

**FINAL MEETING SUMMARY**

HANFORD ADVISORY BOARD  
TANK WASTE COMMITTEE  
*September 11, 2013*  
*Richland, WA*

Topics in this Meeting Summary

Opening..... 1  
System Plan Assumptions..... 1  
System Plan Models..... 4  
Committee Business..... 6  
Attachments ..... 7  
Attendees ..... 7

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. The committee approved the August meeting summary, pending minor changes to be submitted by David Bernhard.

**System Plan Assumptions\***

*Introduction*

Al Boldt said the System Plan analyzes several alternatives defined by the U.S. Department of Energy (DOE) and the Washington State Department of Ecology (Ecology). The output is dependent on a variety of assumptions, including milestones stated in the Tri-Party Agreement (TPA) and Consent Decree (CD). Al noted that there are numerous considerations that feed into the assumptions that the System Plan is then based upon. The System Plan provides an estimated end date for cleanup of the Hanford Site based on all of the time constraints and other assumptions.

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

AI said the System Plan also includes a consideration of secondary assumptions such as chemistry, composition of waste forms, the algorithm to be used for acceptable glass formation, and the production quantity amount of secondary waste. Previous system plans evaluated variations in waste retrieval sequences within the tanks in order to illustrate different processes that would help determine optimized results.

AI said System Plan 7 is currently under development. The baseline case and other cases included in System Plan 7 will be different than cases included in previous system plans. All of the specific assumptions used for the alternatives will need to be defined. These assumptions could include construction of additional tanks, delays at the Waste Treatment Plant (WTP), loss of double-shell tanks (DSTs), impacts from mixing/blending tank waste, etc. New waste forms could also be identified that would require their own set of assumptions. AI added that before assumptions can be determined an alternative must be defined.

### *Regulator presentation*

Dan McDonald, Ecology, provided a presentation on Ecology's perspective of the assumptions in System Plan 6. Dan emphasized the following points in his presentation:

- Ecology supports the assumptions and milestone dates that are supported by the TPA and the CD. These are the agreements that are currently in place; scenarios in the System Plan must be compliant with these agreements because they represent Ecology's legally binding position.
- Once the TPA-compliant scenario requirements are satisfied, Ecology can then begin to consider situations such as enhanced glass formation at WTP or direct feed low-activity waste (LAW). Many technical discussions have been ongoing between the U.S. Environmental Protection Agency (EPA) and DOE regarding LAW, but there have been no decisions at this point in terms of alternative approaches.
- Ecology's concerns with the WTP and waste feed reflect the unknown scope and unknown path forward.
- Ecology is concerned about the limited DST space, the leak in DST AY-102, leaks in single-shell tanks (SSTs), impacts to groundwater, vadose zone remediation, and leaking tanks. Dan noted that none of these concerns are new to Ecology. He added that the leak in AY-102 is an indication that time is up for addressing the issues and that incidents at the Hanford Site are not isolated.
- There are many unknowns until the technical issues are resolved and a path forward is determined. The CD and TPA both contain deadlines for when work needs to be complete. The Secretary of Energy will be releasing DOE's plan for a path forward later in September; it will then be November or December before the community at large can move forward.
- Dan noted that adequate funding at the Hanford Site has been an ongoing issue. In addition to the actual amount of funding received, there are also questions around how that money is being spent. Some areas of work are simply not being funded.

- The entire Hanford Site sits on a three-legged stool made up of cost, scope, and schedule. Cost and scope are both fixed so the only element that can be altered is schedule.
- Dan reviewed Ecology's preferred System Plan 7 model runs. Ecology would first like to see the baseline case and then a CD and TPA complaint case. Ecology would also like models to consider WTP enhanced glass with blending and conditioning, direct waste feed to LAW with blending and conditioning, tank farm SST waste retrieval schedule maintained to compliance dates, develop proper waste retrieval and feed for WTP, and contingency plans for tank farms and WTP.

*DOE perspective*

DaBrisha Smith, DOE – Office of River Protection (ORP), said she agrees that not enough information is known for DOE to move forward with realistic assumptions and scenarios for System Plan 7 until the Secretary of Energy lays out the direction, expected to occur by September 20. DaBrisha added that staff from Ecology, DOE-Headquarters, and the Governor's office were meeting in Seattle. DaBrisha is unsure what is being discussed and what, if any, aspects of the conversation will be shared with those who did not attend.

