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Progress and Challenges in Cleanup of Hanford's Tank Wastes

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Office of River Protection

P.O. Box 450
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Progress and Challenges in Cleanup of Hanford's Tank Wastes

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ABSTRACT

The River Protection Project (RPP), which is managed by the Department of Energy (DOE) Office of River Protection (ORP), is highly complex from technical, regulatory, legal, political, and logistical perspectives and is the largest ongoing environmental cleanup project in the world. Over the past three years, ORP has made significant advances in its planning and execution of the cleanup of the Hanford tank wastes. The 149 single-shell tanks (SSTs), 28 double-shell tanks (DSTs), and 60 miscellaneous underground storage tanks (MUSTs) at Hanford contain approximately 200,000 m^3 (53 million gallons) of mixed radioactive wastes, some of which dates back to the first days of the Manhattan Project. The plan for treating and disposing of the waste stored in large underground tanks is to: 1) retrieve the waste, 2) treat the waste to separate it into high-level (sludge) and low-activity (supernatant) fractions, 3) remove key radionuclides (e.g., Cs-137, Sr-90, actinides) from the low-activity fraction to the maximum extent technically and economically practical, 4) immobilize both the high-level and low-activity waste fractions by vitrification, 5) interim store the high-level waste fraction for ultimate disposal off-site at the federal HLW repository, 6) dispose the low-activity fraction on-site in the Integrated Disposal Facility (IDF), and 7) close the waste management areas consisting of tanks, ancillary equipment, soils, and facilities.

Design and construction of the Waste Treatment and Immobilization Plant (WTP), the cornerstone of the RPP, has progressed substantially despite challenges arising from new seismic information for the WTP site. We have looked closely at the waste and aligned our treatment and disposal approaches with the waste characteristics. For example, approximately 11,000 m^3 (2-3 million gallons) of metal sludges in twenty tanks were not created during spent nuclear fuel reprocessing and have low fission product concentrations. We plan to treat these wastes as transuranic waste (TRU) for disposal at the Waste Isolation Pilot Plant (WIPP), which will reduce the WTP system processing time by three years. We are also developing and testing bulk vitrification as a technology to supplement the WTP LAW vitrification facility for immobilizing the massive volume of LAW. We will conduct a full-scale demonstration of the Demonstration Bulk Vitrification System by immobilizing up to 1,100 m^3 (300,000 gallons) of tank S-109 low-curie soluble waste from which Cs-137 had previously been removed.

This past year has been marked by both progress and new challenges. The focus of our tank farm work has been retrieving waste from the old single-shell tanks (SSTs). We have completed waste retrieval from three SSTs and are conducting retrieval operations on an additional three SSTs. While most waste retrievals have gone about as expected, we have faced challenges with some recalcitrant tank heel wastes that required enhanced approaches. Those enhanced approaches ranged from oxalic acid additions to deploying a remote high-pressure water lance. As with all large, long-term projects that employ first of a kind technologies, we continue to be challenged to control costs and maintain schedule. However, it is most important to work safely and to provide facilities that will do the job they are intended to do.

INTRODUCTION

The River Protection Project (RPP), managed by the Department of Energy (DOE) Office of River Protection (ORP), is the largest ongoing environmental cleanup project in the world. It requires the retrieval, treatment, and disposal of 200,000 m^3 (53 million gallons) of mixed radioactive wastes, some of which dates back over 60 years to the first days of the Manhattan Project. The waste is contained in 149 single-shell tanks (SSTs), 28 double-shell tanks (DSTs), and 60 miscellaneous underground storage tanks (MUSTs). The RPP also requires the cleanup and closure of the Hanford tank farms under both the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Conservation, and Liability Act (CERCLA); the design, construction, and operation of the largest radiochemical plant in the world to treat retrieved waste; the disposition of wastes at the Yucca Mountain high-level waste (HLW) repository, the Waste Isolation Pilot Plant (WIPP), and in the on-site Integrated Disposal Facility (IDF); and working within complex regulatory relationships that include DOE, the Washington State Department of Ecology (Ecology), the U.S. Environmental Protection Agency (EPA), the U.S. Nuclear Regulatory Commission (NRC), the State of Oregon, Tribal Nations, and public stakeholders. The overall foundation of the RPP is to ensure worker and public safety in every plan and action as Steve Wiegman describes in his paper, Safety as a Foundation for Success [1]. Over the past three years ORP has made significant advances in its planning and execution of the Hanford tank wastes cleanup including laying out its plan through mission completion approximately 30 years from now.

