

**FINAL MEETING SUMMARY**

**HANFORD ADVISORY BOARD  
TANK WASTE COMMITTEE**

*October 8, 2014*

*Richland, WA*

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*This is only a summary of issues and actions in this meeting. It may not represent the fullness of ideas discussed or opinions given, 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.*

**Opening**

Bob Suyama, Tank Waste Committee (TWC) vice chair, welcomed the committee and introductions were made. The committee adopted the May 2014 meeting summary.

*Announcements*

Bob reminded committee members that the Hanford Advisory Board (HAB or Board) will celebrate its 20-year anniversary during the week of the November 2014 Board meeting. Bob requested those interested in helping or donating get in touch with a member of the planning group.

**Safety Culture Improvement Efforts (joint w/ HSEP)**

*Introduction*

Liz Mattson provided the committee with an introduction to the Hanford Site safety culture topic, noting that the purpose of the day’s update and discussion was to better frame the Board’s role in future safety culture conversations. Members from the HAB’s Health, Safety, and Environmental Protection Committee (HSEP) were in attendance.

*Agency Presentation\**

Steve Pfaff, U.S. Department of Energy – Office of River Protection (DOE-ORP), began his briefing by noting that organizational culture changes only when there is a significant and sustained push from leadership. Steve identified the following key points:

- DOE-ORP expended a lot of effort into enhancing safety culture over the past two years following a report released by the Department’s former office of Health, Safety, and Security (HSS). The agency graded itself very hard, and the review noted areas for future improvement. A follow-up review of efforts recognized positive changes.
- In the coming months, DOE-ORP is going to review intervention strategies a second time to once again determine the effectiveness of implemented safety culture enhancements. The results of this review will likely be mixed; some efforts have not been implemented for a long enough time to produce tangible changes.
- A core group of four individuals (and rotating volunteers) are working to support and implement identified safety culture enhancements.
- Efforts have worked to identify a list of activities and behaviors that have successfully contributed to a healthy safety culture in the past. DOE-ORP has also worked to bring in representatives from other area companies to share their experiences and solutions.
- Past efforts to document safety values have resulted in complex, lengthy products with many takeaway points. To simplify the basic ideas of safety culture and to make them more memorable, the team distilled messages into five main ideas: (1) Accountability, (2) Behavior, (3) Communication, (4) Trust, and (5) Vision. Each of these topics is being covered by employee meetings.
- DOE-ORP is also looking into strategies for enhancing the agency’s internal team (consolidating all of ORP into a single work location, for example).
- The team is working on a phased approach to get the Hanford Waste Treatment and Immobilization Plant (WTP) operational and to manage the tank farms in a way that supports the WTP operations. Current safety statistics are promising, but those records could change at any moment. As DOE-ORP begins to move ahead with improvements to the tank farms, the principles of safety culture are becoming more and more important.
- The 2012 HSS safety culture review identified that there needs to be enhanced focus on building relationships between managers and workers. DOE-ORP has been working on strategies to strengthen feedback channels so that these lines of communication can become more open.

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\* Attachment 2: Independent Oversight Follow-up Assessment of Safety Culture at the Waste Treatment and Immobilization Plant (DOE packet)

- Contractors are working with DOE-ORP to enhance their organizational safety culture. Washington River Protection Solutions LLC (WRPS) has their own sustainability panel that is working on this matter, and Bechtel National, Incorporated (BNI) has undertaken approximately 50 actions suggested by the 2012 HSS report.

### *Regulator Perspectives*

Dan McDonald, Washington State Department of Ecology (Ecology), recognized that managers and staff must remain diligent in their efforts if Hanford Site safety issues are to be overcome. Dan stated that Ecology's organizational purpose is to protect human and environmental health, and he noted that he was encouraged by the explanation provided by DOE-ORP. Dan hopes that ongoing efforts produce an ingrained safety culture that drives future change.

### *Committee Questions and Responses\**

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

C. HSEP has concerns relating to changing facilities and infrastructure. DOE needs to ensure that safety culture efforts keep up with this transition. One simple strategy that has been proven to work in many organizational cultures is the reduction of management complexity. Though there is always resistance to this strategy, it is a straightforward way to improve safety and cut costs.