*Committee discussion*

*Note: This section reflects individual questions, comments, and agency responses, as well as a synthesis where there were similar questions or comments. Questions, comments, and responses were provided by HAB members unless noted otherwise.*

C. Most, if not all, of the system planning work to date has assumed a success-oriented approach. DOE has not intensely looked at the potential for glitches in the system and how the entire program would be impacted if there are failures. These concerns should be examined in more detail in the System Plan.

C. DOE could just assume they will receive \$1.2 billion a year and use that as a basis for the System Plan, disregarding with is stated in the TPA. The System Plan should include a consideration of cases that are not TPA compliant. There have been a lot of "chicken or egg" discussions regarding the assumptions and System Plan 7 development.

Q. Is the system planning effort driven by the CD or the TPA?

*R. [Ecology] Ecology's position is that the System Plan is primarily driven by the TPA and CD requirements. The scenario set in the System Plans should be compliant with both.*

C. The Hanford Advisory Board (HAB or Board) understands the need to begin with compliant scenarios. However, the Hanford Site is facing ongoing funding challenges from Congress. Congress is reluctant to fund items such as blending and conditioning of tanks without first having a baseline. In order for a baseline to be established, the technical issues must first be resolved. System Plan 7 appears to be on hold until that happens.

*R. [Ecology] Ecology can only speak to high-level waste (HLW) right now. DOE is expected to decide on a path forward for HLW by December 2013; prior to a final decision there will be*

*conditional approval, which means the safety basis and technical basis will not be in alignment until there is full approval of the new baseline. Some of the technical issues will not be resolved until months or years in the future. The baseline should accommodate the uncertainty in when technical issues will be resolved.*

C. DOE staff has mentioned they believe it is unnecessary to spend money testing materials in the tanks because the composition of the material will change; some staff at DOE believe the more efficient approach would be to begin planning for mixing and blending without sampling.

*R. [Ecology] DOE is likely suggesting that characterization of the waste would change due to heat and resonance time. The waste acceptance criteria determine the constitution of the waste form after undergoing treatment. Waste would need to be sampled after treatment to prove it meets acceptance criteria and DOE is suggesting testing prior to that point would be redundant.*

C. The process to reach an end point can be laid out once that end point is determined. Engineering studies can be completed relatively cheaply, looking at a range of possibilities across many scenarios without needing to wait for final determinations to be made. Analyses could be completed for any reasonable path forward.

C. There is a lot of uncertainty right now that will remain until re-baselining is complete. Without characterizing the tanks, there is no guarantee of configuration control and some tanks may have been out of compliance for years without anyone knowing. The actual number of leaking tanks is unknown and DOE is not very agile in addressing potential tank leaks. The reality of dealing with a leaking tank is tremendously more complicated than ever imagined. There is a moral obligation to deal with waste at the Hanford Site and to maintain it in some sort of configuration control until it can be safely treated. The community should acknowledge that the technology issues are too large for any immediate solutions. There should also be an acknowledgement that more tanks are needed along with more monitoring and contingency plans for moving waste between tanks.

The committee agreed that it made sense to wait on advice development until after the Secretary of Energy provides direction for the site and information relevant to System Plan 7, anticipated to be available toward the end of September. TWC tentatively planned to discuss the System Plan during a potential November committee meeting with potential advice to be developed for the December Board meeting. System Plan 7 is due on October 31, 2014. The scenarios will be proposed during fall 2013 and selected in 2014.

### **System Plan Models\***

*Agency presentation*

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Tony Waldo, Washington River Protection Solutions (WRPS), introduced himself as the team lead for WRPS System Planning. He also introduced his team members at WRPS: Ted Hohl, Linda Bergmann, Jeremy Belsher, and Tom Crawford. Tony reviewed the system planning process and then Ted reviewed the Hanford Tank Waste Operations Simulator Model (HTWOS) and provided a demonstration of the HTWOS model. The following points were noted in the presentation:

- Tony outlined a simplified process flow diagram mission flowsheet for waste treatment at the Hanford Site. He noted facilities that were already built, facilities under construction, and facilities that will be built in the future. The overall process involves waste from the SSTs first moving to the DSTs and then into the pretreatment facility. Waste will then be divided into HLW and LAW to prepare the waste for final disposal either onsite or offsite.
  - *[Ecology] Ecology noted that the entire basis for assumptions is that there will be two feeds from the pretreatment facility. If that two-feed option changes, the entire model will need to be changed.*
- Tony reviewed some of the many inputs that guide the system planning process. The first layer of information comes from the Tank Operations Contract (TOC) performance measurement baseline, TOC contract & technical baseline plus information from WTP. This information is used for DOE-ORP modeling assumptions and planning waste feed delivery and retrieval projects. The information continues to move up into the System Plan that will ultimately be compared to a future TOC performance measurement baseline to determine if there is a need to update the baseline.
- Ted described the purpose and software of the HTWOS model. The TOC specifies use of the model. HTWOS is used to simulate the full duration of the System Plan over time.
- Ted demonstrated the HTWOS model using the 200 Area as an example of the overall waste treatment process.

