Oregon Hanford Cleanup Board

Hampton Inn and Suites
Hood River, Oregon

Monday, April 3, 2017

Members in Attendance
Kristen McNall, Chair
Ted Taylor, Vice-Chair
Mecal Seppalainen
Lori Brogoitti
Steve March
John Howieson, M.D.
Dave Ripma
Dan Solitz
Armand Minthorn, Confederated Tribes of the Umatilla Indian Reservation
Justin Iverson (Oregon Water Resources Dept.)
Ken Niles (Oregon Department of Energy)

ODOE Staff
Mark Reese
Dirk Dunning
Dale Engstrom
Sara Lovtang

Tri-Party Agencies
Doug Shoop, U.S. Department of Energy, Richland Office (DOE-RL)
Tom Teynor, DOE-RL
Rich Buel, DOE-RL
Moses Jaraysi, CH2M Hill Plateau Remediation Company
Jennifer Copeland, CH2M Hill PRC

Public
Sharon Monteiro
Eileen Laramore
Shelley Cimon
Jürgen Hess

Administrative

Chair Kristen McNall opened the meeting at 1:01 p.m. and welcomed Board members and guests.

After introductions, the September Board meeting minutes were approved with a minor change.

Ken Niles, Oregon Department of Energy (ODOE), explained some proposed revisions to the Board's Bylaws. At the Board's January 2016 meeting, during the election of the Chair, there was a tie vote and the bylaws did not indicate how to break that tie. Staff proposed some language for a process to do that. The draft language also requires a Board member to be present to cast a vote. In addition to changes related to the election of officers, a few other changes related to the role of the Vice Chair were also proposed.

Board members had differing opinions about the proposed changes. There were strong opinions on both sides of the argument as to whether a Board member should be present to vote. No one was thrilled with the concept of breaking a tie through the flip of a coin or some other element of "chance," yet no one could offer a better solution. After some discussion, Kristen suggested the Board members think about the proposed changes and the topic would be revisited on Tuesday.

Hanford 2020 Vision

Doug Shoop, Manager of the U.S. Department of Energy's Richland Office (DOE-RL), provided the Board with an update on cleanup progress and on plans and expectations for the next few years, in what has been termed the "2020 Vision."

Doug said several major cleanup accomplishments are expected within the next few years – in some cases they represent the culmination of more than 20 years of work. With completion of some of these projects, funding should be available for new work, and the priority of that work needs to be determined. He invited the Board to help provide its input.

The 2020 Vision is based on anticipated funding of about $900 million per year. If DOE receives additional funding, it will be able to accomplish some of the work more quickly. If the budget is less, than it will take longer. Of that $900 million, about $550 million is referred to as 'MinSafe,' which is the funding needed for basic operation of the site. MinSafe does not include cleanup work.

By December 2019, Doug said DOE is scheduled to complete the Records of Decision (ROD) for all six of the reactor operable units. Considerable cleanup work was conducted at each of the reactor areas under interim RODs. Two of the final RODs have been completed, and Doug expects a ROD for the D and H areas sometime within the next month.

By that same December 2019 deadline, Doug expects all waste site remedial actions within the river corridor will be completed, with the exception of work at the K Area and the 618-11 burial ground. All groundwater actions will have been implemented.

DOE expects to complete characterization of 5,000 acres of former fruit orchards by August 2018. The orchards pre-date Hanford operations, but DOE assumed the liability when it took over the land. Like many orchards, pesticides with arsenic and lead were used, which left contamination behind.

One of the toughest challenges DOE faces in the next few years is remediation of highly concentrated contamination beneath the 324 Building, which leaked from a hot cell in the building. Because of the intense radioactivity, the work will need to be done with remote-operated equipment. Doug said equipment is being installed in a mock-up of the hot cell, to allow workers to practice in a safe environment. DOE has a Tri-Party Agreement milestone to have the contaminated soil removed by December 2019. Demolition of the structure itself is due by September 2021.

Remediation work is wrapping up at the 618-10 burial ground, which is just a few miles north of the 300 Area. Buried waste has been removed from all of the trenches, and 80 of the 94 vertical pipe units have been remediated. This work is due to be complete by September 2018. Doug said the work may be completed by the end of this calendar year.