*R. [DOE-ORP] Our surveys have demonstrated that there is generally a high degree of trust between workers and their first level supervisors; however, this trust erodes as you move further up the managerial layers.*

*R. Middle-level management is a concern in agency and industry alike. There is often a problem with issues being communicated up the chain of command.*

C. Other iterations of HAB committees have visited this issue. In the past, there were fears in certain operations that if workers called attention to safety concerns, they would lose their job. There was organizational change in several cases, and it was always because everyone, from top management to workers, believed that it was their duty to report safety issues, and they believed that their concerns were going to be listened to by those higher up. DOE-ORP should consider these past examples as safety culture strategies move forward.

C. It is very important that DOE-ORP clearly conveys to staff that no one could be punished for reporting their concerns. Workers are the best resource for gauging on-the-ground conditions; they need to feel like they can present open feedback. This obstacle may still be present at Hanford.

*R. [DOE-ORP] The organization is working to improve this all the time, and top management has over-promoted this idea in an effort to hear feedback. We are concerned about the tank farms, and we need workers to report any developing or ongoing problems. New Mexico's Waste*

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\* Attachment 1: Transcribed Flipcharts

*Isolation Pilot Plant scored their safety culture very high; however, there were many deferred maintenance issues that were ignored. Due to funding at Hanford, DOE must balance priorities. We need to ensure that our workforce is a fully-developed resource that is actively seeking out and reporting on potential safety issues.*

Q. Do you feel like incoming BNI staff is technically able to design the WTP on a safety basis?

*R. [DOE-ORP] Quality engineers are highly desirable, and it is a challenge to bring them into Hanford. Tank farms have the same issues. We are struggling to employ an experienced workforce. In years past, DOE-ORP had a mentoring program that received mixed reviews. We hope to see more of these in the future, so that knowledge and experience can be more effectively shared.*

C. Different segments of the workforce should be better integrated (e.g. workers and engineers). Sometimes there is enmity between the two groups. DOE should consider intergroup relationships as safety culture is further developed.

Q. What can be done about public perceptions of Hanford whistle-blowers? Many of the experiences that the public and workers have with reporting issues at the Site come from high-profile whistle-blower cases in the news.

*R. [DOE-ORP] DOE is unsure of the impact that these publicized examples have on worker morale. Plenty of issues are still being raised. However, agencies need to continually invest in safety culture to ensure that this reporting is happening every time that it needs to.*

C. During the Savannah River National Lab (SRNL) Tank Vapor Assessment, there were several comments made by mid-level management regarding employee reporting. There appears to be a belief on their behalf that safety reporters are not genuine in their intentions; therefore, reporters may not be taken seriously. Top-level management is very engaged and interested in safety culture improvements, but middle-management demonstrates a high level of resistance and denial.

Q. How is safety culture reporting actually happening—the reality of reporting versus the procedures for reporting? DOE-ORP needs to ensure that procedures are being structured in a way that is accessible and impactful.

*R. [DOE-ORP] We have had an employee concern program in place for a long time, and improvements are continually being explored. We are interested in the substance of the concern as well as the method of reporting. If there are too many reports that are entered anonymously, that speaks to issues with the process. DOE-ORP is finding that there is still an unwillingness to assign one's name to reported concerns.*

The committee thanked Steve for the informative updates, and Steve recognized that the committee's questions and insights were helpful for DOE-ORP's uses moving forward. The next steps for DOE-ORP involve reviewing the SRNL Tank Vapor Assessment. TWC noted that an additional briefing on the subject could be explored in April or June 2015, and they requested that Steve consider returning during the committee's discussion on the draft Tank Vapor Assessment in November 2014.

## **Waste Treatment and Immobilization Plant Progress**

### *Agency Presentation*

Bill Hamel, DOE-ORP, presented TWC with an update on WTP progress. Bill's talk included the following key points:

