shield doors, 13 feet wide by 14 feet high, to handle the largest waste container. A removable keystone concrete panel will enclose the area from the bottom of the crane access portal to the top of shield doors. The cranes can still be used to move loads from one cell to another.

Design-Build Contract

A turnkey construction contract has been awarded for the design, construction, startup, and testing of the RHWF. The primary responsibility for project management resides with the design-build subcontractor, with WVNS in an overseer role. Because this is a firm, fixed-price subcontract, it is in the design-build subcontractor's best interest to manage the design process to produce a design that meets the design requirements at the lowest possible cost. The design-build subcontractor is also responsible for resolving field interferences. Therefore, it is also in the subcontractor's best interest to produce a design that is constructable with minimal design changes. Finally, this is a turnkey contract, which means that the design-build contractor must turn over a fully functional, operating facility to WVNS before being released from the contractual commitments.

One of the technical keys to the success of any design-build project is to have a well-defined set of design requirements. WVNS has approved and issued a design criteria document that summarized the design requirements. WVNS also produced a detailed conceptual design that shows a preferred approach for meeting these design requirements. Both of these documents were included in the turnkey bid package, and were used by the design-build subcontractor as the bases for developing the bid, as well as for developing the detailed design.

To ensure the best results from this arrangement, there has been a very high emphasis on teamwork between the contractors and personnel at the WVDP, and in maintaining open and up-front communication.

Construction Strategy

During development of WVNS' requirements for the RHWF design-build subcontract, a goal was set of achieving working conditions typical of those encountered in a commercial environment. The construction site for the rescoped RHWF was specifically selected with this goal in mind. Current plans call for fencing off the construction site and providing a separate construction entrance. When completed, the fence line will revert to the original site boundary and the RHWF will become part of site operations.

Activities within the fenced-in area will be under the control of the design-build subcontractor. The subcontract reflects these responsibilities for the design, construction, startup, and testing of the RHWF. WVNS is responsible for oversight to assure that the design-build subcontractor is meeting the requirements of the contract from design through final testing and turnover.

Projectized Organization

The RHWP is staffed and managed as a projectized organization. The project team currently functions using a "Core Team-Expanded Team" approach. The Core Team consists of those people working full time on RHWP activities. It also contains representatives from other WVDP organizations with which the project has a key interface (e.g., Waste Management and Operations). These representatives spend a significant amount of time supporting the RHWP. They do not report directly to the RHWP's project manager, but provide support in a matrix fashion. Also included as members of the Core Team are representatives of the DOE. The New York State Energy Research and Development Authority (NYSERDA), a partner in the WVDP, is generally represented by the DOE.

The Core Team acts as a Board of Directors by participating in the development and implementation of project management plans, especially strategic planning activities. One of their primary responsibilities is providing direction to and oversight of the design-build subcontractor.

The Expanded Team consists of all the members of the Core Team, plus those people from other WVDP organizations called on for support on an as-needed basis. In many cases, the Expanded Team members are points-of-contact in various technical specialties needed by the RHWP. Their involvement is typically less frequent than that of the Core Team.

Another important concept of the RHWP Team organization is the use of selected specialty subcontractors. They are included on the Project Team where needed, to provide specific deliverables and services, thus avoiding the hiring of additional permanent staff. The use of an experienced consulting firm to prepare the conceptual design and the design-build subcontract for the rescoped RHWF are two examples of this strategy.

This overall teaming arrangement (Project Team, Core Team, Expanded Team, key subcontractors) allows the RHWP to effectively define and meet its needs. It eases the project's ability to both apply new expertise as needed and release expertise when no longer required for other WVDP use. These combine to make this arrangement efficient and cost effective for the RHWP.

CONCLUSION

As WVNS, DOE, and NYSERDA work together toward site closure, the design and construction of the RHWF fills a WVDP need. Designed to handle a wide variety of waste forms, the RHWF provides the flexibility to deal with those

wastes already identified and will be well suited for future processing of new waste streams that may arise from closure activities.

Although there are facilities planned or in service that process waste, this facility is unique within the DOE complex because of the variety of waste materials that will be processed. It provides both a model for other waste clean-up projects and an example of design, construction, and project management that results in the best-cost values for all concerned.

LIST OF ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
ALARA	As Low As Reasonably Achievable
B-257	90 ft^3 Radioactive Waste Box, Manufactured by Container Products Corp.
CH-TRU	Contact-Handled Transuranic Waste
CPC	Chemical Process Cell
DAW	Dry Active Waste
DOE	Department of Energy
HEPA	High-Efficiency Particulate Air (Filter)
Herculite7	Reinforced Plastic Sheeting
Hi-Vac	Custom-Fabricated Canisters for the Vacuum Collection System
HLW	High-Level Waste
HVAC	Heating, Ventilation, and Air Conditioning
LLW	Low-Level Waste
NYSERDA	New York State Energy Research and Development Authority

OH/WVDP	Ohio Field Office (DOE), WVDP
PDM	Powered Dexterous Manipulator
PMP	Project Management Plan
RH-TRU	Remote-Handled Transuranic Waste
RHWF	Remote-Handled Waste Facility
RHWP	Remote-Handled Waste Project
SNF	Spent Nuclear Fuel
TRU	Transuranic
VE	Value Engineering
Vit	Vitrification (Facility)
WSA	Waste Storage Area
WTF	Waste Tank Farm
WVDP	West Valley Demonstration Project
WVNS	West Valley Nuclear Services Co.