GENERAL CLEANUP PLAN

The plan for treating and disposing of the waste stored in large underground tanks is to: 1) retrieve the waste, 2) treat the waste to separate it into high-level (sludge) and low-activity (supernatant) fractions, 3) remove key radionuclides (e.g., Cs-137, Sr-90, actinides) from the low-activity fraction to the maximum extent technically and economically practical, 4) immobilize both the high-level and low-activity waste fractions by vitrification, 5) interim store the high-level waste fraction for ultimate disposal off-site at the federal HLW repository, 6) dispose the low-activity fraction on-site in the Integrated Disposal Facility (IDF), and 7) close the waste management areas including tanks, ancillary equipment, soils, and facilities. The overall treatment and disposal scheme results in 97% of the radioactivity being disposed of off-site, as depicted in Fig. 1.

Hanford's tank waste is more chemically complex than tank wastes at other DOE sites, which complicates retrieval and treatment. The chemical complexity is due to the multiplicity of reprocessing technologies and chemical separations processes used at Hanford as the nation's weapons complex was born and evolved. By volume, most of the tank waste originated in the Bismuth Phosphate plutonium recovery process, a batch precipitation-based process that was used from 1944 through 1956. The REDOX process, an early solvent extraction reprocessing technique, was used from 1952 to 1967, and the PUREX process was used from 1956 to 1989 when reprocessing operations at Hanford ceased. Additional separations processes were used to recover uranium from Bismuth Phosphate wastes as well as to recover cesium and strontium in order to reduce the decay heat load on tanks and make those isotopes available for beneficial use.

At the present time, the 149 SSTs contain approximately 114,000 m^3 (30 million gallons) and just under 3.66 EBq (99 million curies) of radioactive isotopes (including daughter products). The 28 DSTs contain approximately 95,000 m^3 (25 million gallons) and 3.5 EBq (95 million curies) of radioactive isotopes (including daughter products).

