

FINAL MEETING SUMMARY

**HANFORD ADVISORY BOARD
TANK WASTE COMMITTEE**

*December 9, 2015
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.

Opening

Bob Suyama, Tank Waste Committee (TWC) chair, welcomed committee members and introductions were made. The committee adopted the September 2015 TWC meeting summary following the incorporation of minor edits.

Update on the Status of Double-Shell Tank AY-102

Reggie Eakins, U.S. Department of Energy—Office of River Protection (DOE-ORP), provided committee members with background information and the status of retrieval efforts at double-shell tank (DST) AY-102. Key points from Reggie’s presentation¹ included:

Attachment 1: Hanford Advisory Board Tank Waste Committee Double-Shell Tank AY-102 Update (DOE-ORP presentation)

- AY-102 has the capacity to store approximately one million gallons of waste. In 2012, DOE-ORP discovered that approximately 60 gallons of hazardous, radioactive waste leaked into AY-102's annulus (the space between the primary tank and the secondary tank).
- Since DOE-ORP discovered the leak at AY-102, cameras and other monitoring equipment have been used on a bi-weekly basis to monitor the conditions in the annulus. The annulus is monitored through three tank risers once every month. DOE-ORP reports the findings of these efforts to the Washington State Department of Ecology (Ecology).
- DOE-ORP's contractor, Washington River Protection Solutions (WRPS), will begin retrieving supernatant from AY-102 no later than Mar. 4, 2016, per DOE-ORP's agreement with Ecology.
- DOE-ORP completed 100 percent of the engineering and design work for retrieval in late 2015. Procurement and construction/installation are continuing, and both efforts will likely be completed in December 2015. The current critical path for AY-102 retrieval is electrical work.
- DST AP-102 will serve as the receiver tank for wastes pumped out of AY-102. The two tanks will be connected by approximately 1,500 feet of line-in-line transfer hoses.
- WRSP will install an annulus pump in AY-102. In the case that the leak in the primary tank becomes more severe during retrieval efforts, the annulus pump will allow WRPS to pump waste back into the primary tank.
- In October 2015, WRPS intended to retrieve and dispose of the AY-102 mixer pump by breaking it into three pieces. During efforts to disassemble the pump, workers discovered a buildup of tank waste on the pump's flange that was harder than anticipated and unable to be removed. Workers were shielded from the radiation present on the pump, and DOE-ORP notified Ecology of the safety issue. There was a three-day delay in work on AY-102, and workers responded by breaking the mixer pump into two pieces prior to removal from the tank.
- DOE-ORP will spend approximately \$70 million to retrieve wastes from AY-102. \$50 million of the total cost has been expended in preparation work so far.

Regulator Perspectives

Jim Alzheimer, Ecology, noted that the retrieval of waste from AY-102 has proved to be a challenging effort for WRPS, and Ecology meets monthly with WRPS and DOE-ORP representatives to discuss retrieval preparations. Jim noted that Ecology has been impressed with the ongoing work, and he noted that WRPS has been effectively tracking the thousands of activities required to complete the complex retrieval. Jim passed compliments to the workers for doing an exceptional job in the difficult work environment.

Jim noted that the next group of tanks that DOE-ORP will work to retrieve will be AX Farm, and he was hopeful that the retrieval at AY-102 would inform AX Farm work, since both tanks share some similar design features.

Finally, Jim highlighted that the loss of AY-102 represented an approximately 1 million gallon hit to the Hanford Site's DST waste storage capacity. He commented that Ecology was concerned that there would be little available DST space following the retrieval of A/AX Tank Farm waste. Jim noted that Ecology requested DOE-ORP design and construct additional DSTs to address this need for additional waste storage space.

Committee Questions and Responses ²

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

Q. Currently, how full is AY-102?

R. [DOE-ORP] AY-102 is currently approximately three-quarters full, containing around 750,000 gallons of waste.

Q. The supernatant in AY-102 acts as heat transfer for the radioactive sludge and saltcake present within the tank. How much of the AY-102 supernatant can be pumped out before DOE-ORP becomes concerned about the remaining tank waste overheating or breaking down tank components? What happens if supernatant is removed and then there is an unanticipated delay in tank retrieval?

R. [DOE-ORP] DOE-ORP does not want the sludge to sit without supernatant for an extended period of time. Once workers pump away the supernatant, DOE-ORP plans to begin sluicing the sludge and saltcake right away. If sluicing begins shortly after the retrieval of the supernatant, DOE-ORP is not concerned about tank waste overheating.

