FINAL MEETING SUMMARY

HANFORD ADVISORY BOARD
JOINT HEALTH SAFETY AND ENVIRONMENTAL PROTECTION COMMITTEE
AND TANK WASTE COMMITTEE

February 13, 2013
Richland, WA

Topics in this Meeting Summary

Opening 1
Effects of Radiation on Critical Concrete Structures (Joint with RAP) 1
Documented Safety Analysis for the Waste Treatment and Immobilization Plant (WTP) 3
Part 2 – DOE Response to HAB Advice #258 (Safety at the WTP) 7
Waste Transfer Line 11
Committee Business 16
Attachments 16
Attendees 17

This is only a summary of issues and actions in this meeting. It may not fully represent the ideas discussed or opinions given. Examination of this document cannot equal or replace attendance and public participation.

Opening*

Dirk Dunning, Tank Waste Committee (TWC) Chair, welcomed the committee and introductions were made. Dirk noted that there were a number of changes to the agenda. The issues are the same, but the order is rearranged. The TWC approved the January meeting summary, and the Health, Safety, and Environmental Protection Committee (HSEP) approved the January meeting summary.

Effects of Radiation on Critical Concrete Structures (Joint with RAP)

Dirk provided a presentation on Waste Encapsulation Storage Facility (WESF) concrete gamma dose damage (Attachment 2). The presentation discussed damage to concrete from radiation dose and showed technical data supporting that as radiation dose increases, concrete loses structural integrity. The presentation touched on what happened at WESF and the Occurrence Notification Center (ONC), why the problem was not discovered sooner, major related policy concerns, effects of loss of water from a single pool, technical issues, data on concrete compressive strength versus gamma dose, structural strength, questions and concerns, and where there might be other related problems. In addition to the information contained in his presentation slides, Dirk emphasized the following:

* Please see Attachment 1 – Transcribed Flip Chart Notes for key points/follow up actions recorded during the committee discussion.

- Loss of water from a pool means an unrecoverable event and would result in facility control loss. No one would be able to safely get in or near the building.
- Six cells, four meters deep, are active and used to store capsules at WESF. Cherenkov radiation glow is visible in a series of time-lapse photos. Secondary radiation is visible in a blue glow.
- Available reports with data on radiation damage to concrete include a 1958 report by R. G. Clark, a 2004 report by D. L. Fillmore, a 2008 report from Poland by A. Lowinska-Kluge and P. Piszora, a 2010 report by C. E. Acevedo and M. G. Serrato from the Florida International University. Revision 1 of the report published by Florida International University notes that there had been a miscalculation of the effects of radiation damaging concrete in the report's Revision 0.
- Graphs shown in the presentation show the range of dose for the most exposed concrete at WESF. Dirk believes that, based on the dose it is receiving, the outer two inches of concrete at WESF has no strength.
- There may be more data in classified reports from the 1950s. Concrete constructed in the 1960s and 1970s is more susceptible to degradation.
- There is potential concern with the tanks. There is a thin concrete pad beneath the tanks. Some of the tanks have had thermal problems. The gamma dose to the concrete may be equal to the thermal problems in the WESF structural analysis.

Committee Discussion
As this particular discussion was based on an issue manager presentation, the comments, questions, and responses are attributed to HAB committee members unless otherwise noted.

C: A physicist in Portland independently verified data presented by Dirk and found that concrete at WESF lost 9% of its strength. DOE should put the most dangerous high-risk canisters out of the pool and into dry storage.

Q: The other cells are not being used for cesium capsules. What are they being used for?

> R: It is thought there is nothing radioactive in the other cells. They may be filled with water. The water is constantly filtered. It may make sense to move some of the capsules into the cells that are not being used.

Q: How are capsules taken out into dry storage?

> R: At one time there was a plan to move the capsules into dry cask storage. However, the cask design included concrete, which now appears unwise. The capsules are moved out of the basins through ports in the basin sides into long transfer basins, then out of the water and into the hot cells and from there into transport or storage casks. Along with the radiation damage to the basin walls, there is also damage to the concrete that forms the basin floors.

Q: What is the timeline for WESF for getting the capsules into dry storage?

> R: Ten years ago the plan was to move the capsules into dry storage within five years. Funding and not knowing what to do with the capsules changed the plan. Right now the plan is to move the capsules sometime later this decade, funding-dependent.

C: Getting the capsules into dry storage will not be a problem. These capsules were shipped across the country. Keeping the capsules in dry storage, however, may be a problem.

C: The Hanford Advisory Board (HAB or Board) should provide input to DOE to keep water in the cells until the capsules are removed.

C: In the worst-case scenario described in the accident analysis, temperature increases and the concrete is completely destroyed. A separate way is needed to get water into the cells in case something goes wrong.