Work at the K-West Basin is also looking to be ahead of schedule. The equipment needed to move the sludge out of the basin has been installed ahead of schedule, and removal activities will begin this year – well ahead of a September 2018 milestone. Doug said that if all goes well, workers should be able to complete removal of the sludge as much as a year ahead of the December 2019 milestone. Once that is done, final cleanup of the K Area will begin.

The Plutonium Finishing Plant (PFP) should be "slab-on-grade" by late this summer. Doug said this will culminate work that began back in 1990 to stabilize and remove plutonium from the facility, and then clean it out sufficiently so they could begin demolition.

Doug thanked Oregon for giving DOE some good advice related to the vulnerability of pool storage of nearly 2,000 cesium and strontium capsules. DOE has begun the process of planning for moving the capsules to dry storage. It will be safer and save money.

Groundwater treatment is going well. Systems have been built; enhanced; and expanded.

Once these major projects are behind them, Doug said the focus will move almost exclusively to the "inner area" of the Central Plateau. There is a considerable amount of waste site characterization that is necessary to develop the cleanup documents and plans.

Doug is hopeful there will be sufficient funding available to devote towards badly needed infrastructure upgrades. Much of the infrastructure – such as water systems, the electrical distribution systems and roads – is decades old and badly in need of repair or replacement. Since cleanup will continue for decades, they need to have the infrastructure in place to support this ongoing work.

Doug said there is still work to be done to fully transition DOE properties to the Manhattan Project National Park. A transition plan was complete in March. Its implementation will begin over the next year and a half.

New Memorandums of Agreement for Tribal access to Hanford lands are being completed. Doug said they are working closely with the tribes to establish protocols for access for some activities.

DOE is also hoping to have new Hanford cleanup contracts awarded and contract transition completed by December 2019. The new work will total about $27 billion in scope.

Doug is also hopeful there will be some partial settlements agreed to as part of the Hanford Natural Resource Damage Assessment within the next two years.

Doug mentioned that most of the DOE-RL staff have moved from the Federal Building in Richland to buildings near the DOE-Office of River Protection (DOE-ORP). DOE-RL and DOE-ORP are assuming they will be re-combined into one DOE office in September 2019, and there is a lot to do in the meantime to coordinate the work of the two offices.

Finally, Doug said now is the time to begin identifying the next priorities for cleanup, and he wanted Oregon and the Board to provide input later this year.

Mecal Seppalainen, Board, asked Doug about merging the RL and ORP offices, and when this planning began. Doug responded that discussions have been occurring for several years. The 2012 legislation that extended ORP terminates ORP as a separate office on September 30, 2019 unless the Assistant Secretary for Environmental Management determines that termination would disrupt effective management of the tank waste operations.

Mecal asked why Doug is confident the K-Basin sludge will be successfully moved away from the river. Doug replied that after several failures, the contractor looked at it much more methodically. They constructed a full-size replica of the K-West basin to allow workers to develop the tools and practice the techniques in a safe environment. That has been done successfully, and the equipment has now been installed in the basin and will soon be ready for operational testing.

Ken asked Doug whether DOE will conduct structural tests of the concrete in the storage pools once the cesium and strontium capsules have been removed. When the issue was first identified as a concern, it was soon discovered there is very little data available related to the effects of high radiation on concrete. Doug said DOE should do that to gather that data, but says nothing is planned at the moment.

Plutonium Finishing Plant Status

Tom Teynor, Federal Project Director for DOE-RL, updated the Board on demolition progress at PFP.

Tom said ever since PFP was shut down in 1989, they have been working towards getting the facility ready to demolish. That included stabilizing the plutonium, cleaning out heavily contaminated gloveboxes, removing piping, and transferring the plutonium to the Savannah River Site. After more than 25 years to accomplish all this work in what was by far Hanford's most contaminated facility, they could finally begin to demolish the several facilities that make up the PFP.

Hanford workers have just completed demolishing the 242-Z facility, the site of a 1976 chemical explosion which severely injured Hanford worker Harold McCluskey. Prep work is underway on the Fan House and the canyon building itself (234-5Z Building) in preparation for demolition. Steam lines have been secured and electrical power removed. Staff have all been moved out of the building to trailers.

Demolition is now underway on the Plutonium Reclamation Facility. Because of potential airborne contamination, only a certain amount of demolition will occur each day. Pacific Northwest National

Laboratory developed a chemical air dispersion model to determine how much work could be done safely daily. Larger sections of the canyon could be demolished each day, depending on monitoring results for air contamination.