Q. If the tank needs to be cooled during retrieval, will DOE-ORP use tank supernatant or clean water to cool AY-102?

R. [DOE-ORP] Either clean water or tank supernatant could be used to cool AY-102, if needed. Adding supernatant from another tank would be preferred, as this would not add additional waste volume to tanks.

Q. What are the two technologies that DOE-ORP will employ for AY-102 retrieval?

R. [DOE-ORP] Sluicing is the primary technology, and the secondary technology is high-pressure water.

Q. Did DOE-ORP need to delay any projects in order to address AY-102 retrieval?

R. [DOE-ORP] DOE-ORP has budget for two tank retrieval shifts. Both retrieval shifts were working at C Farm; however, one of those was shifted to address AY-102. This caused schedule delays in C Farm retrieval (workers are currently retrieving waste from only one tank, C-111).

Attachment 2: Transcribed flipchart notes

R. [Ecology] Retrieval at AY-102 will not likely cause significant delays to single-shell tank (SST) waste retrieval efforts overall. Closure activities at A and AX Farms may be pushed back as a result of the work at AY-102.

Q. What was the solution that DOE-ORP and WRPS implemented to solve the radiation concern associated with the mixer pump?

R. [DOE-ORP] Workers were using a wand to wash tank wastes off the mixer pump as it was removed from the tank. The material encrusting the pump's flange was harder than anticipated. There was a risk of worker exposure if workers continued trying to remove waste encrusting the bolts on the pump. To avoid potential exposure, the pump was not further disassembled before it was packaged for disposal. As the mixer pump is now too big to fit into shipping containers, DOE-ORP and WRPS are currently evaluating disposal options. The mixer pump is currently being stored in AP Farm until DOE-ORP finalizes disposal plans.

Q. The monthly report on tank wastes shows that tank AP-102 is full and currently unable to accept waste. How will DOE-ORP and WRSP move the wastes currently within AP-102 around to create space?

R. [DOE-ORP] This will be a complex effort; four waste transfers will occur in January 2016 to create space for AY-102 waste. The full sequence will involve transferring waste among a series of other DSTs to make space in AY-102 and to avoid mixing incompatible wastes. The 242-A Evaporator will be used to reduce the volume of tank waste.

Q. There are several leaking SSTs that the Board is concerned about at the Hanford Site. Since the leak in AY-102 appears to be relatively small, and since the leak is only in the primary tank, should DOE-ORP be contributing so much money and time to this retrieval effort? AY-102 does not seem like a significant hazard in the near-term.

C. Ecology and the Resource Conservation and Recovery Act (RCRA) are driving the retrieval of wastes from AY-102.

R. [DOE-ORP] Tanks need to serve as compliant storage containers. Therefore, tanks that leak are required to be emptied. There are opportunities that come from this effort, and DOE-ORP will have the chance to inspect AY-102 after retrieval is completed. Assessing the cause of AY-102's leak may allow DOE-ORP to apply lessons and precautions to other similar DSTs.

C. There are several reasons that it is important to retrieve waste from AY-102 and assess the cause of the tank leak. The secondary tanks incorporated into the design of DSTs are not built to the same specifications as the primary tank. The walls of the secondary tank for AY-102 are half the thickness of the primary tank. The secondary tank was never radiographically inspected. Inspection of the tertiary leak detection system beneath the secondary tank resulted in dilute contamination on the crawler that had the same ratio of cesium and strontium as the sludge inside tank AY-102, suggesting that it is diluted tank sludge and that there is a small leak from the secondary tank into the leak detection system. If there were to be a large release of tank waste into the annulus, it could potentially leak into the surrounding soil.

Also, the leaking tank waste is plugging the channels underneath AY-102 and is leading to difficulties circulating cooling air between the primary and secondary tanks. The Defense Nuclear Safety Board site staff have expressed concerns about the continued ability to cool the tank. The longer waste remains in AY-102, the more waste may potentially leak into the annulus, cool, and further block airflow

Seven other Hanford Site tanks have similar design, construction, and operational issues that obstruct ventilation passageways and make condensation under the secondary tanks likely. This may contribute to accelerated failure of tanks in AX, AY, and SX farms, as well as tank AN-107. Lessons learned from examination of AY-102 following retrieval will allow DOE-ORP to better anticipate these potential issues. Finally, it is important to learn more about why the primary tank failed so that DOE-ORP and regulators have a better idea as to how much other DSTs are at risk.