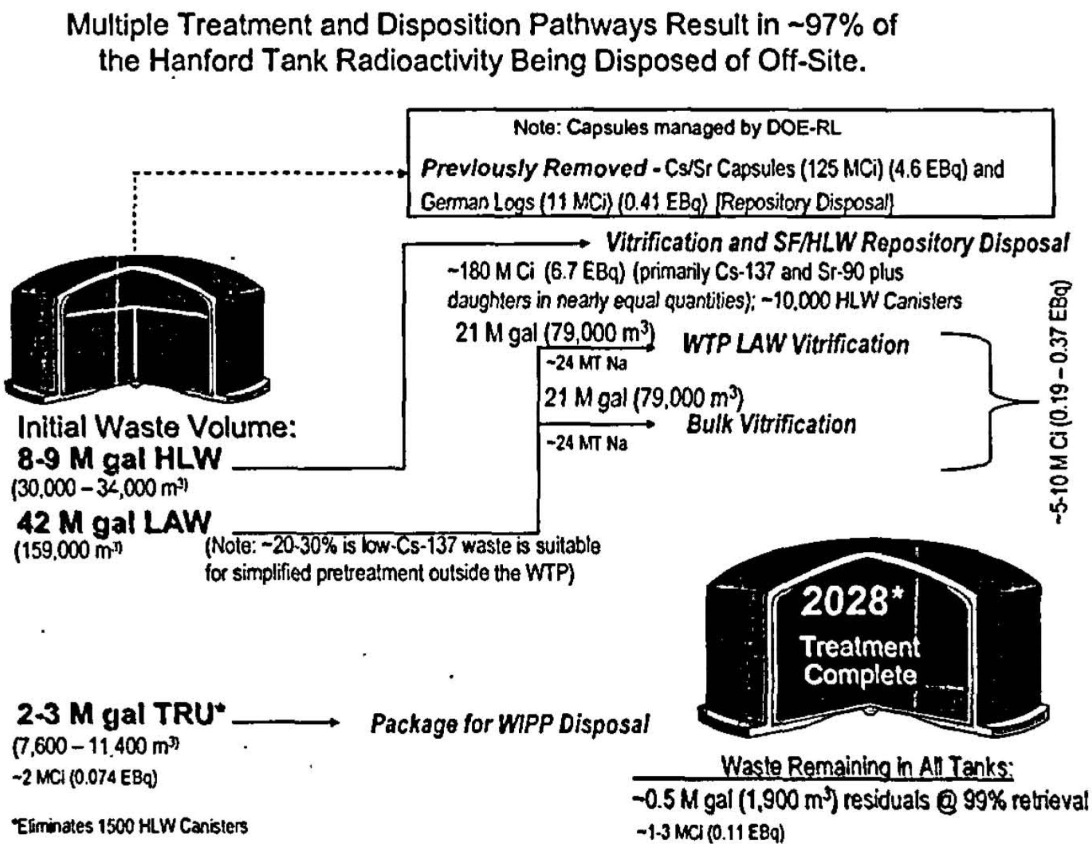

Fig. 1. General treatment and disposition scheme for Hanford tank wastes

Hanford's tank waste is also more dilute (from a radioactive perspective) than tank wastes at other DOE weapon's sites. This is primarily due to two factors. The first is that the Bismuth Phosphate process created approximately 50 times as much waste per ton of plutonium recovered as the PUREX process; PUREX having been used at Savannah River, West Valley, and Idaho. The second factor is that over 40% of the fission product radioactivity due to Cs-137 and Sr-90 was chemically removed from the tanks in the 1960s and 70s and placed into approximately

1900 cesium and strontium capsules that are now stored in the Waste Encapsulation and Storage Facility (WESF) pending final disposal.

As noted in Figure 1, the wastes are treated to form a HLW feed stream and a low-activity waste (LAW) feed stream. The HLW consists primarily of metal sludge that contains the low solubility radionuclides (e.g., alpha-emitting transuranic isotopes and Sr-90) as well as soluble Cs-137 that was removed from LAW feed stream by ion exchange. A major objective with the HLW feed stream is to wash and/or selectively leach non-radioactive metals (e.g., aluminum and chrome) from the feed stream to reduce the number of HLW canisters ultimately produced. The HLW will contain nearly all of the fission product and alpha-emitting transuranic isotope activity currently in the tanks. The vitrified HLW will be disposed of off-site at the HLW repository as will the cesium and strontium capsules and the German logs (glass logs containing Hanford tank waste cesium and strontium that were produced for research purposes). The radioactivity in the vitrified HLW, capsules, and German logs account for approximately 96% of the Hanford tank waste radioactivity. When combined with waste in the 20 TRU tanks that we propose to dispose of at WIPP, the result is that 97% of the tank waste radioactivity will be disposed of off-site.

The LAW feed stream contains soluble chemical constituents such as sodium and potassium compounds as well as soluble radionuclides and non-radioactive chemicals washed or leached from the HLW feed stream. The principal soluble radionuclide, Cs-137, is largely removed from the LAW feed stream by ion exchange. Other soluble radionuclides, such as Tc-99 and I-129, are present in low concentrations that can be safely accommodated in the vitrified LAW and secondary waste in compliance with applicable environmental regulations. All radionuclides in the LAW will be within 10 CFR Part 61.55 Class C concentration limits.

REGULATORY, CONSULTATION, AND OVERSIGHT

The Hanford Federal Facility Agreement and Consent Order [2], commonly referred to as the Tri-Party Agreement or TPA, governs the overall cleanup of Hanford. The TPA signatories are DOE, Ecology, and the EPA. Ecology is the lead regulatory agency for tank farm cleanup activities.

The eighteen SST and DST tank farms are divided into RCRA waste management areas (WMAs) for RCRA closures. Those WMAs are located within four large CERCLA operable units (OUs) on the Central Plateau. Those OUs, which are managed by DOE-RL, include the cribs, trenches, canyon facilities, and a variety of other facilities. In addition, all groundwater on the Central Plateau is regulated under CERCLA. The result is that the tank farm-related closures will occur under RCRA but will ultimately be integrated into larger closure actions under CERCLA. Accordingly, we have developed our closure plans to obtain input from the EPA even though approval authority resides with Ecology.