Water misting machines and a liquid fixative are being used to keep dust down and avoid spreading contamination from the immediate demolition site.

In response to a question, Tom said the fixative will last long enough to get the demolition debris into Hanford's Environmental Restoration Disposal Facility or packaged for disposal at the Waste Isolation Pilot Plant (WIPP).

After the facilities are demolished to slab-on-grade, extensive characterization will be necessary to understand the contamination that remains below grade in pipes, tanks and the soil. Ten large gloveboxes are left in the 234-5Z facility. Three will come out prior to demolition, the others during the remaining demolition work.

Kristen asked whether the water used for dust control was driving contaminants into the soil. Tom said the fixative helps prevent contaminants from seeping into the ground more than a few inches. Once demolition is complete, they will scrape the soil to collect any potentially contaminated soil.

Tom said that transuranic material will be sent to Permafix for size reduction, and then will eventually be sent to WIPP. He said all the waste has been studied for chemical compatibility to meet WIPP's waste acceptance criteria.

Lori Brogoitti, Board, asked why Hanford is a low priority for sending waste to WIPP. Doug responded that in part it is because Hanford has had too many other higher priorities and has not had funds available to devote to getting transuranic waste ready to ship. That led to other sites getting a higher priority on planned shipments. Doug also said that was an issue worth revisiting, to see if there is consensus to raise the priority of dealing with transuranic waste at Hanford.

Review of Activities/Events since May Meeting

Ken provided a review of relevant Hanford and Board related activities since the Board's last meeting in September 2016. He mentioned that because of the postponed January meeting, there was a lot to cover.

Former Texas Governor Rick Perry is the new Secretary of Energy. At his confirmation hearing in January, he addressed several questions about Hanford and the DOE cleanup that were raised by Washington Senator Maria Cantwell. He said he was committed to working with Senator Cantwell to prioritize what is one of the most "dangerous and polluted sites we have in this country." He also said he understands and is committed to cleaning up nuclear waste that is the legacy of the Cold War.

Ken shared information from a national meeting he attended in November with other states and tribes from around DOE sites. DOE representatives from the sites and from Headquarters also participated. The meeting occurred a few weeks after the Presidential election, and there was considerable discussion and speculation about how the new Administration would handle the DOE cleanup.

Andy Fitz, a deputy Attorney General with the State of Washington, shared recommendations he had as unsolicited advice to the new Secretary of Energy.

- You are stepping into an established process – there are compliance agreements, regulatory requirements and Consent Decrees in place and significant expectations have already been established.
- Temper the urge to reinvent the process – these are multi-generational projects, constant shifts derail progress and increase costs.
- Don't spring surprises – it diverts energy and focus and creates mistrust.
- Pick relevant battles – an example he gave from Hanford was a long fight with DOE about whether the state could use the word "radioactive" in a state permit.
- Regulation is not the problem, but fighting regulation can be one of the problems. Sometimes DOE expends more energy trying to get around something rather than complying.
- Productively anticipate the challenges ahead – budget needs, a shrinking political map of support.

David Klaus, then the Deputy Under Secretary for Management and Performance for DOE, also spoke of the transition. He explained some of his messages to the transition team, which he expected to meet with.

- Your part of this whole process is just a small slice – it began back in the early 1940s with the Manhattan Project, and won't be complete until 2075 or so.
- Priorities should include:
    - Establishing long-term financing
    - Continued focus on project management needs to be maintained
    - Recognize that DOE does have legal and regulatory commitments – you must work within this process
    - Developing new technology has continually been underfunded
    - Recognize the importance of the next generation workforce (only 4 percent of DOE's workforce is under the age of 30)
    - Recognize our partners – meet with them, get to know them, rely on them, work with them

Ken also offered his perspective on what we've typically seen with a change of Administration – regardless of party. Ken said these three things invariably happen:

- There will be an attempt to reduce the cleanup budget – although the first numbers proposed by the Trump Administration actually increased the DOE Environmental Management program
- Key Environmental Management positions within DOE will likely remain unfilled for many months

- There will be a “how long is this supposed to take and how much is this supposed to cost?” moment, followed by proposals for a “faster, cheaper” cleanup.

The WIPP disposal site has re-opened – now three years since the accident where a waste barrel burst open, and spread radioactivity throughout much of the repository.

DOE has decided to close some areas of WIPP – abandoning some disposal areas because of ceiling instability and one disposal room is now full of contaminated equipment.

