HANFORD ADVISORY BOARD

A Site Specific Advisory Board, Chartered under the Federal Advisory Committee Act

EnviroIssues
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November 2, 2012

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Jane Hedges, Program Manager
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Re: Double-Shell Tank Integrity

Dear Messrs. Huizenga, Samuelson, McCormick, Faulk and Ms. Hedges,

Background

The purpose of this advice is to present Hanford Advisory Board (Board) views to the U.S. Department of Energy (DOE) and the Washington Department of Ecology (Ecology) for their consideration in response to a leak in the inner liner of Double-Shell Tank (DST) AY-102, and in planning for the future.

On October 22, 2012, as a result of DOE's ongoing monitoring and inspections, DOE announced there is a slow leak from the inner liner to the annulus at tank AY-102. DOE further acknowledged this is the first time a DST leak from the primary tank into the annulus has been identified.

A number of the DSTs are nearing the end of their design lives, and yet, there is no plan for the complete retrieval of them for decades. The remaining safety margins for these tanks against corrosion, stress, strain, and earthquake is uncertain; however, via the processes of commonly understood chemistry and physics, the margins are decreasing. It appears that additional tank capacity is a necessary interim measure to protect the environment. However, building more tanks at Hanford does not delay the urgent need for tank waste treatment.

The Board acknowledges that constructing additional DST capacity constitutes a significant shift in its prior position. The AY-102 event identifies the need to develop additional contingency measures. Sufficient budgets must be requested and immediate action needs to be taken beyond that which DOE has taken to date.

The Hanford Site lacks sufficient available tank space to empty a leaking DST, while continuing the mission of emptying Single-Shell Tanks (SSTs), without first needing to distribute excess wastes among the remaining tanks. There is a compelling need for additional measures to secure tank space that would be immediately available to empty a leaking DST and prevent further spread of waste into the environment.

DOE and the Hanford Tank Farm contractor have made plans to transfer waste to the Waste Treatment and Immobilization Plant (WTP) through a select set of DSTs. This plan is jeopardized when one of these tanks fails or becomes unusable. Reliance on a single path creates a potential choke point which could stop waste feed delivery to the WTP. Our common mission is to immobilize all tank waste by approved methods as soon as possible. The critical path of this mission is jeopardized if it is susceptible to single failure choke points.

DOE and the Hanford Tank Farm contractor lack the agility to rapidly transfer the waste from a leaking DST to a sound DST. The available emergency tank space is distributed among many DSTs, which in some cases will require testing for waste compatibility prior to transfer. DOE indicated in its latest briefing that such testing could take weeks, if not months, to draw down the waste in one tank. This lack of agility may allow large amounts of waste to be released to the secondary containment annulus before DOE can sufficiently empty a leaking inner tank. If, as appears to be the case for AY-102, the leak is in the primary tank bottom, this problem may be particularly critical.

The Board believes that, historically, infrastructure has degraded to the point of failure. The Board also believes there have been times when the chemistry has been outside limits set for corrosion control, which puts the tanks at risk for corrosion and corrosion cracking. The extent to which these excursions may have influenced the safe working life of the system is uncertain. The Board recognizes the difficulty and complexity of Tank Farm operations. Our value is that a high priority should be assigned to maintaining waste chemistry compliant within the specification range at all times, to reduce the probability of leaks in the DST system. The Board values DOE's independent, expert reviews of specifications, procedures, and operations. It is important to the Board to have the discovery of a leaking tank reviewed by these experts.

DOE and the Tank Farm contractor briefings on the chemistry and corrosion monitoring programs indicate that these guidelines are based on a sampling of a limited set of the tanks and assume that this sampling will be sufficient to operate and protect all of the tanks. The Board believes the lack of detailed knowledge for each of the tanks results in risk and uncertainty that one or more additional tanks may leak while they are still needed. The Board supports a thorough investigation of the material that is in the annulus of AY-102, the mechanism or path for potential leaks from the tank, and the application of this knowledge to other DSTs looking for potential common causes and problems. Inspections should be expanded to all of the DSTs, and performed on a more frequent schedule.

The Board expects successful containment, treatment, and disposition of all tank wastes. There is interdependency between the Tank Farms' ability to continue containing high level waste in a safe configuration and the ability to provide feed to a running WTP; thereby supporting final immobilization of the waste. We cannot reach success for this monumental program unless both sides of this project are successful. The uncertainty about when the WTP will actually be online demands a reassessment of the Tank Farms' ability to continue to store high level waste safely, over an unknown time period, and to provide the appropriate waste feed to the WTP.

Advice

- The Board advises DOE to begin the process immediately to build additional tank capacity at Hanford. This additional tank capacity should consider the needs of the WTP and requirements of the TPA relative to tank waste treatment, allowing for maximum flexibility for blending, transferring, segregating, and otherwise dealing with wastes.

- In addition to DOE's efforts to locate the source of the leak from Tank AY-102, the Board advises DOE to explore potential solutions for determining the cause, stopping the leak, and repairing the tank.

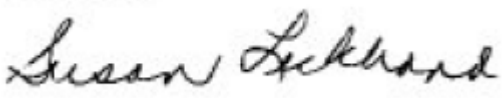
- The Board advises DOE that the new tanks should be planned to support future waste feed delivery to the WTP, or to whatever other waste processing facility may be in place. The Board advises DOE to include multiple paths for feeding the WTP from the DST system in their overall planning. DOE should not rely on AY-102 (or any other individual tank) to feed the WTP.

- The Board advises DOE to ensure that emergency tank space is available at all times, and not constrained by a need for redistribution of tank waste across the population of DSTs. Additionally, the Board advises DOE to ensure that the necessary plans, pumps, piping, procedures, and other equipment needed are in place to quickly pump any tank found to be leaking in accordance with requirements and agreement with the Washington State Department of Ecology.

- The Board advises DOE to expand sampling to all DSTs and maintain the chemistry of the waste in the tanks, such that it always remains within the specification range.

- The Board advises DOE to complete exterior inspections, insofar as the tanks can be inspected, of all DST inner tanks at an increased frequency.

Sincerely,



Susan Leckband, Chair
Hanford Advisory Board

This advice represents Board consensus for this specific topic. It should not be taken out of context to extrapolate Board agreement on other subject matters.

cc: Catherine Alexander, U.S. Department of Energy, Headquarters
The Oregon and Washington Delegations