C: If during a potential seismic event the bottom of the basin implodes, a large release would occur. The worst release would occur with a one-meter hole in the wall. If there is a smaller hole, the temperature would increase, but the release would be smaller.

C: The overall ventilation system is not credited in an accident. The discussion of the safety basis development process is very important. The concrete next to the wall has received higher radiation exposure. The question is how far it has progressed in the concrete. The further down in the concrete the failure is during a seismic event, the more important the failure is in terms of strength integrity. The HAB should consider producing potential advice on what an annual review is and how much detail it includes.

C: The next step is not to go to advice, it is to go to DOE and ask if anything is happening that the HAB is not aware of.

Susan Hayman, EnviroIssues, noted that it is important to give DOE an opportunity to respond to committee member concerns before the committee produces potential advice. It would be helpful to identify other topics on which issue managers can follow up with DOE. The committee identified the following topics for issue managers to follow up on with DOE:

- What other facilities should the HAB be concerned about?
- Is there opportunity at old reactors to obtain more data?
- Are there in situ modifications or repairs to basins that might increase their life span?
- What is the timing of the concrete degradation?

The issue managers will continue to work with DOE on this topic. The joint committees will identify during 3-month work planning when an appropriate time is anticipated for further discussion of this issue.

<u>Documented Safety Analysis for the Waste Treatment and Immobilization Plant (WTP)</u>

Rich Bloom, HAB issue manager, introduced the topic and noted that the committee asked DOE to provide an informational presentation to help the HAB understand what is contained within the Preliminary Documented Safety Analysis (PDSA), how the safety basis is maintained given the design changes and unresolved technical issues, how the safety basis may affect existing DSAs for nearby public areas, and what the schedule is for initiating the development of the final safety basis.

Agency Presentation

Vic Callahan, U.S. Department of Energy – Office of River Protection (DOE-ORP), provided a presentation on the PDSA for the Waste Treatment and Immobilization Plant (WTP) (Attachment 3). The presentation included a map of WTP and site boundaries; general information on the contents of PDSA

documents including Preliminary Treatment (PT) Facility PDSA, High Level Waste (HLW) Facility PDSA, Limited Approach Boundary (LAB) Facility PDSA; safety basis maintenance, and the path forward for PDSA reconstitution.

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

Q: What is an offsite receptor, and how are the specific locations of the offsite receptor line determined?

> R: [DOE] An offsite receptor line is the boundary between public areas and on-site areas. The dotted line on the map shows the public areas. A software program calculates the boundary taking into account wind and values for atmosphere dispersion coefficients and indicates the locations at which 25 rem is reached. Conservatisms are built in to account for uncertainties. Currently, the calculation uses a 5 rem criterion. If levels greater than 5 rem are reached, the location is challenged. The location of the line could be concentric circles, but the boundary must be overlaid onto the map. In the event of an accident that would have potential for offsite consequences, Route 240 will have to be secured. DOE-ORP has an agreement with DOE-RL and the RL security forces to blockade or control access in the event of an emergency.

Q: The offsite receptor boundary follows the river on the north side. Is that a matter of convenience?

> R: [DOE] Part of it is. At one time, the boundary extended beyond the river. DOE-ORP expressed dissatisfaction with transferring the land to an authority outside of DOE because these are areas where DOE needs to control access that are further out beyond Route 240. If the land is transferred to another authority, the other authority will not build in emergency preparedness within operations.

C: DOE cannot take control within the Congressional monument. DOE cannot require badges for a national monument.

The joint committees decided to follow up on a discussion about the boundaries of what is onsite or offsite, what is under control for emergency preparedness and operations, and what the limitations are for public access at what times throughout the whole site. This topic will require future issue manager work and potentially reach out to the Emergency Operations Center for more information.

Q: How will DOE address tribal members that are not on-site workers? If there is an upset at the facility and the wind is blowing north, will there be an effort to inform members of the Tribes?

> R: [DOE] The map in the presentation shows the boundaries of what DOE analyzes. DOE-ORP has an agreement with the U.S. Department of Energy – Richland Operations Office (DOE-RL) to close down the site if there is an accident and to alert members of the public.

R: [Washington State Department of Ecology (Ecology)] Ecology has separate agreements for Tribes that are covered under emergency preparedness.

Q: What does HEPA stand for?

R: [DOE] High Efficiency Particulate Air filter.

Q: Are high activity process vessels non-Newtonian?

R: [DOE] Yes. There are five high activity process vessels in pretreatment.

Q: Why are the high-activity process vessels categorized as Safety Class, and could that change?

R: [DOE] The high activity vessels are categorized as safety class based on the material at risk for which DOE analyzes. DOE provides the highest functional classification based on the hazard. They are designed to an American Society of Mechanical Engineers (ASME) national consensus standard. DOE must have reliability that the vessels are able to withstand events such as explosions or seismic activity. It is possible that the classification could change during the final safety analysis for the DSA.