R. [Ecology] DOE-ORP and regulators need to consider these questions as the Tri-Party Agreement (TPA) agencies look into potentially constructing additional DSTs. It may be difficult or impossible to design large, million gallon tanks that are RCRA compliant.

C. In order for new waste storage tanks to be RCRA compliant, smaller tank design may be required.

C. The contamination on the crawler suggested that there may be a DST design issue that leads to condensation forming on the outside bottom of the secondary tank. This may have resulted in the steel of the secondary tank rusting from the bottom upwards. Following AY-102 retrieval, investigation of the tank may help to determine what precisely happened and whether or not similarly constructed tanks could face similar issues. An ongoing concern with Hanford Site tank farms is that there is no way for DOE-ORP to look beneath either the primary or secondary tank shells.

R. [DOE-ORP] DOE-ORP is working on plans to develop and deploy robotic technology to facilitate monitoring beneath the primary tank shells.

Q. DOE-ORP oversaw the construction of AY-102. Were there other tanks that built around the same time about which DOE-ORP is also concerned?

R. [DOE-ORP] AY-102 was constructed in the late 1960s and commissioned in 1971. There are six other tanks of that same vintage. DOE-ORP inspected all six of these similar tanks following the discovery of the AY-102 leak and conducted an extensive review of construction documents. At this time, DOE-ORP has not discovered any concerns with these other tanks.

Q. Does DOE-ORP plan to search for the cause of the leak in AY-102?

R. [DOE-ORP] Yes. As part of DOE-ORP's agreement with the Ecology, DOE-ORP will work to determine the cause of the leak following the completion of the second retrieval technology.

Q. How will DOE-ORP and WRPS determine which supernatant can be safely used to conduct the sluicing in AY-102?

R. [DOE-ORP] Plans call for the existing supernatant in AY-102 to be employed in sluicing efforts. If WRPS requires additional sluicing liquids, engineers would look at the composition of available supernatant from other tanks and use the supernatant from another tank that would be most chemically compatible with AY-102 waste. These evaluations are thorough and ensure that no undesirable chemical reactions occur (e.g. the creation of phosphates).

Q. What will the tank storage capacity be following retrieval at AY-102? Will there be any reserved space in case of an unexpected failure?

R. [DOE-ORP] There is currently approximately 4 million gallons of open space in tank farms, plus more than a million gallons of emergency space. The 4 million gallons of available space will largely be occupied following retrieval at A/AX Farms. DOE-ORP will always maintain the emergency space.

C. The Board was briefed on the construction of AY-102, and members learned that there were many weld problems associated with the construction of AY-102. It is unfortunate that DOE-ORP chose AY-102 to be the feeder tank for the Waste Treatment and Immobilization Plant (WTP).

Q. Is there a measurable impact on tank integrity as waste is repeatedly retrieved and transferred?

R. [DOE-ORP] The tanks were designed for transfer and retrieval operations. DOE-ORP's tank waste retrieval work plans document the anticipated effects that technology and strategies used to retrieve tank waste will have on the tanks themselves. DOE-ORP anticipates that sluicing at AY-102 may exacerbate the leak temporarily.

The committee thanked Reggie and noted that retrieval plans were progressing well. Members were interested to hear an additional update on retrieval at AY-102 in April or May 2016.

Safety Culture (joint w/ HSEP)

Dirk Dunning, issue manager, continued the TWC and Health, Safety, and Environmental Protection Committee's (HSEP) recent examination and discussion on Hanford Site safety culture, last discussed at the September 2015 TWC meeting. Dirk was hopeful that HAB members could determine whether the Board should provide input to TPA agencies on the values and definitions associated with safety at the Hanford Site, incorporating the ideas of organizational culture, safety conscious work environments, and safety by design. Dirk noted that past TWC and HSEP discussions framed the HAB product for this work plan topic as advice, and he provided members with draft issue manager advice³ for discussion and input.

Dirk provided framing for the draft advice, noting that safety culture is a term that came about as a direct result of international efforts following the Chernobyl disaster in 1986 in order to prevent reoccurrence of a similar incident. He recognized that design choices that jeopardized safety and relied on interlocks,

Attachment 3: Draft Hanford Advisory Board Advice: Testing Safety Culture in Practice (issue managers Dirk Dunning and Liz Mattson)

mitigations, and training were the major cause of the Chernobyl disaster. The response to the disaster resulted in the definition of “safety culture.” However, the language that was used in early nuclear safety culture documents was not clear and it failed to recognize the institutional ideal of safety by design (designing safety into operations from the very beginning). Dirk emphasized that incorporating safe design from the very beginning (as opposed to mitigating hazards as they arise or adding safety features into a design) was key to understanding safety culture.