- The High-Level Waste Facility (HLW) was recently authorized to return to full-production engineering (FPE). In 2012, work on the HLW was stopped except for non-technical construction. There is currently no new construction occurring, but engineering in support of corrective actions will soon be underway.
- In 2013, the HLW was paralyzed by technical inabilities. This necessitated a move back to production engineering that could allow the project to move forward. The team focused on ensuring that facility design would allow HLW to meet its functional requirements. A team of experts collaboratively worked with BNI to review design and operation documents. This review was rigorous, and it incorporated measures of risk. The review verified much of what we already believed, and many issues fell into the categories of ventilation (ducting, fan size, etc.) and operability. A design and operability report was authored for the riskiest systems. The design and operability report process has also been applied to the Low-Activity Waste Facility (LAW).
- DOE-ORP has been working with BNI to strengthen the contractor's engineering program and their system management approach. Results from these requests are being demonstrated (through system design documents, safety and design strategy, etc.). DOE-ORP is using this documentation to get into alignment and then conduct a gap analysis.
- DOE-ORP would like to continue working with BNI to ensure that all necessary procedures and protocols are followed as FPE efforts continue and as HLW moves to full release of procurement and construction.
- There are three major ongoing activities pertaining to direct-feed LAW. These include two active contract proposals . BNI will submit proposals, and DOE-ORP will negotiate. DOE-ORP has authorized two not-to-exceed orders for the balance of facility isolations and the effluent management facility. The third initiative is work to negotiate this scope of work into the contract.

Bill closed by requesting that the Board assist DOE-ORP in communicating WTP issues to the public. He noted that the WTP receives a lot of negative publicity, and he was hopeful that the Board could consider these challenges and advocate for an effective outreach strategy as it discusses the topic throughout the coming year.

### *Regulator Perspectives*

Dan McDonald noted that Ecology has been following these efforts with great interest, recognizing that 77% of the items included in the HLW expert review will require technically difficult solutions. There have been many designers involved with the WTP over the years, and Ecology is concerned that not enough calibration has occurred throughout the process. DOE and Ecology will need to work together closely in coming years to ensure that HLW and other facilities function as expected.

## *Committee Questions and Responses\**

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

Q. Why were these operational studies not done earlier on in the project?

*R. [DOE-ORP] There were many studies done early in the process, but, as time went on, there was less emphasis placed on conducting and incorporating them. At this point, it is more helpful to take corrective steps than it is to ask why things were not done differently in the past.*

*R. While moving forward is important, reflecting on past mistakes is an excellent way to ensure that errors are not repeated moving forward.*

*R. [DOE-ORP] DOE-ORP agrees that these lessons are very important, and we are working to incorporate them into our processes. For example, the expert review team was tasked with analyzing LAW while the contractual mechanisms are in place. DOE-ORP would request that they do an additional analysis on the Pretreatment facility, but it is too early in the process to engage them at this time.*

Q. In reference to your HLW review— do you have enough raw data from actual melter off-gas treatment?

*R. [DOE-ORP] We have a lot of expertise in terms of design. In terms of operational modelling, the report demonstrates that we may need to gather more data.*

Q. What is the schedule for all of the engineering activities? Ecology dictates when construction can commence.

*R. [DOE-ORP] Because of recent developments with the Consent Decree (CD), specific schedule information is not available. The process that we plan to follow will begin with a gap analysis, then a system design and engineering plan (ongoing, BNI's plan was approved), then a design and operability report. There is a lot of engineering that still needs to be done.*

Q. What are the budget impacts on WTP progress?

*R. [DOE-ORP] DOE is currently operating under a continuing resolution until December 11. At the moment, we have the money to accomplish needed work.*

Q. [DOE-ORP] Does the committee have any thoughts on effective communication strategies regarding the WTP? How can we convey the positive work that staff is engaged in?

*R. Does DOE-ORP ever give presentations to professional societies or groups that have technical expertise? This strategy could help to convey this work to a new audience and garner additional insight and support.*

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\* Attachment 1: Transcribed Flipcharts

*R. The Board's Public Involvement and Communications Committee would be a strong resource for strategy and messaging.*

The committee thanked Bill for the information. Bob recognized that much of the information pertaining to WTP progress is currently tied up in ongoing CD procedures, and he requested that Bill return to TWC in four to five months with another update. Bill thanked the committee for feedback relating to WTP communication strategies.