Q: The worst accident exceeds the public evaluation guideline. What does that cause to happen? Does that mean it is reflected back into the redesign to make sure it will no longer exceed that guideline?

R: [DOE] These kinds of results are reflected back into the design as a form of mitigation. DOE looked at material and risk in a facility based on the worst-case scenario. In what is called a parking lot scenario, analysis is completed for what would happen if waste were released out in the open. Computer models take into account dispersion of radioactive material. If waste goes up to the boundary and beyond and is 25 rem total effective dose equivalent, then it exceeds safety guidelines and it achieves Safety Class. DOE is designing something to prevent an explosive event in the event that hydrogen is released into the vessels. A release of large amounts of hydrogen gas in the headspace could yield a potentially explosive event. When DOE specifies a credited control, especially as Safety Class, engineers design the control accordingly. If it is an active system, redundancy is built into the system to a national standard.

Q: What does level of pedigree mean?

R: [DOE] Level of pedigree is the standard to which a part is expected to perform. A part's level of pedigree reflects that the part is built to a certain specification or standard. The contractor also performs on-site inspections and checks to verify performance standards. For example, the piping system is installed in black cells in hard-to-reach areas. These areas will not be able to be assessed after they are in place. DOE needs to specify that they are 100% inspected through non-destructive examinations and ultrasonic and radiographic testing.

C: There is no amount of pedigree that will guarantee that the design is right. There is a problem with not overseeing component fabrication from beginning to end. It would be cheaper to send a person to a fabrication facility and pay them to watch each weld than to have a vessel come out of the shop and fail on site.

Q: What safety designations exist for when material comes into pretreatment and is separated to go to either low or high level waste?

> R: [DOE] There is a transfer line, a pipe, between the two facilities. The transfer line from the tank farms to WTP is classified as Safety Class for the inner pipe and Safety Significant for the outer pipe. There is really no difference for a pipe having a designation of Safety Class versus Safety Significant in terms of the way it is constructed. There is no redundancy required for a pipe. Safety Class is supposed to have the highest level of pedigree, but for a pipe it cannot be designed any differently than a pipe designated Safety Significant.

Q: Is there 100% inspection on the pipe?

> R: [DOE] No, a pipe can still be accessed and dug up once in place.

Q: The presentation notes that Chapter 13 of the PDSA discusses human factors. What does human factors consider?

> R: [DOE] This chapter takes into account human response in the case of an emergency. Not all systems are designed to be automated. Certain administrative controls take the form of human operator interactions. A human operator can respond in a reasonable amount of time. In the pretreatment main control room, for example, there are switches that are going to be operated by a human operator in that room. In the case of a seismic event, the operator in that control room will need to follow an emergency procedure to initiate an action to shut down operations, such as isolating the process vessels and isolating the 21 pump suction isolation valves. The operator must be able to withstand the event and know what switches to use and how fast they can be operated. Analyses consider how long the procedure would take and what would be necessary to perform the procedure in a given amount of time. The operator must be trained in an accident scenario to follow procedures that are easy to perform (e.g. easy to reach the controls and easy to think of what needs to be done).

C: The following concerns have been raised about limitations of the WTP ventilation system:

- A lack of overcapacity and a system designed in a rigid operating parameter.
- Joint seals where two pieces of duct work come together. (These seals were supposedly designed for a 30-year life, while the system is designed to have a longer lifespan.)
- Pipe hangers comprised of a dissimilar metal from the pipe they adhere.

R: [DOE] Joint seals, like all system components, must be demonstrated to remain operable through the system's lifetime. These components are designed for the safety function and are able to demonstrate that ability for the lifetime of the facility for which they were designed. If a pump fails, it can be replaced, and if it is a part that will need to be replaced, it will be designed so that spares are available and so that it can be replaced when necessary. Workers need to bring concerns regarding pipe hangers up through the contractors. The contractors or contractor management must address the pipe hanger issue.

The joint committees decided to follow up with the WTP contractor regarding safety seals and use of pipe hangers comprised of dissimilar metals from the pipes to which they adhere.

Q: There are concerns about the effects of earthquakes on WTP operability. Does DOE have the capability to incorporate seismometers at WTP to shut down operations when seismic activity is detected?

R: [DOE] The pretreatment facility did have some type of ability to detect seismic movement. WTP also relies on the Pacific Northwest National Laboratory (PNNL) seismic monitoring stations to provide seismic activity detection information. Using an automatic system has drawbacks, such as spurious actions shutting down the plant. DOE decided to rely on the human operator to shut down operations rather than having the plant shut down and need to restart based on a false detection of seismic activity through an automated system.

Q: In the past, did the contractor not refer to the safety basis, and are there any lessons learned to come out of this to apply to construction of future facilities?

R: [DOE] There were competing factors between engineering schedules and a lack of oversight from nuclear safety. The safety basis has to be adopted by the owner of the facility.