#### *Committee discussion*

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Q. [Ecology] How are the assumptions validated?

*R. [WRPS] First, a literature review is conducted for the constituents that are present. Next, lab studies are conducted to verify information obtained from the literature review. Data goes through a validation process which is fully documented and reviewed before being implemented in the model. There is a checklist for verification that can be very simple or complex depending on the complexity of the assumption.*

Q. Do the models provide a range of answers or are results deterministic with one output for each scenario?

*R. [WRPS] Model results are static. The modeling group is currently working on ways to better understand the uncertainty within modeling results. Models lead to the same result every time they are run while in reality there could be different outcomes.*

Q. [Ecology] The output is a condition-dependent variable based on the contributions going in. Can the output be fixed to change the contributor?

*R. [WRPS] WRPS can fix some elements of the contributors. For instance, solid levels are set at a threshold for depth that cannot be reduced.*

Q. How difficult is it to change elements in the model?

*R. [WRPS] Some aspects of the HTWOS model are easier to alter than others and may involve checking or un-checking a box. Other aspects of the model are more ingrained and more complicated to either include or exclude as needed. However, the models are built to accommodate change so models can be alternated to accommodate just about any request.*

C. The modeling process does not sound like an area where the Board would have a lot of input. The Board should focus instead on higher level efforts.

C. Is the final output of the System Plan dependent on both the Operations Research Plan or the HTWOS?

*R. [WRPS] Lifecycle time constraints and costs and were considered for the System Plan from this model. The model does not assume 100% efficiency; the model uses the assumed efficiency from the WTP contracts and overlays efficiency assumptions to flow rates for waste. These types of considerations can be included as scenarios.*

*R. [DOE] Only the HTWOS model results are included in the System Plan. The goal is for the Operations Research Plan to be integrated into the System Plan at the same level as HTWOS as well but that will require several years of work. DOE offered to provide TWC more information.*

C. [Ecology] The models can illustrate the consequences of failure over time using criticality analysis and failure mode. Some of the information in the HTWOS model is used to inform decisions and can help estimate the meantime between repairs or failures. The models are much more useful than just to inform the System Plan.

The committee thanked WRPS for the presentation and did not identify any needed follow-up on this particular topic, outside of advice development on overall System Planning anticipated for November.

### **Committee Business\***

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The committee will discuss the 3 month work plan and potential October meeting topics table during the call scheduled for Tuesday, September 17. TWC members also requested copies of the presentation. Hillary noted that presentations are always posted to the SharePoint site by the Friday following committee meetings.

Sharon Braswell, Mission Support Alliance (MSA), asked TWC members to share feedback with her about the WTP tour given that morning. Board members expressed appreciation for the tour and requested more opportunities to tour the site, potentially whenever major progress is made or an update is timely. Even if a tour is not possible at every major point of progress, TWC would like to be notified about major accomplishments. TWC may request an annual tour.

**Attachments**

- Attachment 1: Transcribed flipchart notes
- Attachment 2: Ecology System Plan Assumption Concerns Presentation
- Attachment 3: HTWOS: A System Planning Tool Presentation

**Attendees**

HAB Members and Alternates

David Bernhard	Harold Heacock	Melanie Meyers (phone)
Allyn Boldt	Rebecca Holland	Maynard Plahuta
Tom Carpenter (phone)	John Howieson	Gerry Pollet
Shelley Cimon	Steve Hudson	Dick Smith
Shannon Cram (phone)	Gary Garnant	Bob Suyama
Dirk Dunning	Pam Larsen	Mecal Samkow
Laura Hanses	Liz Mattson (phone)	

Others

DaBrisha Smith, DOE-ORP	Dan McDonald, Ecology	Alex Nazarali, CTUIR
	Nancy Uziemblo, Ecology	Nicole Addington, EnviroIssues
	Ginger Wireman, Ecology	Hillary Johnson, EnviroIssues
		Meredith Crafton, Hanford Challenge, (phone)
		Sharon Braswell, MSA
		Jeremy Belsher, WRPS
		Linda Bergmann, WRPS
		Ted Hohl, WRPS
		Jim Kelly, WRPS
		Tony Waldo, WRPS