New Waste Acceptance Criteria is in effect for transuranic waste coming to WIPP. Programs at each generator site must be updated to meet the new requirement. All previously certified waste will be evaluated to determine if additional documentation, characterization or treatment is required. This is all in an attempt to not have a repeat of the chemical incompatibility that led to the waste drum bursting.

Until they can build a new ventilation shaft – which is expected to be about five years from now, WIPP will operate at a much reduced level in terms of waste emplacement compared to the time before the accident.

The first waste to be emplaced was waste that had been stored on the surface of WIPP. That occurred January 4. For the last few months, they have been working to move all the waste on site to the underground.

One other significant change at WIPP. At the surface, the workers are in jeans and typical work clothes. Underground they are all suited up in anti-contamination suits, which will now be the case for waste emplacement for some time to come, until they do expand the disposal area into uncontaminated salt.

Shipments to WIPP begin this week, with waste coming from both the Idaho National Laboratory and the Savannah River Site in South Carolina, but only two shipments per week initially.

There is still some of the Los Alamos waste that is currently being stored at Waste Control Specialists in Texas. However, some of the waste in Texas is from the same batch of waste that caused the drum to burst and it cannot be shipped without some kind of treatment. DOE is still figuring out how to address that waste.

Ken mentioned some changes in DOE Hanford leadership involving managers that have visited the Board in recent years. Tom Fletcher is now the DOE-RL Deputy Manager, after working as the Tank Farm Manager for a number of years. Ben Harp is now the DOE-ORP Deputy Manager. And Jon Peschong is now the One System Director – which is the organization that is charged with integrating the tank farm work with tank waste treatment.

Ken mentioned that top officials from Hanford – the managers (or representatives) from DOE-RL and DOE-ORP, along with the local Hanford project managers for the State of Washington and the U.S. Environmental Protection Agency – will participate in a webinar on April 12 called “Hanford Live.” The webinar is a replacement for State-of-the-Site meetings that have previously been conducted around the region.

Detailed Review of Oregon Comment Letter on Plans for Final Disposition of Hanford's Transuranic Waste

Ken next walked the Board through a Hanford document called the M-91 Engineering Alternatives Study. It was a document ODOE commented on.

M-91 refers to the series of milestones in the Tri-Party Agreement that dictate what will happen with a portion of Hanford's transuranic waste. The State of Washington can only regulate radioactive waste if it also has a chemical contaminant mixed in. It is referred to as mixed waste.

The non-mixed waste – in which the only contaminant is radioactive waste – is not regulated by Washington. Ken said this document did combine the two to give an overall assessment of transuranic waste at Hanford.

One pertinent milestone related to all this is M-91-48, which requires complete shipment of all mixed transuranic waste in above-ground storage after June 30, 2009 and in retrievable, below-ground storage. That waste must be shipped off site by September 30, 2030.

Transuranic waste was generated primarily during the research, development and production of nuclear weapons. Most of the waste consists of such things as laboratory clothing, tools, gloveboxes, rubber gloves and air filters, contaminated with small amounts of plutonium and other radioactive elements. It can also include highly contaminated soils and sludges. Because it will be hazardous for such a long period of time (tens of thousands of years or more), under U.S. law it is to be isolated in a deep geologic disposal facility – which is WIPP.

Transuranic waste can further be defined by contact-handled (CH) versus remote-handled (RH). CH waste has little to no penetrating radiation, so workers are able to be in close proximity to the containers and barrels. RH transuranic waste does have penetrating radiation, which unless it is shielded, poses a hazard to workers. Dealing with RH waste is much more difficult, because you have to use heavy shielding and remote equipment. From a transportation standpoint, as an example, because of the shielding you need to use for the RH waste, a typical WIPP RH shipment is three 55 gallon drums of waste. A typical WIPP CH shipment is 42 barrels. There is more CH waste at Hanford, but the RH will require more shipments.

There is also waste that is called "suspect-transuranic." Transuranic waste as a waste category was created in 1970, and waste was set aside beginning at that time with the intention it would eventually be retrieved and disposed. In 1982, the technical definition was changed – the concentration of transuranic elements was allowed to be ten times higher than the initial designation. From that point on, waste set aside likely meets that newer definition of transuranic. But the waste set-aside from 1970 to 1982 may have the lower concentrations and no longer be considered transuranic. Until that is known, it is suspect transuranic.