Department of Energy – DOE typically self-regulates radioactive materials that it manages under its Atomic Energy Act of 1954 as amended (AEA) authority. This is the case for the tank wastes at Hanford. In certain cases, however, another Federal agency may have regulatory authority over radioactive materials (see EPA and NRC below).

Washington State Department of Ecology – Ecology is the lead TPA regulator for the Hanford tank farms, tank waste, and waste treatment plant (WTP) and is involved in virtually every activity associated with tank waste storage, retrieval, treatment, and on-site disposal as well as tank WMA and component closures under RCRA. Ecology must also delist vitrified HLW prior to off-site disposal at Yucca Mountain. Because Ecology's authority flows down from RCRA, Ecology does not have regulatory authority over the radioactive constituents in the waste but does have authority over the hazardous (dangerous) constituents in mixed waste.

Environmental Protection Agency – The EPA is also a signatory to the TPA and primarily focuses on CERCLA activities. The EPA also plays another role that is important to the Hanford tank farms albeit totally outside the TPA. That is the role of Federal regulator for the WIPP facility. The EPA is responsible for the WIPP Compliance Recertification Application (CRA) review and approval, a key first step in disposing of Hanford's TRU tank waste at WIPP. EPA also has a delisting role for vitrified HLW transported from Hanford to the HLW repository for disposal and has regulatory authority for any Polychlorinated Biphenyls (PCBs in the tank waste.

Nuclear Regulatory Commission – The NRC does not have regulatory authority over the Hanford tank wastes but is called upon by DOE to consult in three principal areas; (a) LAW treatment and disposal, (b) TPA Appendix H analyses, and (c) tank waste residue determinations as discussed below.

LAW is waste from which radionuclides have been removed to the maximum extent technically and economically practical, that when vitrified are within 10 CFR Part 61.55 Table 1 and Table 2 Class C concentrations, and that when disposed of will meet 10 CFR Part 61, Subpart C Performance Objectives. DOE typically consults with NRC on LAW determinations.

The TPA specifies that when wastes are retrieved to the maximum extent technically possible, no more than 30 ft^3 (0.85 m^3) can remain in the 200-series SSTs and no more than 360 ft^3 (10.2 m^3) can remain in the large 100-series SSTs. Retrieving to these volume levels represents an overall average of 99% waste retrieval. If for any given tank waste cannot be retrieved to these levels, then DOE must conduct technical feasibility, risk, and cost/benefit analyses as specified in TPA Appendix H and also request NRC consultation on the Appendix H analyses. Ecology and EPA will take that consultation into account in making the final decision of whether sufficient waste has been retrieved to determine that retrieval is complete. To date, DOE has only used Appendix H for one tank, C-106, due to a final residue volume that was slightly higher than 360 ft^3 (10.2 m^3).

Before tanks can be closed, DOE must make a determination that any waste residuals in the tank are mixed low-level waste, not HLW. The determination will be based on criteria such as discussed above for LAW, but in this case, applied to the stabilized residual wastes remaining in the tanks following retrieval. The process includes opportunity for public comment and includes consultation with the NRC. Unlike DOE-Savannah River and DOE-Idaho, ORP has not yet made a tank residual determination and, consequently, has not yet requested NRC consultation on this type of determination; however, it is anticipated that this will occur shortly.

State of New Mexico – Any waste that has ever been managed as HLW cannot be disposed of at WIPP unless a Class 3 Permit Modification Request (PMR) is submitted to the State by DOE and approved by the New Mexico Environment Department (NMED). The Class 3 PMR review and approval process is formal and provides opportunities for public involvement through a public comment process as well as through an adjudicatory hearing. It is anticipated that for tank-related TRU, the Class 3 PMR process will require one or more years to complete.

State of Nevada – Once treated by vitrification and delisted by Ecology and the EPA, the immobilized HLW must also be delisted by the State of Nevada prior to disposal at Yucca

Mountain. It is assumed that the information required for delisting would be similar to that provided to Ecology and the EPA for those two delisting decisions.

Defense Nuclear Facility Safety Board (DNFSB) – The DNFSB oversees DOE's tank waste related activities, conducts detailed evaluations, and makes recommendations that can have profound affects on the way that the RPP mission is carried out.

