



FINAL MEETING SUMMARY

**HANFORD ADVISORY BOARD
TANK WASTE COMMITTEE**

October 5, 2016

Richland, WA

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This is only a summary of issues and actions discussed at this meeting. It may not represent the fullness of represented ideas or opinions, and it should not be used as a substitute for actual public involvement or public comment on any particular topic unless specifically identified as such.

Hanford Site Tour (Joint w/HSEP)

Karthik Subramanian, Washington River Protection Solutions (WRPS) provided Tank Waste Committee (TWC) and Health, Safety, and Environmental Protection (HSEP) members a tour of the AP Tank Farm and vapor monitoring and detection system technologies. Committee members received a brief presentation of the overview of technologies at the AP Tank Farm Site, toured the mobile lab and the control room. The tour was a follow-up to Karthik's presentation to TWC in August 2016 on vapor monitoring and detection system technologies.

Opening

Melanie Myers-Magnuson, TWC vice chair, welcomed committee members and introductions were made. Committee members approved the August 2016 TWC meeting summary.

Announcements

Melanie reminded committee members that nominations are open for Hanford Advisory Board (HAB or Board) chair, vice chair, and the national liaison position. The Board will make their selection for Board vice chair and national liaison and their recommendation for Board chair to the Tri-Party Agreement (TPA) agencies at the December 2016 Board meeting. New Board leadership and the national liaison position will take effect at the March 2017 Board meeting.

Tank Farms Update

Agency Presentation

Chris Kemp and Dawn MacDonald, U.S Department of Energy – Office of River Protection (DOE-ORP), provided TWC members with an update on the Hanford Tank Farms. Key points from Chris's presentation¹ include:

- 2.7 million gallons of tank waste from sixteen tanks has been retrieved at the C and S Tank Farms.
- Tank waste retrieval began in 2003 and DOE-ORP has nearly completed retrieval at C Farm. (Only C-105 remains to be retrieved).
- There are 30,000 gallons of waste that remain in Tank C-105. Enhanced reached sluicercs are a tool that is being utilized to retrieve remaining waste.
- No tanks are currently under review by regulatory agencies.
- DOE-ORP is in the process of installing retrieval systems for Tanks AX-102 and AX-104.

Attachment 1: Hanford Tank Farms Update (DOE-ORP, 10/5/16)

- After the October 12 court decision, DOE-ORP is hoping to start the portable exhauster and remove sixteen pieces of legacy equipment.
- DOE-ORP will adapt the lessons learned from tank waste retrieval at C Farm when retrieving the next set of tanks from the A and AX Farm.
 - Tanks at AX Farm are the last single-shell tanks (SSTs) constructed and have a curved-side bottom. Tanks AX-102 and AX-104 will be retrieved first, followed by tanks AX-101 and AX-103.
- The Effluent Treatment Facility (ETF) resumed operations earlier in 2016. Some waste from the Tank Farms is sent to the 242-A Evaporator. The condensate from the evaporator is sent to the Liquid Effluent Retention Facility (LERF). The waste water is sent to ETF, where waste is treated in one of two methods, depending on its content, through a two-stream approach.
 - The first stream line tests liquids to the drinking-water standard and is then sent to tanks located outside the ETF and tested for cleanliness. If the liquids pass the test, it is shipped to the State Approved Land Disposal Site (SALDS).
 - For fluids that do not pass the cleanliness test, it is sent to a second stream line that continues to process the waste until it can be converted into a dry powder state. The powder is placed into drums and disposed of at the Environmental Restoration Disposal Facility (ERDF).
 - The Treated Effluent Disposal Facility (TEDF) is another disposal area near the ETF site. The 200-West Area pumping stations transfer waste to TEDF, where two filtering basins treat contaminated water. Over four million gallons of waste has been treated in 2016. DOE-ORP hopes to treat more waste in 2017 by upgrading the systems and repairing minor issues.
- Approximately 600,000 gallons of waste has been retrieved from Tank AY-102 (96%). Waste retrieval was paused to allow for the installation of four extended reach sluicers. Retrieval is expected to resume in November. The deadline to complete retrieval is March 4, 2017.
- Crews will install a high-definition camera inside Tank AY-102 to perform observations after retrieval is complete. DOE-ORP noted that it is important to gather lessons learned from Tank AY-102 and apply it to other tanks.

Committee Questions and Responses²

Note: This section reflects individual questions, comments, and agency responses, as well as a synthesis where there were similar questions or comments.