The committees thanked Vic for his time and agreed to have issue managers follow the topic as the next version is released. At that time, the committees will identify if there should be future committee discussions on this topic.

Part 2 – DOE Response to HAB Advice #258 (Safety at the WTP)

The committee completed the discussion of the agency response to HAB Advice #258 (Attachment 4) that was started at the November HSEP meeting. The committee went through each advice point to make sure the responses were clear and understood. Unless otherwise noted, Steve Pfaff, DOE-ORP, provided agency perspective to committee members' questions and comments during this discussion.

Advice Point 9

C: The response notes that DOE will develop training documents to develop and maintain strong safety culture. This is different than meeting with members of the Nuclear Regulatory Commission (NRC) and the U.S. Naval Reactor Headquarters as was put forth in the advice.

> R: [DOE] It was part of the DOE improvement plan to conduct benchmarking among NRC and the U.S. Naval Reactor Headquarters organizations. Minimal progress has been made on this to date. Published documents from nuclear power associations have been distributed to DOE staff. DOE will conduct a self-assessment after the first year's work is completed. One difference between DOE and the nuclear Navy is that DOE has a more personality-based culture. Naval Reactors' design authority is at the top of the organizational structure. Military personnel carry out and respond to orders on the job that are put before them, and they know exactly what needs to be done. DOE differs because there are problems that need to be solved along the way and issues to respond to.

C: DOE needs to talk to the Naval Reactors and ask for advice about safety culture. Even though Naval Reactors centralize design authority, everyone down the chain of command to the bottom takes ownership and can and is expected to challenge it if there is an issue of concern. Each individual is responsible. Once an issue is raised, there is a quick response. Within DOE, it could be years before an issue is adjudicated.

C: At Naval Reactors, the alert, well-trained operator is the first sign of defense in duty. An operator is believed when he reports that something does not function as it should. Safety is taken seriously. In a government-run shipyard, procedure to change equipment and put it into place is performed instantly and automatically. In a commercial shipyard, until there is an agreement on a contract change, there is no change. Safety is still important in the commercial world, but the owners of the commercial shipyard are worried about pay.

Advice Point 10

C: The sentence "All employee concerns that involve allegations of reprisal, as well as any potential chilling effect that may have resulted, are taken seriously, and are rigorously investigated" implies that the Employee Concerns Program (ECP) is working well. It is disappointing to have this notion in the response. In actuality, the program needs much improvement.

> R: [DOE] ECP has been operating under DOE-RL on behalf of both RL and ORP. DOE-ORP does not have a separate ECP office. Workers could go to the Federal Building to file a concern. Through the process of investigating safety culture concerns, it was discovered that some concerns at DOE-ORP filed through ECP had been lost. In the past when a contractor and an employee brought a concern, most of the time the concern would go back to the contractor to investigate. There was no opportunity to provide the employee with a status update and ask if the employee was comfortable with the concern being investigated by DOE. Some of these issues were reported through the site-wide Speak Up survey. These issues were also raised during the DOE self-assessment direct interviews. This is something DOE will need to work on to make sure

the program is credible so that people are willing to use it. That these issues have been brought to light more recently seems to indicate that people are more willing to raise them than before.

C: Retaliation takes many different forms, and some people are more sensitive than others. Some people cannot take the psychological pressure of reporting an issue. Retaliation can take the form of a look associated with fear of future reprisal.

C: It will be important to resolve technical issues among exempt employees. Reporting an issue for exempt employees is additional work, and they are already overworked.

Advice Point 11

C: [DOE] In the DOE implementation plan for the Defense Board recommendation, there are a couple of actions needed to evaluate the fee structure for Bechtel. Some actions have been completed. A Performance Evaluation Measurement Plan (PEMP) analyzes how DOE evaluates award fees and performance-based incentives. The question is how to incentivize safety. Awarding the contractor more money for safe practices does not have a significant enough impact for the majority of meeting project-related deadlines. A cost-plus fixed-fee contract is not commonly used.

C: Disincentive aspects can be incorporated into the contract, such as Conditional Payment of Fee (CPOF). This could result in Bechtel taking their most qualified workers off of the project.

Q: DuPont was selected for their technical capabilities and safety record in 1943. Is there value in looking at DuPont's history into how safety culture was incorporated and how it was developed?

R: [DOE] In the WWII timeframe, the government hand picked companies for their capabilities. DuPont's safety culture is legendary, and DOE has looked into it. DuPont no longer bids on Hanford Site contracts. A limited field of companies is willing to do this cleanup work and bid on the contracts. Often there are only two or three bids.

C: DOE should consider using Provisional Payment for Fee in contracts and penalize contractors for installing something that is inherently unsafe or not consistent with the safety basis. The fee structure can remain the same, but the provisional payment clause could be altered.

Advice Point 12

Q: Where is DOE communicating behavior expectations and displaying authority?