In evaluating Hanford's transuranic waste, this document includes both CH and RH, both legacy and newly generated, and suspect transuranic as well. It's not the full story of Hanford's transuranic waste,

but it is most of it. The document addresses: retrieval; characterization; processing; certification; and shipment.

In 1970, DOE began to "store" waste containers in Hanford's burial grounds, under dirt, with the intent they would eventually be retrieved, processed, and sent to WIPP. About 37,300 containers – mostly 55 gallon drums – were stored in this manner.

There were also "alpha caissons" in one burial ground. These are somewhat similar to the concept of the vertical pipe units that have been talked about in the 618-10 and 618-11 burial grounds – basically a method to get more radioactive waste down at the bottom of these pipes. The records show 5,545 waste containers – mostly one gallon size "paint cans." This waste is expected to be RH waste.

There were two different major campaigns to dig up this retrievably stored waste that ran from 2003 through 2011. Between these two retrieval campaigns, about 25,000 drums were recovered. Nearly 12,000 55 gallon drums remain in below-ground storage, plus some 300 miscellaneous containers.

All of this previous work involved only CH waste. Consequently, the existing or legacy infrastructure and capabilities at Hanford are exclusive to CH waste.

This report estimates 12,000 containers of CH waste remain to be retrieved; 14,200 containers to be characterized; 9,950 containers to be processed; 49,800 containers to certify (the large increase is because of newly-generated waste from the cleanup); and 2,800 shipments to WIPP.

For RH waste, this report estimates 5,700 containers to be retrieved; 6,450 containers to be characterized and processed; 18,200 containers to certify; and 3,650 shipments to WIPP.

In general, existing or "legacy" capabilities are sufficient to handle much – but not all – of the CH waste, in terms of retrieval, characterization, processing, certification and shipment. In some cases, these aren't sufficient, and there would need to be some new facilities or new options developed.

DOE could potentially modify Hanford's Waste Receiving and Processing Facility, which began operation in 1997 to characterize and package CH waste for shipment to WIPP. Another option is to send waste to Idaho to make use of their Advanced Mixed Waste Treatment Plant. However, to get the waste to Idaho, the report concludes that transportation packaging requirements would need to be reduced, which Oregon indicated in comments on the report that it opposed.

For the RH, Hanford will need to develop a new capability to retrieve waste from the alpha caissons, and it would need some new facility or capability to characterize, process, certify, and load RH shipping casks. This lack of capability has been noted since almost the beginning of Hanford cleanup, and a decision for how to achieve this capability to deal with RH waste has been pushed back several times.

In addition, portions of the remaining waste are unique waste forms and are not considered acceptable for disposal at WIPP. Shipment of some of this RH waste to WIPP for disposal does not appear to be technically or economically feasible. In some cases, a single container of RH waste would require hundreds of RH shipments to WIPP. Cost and schedule for that is not feasible.

This document therefore proposes Monitored Natural Attenuation for just over 100 containers of waste:

- 35 waste containers from the 324 Building that are stored in vaults in a burial ground
- 32 miscellaneous high-curie waste containers stored at the Central Waste Complex (CWC)
- 34 canisters of vitrified logs originally intended for Germany's underground repository testing – stored in 8 shielded casks near CWC.

The document states that long-term storage of these wastes at Hanford would allow the radioactivity to decay. Oregon agrees that storage up to a few decades may be viable, but is concerned about the potential degradation of the storage containers over a long period of time, and believes some type of better solution needs to be proposed.

Oregon also raised concerns about the ability of DOE to make these estimated 6,450 shipments of transuranic waste from Hanford in what would be a fairly small window – 2024 to 2030. To get all of Hanford's transuranic waste to WIPP prior to 2030 would require about 20 shipments per week, every week, if they didn't start shipping until 2024. Experience has demonstrated that number of shipments is not sustainable over such a long period of time and through winter conditions.

Public Comment/Adjourn

Jürgen Hess, Hood River, said he has worked with ODOE over the years. He welcomed the Board to Hood River. He expressed concern about the federal budget and suggested that since the mess at Hanford was created in the name of national defense, that perhaps Hanford cleanup should be part of the defense budget.

Mecal then debuted an original song she wrote about Hanford. It is posted on YouTube and can be found by searching its title – "to not repeat." The Board watched the video and listened to the song. A number of Board members complimented Mecal on the song.