Q. Is DOE-ORP planning to cut more tanks at the top?

R. [DOE-ORP] Tanks AX-104 and AX-102 do not need to be cut at the top. DOE-ORP is looking at mechanical retrieval systems.

Q. Tank C-105 has a known leaking cascade line. Is water or supernate used to retrieve the waste?

R. [DOE-ORP] High pressure water will be used to retrieve the waste. Supernate is used with sluicing tools.

Q. Will DOE-ORP meet the Consent Decree milestones for the 242-A Evaporator? Are there other cascading effects that effect the overall mission from not running the evaporator?

R. [DOE-ORP] The plan is to run the evaporator in January 2017. A ruling from the Oct. 12 court hearing will help to determine if we are on schedule to meet those milestones.

Q. How much waste from ETF is sent to ERDF?

R. 130 drums have been processed so far.

R. [DOE-ORP] The type of waste treated impacts the number of drums. Some waste will require more drums than other waste types.

Q. Has DOE-ORP thought about how waste will be retrieved from the annular space of AY-102, including the refractory drain?

R. [DOE-ORP] DOE-ORP has not visually detected sludge in the annular space. It is not confirmed but DOE-ORP is considering using supernate for retrieval.

Q. What does DOE-ORP mean when they say there are zero tanks under review?

R. [DOE-ORP] After retrieval in the field is complete, DOE-ORP completes an analysis using a FARO laser and scans pictures to determine what the final volume of waste is. According to the Consent Decree, if DOE-ORP uses two approved retrieval technologies and a third technology is not practical or feasible, DOE-ORP can request to receive an exemption from Ecology to forgo the third retrieval technology. A complete retrieval requires certification and that process can take time.

Q. DOE and the regulators have approved and certified that DOE-ORP has successfully retrieved sixteen tanks to date?

R. [DOE-ORP] DOE can confirm that sixteen tanks have been successfully retrieved.

Q. If the Washington State Department of Ecology (Ecology) tells DOE-ORP that a third technology needs to be used to retrieve waste, will DOE-ORP use a Waste Incidental to Reprocessing (WIR) process?

R. [DOE-ORP] DOE-ORP will use a WIR process. DOE-ORP has not disagreed with Ecology on any request to forgo using a third technology for retrieval.

Q. When is the WIR process implemented? Is it used as a process between regulators who disagree?

R. [Ecology] WIR occurs during the review process for the residuals in a tank and helps to explain what impacts exist. The WIR process is a DOE process to have internal approval to dispose of the tank residuals.

Q. It seems like there is an assumption left in place when a WIR is implemented. What happens to the material underneath a tank?

R. [Ecology] WIR is a complicated regulatory process. A closure plan will suggest what Ecology thinks DOE-ORP should do about the tanks and the soil underneath them. It is a convergence of contamination and a mitigation plan. A closure plan will be included in the Performance Assessment (PA).

Q. The regulators have the Hanford Site Waste Management Area C (WMA-C) PA. It would be nice if DOE-ORP could disseminate the information in the PA to stakeholders before it is released. Is that a possibility?

R. [DOE-ORP] Ecology should receive the four volumes of the PA the week of October 10, 2016. The four volumes detail radionuclides in the tank residuals, chemicals in the tank residuals, past leaks, and the baseline risk assessment. DOE-ORP needs to apply for a WIR, which is reviewed by DOE Headquarters General Counsel. When the application is approved, it is submitted to the Nuclear Regulatory Commission (NRC). The NRC has 60 days to review and 30 days to provide a response. The NRC will then release the PA with a public review notice. It is possible that stakeholders will be able to review the PA around February 2017. DOE-ORP intends to provide an outline of the public review process to the public on the WMA-C PA in November or December 2017.

C. [Ecology] Ecology is determining how the PA will be distributed. Ecology is expecting the PA to document the result of the tank retrieval.

Q. Will the modeling results be available to share with the HAB in November or December?

R. [DOE-ORP] The modeling results will not be available until DOE Headquarters General Counsel approves the WIR. The public review process opens when the PA is in the hands of the NRC.

C. The modeling discussions were never finished. This process used to be open and inclusive; now it is closed and exclusive. Why has it changed? Will the public not be able to comment after the NRC's thirty-day comment period?

R. [DOE-ORP] DOE-ORP is following Section 3116 of the National Defense Authorization Act (NDAA). The public review process will be available on the PA when the NRC review process begins.

C. Section 3116 does not apply here.

R. [DOE-ORP] DOE-ORP is attempting to align the Order 435.1 process as close as possible to the 3116 process.

C. The HAB has been involved in this process with the agencies, working side by side, so that the PA would have a broad consensus. Now the HAB has been excluded from the process.