R: [DOE] The Integrated Safety Management (ISM) guide describes the safety cultural focus areas and attributes. Each year DOE Headquarters (DOE-HQ) provides direction for how to evaluate safety management processes with a directive to continue to implement the Integrated Safety Management System (ISMS). This year the directive came with guidance to pursue self-assessments, and lines of inquiry were provided. DOE-ORP will provide the results from the self-

assessments to DOE-HQ by the end of February 2013. These results could be available for the Board to look at after this time. Some people made comments in the multiple-choice site-wide survey that never made it into the report. The self-assessment can yield better insight into what people are feeling. As part of the self-assessment, DOE staff conducted 31 individual, randomly selected interviews and 7 focus groups of randomly selected work groupings. Bechtel recently restructured their management to separate design authority and engineering. DOE hopes this will provide better interaction and allow for challenging between the two groups. All organizations will go through training, and it will take time to determine which areas need the most assistance for improvement.

Q: Evaluation of leadership behavior applies to looking at individual management and management style. Is that part of the plan?

R: [DOE] DOE self-assessments are geared towards trust of management, worker communication with management, and management feedback to workers. A 360˚ Assessment was not part of this assessment, but DOE did intentionally look for feedback about management. Some of the graphics in the report indicate 20-30% of people showed dissatisfaction with management performance. DOE did not identify anyone that needed to be immediately replaced.

C: When a safety organization, group of workers, or even the exempt personnel responsible for the workforce and the safety of everyday operations have incentives tied to whether or not work is completed, the operations group will try to figure out how to complete the work no matter what, even at the cost of safety. People working for a separate company should not be tied to people who are getting the award fees for work completion.

C: It is important that a worker should be able to bypass the chain of command two levels above them. This should be supported, as a worker does not want to let their boss know that they cannot handle a problem facing them on a daily basis.

R: [DOE] The Safety Culture Integrated Project Team is run by Brian Harkins, DOE-ORP. The rest of the team is not management. This enables DOE to get better response back from interviewees. The management team is amenable to hear feedback without overreacting to it. Kevin Smith, the new DOE-ORP manager, has communicated several ways in which he wants to hear questions or concerns. He has provided times when workers can show up at his office to voice concerns, and he has been good about responding to email. He is working to tighten up how DOE-ORP functions and communicates.

C: DOE-ORP might consider using an independent group whose job it is to critique onsite staff and look for problems. An outside group will be more likely to raise issues than an onsite group.

Q: Do politics play a role in implementing safety culture at WTP?

R: [DOE] Politics has played a role in the past. Projects do not work well together right now. There are residual effects from people's offices being relocated across the street. Something promising that came out of the self-assessment is that employees seem to like what they see in new management, even after a short time.

Advice Point 13

Q: What will happen now that Secretary of Energy Steven Chu has offered his resignation?

R: [DOE] Though Steven Chu has announced his resignation, he has not left yet, and he remains actively engaged in the secretary team he is involved with. The efforts of the teams he established can continue without his direct involvement. There is room for improvement in interaction, even between the teams. DOE has been struggling with the ability to keep information contained while it is under consideration. Ultimately, the outcomes of these groups need to be evaluated through system planning space when information is to be routed to the public. System plans are public documents.

C: Data sheets behind the system plans are no longer available. It is clear that there is information staff wishes to share but cannot.

C: In order to increase credibility, a worker needs to be able to report to senior level staff.

C: There are a lot of large policy issues that need to be discussed related to tiered integration throughout the system. Some areas are being cued for land transition without coordination with other projects on site.

R: [DOE] The self-assessments will be public documents and will be posted on the Defense Board website by the end of March 2013. DOE-ORP's self-assessment report on the past year's actions will be available at the end of May.

The committee agreed on a potential April joint TWC/HSEP topic to follow up on the discussion for the synthesis of self-assessment responses. EnviroIssues will provide combined response point discussion notes from the November and February meeting summaries to send to Sharon Braswell, Mission Support Alliance (MSA), to be shared with Steve Pfaff.

Waste Transfer Line

Mike Korenko introduced the Waste Transfer Line topic. Committee members asked what future risks are associated with transferring waste from the tanks to the WTP. Mike noted that in order to keep the line from plugging, waste needs to be pumped at a faster pace, which creates risk of corrosion. If the line is blocked, there is risk for exposure. The committee asked DOE to provide an informational presentation on the design of the waste transfer line to learn more about these issues.