As can be seen through this brief overview, the regulatory processes to complete the retrieval, treatment, disposal, cleanup, and closure of the Hanford tank farms are complex and, in some cases, require yet-to-be-determined criteria and processes. Table 1 depicts the intertwined regulatory, consultation, and oversight roles and responsibilities for the Hanford tank farm cleanup.

Table 1. Hanford tank waste-related regulatory roles and responsibilities

	DOE	Ecology	EPA	NRC	NMED	Nevada	DNFSB
Tank Waste Storage	RCR	HCR					O
Tank Waste Retrieval	RCR	HCR					O
Waste Treatment Facilities (Permit)	RCR	HCR	T				O
Waste Treatment Facility (Operations)	RCR	HCR	T				O
LAW Determinations	RCR			C			O
Tank Residual Determinations	RCR			C			O
TRU Determinations	RCR		R				O
HLW Delisting		HCR					
Tank Farm Cleanup (soils/equipment)	RCR	HCR					O
Tank/Components Closures	RCR	HCR					O
WMA Closures	RCR	HCR					O
OU/Groundwater Closures			R				
LAW (Mixed Waste) Disposal Permit	RCR	HCR					O
TRU Disposal			R		HCR		O
HLW Disposal			R			HCR	O
NEPA	R	CA					
Nuclear Safety	R						O
OSHA	R						

Key: C – Consultation; CA – Cooperating Agency; O – Oversight; R – Regulate; RCR – Radioactive Constituents Regulatory Authority; HCR – Hazardous Constituents Regulatory Authority; T – TSCA (minor PCB constituents in some tank wastes)

WASTE RETRIEVAL

I will highlight waste retrieval and supplemental treatment. Zack Smith addresses these areas in more detail in his paper, Retrieval and Treatment of Hanford Tank Wastes-6203 [3]. Our SST waste retrieval activities have been marked by both progress and new challenges. The first tank to be retrieved, C-106, was a sludge tank. We used a combination of modified sluicing and oxalic acid washes to breakup and remove the waste that fell just short of the TPA retrieval goal of leaving less than 360 ft^3 of waste residuals. This led to consultation with the NRC using the

TPA Appendix H process. Our retrieval efforts with the smaller C-200 series tanks using vacuum retrieval were very successful, each resulting in less residual waste than the 30 ft^3 stipulated in the TPA.

We have completed waste retrieval from three tanks and are conducting retrieval operations on an additional three tanks. While most waste retrievals have gone about as expected, we did encounter difficulty in removing a hard layer of waste at the bottom of tank S-112, i.e., the heel was resistant to the modified sluicing system used for the salt cake. A remote high-pressure water lance (Mantis) uncovered approximately 30% of the tank floor steel plate in a relatively short (10 hours) but highly successful test. We will soon deploy another remote retrieval technology called the mobile retrieval system (MRS). The MRS is a robotic in-tank retrieval device that includes an in-tank vehicle and an articulated mast. The in-tank vehicle is equipped with a plow blade to break up and push waste to collection locations. The articulated mast has a vacuum head, vacuum pump, slurry vessel, and slurry transfer pump to retrieve the waste. The waste is vacuumed into the slurry vessel using small volumes of water as a carrier fluid. The slurry pump then pumps the waste from the slurry tank to a DST. The MRS has been successfully demonstrated in Hanford's Cold Test Facility and is primarily planned for use on tanks that are assumed leakers where minimal water can be used during retrieval. The first actual deployment is planned for Tank C-101 next year.

The waste retrieval effort has been hampered somewhat by current requirements for all tank farm workers to wear fresh air masks while conducting retrieval operations. This is a safety precaution to protect against possibly noxious chemical vapors emitting from some tanks. Work is underway to better understand the nature of these vapors and to determine the safest and most effective ways to mitigate any potential impacts to workers.