Kristen adjourned the meeting for the day at 5:13 p.m.

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Tri-Party Agencies
Ben Harp, DOE-ORP
Ken Wade, DOE-ORP
Brian Harkins, DOE-ORP
Dieter Bohrman, Northwind
Alex Smith, Washington Depart of Ecology

Public
Sharon Monteiro
Eileen Laramore
Shelley Cimon

Kristen called the meeting to order at 8:33 a.m.

Administrative

Ken mentioned that an Oregon Legislator has proposed a House Joint Resolution related to Hanford funding. It has been moving through a House Committee.

Hanford Public Involvement

Kristen has previously led the Board in several discussions about how Board members may be able to better inform the public about Hanford and Oregon's interests. She was disappointed that few Board members responded to an e-mail questionnaire she had sent out a few weeks ago. Part of the questionnaire focused on how to better inform and engage younger people.

There were several suggestions offered about how to engage younger people, including having a separate Board made of college students; having a college student as a member of this Board; linking Hanford on social media to "buzzwords" that are in the news; and engaging with high school science

clubs. There was a consensus that outreach to both high school and college aged students is important to keep Hanford issues in the news for the next generations.

The Board concluded the discussion and agreed to revisit it at the next meeting.

DOE-ORP Update

Ben Harp, Deputy Manager of DOE-ORP provided an update on a variety of issues related to the tank waste retrieval and treatment missions.

Retrieval of tank C-105 is expected to resume this summer. It is the last of the 16 tanks in C Farm where retrieval has not been completed.

DOE will next retrieve waste from the A and AX farms. Ben told the Board that they learned a lot from work in C-Farm. One key lesson is that it is inefficient to do one tank at a time. At A and AX they will build all the tank farm infrastructure first before initiating retrievals.

At the Waste Treatment Plant, the focus is getting Direct Feed Low-Activity Waste (DF-LAW) up and running. Major components continue to be installed in the LAW vitrification facility. A nearly 30-foot tall caustic scrubber is the last piece of major equipment to be installed. It is a major component of the offgas treatment system.

The target for DF-LAW is 2022. They have begun to energize some of the support facilities that will be needed. Design is underway on the LAW pre-treatment system, which will remove cesium and solids from the waste stream. The cesium and solids will be returned to the double-shell tanks, and the remaining liquid will be sent to the LAW vitrification facility. Design is also underway on the effluent management facility. Ben told the Board there are many pieces needed to make this process successful. Ben shared the DFLAW "Critical Path Schedule," which shows when various components must be completed.

The Consent Decree requires DOE to complete hot commissioning of the LAW vitrification facility by December 2023. Ben said a separate company has been created by Bechtel/AECOM to focus on starting LAW treatment as soon as 2022. The Waste Treatment Completion Company will manage facility construction, start-up and commissioning.

Ben said DOE is making progress in resolving technical issues related to the Waste Treatment Plant's pretreatment facility. Three of eight issues have been "resolved" sufficiently enough to allow design to resume as it relates to specific systems. Two of these issues are related to hydrogen gas build up and the third is related to criticality controls.

Considerable testing has been done with waste mixing and pulse jet mixers and they expect to complete testing of a new vessel later this calendar year.

Tank vapors are still a concern in the tank farms. DOE and its tank farm contractor have been working to refine the efficiency of filter cartridges to replace the need to use air tanks and full face masks. The use of the filter cartridges has been approved by DOE and the union within one tank farm, when waste disturbance activities are not underway. They have also installed considerable equipment within some of the tank farms to better identify and remediate vapor issues.

Ben said DOE-ORP's budget situation remains somewhat uncertain, as they are still operating under a continuing resolution (CR). Under the CR, DOE-ORP is being funded at fiscal year 2016 levels of $1.414 billion dollars, though DOE has requested $1.499 billion for the current year.

Ken mentioned a recent meeting between DOE, Washington state and Oregon that is required by the Consent Decree every three years to discuss progress and challenges. Three years ago, when litigation was active, DOE and U.S. Department of Justice lawyers greatly restricted what information could be shared. Ken said this recent meeting went very well, and DOE spoke frankly about the various issues. Ben responded by saying that DOE-ORP is trying very hard to be more transparent.

AY-102 Retrieval

Ken Wade, interim Tank Farm manager at DOE-ORP, provided the Board with an update on retrieval efforts from Tank AY-102. AY-102 is a double-shell tank that was discovered to be leaking from its inner shell in 2012.