Agency Presentation

Jeremy Johnson, DOE-ORP, provided a presentation on Tank Farms to WTP Transfer Lines (Attachment 5) and a diagram of the transfer system (Attachment 6). The presentation provided information on WTP feed lines, erosion and corrosion considerations, transfer line operations, the Fitness for Service Program, C-Farm Jumper, and SY transfer lines. In addition to the information contained in his presentation slides, Jeremy emphasized the following points:

- Three lines will eventually feed waste to WTP. The lines have the same design as lines in the cross-site transfer system. The lines are designed to be maintenance-free throughout their lifespan.
- The fiber glass insulation jacket on the outside of the WTP feed line acts as waterproof exterior, and the fusion bond epoxy coating is relied upon to keep the waste isolated from the environment. The feed lines are pipes buried between four and half to nine feet below ground. In the cross-site transfer system, pipes were installed in trenches and backfilled.
- The old jumpers, or removable connectors, in the C Farm portable above ground valve boxes were removed. New stainless steel jumpers were installed. Blue, flexible ultrasonic transductive arrays allow workers to take ultrasonic measurements of the radius on the jumper where the most erosion is expected to occur. These jumpers were used to transfer waste out of C-107. To date there has been no measureable loss of pipe wall thickness on the jumpers.
- As part of the American Recovery and Reinvestment Act (ARRA) work, non-compliant transfer lines were replaced. DOE was unable to conduct ultrasonic testing on the pipes to determine corrosion because of the dose. DOE cut out a section of the pipe to conduct surveys to determine if there was corrosion. On one line it could not be determined that there was any measurable wall thinning. On the other line, some wall thinning was found that equated to less than one-thousandth of an inch per year. This was within the acceptable standards. A similar survey was done in the AP Farm prior to SY. Workers dug down to the line and removed the insulating material. No measurable wall loss from corrosion was discovered. Electro-resistivity sensors were installed on the pipe and in the soil that will indicate corrosion on the lines. If there is corrosion, there is a change of resistance on the wires.

Committee Questions and Response

Q: Have animals been attracted to and mined the lines? There have been instances where some fox and rodents liked the flavor of the lining on the line and wanted to forage it.

R: [DOE] Animals mining the line have not been an issue.

Q: There were problems at the K East and K West transfer lines because sandy waste wanted to travel in straight lines. Special pumps were needed at Savannah River Site for this reason. There is concern for the material that will come out of the single shell tanks (SSTs). Rubble coming out of the SSTs might be overbearing for the pipes. There are no booster pumps in the system. A lot of pressure would be needed initially. From an engineering standpoint there is not a lot of confidence in pushing the waste through the system with a single pump. How long is the line in comparison with the normal transfers between tanks?

R: [DOE] DOE is evaluating the velocity required to push waste through the line. There is the potential that for some of the tanks that the system would fall below the critical velocity. An evaluation will be necessary to determine if pressure can be upgraded or if booster pumps can be installed. The elbow was instrumented on the C Farm jumper so that the solid material coming out of the SSTs could change direction and increase the friction.

Q: What accident scenarios considered in the safety basis would DOE need to mitigate?

R: [DOE] DOE would need to mitigate a spray leak to a co-located worker.

Q: Is there some amount of flexibility in the pipe, or will DOE need to artificially insert four 90-degree joints for each expansion loop?

R: [DOE] All of the piping is rigid. There are some flexible jumpers and pits.

Q: Is the internal diameter of the WTP transfer line consistent with other transfer lines, and is there a blending apparatus for the solids in the tanks so that a large chunk of waste is not sent down the line?

R: [DOE] The design of this transfer line is consistent with the rest of the transfer systems. Primary pipes are two to three inches. The system does not currently include a blending device.

C: Waste is pretty well broken up by the time it is retrieved from the tank.

Q: During the flushing process, does a black flush go back to the tanks, and does it go to the tanks before it goes to the evaporator?

R: [DOE] Back flush goes back to the ascending tank and is then sent to the evaporator.

Q: [Ecology] Does DOE have leak detection, and what is it?

R: [DOE] There is leak detection in the form of a cable that runs the length of the pipe.

Q: The leak detection system does not likely have a 40-year lifespan. Is there a provision to replace it? It may be subject to radiation damage more than the insulation.

R: [DOE] The transfer line was designed to be maintenance free. This information is available in the design documentation.

Q: [Ecology] Are inspections conducted by Independent Qualified Registered Professional Engineers (IQRP)?

R: [DOE] Yes, DOE has IQRP in certification of designs and inspections.

C: It might be wise to go into the system and make physical observations to see if there are any impacts to the insulation.

> R: [DOE] For the cross-site transfer lines DOE conducted an assessment in which the pipe was dug out and exposed. DOE plans to continue observational assessments opportunistically at a minimum when pipes are exposed to make sure pipes are not corroding faster than expected.

Q: Has Ecology seen integration from groups working on the tanks and transfer lines talking with people working on WTP, and how is that dialogue going?

> R: [Ecology] A system team is conducting evaluations and reports.

Q: Before waste is transferred through the WTP transfer line, will the line be evaluated to make sure that waste can be transferred through it?

> R: [DOE] Yes. As soon as the line is hooked up to WTP, there will be an IQRP assessment to make sure the line is sound. At minimum the encasements will undergo pneumatic assessments.