A major factor influencing the rate of SST waste retrieval is the availability of space in the DSTs to accept SST wastes. We expect the DST space available for SST retrievals to be used in the 2008 to 2010 time frame depending upon the rate of SST retrievals and how we apportion the available DST space. Relative to apportionment, the DSTs can serve several functions such as receiving retrieved wastes, blending wastes to optimize the WTP feed, performing certain head-end treatment operations (e.g., precipitation) to improve WTP throughput. The total DST space is 31.4 million gallons. The DSTs currently contain ~25 million gallons of waste. Of the 6.4 million gallons of free space, 2 million gallons are dedicated to operational use (SST retrievals and ongoing tank farm operations), 1.7 million gallons are dedicated to restricted use (tanks with wastes that cannot be mixed for operational or safety reasons), and 1.2 million gallons are for emergency use resulting in just over 1.5 million gallons of available space. Various options are available for generating more space, e.g., combining similar wastes that are currently segregated, or concentrating wastes through evaporation. It is important to plan the DST space utilization carefully, for example, filling all available DST space with SST waste could negatively impact our ability to meet WTP needs and/or deploy supplemental treatment approaches prior to the WTP coming on line.

WASTE TREATMENT

Design and construction of the WTP has progressed such that design is now 60% complete and construction 30% complete. This mammoth project consists of three large processing facilities, an analytical laboratory, and the balance of the plant that provides the infrastructure. About a year ago, new geological data suggested that the seismic design criteria were not conservative enough. Since then we have been reviewing thousands of calculations to determine whether the safety factors used in the design provide an adequate margin to cover the higher seismic loadings or whether redesign of some building areas or equipment is needed. Stephen Reidel addresses the seismic aspects of the WTP design in his paper, Site-Specific Seismic Response Model for the Waste Treatment Plant, Hanford, Washington-6321 [4]. Meanwhile, construction on the two plants (Pretreatment and High-Level Waste Vitrification) affected by the new seismic criteria has been slowed. Construction on the other facilities not affected is progressing. The paper by Bill Hamel, The Waste Treatment Plant, A Work in Progress-352 [5] provides more detail on WTP design and construction.

We have looked closely at the waste in the tanks and aligned our treatment and disposal approaches with the waste characteristics. For example, rather than sending 100% of the metal sludges to HLW vitrification without regard to radioactive content, we determined via operations records that approximately 20 tanks containing 7,600 – 11,400 m^3 (2-3 million gallons) of metal sludges did not originate during the actual reprocessing of spent nuclear fuel and are, therefore, not HLW by origin. Those wastes also have low fission product concentrations. If we are able to reroute those wastes through a non-HLW treatment and disposal pathway (e.g., TRU waste disposal off site at WIPP) we can reduce HLW melter operations by three or more years.

We are also developing and testing bulk vitrification as a supplemental technology for treating the massive volume of LAW. Bulk vitrification in combination with the WTP LAW vitrification facility can process LAW at the rates required to keep pace with the HLW melters whose capacity has been increased to 6 metric tons of glass per day, i.e., approximately 60 metric tons per day vitrification of LAW. Testing of bulk vitrification has progressed with the latest full-scale melts with simulated waste showing that the design changes made in the melt container have corrected earlier problems with melt containment. Bulk vitrification continues to look promising and the next step is to construct and operate the Demonstration Bulk Vitrification System that will immobilize up to 1,100 m^3 (300,000 gallons) of tank S-109 waste. Zack Smith's paper provides additional information on supplemental treatment [3].

HLW DISPOSAL

It is estimated that approximately 10,000 HLW canisters, 0.61m diameter x 4.5m tall (2ft. x 15ft.), will be produced and disposed off-site in the federal geologic repository. The Hanford Canister Storage Building will be modified to store the initial 880 HLW canisters produced in the WTP. Additional canister storage will be built if/when needed based upon when initial shipments commence to the Yucca Mountain repository and the shipment rates thereafter.

TRU DISPOSAL

Eight tanks containing 280,000 gallons of waste from Hanford's 224B and T Buildings are the first TRU tank wastes being considered for treatment and disposal at the WIPP. The fission product content of this waste is very low, allowing these packaged waste containers to be contact-handled. An additional five tanks are anticipated to also contain contact-handled TRU waste while the remaining seven tanks being considered are more likely to contain TRU waste that must be handled remotely. No actions to retrieve or package this waste as TRU waste will be taken until DOE has assurance that the waste can be disposed in WIPP. That assurance will be obtained through the WIPP Class 3 PMR process which requires NMED approval.