### **Waste Treatment Plant Operability**

#### *Agency Presentation\**

Rob Gilbert, DOE-ORP, and Ken Wells, URS, provided a presentation on WTP Operability, touching on operability as it relates to design, procurement, construction, full-commissioning, operations, maintenance, and documentation. Their presentation noted the following key points:

- Operability denotes the WTP's ability to safely complete its production mission. The WTP needs to run well, but safety is vital to the principles of operability.
- The WTP system needs to be operational, but key staff will also need to be trained so that the plant will be able to run well. Operability includes human-factors research to ensure that plant design is intuitive for workers.
- Assessment of operability will continue throughout the life of the project. The process works to improve safety and nuclear operations as well as protect workers, the public, and the environment. In this regard, the assessment moves beyond a simple production view. The continuous focus on operability starts at a very high level (conceptual design) and specifies as the project moves into an operations and maintenance phase.
- Other DOE vitrification facilities are in the process of being studied so that strategies and learned-lessons can be applied to Hanford. The Defense Waste Processing Facility (DWPF) at the Savannah River Site is especially similar to Hanford. Examples of lessons from DWPF include remote access capabilities, remote retrieval plans, and pipe-inside-of-pipe design.
- Before any hazardous waste is introduced into the WTP system, extensive operability testing will be carried out to demonstrate functionality, capacity, etc.
- Operability testing may influence design. An example of this can be found in the DOE "canyon" concept at Hanford—piping and components can be replaced as needed. This allows equipment to be updated throughout the expected life of the WTP (40 years).
- A variety of stakeholders have provided operability input, including representatives from agencies, industry, project vendors, review teams, etc.

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\* Attachment 3: Waste Treatment and Immobilization Plant Operability (DOE Presentation)

## *Regulator Perspective*

Dan McDonald recommended that committee members read the WTP Operations Requirement Document. He noted that the document highlights the high level of interconnectedness that the WTP displays. To function correctly, the system will need to be balanced precisely. Dan highlighted the importance of identifying the weak links in the WTP system so that designers can explore remedy options as soon as possible.

## *Committee Questions and Responses\**

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

Q. The waste stored at the tank farms is composed of many different substances. How much flexibility is there in creating vitrification blends? Will these blends be able to work with the different tank wastes?

*R. [DOE-ORP] DOE is currently modelling and analyzing different batches and blends. We are also taking waste samples to ensure that tank waste can be processed to the capabilities of the WTP. The Tank Waste Characterization and Staging Facility will assist in creating a more homogenous waste product for vitrification. Waste stored in some tanks will be easier to process than waste stored in others. The most important rule of vitrification is to produce good glass; therefore, there is a lot of rigor and attention being placed on this aspect of the process.*

Q. How many recipes for glass does DOE-ORP have? Will they be able to incorporate these ingredient changes quickly if incoming waste streams change dramatically?

*R. [DOE-ORP] There will be strategies in place to ensure that incoming waste is treatable. Waste will undergo handling and characterization efforts before it arrives at LAW.*

Q. How long will cold commissioning last?

*R. [DOE-ORP] Cold commissioning will occur for approximately one and a half years. A series of campaigns will be carried out to ensure the quality of glass, and trial runs will then be observed by Ecology.*

*R. [Ecology] Before any glass is produced, all support structures must be functioning.*

Q. What happens to equipment that becomes outdated or requires replacement parts?

*R. [DOE-ORP] We have a decision tree that helps us to decide which replacement parts we should purchase preemptively. This allows us to avoid long wait times for vital components.*

The committee thanked Ron and Ken for the update and encouraged the presenters to return to TWC whenever they have any additional information to share. The committee recognized that they would be interested in exploring an update on direct-feed LAW at an upcoming committee meeting.

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\* Attachment 1: Transcribed Flipcharts

## **Open Forum\***

### *Vessel Shape and Construction*

Mecal (Mimi) Seppalainen shared preliminary research regarding egg-shaped vessel, wondering if future tank construction at the Hanford Site could incorporate aspects of the design. Mimi recognized that current tank design at Hanford (standard, horizontal cylinders) present difficulties with regards to the waste stored on-site. The egg-shaped vessels are better able to suspend solids, easier to mix, and better able to disperse heat—all of these characteristics are important for managing Hanford tank wastes. Mimi suggested that the Board could explore the possibility of authoring a white paper on vessel design for agency review.

Q. An egg-shaped tank would better allow sludge to settle, and mixing contents within a vessel of this size would be much easier to do. However, there is concern about size and capacity. What is the largest size tank that has been built in this shape?

*R. There are very large examples that exist—there are egg-shaped digesters that are as large as current Hanford tank farms. The maximum volume of waste that these tanks could hold is currently unknown, but additional research could be compiled.*

C. It would be difficult to weld these containers. Three dimensional curves are very difficult to execute. Also, if this container shape were to be explored at Hanford, secondary containment may be an issue.