Dirk encouraged committee members to review the draft advice and discuss clarifications and next steps. The draft advice that he provided focused on the accepted definitions of safety culture, organizational safety culture, and safety conscious work environment that were the legacy of the Chernobyl disaster, and advising the U.S. Department of Energy (DOE) to consider what safety culture language means and how it can be best institutionalized.

Agency Perspective

Steve Pfaff, DOE-ORP, briefly provided initial DOE-ORP perspectives to the committee. Steve noted that the draft advice appeared to focus heavily on organizational culture and the idea of involving more workers in the safety culture process. Steve highlighted U.S. Department of Energy (DOE) documents that codified existing safety standards, including safety culture and safety by design, including DOE-STD-1189-2008, 413.3B (DOE Order for the Acquisition of Capital Assets), and 420.1C (DOE Order on Facility Safety). He noted that safety by design is something that DOE is working to incorporate into new designs to a high degree, but he stressed that it was a more difficult process to adapt these concepts to older, existing infrastructure.

Steve noted that the HSEP committee would receive an update on the latest U.S. Department of Energy Office of Enterprise Assessments (EA) review of Hanford WTP safety culture at their December 2015 meeting. Steve stated that he anticipated that the DOE-ORP response to the draft advice, as it was currently conceptualized, would note that DOE-ORP would take the information into consideration as the next round of EA reviews and federal employee viewpoint surveys were constructed.

*Committee Questions and Responses*²

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

Q. Is the Integrated Safety Management System already addressing the issues raised in the draft advice?

R. Yes. The Integrated Safety Management System is an important component of what the draft advice discusses. If the Integrated Safety Management System is expanded and implemented correctly, it could go further in making progress.

R. The Integrated Safety Management System codifies the ideas of safety culture; however, just like the original definition of safety culture, the plan uses language that is unapproachable and not understood by most people.

Attachment 2: Transcribed flipchart notes

C. DOE-ORP is becoming more interested in safety by design as it is demonstrated to be both safer and less expensive in the long-term.

C. A question that issue managers and DOE need to consider are whether or not exercises such as the EA reviews and employee viewpoint surveys encourage a culture of safety, or whether they assessments serve only as a measure of existing behaviors and perceptions.

C. It is important to make safety a key component of new construction at the Hanford Site. As contractors do most of the work on site, demonstrating the safe design of facilities should be a requirement that DOE builds into contracts.

Q. Do committee members feel that this topic warrants HAB advice?

R. It could; however, it would be important for the Board to work in exiting DOE safety orders to strengthen the advice and make it more applicable. The Board could request a briefing on these documents at an upcoming TWC or HSEP meeting.

R. One of the challenges that is associated with much of the codified DOE information regarding safety culture and safety by design is that it incorporates complex, unapproachable language. Advice needs to focus on being clear and succinct so that it can be widely understood.

Committee members agreed that issue managers should review and summarize the DOE safety orders and modify the draft advice to reflect and incorporate any new information in anticipation for upcoming discussions. TWC would continue to discuss, develop, and consolidate advice at the next joint TWC and HSEP meeting. n

High Level Waste Facility Update

Wahed Abdul, DOE-ORP, provided TWC members with an update on the status and the path forward for the WTP High-Level Waste (HLW) Facility. Key points from Wahed's presentation⁴ included:

- The WTP consists of four major facilities that will allow Hanford Site tank wastes to be treated (via vitrification): the Pretreatment Facility, the Low-Activity Waste (LAW) Vitrification Facility, the HLW Vitrification Facility, and the Analytical Laboratory.
- The HLW Facility is 440 feet long and 275 feet wide; there will be five levels to the plant. The Facility will incorporate an annex that will house administrative offices, the main control room, and the air handling units.
- The HLW Facility will receive HLW slurry from the Pretreatment Facility. The HLW will then be combined with glass-forming materials, sent into one of two 90-ton melters, and heated to over

Attachment 4: Waste Treatment and Immobilization Plant High-Level Waste Facility Status and Path Forward
(DOE-ORP presentation)

2,000 degrees Fahrenheit. Vitrified HLW will then be stored in sealed containers until it can be sent to an off-site deep geological repository.