Q: Is anodic protection used on the line?

> R: [DOE] No, the lines are designed to be waterproof and are isolated from the environment with the waterproof fiberglass encased plastic.

Q: What is the range of temperatures that a pipe will experience during operations, and is there a maximum or minimum temperature expected? The pipe needs to remain cool enough so as not to melt the polyurethane insulation.

> R: [DOE] The minimum and maximum temperatures are available in the Integrated Waste Feed Delivery Plan, and there is a control on the temperature of the waste that can be transferred outside of the tanks.

Q: Will the insulation be destroyed from radiation damage from the fluids passing through it?

> R: [DOE] This is something DOE is required to look into as part of the compatibility assessment.

Q: Do you know if there is a design basis document for the technical parameters associated with the pipeline design? With enough radiation exposure, plastics are destroyed and polyethylene turns to dust.

> R: [DOE] DOE will follow up with issue managers with this information.

C: Erosion and corrosion from solids are not the only issues of concern. Depending on the flow rate, cavitation is also a concern as waste travels around corners. DOE should consider lining the interior of the elbow for potential erosion resistance.

C: These pipelines connect disparate sections of the site that are electrically different. There may be some places where a current could flow through the pipe if sections are not isolated. If the transfer line is miles in length, there is a good chance that there could be voltage and current flows. That is something to watch for.

Q: Historically there were active cathodic protections in the tank farms. Are any still active?

> R: [DOE] Yes, there are still active systems.

Q: Earlier today the committee discussed the safety basis for WTP. What does it mean if the pipeline is Safety Significant or Safety Class?

> R: [DOE] The pipeline is currently Safety Significant, but in terms of the line itself, it does not make much of a difference if it was Safety Class.

Q: Is this system dependent on additional water to keep the temperature of the waste down before it goes through the line? If so, what are the calculations on the volume that will have to be processed to finish the whole campaign?

> R: [DOE] There is no reliance on water to maintain temperature during transfers. The waste in the tank must cool to a required temperature before it is transferred out. Waste is not diluted for the sole purpose of decreasing temperature. For AY-101 DOE would need to have a separate independent cooling module to help cool the contents.

C: It may take a long time for a tank to cool down. Given the content, tanks may not cool down.

C: It was noted in the past that some of the original pipelines plugged because the viscosity of the waste was high enough that it led to gelation. There was also inverse solubility, where as the waste is heated, it precipitates. Has this issue been addressed?

> R: [DOE] This is addressed in the technical design document.

Q: As the pipes are installed, are they hydrotested or vacuum tested?

> R: [DOE] Once the pipes are installed, the primary is hydrotested, and DOE conducts pneumatic testing of the encasement.

The committee agreed that issue manager work remains on this topic related to technical questions. Issue managers will review the technical documents, consider them in terms of the safety basis and policy issues, and think about the next committee discussion. System Plan 6 is available on the Hanford.gov website.

Committee Business

Update the HSEP 3-Month Work Plan

HSEP committee members agreed that there is no compelling reason for HSEP to meet in March. The committee decided that April was timely to receive an update on Beryllium, a briefing on the January 2013 Plutonium Finishing Plant (PFP) contamination event, flammable gas (as a joint HSEP/TWC topic), and follow up on safety culture progress (as a joint HSEP/TWC topic). The committee agreed April was timely to discuss a new topic, portable exhausters for tanks (including leaks and fire department response). Becky Holland noted that there have been recent leaks out of the exhausters, and the fire department has responded at the tank farms. The committee will address advice responses being tracked by HSEP when those responses are received.

Susan Hayman suggested HSEP hold a committee call during the week of February 18 to frame meeting topics even though HSEP decided not to meet in March. Susan encouraged committee members to review the 2013 priorities while developing framing questions for April topics. Susan will follow up on whether or not HAB advice on budgets could be accepted in June. If advice on budgets will be accepted in June, there may be no need for the Board to meet in April. The Board does not typically meet if it is not putting forth any advice. Even if the Board does not meet in April, committees can still meet.

Laura Hanses noted that Roby Robinson had come to speak with HSEP in January about industrial hygiene equipment. Laura had sent him an email letting him know that the committee appreciated his work. Roby wrote back extending his appreciation to the HAB for support of the program and indicated that there are people in the field that benefit from HAB efforts and energies. Laura noted that Roby no longer works with Washington River Protection Solutions (WRPS).

Update the TWC 3-Month Work Plan

TWC committee members agreed that there is no compelling reason for TWC to meet in March. The committee decided that April was timely to receive an update on System Plan 7, supplemental pretreatment at WTP, iron phosphate glass, integrated project team update on AY 102, and single shell tank integrity milestones. The committee agreed that there could be potential advice on the topic of iron phosphate glass, and issue managers will frame this topic in detail in advance of the meeting.