Retrieval of the 744,000 gallons of waste in the tank (593,000 gallons of supernate and (151,000 gallons of sludge) began in March 2016. Within a month, about 95 percent of the waste was removed, and in May retrieval was halted to install four extended reach sluicers. In December, retrieval resumed for the remaining 41,000 gallons of sludge. On February 15, 2017, DOE declared that they had reached the limits of retrieval technologies, and the following month provided Ecology with a retrieval completion report. There is about 19,000 gallons of waste remaining in the tank.

During retrieval, when they were sluicing in certain parts of the tank, waste levels in the annulus rose, giving them a pretty good idea of where the leaks are located.

Ken said the retrieval was a complicated operation. It required removal of five obsolete pumps from AY-102 and AP-102, which received the waste. Seven transfer pits were refurbished, and they designed, fabricated, installed and tested three new pumps and 2,000 feet of hose-in-hose transfer line.

Ken said the entire process involved 500,000 hours of labor over three years, 24 months of field work, five months of retrieval, and 30,000 entries into the tank farms, all at a cost of about $100 million.

The next step is to inspect the tank to decide whether it can be repaired and returned to service, though because of remaining waste in the tank, any repairs would have to be made remotely. The inspection will involve use of high-definition video. DOE must also define the reason the tank failed.

Several Board members asked about the viability of repairing the tank – which seemed to them to be pretty unlikely. Ken said they must go through the process outlined in the settlement agreement, which includes determining why the tank failed. He said that the tank could not be re-used unless the State of Washington approved it. The fact that DOE has lost a million gallons of tank space with this tank out of service requires that they at least examine whether it could be repaired.

Dan Solitz, Board, asked whether DOE should look more seriously at building new tanks. Ken said DOE wants to move forward with treatment rather than spend time and money building new tanks.

Mecal said she would like to see a decision tree that would show at what point a new tank would be considered.

Alex Smith, Washington Department of Ecology, said the State of Washington has advocated for new tanks. The Amended Consent Decree says if retrieval milestones are missed, Washington can ask the judge to order DOE to construct new tanks.

Waste Treatment Plant Contract Re-baseline

Ben then briefly explained a "re-baselining" that incorporates the costs of DFLAW into the scope of the Waste Treatment Plant (WTP) project. That increased the estimated cost of the WTP project to $16.8 billion, an increase of more than $4.5 billion from the previous baseline of $12.2 billion.

Ben also explained the contract and baseline change proposal dates which DOE is working under. In all cases, their contract dates and baseline change proposal dates are earlier than the deadlines under the Amended Consent Decree. That gives them some margin for error in case additional unexpected problems are identified, and they still would hopefully be able to meet those Consent Decree milestones.

Ben said there are still a number of key risks that have been identified. They include whether DOE-ORP will receive sufficient funding to maintain progress; the extensive permitting that is required; having waste feed in sufficient quantities to operate the facilities; meeting the schedule to get the Documented Safety Analysis approval; and obsolescence and aging of equipment.

The WTP project will have to be re-baselined again to incorporate new designs and delays associated with the high-level waste vitrification facility, and then later with the pretreatment facility, once technical issues are resolved. These new baselines will also increase the estimated cost.

Board Business

The Board discussed a draft tri-fold brochure developed by staff as a tool to help explain Hanford and Oregon's interests at Hanford. A number of suggestions for modifying the draft brochure were offered.

Ken will work with the ODOE communications team on incorporating the comments and provide a new version to the Board.

The Board discussed the proposed Bylaw revisions related to Board elections. After considerable discussion, the Board agreed that Board members must be present at the meeting to vote. They also agreed to a process to resolve a tie vote, if necessary, by drawing one ballot at random.

There was a brief discussion about Board term limits. Typically, the Governor's office has limited members of all Boards to two terms. Some Cleanup Board members expressed concern that because of the technical complexities involved with Hanford, it often takes a good 3-4 years before someone feels knowledgeable enough to contribute to the discussions. There was a proposal to request a three term limit for the Cleanup Board. Ken said that there has not been a push to replace Board members as they near the end of their second term. He said he would investigate whether such a request was needed.

The Board members selected August 7 and 8 as the dates for the next meeting. It will be held in Salem at the new ODOE offices.

Kristen adjourned the meeting at 1:01 p.m.