- All major systems at the HLW Facility will be remote operated. DOE-ORP expects the HLW Facility to produce approximately six metric tons of glass each day. To accomplish vitrification of HLW, the HLW Facility needs to be able to effectively:
 - Receive waste, blend it with glass forming compounds, and transfer it to the melters
 - Sample waste for process control and glass qualifications
 - Vitrify waste in melters
 - Handle and decontaminate storage canisters
 - Treat gasses released as waste is heated and vitrified (known as off-gas)
 - Ventilate air to remove contamination
- Since 2012, engineering, construction, and procurement for the HLW Facility have been limited. In August 2014, after reviewing a number of changes that Bechtel National, Inc. (Bechtel) proposed, DOE authorized full-production engineering. Following Bechtel's changes, the design and the safety standards for the HLW Facility are closely integrated. Procurement and construction efforts are still limited, and DOE approves them on a case-by-case basis, ensuring that any ongoing work has a very low probability of rework.
- Identified HLW Facility technical issues and associated ongoing activities include:
 - Pulse-jet mixer performance: Testing on updated pulse-jet mixer design is ongoing in collaboration with Washington State University.
 - Erosion/corrosion: Bechtel was unable to provide assurance that HLW would not erode or corrode piping. Testing is ongoing to verify that this will not be an issue during HLW Facility operations.
 - Vessel structural integrity: WRPS completed a re-design and DOE-ORP awarded procurement for the update of radioactive liquid waste disposal vessels 7 and 8.
 - High Efficiency Particulate Air (HEPA) filter adequacy: Existing designs for HEPA filters were not as effective as they needed to be in the hot, humid air expected within the HLW Facility. Mississippi State University is currently testing new, radial HEPA filters to ensure that they can function in the operating conditions of the HLW Facility.
 - Design and operability review vulnerabilities.
- DOE is working to finalize specific criteria that will authorize Bechtel to move into full production. As a part of this, DOE would like Bechtel to develop a HLW Facility completion plan

that provides a strategy for facility rebaselining and incorporate all remaining engineering, procurement, construction, and commissioning activities.

Regulator Perspective

Dan McDonald, Ecology, said that Ecology was pleased to hear that work at the HLW Facility was progressing. He noted that Ecology would be interested in hearing a timeline for upcoming HLW Facility engineering, procurement, construction, commissioning, and operation activities, and he was hopeful that full design and procurement for the HLW Facility would begin soon. He was hopeful that DOE-ORP would share a potential timeline for upcoming activities with the public, as well.

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 rebaselining of the HLW Facility is incorporating updated seismic data from 2005; however, there was a more recent seismic probability assessment released in 2014. Will the HLW Facility design incorporate the 2014 seismic projections?

R. [DOE-ORP] The probabilistic seismic data is not ready to issue to the contractor yet, as it has not yet been adapted to facilities and buildings.

Q. What work is being done related to the radioactive liquid waste disposal vessels?

R. [DOE-ORP] The radioactive liquid waste disposal vessels 7 and 8 were fabricated (one was already on-site), but the vessels needed to be redesigned based on safety basis issues (e.g. pump suction, seismic criteria). DOE-ORP has awarded procurement of these redesigned radioactive liquid waste disposal vessels.

Q. One issue with the treatment of off-gas from the melters is technetium, which exists in several different valence and chemical forms which convert between one another. University of Notre Dame researchers have developed a new, inexpensive thorium borate mineral that both converts the technetium valence state and acts to lock the technetium into a durable and highly specific waste form. Notre Dame researchers tested this material with a simulant of the WTP off-gas and it proved to be both extremely specific to technetium and highly effective in capturing the technetium. It appears that this material has the potential to greatly simplify the off-gas treatment at a low cost. Has DOE-ORP explored this potential strategy for treatment of off-gas technetium?

R. [DOE-ORP] DOE-ORP is looking into waste treatment strategies on an ongoing basis; however, the HLW Facility project is currently not focusing on this aspect of HLW treatment.

Q. Will DOE-ORP take proposed solutions to HLW Facility technical issues back to the expert panel convened under U.S. Energy Secretary Steven Chu?

R. [DOE-ORP] Expert panels have been involved in the process of addressing HLW technical issues on an ongoing basis. National Labs are involved, as well.

Q. Will the two melters at the HLW Facility need to be replaced periodically?

R. [DOE-ORP] Yes. These melters will leave through three sets of shielded doors as they are moved out of the melter bays.

Q. Will DOE-ORP consider cold-crucible melters in the future?

R. [DOE-ORP] DOE-ORP is not currently considering cold-crucible melters for future operations of the HLW Facility. However, future melters at the facility may incorporate new technology as it becomes available.