TWC committee members agreed that May would be timely to follow up on tank sampling and mixing and to receive an update on radiation effects on concrete (as a joint HSEP/TWC topic). The waste incidental to reprocessing (WIR) comment period and performance assessment (PA) integration Waste Management Area (WMA) – C update topics were tabled.

Attachments

Attachment 1: Transcribed Flip Chart Notes
Attachment 2: Waste Encapsulation Storage (WESF) – concrete gamma dose damage presentation

Attachment 3: Preliminary Documented Safety Analysis (PDSA) for the Waste Treatment and Immobilization Plant (WTP) presentation
Attachment 4: DOE response to HAB Advice #258
Attachment 5: Tank Farms to WTP Transfer Lines presentation
Attachment 6: Transfer System diagram

Attendees
Board Members and Alternates

Richard Bloom	Harold Heacock	Melanie Myers
Shelley Cimon	Rebecca Holland	Jean Vanni
Sam Dechter	John Howieson	Maynard Plahuta
Dirk Dunning	Mike Korenko	Dick Smith
Laura Hanses	Pam Larsen	Keith Smith
Barbara Harper (phone)	Bob Legard	Margery Swint
	Liz Mattson	

Others

Kim Ballinger, DOE-RL	Dieter Bohrmann, Ecology	Mark Keffeler, Boilermakers
Carrie Meyer, DOE-RL	Michelle Hendrickson, Ecology	Alex Nazarali, CTUIR
Steve Pfaff, DOE-ORP	Jeff Lyon, Ecology	Abby Chazanow, EnviroIssues
Tom Rogers, WA-DOH		Susan Hayman, EnviroIssues
		Sharon Braswell, MSA
		Barb Wise, MSA
		John Britton, WRPS

Radiation/Concrete

- Dry storage containers for canisters
    - Feasibility of making this move safely?
- Move capsules into cells not currently used
- When would transfer to dry storage occur?
- What is an annual review?
- How about upgrading the wet storage? Interim?

Page 1

Radiation/Concrete (cont.)

- What other facilities should we be concerned about?
    - (March 2013 – 2015 Vision Prev. in RAP)
- Is there opportunity at old reactors to obtain more data?
- Are there in situ modifications/repairs to basins that might increase their life span?
- Timing…Do we have "luxury" to make decisions

Page 2

Follow Up – WTP DSA

1. Discussion of control for emergency response/preparedness
    - Public Access – site-wide/WTP
    - Future IM work
        - From RL/ORP on boundaries
        - Future implications to land transfer
2. Follow up with WTP contractor re: safety seals, dissimilar pipe/hanger metals (IM coordinate w/DOE on this)

Page 3

Follow Up: #258 Advice Response

1. Current concerns
2. Synthesis of "self assessment" responses – share w/committee/HAB
    - (Transfer to DNFSB by March 2013)
    - (DOE actions to DNFSB by May 2013)
3. Follow up discussion on how safety culture concerns are being addressed
    - Updates as time goes on
    - → DOE identifying what is timely to bring to committee
4. Consolidate discussion from Nov./Feb.
    - Share with Kevin Smith -> Sharon -> Steve

Page 4

Follow Up: Waste Transfer Line

1. How are lines buried (encased? Direct buried?)
    - Follow up with DOE
2. What are assumptions about batching? Timing, volume, etc.
3. How is expansion/contraction being handled? (e.g. expansion loops)
4. Have effects from radiation exposure on insulation – epoxy, leak detection wire, etc.—been considered? What are they?
5. Jeremy will track down design document for issue managers
6. IMs:
    → Review tech. docs -> safety basis -> dialogue
    - Mike, Dirk, Vince, Rich

Page 5

TWC – April (work planning)

- System Plan 7
    - Dan McD./ Jeff Lyon
- Suppl. Pretreat at WTP
    - IM – All
- Iron Phosphate Glass
    - Potential advice
    - IMs Frame
- Integrated project team update AY-102
- SST Integ. Milestones

Page 6

TWC – May (work planning)

- Follow-up – Tank sampling, mixing
- Radiation on concrete (Joint TWC/HSEP)

Page 7

TWC – Bin (work planning)

- WIR Comment period
- PA integration WMA-C update
- Advice Response DSTs
- TC & WM EIS topics/ROD?
- Advice Response site-wide Permit (IM)

Page 8

HSEP – April (work planning)

- Jan 2013 PFP Contam. Event Briefing
- Beryllium update
- Portable Exhausters for tanks
    - Leaks? Fire Dept. response
- Follow up safety culture progress (Joint TWC/HSEP)
- Flammable Gas (Joint TWC/HSEP)

Page 9

HSEP – May (work planning)
(no topics noted)

Page 10

HSEP – Bin (work planning)

- Advice Response (ISM)
- Advice Response (Indep. Review)

Page 11