



**OFFICE OF RIVER PROTECTION**

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**DEC 10 2013**

13-OCS-0010

Mr. S. E. Hudson, Chair  
Hanford Advisory Board  
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Mr. Hudson:

HANFORD ADVISORY BOARD SEPTEMBER 6, 2013, CONSENSUS ADVICE #271,  
"LEAKING TANKS"

Thank you for the September 6, 2013, Hanford Advisory Board (Board) Consensus Advice #271, "Leaking Tanks." Responses from the Department of Energy (DOE), Office of River Protection (ORP) are below.

**Advice point #1:** The Board advises DOE to remove the drainable liquid from Single-Shell Tanks, focusing first on leaking tanks.

**Response:** Beginning in the 1980s through 2005, extensive efforts to remove drainable liquid from single-shell tanks (SSTs) took place. All tanks were interim-stabilized, meaning all pumpable liquids were removed. With currently available technology, DOE does not believe substantial additional liquids can be removed from the tanks until all the contents are retrieved. These mitigation efforts resulted in the transfer of 7.5 million gallons of drainable liquid from SSTs into newer double-shell tanks (DSTs). ORP has been assessing 20 SSTs showing level decreases to fully investigate and determine the causes. Tank T-111 was the first tank examined and it was determined to be leaking at the time. Recent data indicates the leak rate is stabilizing. Results from the evaluations conducted in the remaining tanks were completed and final conclusions indicate the remaining 19 tanks are not actively leaking. The level decreases were analyzed and determined to be due to evaporation or other specific factors, such as atmospheric conditions.

**Advice point #2:** The Board advises DOE that waste should be removed from leaking Single-Shell and Double-Shell Tanks as soon as possible.

**Response:** DOE has determined that only one SST, T-111, is actively leaking waste and are continuing to monitor this tank closely. Addressing the long-term environmental concerns associated with the past tank leaks as well as T-111, requires a robust and sustainable strategy for waste retrieval, treatment, and disposal or long-term storage. The recently released Framework

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document identifies an approach that could begin immobilization of tank waste sooner and potentially send the transuranic tank waste to the Waste Isolation Pilot Plant (WIPP), in New Mexico.

Before a path forward for SST T-111 can be determined, DOE must complete the waste designation process. The results of that determination will be used to develop the retrieval, treatment and disposal plan for this tank waste. If T-111 waste is eventually determined to be contact-handled TRU and can be disposed of at WIPP, the potential environmental risk could be mitigated sooner than by transferring the waste to DSTs for future treatment. A final path forward will be based on a number of factors including cost, schedule selected, and technology, and disposal path for the waste.

Tank AY-102, is the only DST leaking waste into the tank annulus. A pump has been installed in this tank, which could be used to remove supernate from the primary tank. Complete removal of the supernate cannot currently be achieved without introducing an additional safety issue by uncovering the high-heat generating solid waste.

DOE is developing a longer-term strategy for the retrieval, treatment and storage of Hanford's tank waste. This strategy is introduced in the *Hanford Tank Waste Retrieval, Treatment, and Disposition Framework* document, recently released in September 2013, and available online at <http://energy.gov/articles/update-hanford-site-and-cleanup-progress>.

**Advice point #3:** The Board advises DOE to request additional funding starting in FY 2014 and 2015 for removing waste from leaking tanks.

**Response:** As mentioned above, on September 24, 2013, DOE issued a Framework for the ORP mission. This Framework, in DOE's view, represents a prudent and reasonable approach to immobilize waste in a glass form as soon as practicable and will provide a basis for future budget requests. The advice from the Board and the input received from members of the public will be considered in developing the requirements for the fiscal year (FY) 2016 budget request.

**Advice point #4:** The Board advises DOE to evaluate the expansion of the sampling program to first include the six Double-Shell Tanks of similar age and design to AY-102, and to then focus on the remaining Double-Shell Tanks. This recommendation expands on HAB Advice #263 Double-Shell Tank Integrity. The Board recognizes that sampling is expensive and difficult; however, the potential costs of a double-shell tank failure are much higher.

**Response:** As ORP has mentioned previously in response to Advice #263, all 28 DSTs are currently sampled to ensure the waste is maintained within established chemistry limits to minimize corrosion. A new sampling system capable of taking solid samples from tanks is expected to be available in FY 2014 to further ensure the chemistry of the waste within the DSTs is controlled to minimize corrosion.

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**Advice point #5:** The Board advises DOE to obtain samples close to the bottom of AY-102 to identify the chemicals in contact with the bottom of the tank.

**Response:** Samples of the waste heel in DST AY-102 may be taken as part of planned retrieval activities. Prior to retrieval, sampling of the thin heel of waste is not recommended as it could damage the compromised primary tank bottom. ORP is planning robotic inspections of the leak detection pit piping in FY 2014.

**Advice point #6:** The Board advises DOE to ensure that the integrity assessment documents are updated annually with any new information.

**Response:** We accomplish this as part of our procedures and results of all integrity inspections are documented as they are performed.

**Advice point #7:** The Board advises DOE to evaluate lessons learned from the AY-102 event to improve safety culture, especially regarding the reporting and investigation of abnormal events and the conduct of operations.

**Response:** ORP utilizes an Integrated Safety Management System. One of the core functions of that system is to provide feedback and continuous improvement. Lessons learned through operating experience are used to both prevent adverse operating incidents and facilitate the sharing of good work practices. ORP recognizes the value of lessons learned and will ensure continuous improvements in safety culture and conduct of operations are achieved.

**Advice point #8:** New tanks are needed. The Board advises DOE to immediately initiate the process for the funding and design of new tanks, and initiate an accelerated process of building new Double-Shell Tanks (HAB Advice #263).

**Response:** ORP recognizes the need to closely monitor DST storage capacity and continues to research options to address tank storage requirements while maintaining the necessary capabilities to feed the Waste Treatment and Immobilization Plant. ORP will continue to maintain the necessary available emergency tank space and ensure plans and equipment are available to pump liquid from the annulus or primary tank on short notice should conditions in DST AY-102 change. Treating the waste sooner and increased use of the 242-A Evaporator beginning in 2014 will reduce DST space concerns. Meanwhile, we will regularly evaluate DST space and future needs.

**Advice point #9:** The Board advises DOE to provide for monitoring the soil around known leaking tanks to determine the nature and extent of leaked waste, determine possible leak locations, and monitor migration pathways during the retrieval planning process and during and after retrieval operations.

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**Response:** ORP will continue to monitor the soil around tanks undergoing retrieval in accordance with our current practice. Examination of the soil for evidence of past leaks is also done in order to ensure the appropriate mitigation actions are taken (for example interim surface barriers) prior to removing the waste and performing permanent closure actions.

**Advice point #10:** The Board advises DOE to reinstate a routine monitoring program in the existing Single-Shell tank drywells, giving priority to tanks known or suspected to be leaking and/or containing significant quantities of drainable liquid.

**Response:** ORP and the Washington State Department of Ecology are currently in the process of revising the requirements for how SSTs are monitored for leaks. The use of existing drywells has been discussed as a tool for leak detection monitoring. ORP will continue to utilize in-tank level monitoring for SSTs as the best available information for leak detection in SSTs.

DOE recognizes the value of the Board's input and thoughtful deliberations. Many of these items are quite complex, and if helpful, we would be glad to provide briefings or hold discussions to provide additional information. We thank you for your continued interest, and if you have additional comments or questions, please contact Kimberly S. Ballinger, Hanford Advisory Board Federal Coordinator, at (509) 376-6332.



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