Q. The presentation still does not clearly identify proposed solutions to noted technical problems at the HLW Facility and the Pretreatment Facility. When can regulators, the Board, and the public anticipate detailed information on the exact technical issues and DOE's proposed solutions at these facilities?

R. [DOE-ORP] Today's presentation was concerned only with the HLW Facility, and ongoing work at the Pretreatment Facility was not covered. DOE-ORP will share information with the Board and with the public on a more general level while the Consent Decree is in arbitration.

Q. Are there ongoing concerns with nuclear quality assurance documentation?

R. [DOE-ORP] There have been issues with the quality assurance documentation. In response, DOE queued up a managed improvement plan with Bechtel. Drafting of this plan is complete, and a review of the plan by national experts noted that the program is on track to improve nuclear quality assurance documentation.

Q. How will DOE plan to apply new quality assurance strategies to infrastructure that has already been procured? For example, there were concerns raised that the weld composition on some HLW Facility piping was wrong. How will DOE-ORP address a situation such as this?

R. [DOE-ORP] Bechtel will check all existing inputs into the HLW Facility by reviewing past paperwork to ensure that all documentation is in line with updated quality assurance practices. In the case of the incorrect welding—this impacted approximately five pipes. These pipes were fabricated; however, they were not installed in the HLW Facility.

Q. How does off-gas control at the HLW Facility differ from off-gas control at the LAW Facility?

R. [DOE-ORP] Off-gas treatment at both facilities is very similar; however, HLW Facility off-gas has less chemicals. Both off-gas systems need to reduce particulate in similar ways, and the exhaust from both facilities needs to meet the same environmental criteria.

Q. What are the long-term dates for testing and startup of the HLW Facility?

R. [DOE-ORP] Long-term dates and deadlines are currently tied up in the Consent Decree arbitration. Today's discussion is focused on near-term work and goals.

Q. There is currently no roof on the HLW Facility. How is this affecting the deterioration rate of construction?

R. [DOE-ORP] Bechtel has a preservation and maintenance program that looks into the weathering and wear-and-tear of the HLW Facility. Much of the civil engineering is resilient enough to last in the Hanford environment for a very long time without degrading. Installing a roof on the HLW Facility will further protect the interior infrastructure, and that is a construction goal moving forward.

Q. Soil is reactive to the metal used in HLW Facility construction, and this reactivity can eat away at the construction and destroy buried piping and electrical systems. Is cathodic protection to prevent this degradation in place and operational?

R. [DOE-ORP] Proper grounding and cathodic protection are in place at the HLW Facility. Additional anodes will be added to the HLW Facility to bolster the effectiveness of this protection. Digging to install additional cathodic protection will be ongoing for the next six months.

The committee thanked Wahed for the update and the information. The committee noted that they would incorporate updated information on the HLW Facility into the WTP communication approach white paper.

Waste Treatment and Immobilization Plant Progress and Communication Approach (joint w/ PIC)

Bob Suyama, issue manager, provided committee members with a draft WTP communication approach white paper⁵, highlighting that committee discussion should focus on whether or not needed ideas, perspectives, and information were incorporated into the draft.

*Committee Questions and Responses*²

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

C. HAB white papers tend to be longer and provide more background than HAB advice does. The outline included in the draft communication approach is strong; however, additional detail is likely needed in some areas. For example, the white paper noted that it is important for DOE-ORP to provide the public with workshop opportunities to learn about ongoing efforts at the WTP. The white paper should then note additional information about these workshops and their outcomes, for example: (1) useful strategies to convey information at these workshops, (2) benefits that workshops provide, and (3) strategies for communicating with different audiences attending workshops. This level of detail needs to be provided for each communication strategy identified within the white paper.

Attachment 5: Draft Waste Treatment and Immobilization Plant Communications Approach White Paper (12/4/15)
Attachment 2: Transcribed flipchart notes

C. There is some wording incorporated into the draft that reads as accusatory. The Board needs to consider the goals of the communication approach and consider whether this wording supports that goal. The white paper should be very forward-focused and it should limit background information that is counterproductive to the HAB's overall goal. Along the same line, the Board needs to be very careful when broadly characterizing the public's feelings and perspectives.

R. Many people viewed the expert review panel for the WTP, convened by U.S. Secretary of Energy Steven Chu, as being secretive in their process.