C. Non-advice products are important for the Board to focus on in the future. A white paper on this topic would be a healthy product for the HAB to release.

Mimi noted that she will work in the coming month to compile references for a white paper on the topic of vessel-shape. IMs volunteered to support the effort, and the committee agreed that they would look at updates on the topic, if applicable, at the next meeting.

## **Committee Business**

### *FY 2015 Work Plan Review\**

The committee discussed the interim FY 2015 HAB Work Plan. Bob recognized that the discussion would give the TWC membership the opportunity to comment on the work plan and identify additional topics. Board leadership would take these notes to the November meeting of the Executive Issues Committee for discussion with agency personnel. Agency representatives thanked the committee for their patience as new, collaborative work plan development strategies are established, and they stated that agencies will work in the coming year to pledge additional assistance to identified topics, as well as incorporate quarterly check-ins into the work plan development process.

Steve Pfaff noted that agencies would like to see the Board focus on a more defined scope of topics in this fiscal year, as enhanced depth would likely be more useful than enhanced breadth. Committee members

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\* Attachment 1: Transcribed Flipcharts

\* Attachment 4: Hanford Advisory Board Fiscal Year 2015 Interim Work Plan

requested additional background on the topics that TPA agencies proposed for FY 2015. Steve stated that the agencies identified topics that were timely (where there would be updates/action in FY 2015) and where HAB feedback would be appreciated.

Committee members discussed potential updates to the FY 2015 Work Plan, identified changes include:

- Discussing direct-feed low-activity waste and double-shell tank integrity in upcoming months
- Combining and clarifying some topics (WTP budgeting and the continuing resolution, regulatory framework for TPA milestones, etc.)
- Potentially elevating topics currently existing in the “holding bin”

The committee reiterated the importance of hearing periodic updates on the implementation of many Work Plan items, even those where action is not impending. Members stated that this information is highly useful from a policy perspective. Representatives from DOE and Ecology requested that TWC keep in mind ongoing Consent Decree procedures and remember that agencies may not be able to update the committee on many related issues until there is resolution.

Bob said that TWC’s thoughts will be taken to the November EIC meeting for discussion.

#### *Update 3-Month Work Plan\*\**

The committee updated its 3-Month Work Plan and requested a half-day meeting in November that will include the following topics:

- A joint discussion with HSEP regarding tank farm vapor issues. This discussion will focus on the content of the draft SRNL Tank Vapors Assessment, due to be released in mid-to-late October. Committee members should read this report to guide this November discussion.
- Direct feed LAW activities, including an update on new components.

TWC members noted that additional topics for November or December may arise from conversations at the November Board meeting or during the Executive Issues Committee Call.

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\* Attachment 1: Transcribed Flipcharts

\* Attachment 5: Tank Waste Committee 3-Month Work Plan

## **Attachments**

**Attachment 1:** Transcribed Flipcharts

**Attachment 2:** Independent Oversight Follow-up Assessment of Safety Culture at the Waste Treatment and Immobilization Plant (DOE packet)

**Attachment 3:** Waste Treatment and Immobilization Plant Operability (DOE Presentation)

**Attachment 4:** Hanford Advisory Board Fiscal Year 2015 Interim Work Plan

**Attachment 5:** Tank Waste Committee 3-Month Work Plan

**Attendees**

Board members and alternates:

David Bernhard	Steve Hudson	Maynard Plahuta
Richard Bloom	Mike Korenko	Ed Revell
Jan Catrell	Pam Larsen	Mecal Seppalainen (phone)
Shannon Cram	Liz Mattson (phone)	Richard Smith
Harold Heacock	Rodolfo Mendoza	Bob Suyama
Rebecca Holland	Melanie Myers	

Others:

Kristen Skopek, DOE-RL	Rick Bond, Ecology	Todd Nelson, BNI
Rob Gilbert, DOE-ORP	Heather John, Ecology	Alex Nazarali, CTUIR
William Hamel, DOE-ORP	Dan McDonald, Ecology	Rodney Skeen, CTUIR (phone)
Steve Pfaff, DOE-ORP	Ginger Wineman, Ecology	Ryan Orth, EnviroIssues
		Brett Watson, EnviroIssues
		Sharon Braswell, Northwind/DOE-ORP
		Michelle Searls, Northwind/DOE-ORP
		Mark Freshley, PNNL
		Ken Wells, URS