R. [DOE-ORP] DOE-ORP understands the importance of the PA to the HAB and the Oregon Department of Energy (ODOE). An open discussion on this topic will occur when the timing is right. The PA is still in the early stages. DOE-ORP can provide a summary of the modeling approaches used to address some of the concerns ODOE had.

C. It is late in the process. There is waste left in tanks that are no longer active and waste has leaked into the soil. The closure process for radiological waste is not well defined. Is additional waste a nuclear waste policy or are other actions necessary? These processes and decisions need to be transparent and have multiple groups working on them to come to a consensus-based decision that everyone supports.

R. [Ecology] Part of this process includes the WIR determination and the initial appendix in the PA (Appendix I). There will be lots of opportunities to submit comments after the WIR process.

Q. [Ecology] There have been meetings and workshops held where both Ecology and stakeholders were not included in the final draft of the PA. This time, Ecology is receiving the PA and holding workshops so DOE-ORP receives our input. What is the TWC looking for in the PA? DOE-ORP said they would provide the PA to the HAB and will have an opportunity to comment on it before Ecology finishes reviewing it.

R. The TWC needs to understand the entire process and what the drivers are. It would be helpful to have a visual roadmap for everything on the Site. It would allow the Board to understand where there are opportunities to provide input and where the regulatory agencies have opportunities to provide input.

R. [DOE-ORP] DOE-ORP is working on creating road maps for closure processes to share with the HAB. There is a published figure that fleshes out some of those details in Appendix I of the PA.

C. The Board needs to understand the streamlined process to closure. The PA is complicated and not every Board member has the time or technical expertise to fully comprehend the PA.

C. In 1948, DOE observed that plutonium was moving through the soil and wrote a report on it. That same lesson for other materials occurred every decade since the 1940s. None of the models used in the last 30 years incorporate those observations into the models. It is concerning that the HAB was excluded from the modeling approach process. Paul Dixon, Los Alamos National Laboratory, made a commitment to share the results of the Advanced Simulation Capability for Environmental Management (ASCEM). That commitment was not met.

C. There will be new leadership after the general election and it is important for the HAB to remain clear that we support collaborative processes as much as possible because it brings benefits to meeting the cleanup goals.

The TWC thanked Chris, Jeff, and Jim for their presentations and perspectives. Chris reiterated that he plans to give a synopsis of the WMA-C PA process to WMA-C stakeholders in November or December. Chris noted that it might be helpful to present that information to TWC before the NRC releases the PA in January or February.

WTP Building 87 Permanent Power Update

Agency Presentation

Brad Eccleston, DOE-ORP, provided TWC members with a brief overview of power supply to Building 87, the first facility in the Waste Treatment Plant (WTP) complex to have permanent power. Key points from Brad's presentation³ include:

- Building 87 switchgear components went through months of testing and verification before they were energized in September
- Supplying power to Building 87 is a fundamental first step in powering a high-energy system at WTP
 - Building 87 will eventually provide power to Building 91, which will power most of the other facilities at WTP
 - The process facilities at WTP will need power, water, compressed air, and eventually steam

Attachment 2: Transcribed flipchart notes

- Powering Building 87 without significant setbacks sets a high bar for expectations when powering other facilities at WTP
- A significant increase in the pace of construction, startup, and commissioning activities is expected to occur in the next few years at WTP
- A formal document of lessons learned will be released soon
- The next step is to construct the non-radioactive drain system for disposition of water

Agency Perspective

Dan McDonald, Ecology, reinforced the complexity and amount of testing that WTP will need to operate efficiently and correctly as DOE-ORP transitions stages from theory to testing and operations. DOE-ORP needs to conduct the same operations for each system that individually feeds into the whole WTP facility.

Committee Questions and Responses²

Note: This section reflects individual questions, comments, and agency responses, as well as a synthesis where there were similar questions or comments.

Q. Are there old services in the facilities that DOE-ORP handles?

R. [DOE-ORP] There are some legacy construction items that will be disposed of.

Q. Will one line from Building 87 be dedicated to powering Building 91?

R. [DOE-ORP] Building 87 has four main feeds and seventy-two individual cables. Building 91 is fed from four separate lines. The system is built on redundancy to avoid single point failures.

Q. Is the cathodic protection area running?

R. [DOE-ORP] A considerable amount of work remains to be done because there were disagreements between DOE-ORP and the contractor. There were problems with the original design and crews found piping and corrosion. DOE-ORP is aggressively upgrading the cathodic protection system.