C. Using the word "secrecy" is problematic. The lack of released WTP information is not DOE-ORP's choice; it is largely directed by the U.S. Department of Justice (DOJ) while various litigation efforts are ongoing.

C. The background of the communication approach could potentially introduce the DOJ as a key player in DOE's ability to share information.

C. The white paper needs to incorporate a short synopsis of the past. There have been issues with transparency that DOE will need to address and overcome if the Board and the public are to have a solid understanding of the WTP path forward.

C. The proposed 2039 date for the full-start of WTP operations is a new piece of information that the public is very interested in. An updated draft of the communication approach should recognize and address this.

R. This proposed date is so far out that it will be difficult for the public and public officials to comprehend. The communication approach should work to convey this start date and its ramifications in a way that is approachable.

R. [DOE-ORP] In many cases, the public does not have context for information; an example of this is the 2039 schedule for full-operation. Ninety percent of tank waste is LAW, which is set to begin treatment in 2022. Providing strategies for communicating this context in an approachable and meaningful way is part of the HAB's challenge with the communication approach.

Q. Why does the plan note "local and regional" as distinct audiences? The communication approach is coming from the Board's perspective, and it is inappropriate to make an audience distinction based on geography.

R. Issue managers copied this language from the HAB Fiscal Year 2016 Work Plan.

R. [DOE-ORP] The initial request for a local/regional division in the communication approach is a result of DOE-ORP wanting to know more about whether or not the two audiences have different needs or interests.

R. Local and regional audiences have different relationships with the Hanford Site, and they will require different communication strategies as a result. For example, local news about the

Hanford Site is highly fact-based. This is not always the case in regional reporting. Therefore, the two audiences are often approaching Hanford Site cleanup from different perspectives.

C. The plan should note that any materials produced for public meetings should also be made available online.

C. The plan should incorporate an executive summary in addition to the current summary.

Issue managers thanked committee members for the discussion and the perspectives. Issue managers committed to update the draft white paper for the February 2016 TWC meeting, incorporating identified updates. Issue managers noted that they would have a final draft of the communication approach ready for Board review in April 2016.

Update on Cesium Management Resulting from Low-Activity Waste Pretreatment System

David Bernhard, issue manager, provided TWC members with an updated draft of the HAB cesium management and disposition white paper⁶. David noted that the cesium source addressed by the white paper was associated with LAW, and it would be removed by the Low Activity Waste Pretreatment System (LAWPS). DOE-ORP's current pathway for cesium removed via LAWPS would send captured cesium back to tank farms to await vitrification at the HLW Facility; however, David noted that there is interest from DOE headquarters to take cesium from LAW out of the waste stream once captured by LAWPS.

David noted that the latest draft of the white paper removed the deep-borehole disposition option, as the technology had not yet matured and the cost was too prohibitive.

David requested committee discussion on the draft to further clarify the white paper's included alternatives and content.

Agency Perspective

Steve Pfaff, DOE-ORP, thanked issue managers for the effort and detailed information included within the draft cesium white paper, and he noted that the draft of the white paper too closely resembled a technical analysis. Steve requested that updates to the cesium management white paper add additional detail on potential outcomes and associated regulatory pathways for each of the noted cesium management strategies.

As an example, Steve highlighted the option of using a non-elutable media to permanently capture cesium from LAW. He noted that the result of choosing this management strategy would be waste canisters loaded with high concentrations of radioactive cesium. Steve underscored that if DOE-ORP chose this

Attachment 6: Draft Cesium Management and Disposition for the Low Activity Waste Pretreatment System White Paper (12/9/2015; issue managers David Bernhard and Bob Suyama)

option for cesium management, the canisters would need to be managed and disposed of. In the noted scenario, Steve stated that DOE-ORP would be interested in learning about Board perspectives on the acceptability and potential management of the resulting cesium canisters. Steve commented that, as there is currently no national deep geological repository, the cesium would likely remain at the Hanford Site until such a facility became available. He requested that the Board focus on whether or not interim on-Site storage of cesium would be acceptable to the Board, and he requested that the white paper explore the policies and regulations governing such storage and transfer.

*Committee Questions and Responses*²

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

C. During past TWC discussions, it seemed as though committee members identified the strategy of capturing cesium and sending it to Waste Control Specialists (WCS) in Texas as the preferred cesium management alternative. There appears to be interest from WCS, DOE-ORP, and DOE headquarters.

R. [DOE-ORP] There is still a question as to whether or not WCS would be able to accept cesium waste from Hanford. In addition, there are permit considerations associated with the shipment of this waste to Texas that could be incorporated into the white paper.