The plan is to package the contact-handled TRU waste in standard waste boxes that have a 0.9 m^3 capacity. Approximately 1,900 boxes would be required for all contact-handled TRU tank waste. The packaging plan for the remote-handled waste is to place it in 0.2 m^3 (55-gallon) drums and ship the waste to WIPP in RH-72B casks that hold three drums each. Approximately 10,000 drums are estimated to be required for all remote-handled TRU tank waste. For some TRU tanks a waste determination may be required due to some commingling. In all cases, since the waste has been managed as HLW while stored in the tank farms, a WIPP Class 3 Permit Modification Request must be approved by NMED prior to disposing of the waste at WIPP. John Kristofzski's paper, Hanford Site River Protection Project Transuranic Tank Waste Identification and Planning for Retrieval, Treatment and Eventual Disposal at WIPP-6325 [6], provides additional details regarding TRU tank waste disposal.

LAW DISPOSAL

The LAW from both the WTP LAW vitrification Plant and the Supplemental Treatment Plant will be disposed in the IDF, which is currently under construction. The IDF is a near-surface disposal facility consisting of two cells, one for low-level mixed waste (including LAW) and the other for non-RCRA low-level waste. The IDF is being constructed in phases and will eventually have a capacity of 900,000 m^3. Approximately 164,000 m^3 will be available in Phase 1.

The IDF is being constructed to RCRA standards with liners and leachate collection systems. It is estimated that the actual vitrified waste volume of LAW to be disposed of in the IDF will be 150,000 m^3 (glass volume only). When the external volume of the waste containers is included, the overall volume to be disposed of is approximately 300,000 m^3. The IDF is also intended to accept waste from other non-tank farm Hanford sources as well as off-site low-level and low-level mixed waste.

At the completion of operations, the IDF will be closed using a multi-component surface barrier several meters thick to inhibit intrusion by precipitation, plants, animals, and humans.

WASTE DETERMINATIONS

Hanford tanks contain waste from a number of sources and, as a safety precaution, all have been managed as HLW. Now that waste is being retrieved for treatment and disposal, it must be properly classified before it can be disposed of. HLW is defined primarily by its source; that is,

> "the highly radioactive waste material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid materials derived from such liquid waste that contains fission products in sufficient concentrations."

The bulk of the material in the Hanford tanks consists of chemicals and water. DOE's plan is to remove most of the radionuclides from this fraction of the waste so that it can be disposed of as LAW. There will be some residual waste remaining in the tanks after retrieval has been completed to the maximum extent technically and economically practical. DOE Order 435.1 [7] includes a process for determining certain waste from reprocessing spent nuclear fuel to be "incidental to reprocessing" and not HLW. In 1996-97, DOE provided its plan for treating and disposing of the LAW to the NRC for consultation. Based upon the NRC's comments, DOE concluded that this waste was incidental to reprocessing and not HLW. The 1996 technical basis document is being updated to reflect the greater maturity of the treatment and disposal plan and will be forwarded to the NRC in accordance with the NRC's request during the 1996-97 consultation.

Waste determinations will also be needed in the near future for tank waste residuals remaining after TPA compliant waste retrieval activities. DOE will use the criteria in DOE M 435.1-1 to determine whether the residuals, once stabilized with grout, are low-level mixed waste suitable for disposal in place (i.e., in the tanks). DOE will request NRC consultation and public comment on its residual draft determinations prior to making a final decision. In addition, some TRU tank wastes that have experienced waste commingling may require waste determinations.

TANK CLOSURES

The RPP will not be complete until all of the tanks are closed. It would be desirable to proceed with tank closure as soon as the waste has been retrieved from the tank, thereby reducing the potential for water to infiltrate the waste and to reduce tank farm worker safety concerns. While the general closure process is outlined in the TPA, moving forward with closures of stabilized tanks and waste management areas cannot take place until the Tank Closure Environmental Impact Statement and its Record of Decision are issued.

CONCLUSION

The RPP federal and contractor team is dedicated to carrying out the RPP mission to treat and dispose of the waste and to close the tanks in a manner that is protective of human health and the environment. As with all large, long-term projects that employ first of a kind technology, we continue to be challenged to control costs, maintain schedule, and stay the course as we deal with each new challenge. As we do, our objective is always to work safely, to provide facilities that will do the job they are intended to do, and to provide TPA compliant cleanup results. Our open approach to working with our regulators and stakeholders is discussed in a paper by Kim Ballinger, Importance of Regulatory and Stakeholder Involvement to Successful Completion of the Project-6478 [8].

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