R. [DOE-ORP] The final design is complete and a supplemental system will be installed much closer to the pipes. Construction is anticipated to start mid-October. The supplemental system will come offline so the area can be tested.

Q. What is the source of water for WTP?

R. [DOE-ORP] The water comes from the water treatment facility in the 200 Area. The intent is to use potable and demineralized water from the Hanford Site to feed into the water treatment facility, which feeds into WTP.

Attachment 2: Transcribed flipchart notes

C. Using Defense water rights is a good thing.

C. [Ecology] Water systems are no less complicated than electricity. All of this will need to undergo a “conduct of operations” approach.

R. [DOE-ORP] Electricity is a simpler system. Fluid systems have rotating machinery. However, electricity does have a greater risk than fluids.

C. Some of these services are dependent on and independent of each other. There is a huge need to ensure that procedures and training are performed correctly.

Q. There could be an entire failure in a redundant route system. Is there a reverse route?

R. [DOE-ORP] Redundant power sources are not intentionally routed in independent directions. The facility has emergency generators.

Q. Will a backup generator be used for Direct Feed Low-Activity Waste (DFLAW)?

R. [DOE-ORP] The High-Level Waste and Pre-Treatment Facilities need emergency turbine generators. WTP will not have an emergency turbine generator. WTP will have standby diesel generators to supply energy to DFLAW. It can provide power to either side and pick up the entire load of WTP, which is well above the required load to operate DFLAW.

Critical Infrastructure Issue Framing

Melanie Myers-Magnuson, TWC vice-chair, introduced committee discussion regarding critical infrastructure on the Hanford Site. She noted that the discussion will help TWC frame their interests and agencies to frame future presentations for critical infrastructure needs on Site.

Committee Questions and Responses²

Note: This section reflects individual questions, comments, and agency responses, as well as a synthesis where there were similar questions or comments.

C. [Ecology] The topic of infrastructure is very broad. It is advised that TWC members talk about infrastructure as it relates to reliability, operability, maintainability, and availability. Infrastructure can be broken down into two broad categories; system infrastructure (Tank Farms, WTP, etc.) and logistical infrastructure (roads, lights, water, etc.). By keeping ideas about infrastructure separate, it will help focus on the lack of critical infrastructure in some places. Think through the process for when infrastructure breaks. Will it need to be repaired or replaced? What is the mean time to repair or replace? Knowing the right process and protocols will help to support efforts by regulating agencies and DOE-ORP. Try to evaluate situations where there may be cascading effects if a component of infrastructure fails. Identify the single point failures and critical vulnerabilities that could cause the system at large to fail.

Attachment 2: Transcribed flipchart notes

R. It can be difficult for Board members to have that level of detail in mind. The HAB, as a policy board, may not fully comprehend the inner workings of infrastructure in a facility.

C. Focusing on reliability, operability, maintainability, and availability can apply at a conceptual and policy level.

C. There have been major infrastructure issues at Tank Farms in the last six years. The HSEP committee has reviewed system failures that harm the environment. It is important to have discussions about ‘past the point of failure’.

R. [Ecology] Run to failure is not necessarily the wrong answer. It can be a valid option, based on the mean time protocols to repair or replace infrastructure.

Q. At the River and Plateau Committee meeting, Tom Rogers from the Washington State Department of Health (DOH) discussed the need for electricity to perform different kinds of monitoring. Has Ecology thought about implementing physical oversight, such as air monitoring?

R. [Ecology] WTP is currently regulated under a construction-style permit. As the facility gets closer to completion, it will require an operating permit. That kind of physical oversight needs to be part of the operating permit.

C. Maybe the melter is the most important piece of infrastructure to protect on Site. TWC or the Board need to discuss what kind of support system should exist if the melter failed or if a chain reaction occurred that impacted melter operations.

Q. Does DOE-ORP have presentations or research on some of the single point failures of infrastructure? Is there anything specific that the TWC could be briefed on?

R. [DOE-ORP] The 242-A Evaporator is the single point failure right now.

C. The pumps and hoses are single point failures in the Tank Farms.

C. The presentation could focus on single point failures in infrastructure as it relates to the budget. That would provide an opportunity to create advice about priority infrastructure.

C. Traditionally large projects categorize infrastructure specific to operations. Not thinking through problems about the necessary infrastructure has created problems in the past and will likely create problems in the future. One example is at WIPP where a conscious choice was made to not use water to wash the machines in the mine and then they experienced a decline in maintenance that resulted in a fire.

C. There have been problems in the past when DOE-ORP does not give a clear statement about the expectations for TWC products. When the topic of critical infrastructure was brought forth, TWC asked DOE-ORP for a clear purpose of the product. I’m not sure if the TWC received that direction.