Q. Would cesium waste captured in a non-elutable media be class III or greater than class C waste?

R. [DOE-ORP] This depends on how heavily the non-elutable media is loaded with cesium.

Q. What role could the Integrated Disposal Facility (IDF) play in cesium disposal?

R. [DOE-ORP] IDF is currently planned to accept LAW glass and secondary waste forms from LAW treatment. A Performance Assessment for IDF is currently being considered, and cesium is not currently listed for disposal at IDF. If the Board would like cesium to be considered for disposal at IDF, the Performance Assessment process would need to be disrupted. Cesium is currently considered to be HLW; however, there are many who argue that cesium is not HLW from a risk-perspective. In the existing policy framework, it would be difficult to dispose cesium anywhere that is not a deep geologic repository.

C. Returning to the ongoing HAB conversation surrounding safety culture, it makes sense to deal with contaminants such as cesium as few times as possible. From a worker and environmental health and safety perspective, it does not make sense to return cesium to Hanford Site tanks. The HAB should advise DOE-ORP to not return cesium to tanks.

R. [DOE-ORP] If cesium is returned to tanks, tank farm workers would potentially be exposed to it again in the future. However, if cesium is removed from tanks permanently via a non-elutable capture media, workers will be exposed to cesium as these canisters are stored and managed.

Attachment 2: Transcribed flipchart notes

Board members should keep this information in mind and work to find an appropriate, acceptable balance.

C. The white paper needs to incorporate an approachable executive summary in future drafts.

David thanked Steve and committee members for their information and perspectives. Issue managers agreed to update the draft with changes identified by committee members. Further committee discussion on the cesium management white paper was tentatively planned for the February 2016 TWC meeting.

Committee Business

TWC 3-Month Work Plan ²⁷

TWC will plan to hold a committee call in January 2016, as well as a committee meeting in February 2016 that will tentatively include the following topics:

- Discuss and clarify draft advice on safety culture
- Discuss and scope a safety culture sounding board for an upcoming Board meeting (joint w/ HSEP)
- Receive an issue manager update on LAWPS cesium management
- Receive an issue manager update on the WTP communication approach

Attachment 2: Transcribed Flipchart notes

Attachment 7: TWC 3-Month Work Plan

Attachments

Attachment 1: Hanford Advisory Board Tank Waste Committee Double-Shell Tank AY-102 Update (DOE-ORP presentation)

Attachment 2: Transcribed flipchart notes

Attachment 3: Draft Hanford Advisory Board Advice: Testing Safety Culture in Practice (issue managers Dirk Dunning and Liz Mattson)

Attachment 4: Waste Treatment and Immobilization Plant High-Level Waste Facility Status and Path Forward (DOE-ORP presentation)

Attachment 5: Draft Waste Treatment and Immobilization Plant Communications Approach White Paper (12/4/15)

Attachment 6: Draft Cesium Management and Disposition for the Low Activity Waste Pretreatment System White Paper (12/9/2015; issue managers David Bernhard and Bob Suyama)

Attachment 7: TWC 3-Month Work Plan

Attendees

Board members and alternates:

David Bernhard	Becky Holland	Ken Niles
Richard Bloom	John Howieson	Liz Mattson
Don Bouchey	Steve Hudson	Emily Peterson
Amoret Bunn	Alex Klemrntiev	Ed Revell
Jan Catrell	Mike Korenko	Mecal Seppalaninen (phone)
Shelley Cimon	Pam Larsen	Richard Smith
Dirk Dunning	Susan Leckband	Bob Suyama
Gary Garnant	Kristen McNall	Margery Swint

Others:

Kris Holmes, DOR-RL	Jim Alzheimer, Ecology	Ryan Orth, EnviroIssues
Justin Carter, DOE-ORP	Robbie Biyani, Ecology	Brett Watson, EnviroIssues
Reggie Eakins, DOE-ORP	Dieter Bohrmann, Ecology	Rachel Baran, HoANW (phone)
Joanne Grindstaff, DOE-ORP	Melinda Brown, Ecology	Sharon Braswell, North Wind/DOE-ORP
Jeremy Johnson, DOE-ORP	Steven Lowe, Ecology	Kelsey Shank, SN3
Steve Pfaff, DOE-ORP	Dan McDonald, Ecology	Annette Cary, Tri-City Herald
	Gail Laws, WDOH	Katherine Bittinger, WSU
	Earl Fordham, WDOH (phone)	
	Tom Rogers, WDOH	