R. This topic is more about consequence and vulnerability of infrastructure on the Hanford Site. The consequence of a tank failing is far beyond the cost of having a tank system fail. What is TWC tasked with looking at? Do they want TWC to discuss external infrastructure that relates to

internal tank infrastructure? For example, the tunnels at the Plutonium Uranium Extraction Plant (PUREX) could collapse and lead to a catastrophic failure.

R. [Ecology] It is important that TWC define what they mean by 'infrastructure' and lay out topics of interest for further knowledge. Once 'infrastructure' is defined, the scope can be created.

C. The amount of time that is necessary to repair or replace critical infrastructure is very important. There needs to be assurance that appropriate infrastructure is readily available, in order to complete the DOE-ORP Mission.

C. The idea of consequence is important. TWC should ask DOE-ORP for a briefing on the safety basis approach at tank farms and other places. Accident scenarios set a priority of internal and external infrastructures. What are the accident scenarios for safety basis? Stacy Charboneau said her top priority was greater public access. TWC should challenge DOE on the implications of public access.

R. [DOE-ORP] WRPS creates a prioritized list of their infrastructure needs and upgrades. The report has justification for priority infrastructure needs. Bobby Nelson, WRPS, sent the report to DOE-ORP. That could be a good place for TWC to start.

C. A presentation of that report would be helpful for TWC.

C. The transitions of contractors can have consequences because knowledge is lost each time. An example is the transition of the 324 Building cleanup from Washington Closure Hanford to CH2M Hill Plateau Remediation Company and the rewrite on the path forward. These scenarios beg questions like: who is the keeper of information? How important is it to retain that knowledge? Where is the information of historical institutional knowledge stored and how does that information get passed on correctly as contractors change throughout the mission?

C. There are a few components of continuity in my experience working as a federal government employee and as a contractor. The HAB is a great resource of institutional knowledge and the TPA should be reminded of components of the mission that should not change.

C. Each facility has a safety basis status. It would be timely to receive a presentation from DOE-ORP about the change in safety basis regarding waste transfers and waste flows. TWC needs to be educated on this information to have further discussions about critical infrastructure.

Committee members requested to receive a presentation on the critical infrastructure report from WRPS in November 2016. Additional presentations or presenters from contractors and DOE-ORP may be requested in the future to provide information and context on the topic of critical infrastructure, as it relates to TWC.

Committee Business

TWC 3-Month Work Plan²⁴

The TWC will plan to hold a committee meeting in November 2016 that will tentatively include the following topics:

- WRPS report on critical infrastructure
- Tank Integrity Program update
- Regulatory streamlining processes, with a focus on DFLAW permitting processes
- LAWPS Notice of Intent, permit modification and public process

In January 2017, TWC will tentatively meet to discuss tank retrieval including the WMA-C performance assessment, regulatory streamlining processes, and an update on the WTP technical issues resolution.

In February 2017, TWC will tentatively meet to receive an update on the status of Tank AY-102, the 242-A Evaporator, and cathodic protection at WTP.

Attachment 2: Transcribed flipchart notes

Attachment 4: TWC 3-Month Work Plan

Attachments

Attachment 1: Hanford Tank Farms Update (DOE-ORP, 10/5/16)

Attachment 2: Transcribed Flipchart Notes

Attachment 3: WTP Building 87 Permanent Power (DOE-ORP, 10/5/16)

Attachment 4: TWC 3-Month Work Plan

Attendees

Board members and alternates:

David Bernhard	Dirk Dunning (phone)	Phillip Lemley
Don Bouchey	Steve Hudson	Melanie Myers-Magnuson
Amoret Bunn	Alex Klementiev	Vince Panesko
Shelley Cimon	Pam Larsen	Jean Vanni

Others:

Dieter Bohrmann, North Wind/DOE-ORP	Jim Alzheimer, Ecology	Jeff Nelson, BNI
Brad Eccleston, DOE-ORP	Randy Bradbury, Ecology	Samantha Herman, EnviroIssues
Wade Hader, DOE-ORP	Jeff Lyon, Ecology	Ryan Orth, EnviroIssues
Chris Kemp, DOE-ORP	Dan McDonald, Ecology	Shintaro Ito, PNNL
Dawn McDonald, DOE-ORP	Ginger Wireman, Ecology	Sebastian Grinot, WRPS
Jeff Rambo, DOE-ORP	Tom Rogers, DOH	Karthik Subramanian, WRPS
Jason Young, DOE-ORP		