Waste Treatment and Immobilization Plant (WTP) Communications Approach

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Summary

The Hanford Advisory Board, following discussions conducted by the Board's Tank Waste and Public Involvement and Communication committees with the U.S. Department of Energy (DOE) Office of River Protection (ORP), prepared an assessment and recommendations for a communications approach regarding the High Level Waste (HLW) Authorization to Proceed and the Low Activity Waste Pretreatment System (LAWPS). This review was performed at the request of the DOE Waste Treatment Plant (WTP) Assistant Manager, as described in the Hanford Advisory Board 2015 and 2016 Work Plans. Specifically, the Committee's discussions focused on the areas as requested by DOE. These areas included:

1. Describe the Board's perception (local and regional) of the High-Level Waste (HLW) Authorization to Proceed and Direct Feed Low Activity Waste (DFLAW) Project.
2. Review information about HLW and DFLAW that has been provided to the Board and propose approaches and techniques that may be used to effectively communicate information related to these facilities with both highly technical audiences and the general public.

This document is not a communication plan. It is an assessment by the Board of the current status of the Board's and the public's perception of the WTP facility and the information needed by the public to better understand DOE activities related to the WTP path forward. There is a high level of inherent uncertainty that exists in these highly complex projects. It is hoped that this communication approach will serve as an informational baseline document for stakeholder outreach.

The following white paper provides input for WTP Management and Communications staff as they prepare a comprehensive communications plan. There is much uncertainty considering the path forward for WTP. The strategies that DOE is currently following will likely evolve as the work on the WTP progresses. This uncertainty will be a challenge to convey, and the DOE Communications Plan will need to consider strategies for working through these uncertainties.

1. Describe the Board's Perception (local and regional) of the High-Level Waste (HLW) Authorization to Proceed and Direct Feed Low Activity Waste (DFLAW) Project:

Overview

Over the years, the Board and the public in general, have developed strong concerns about DOE' ability to successfully immobilize tank waste. The WTP's history of delays, secrecy, technical showstoppers, and cost overruns have damaged DOE's credibility, integrity and believability.

This view is based on a long history and a seemingly endless series of news articles and stories concerning: leaking waste tanks; tank vapor and safety issues; a lack of WTP construction progress; critical public statements by congressional and state leadership; unfavorable General Accounting Office reports;, significant Defense Nuclear Facilities Safety Board issues over the WTP design; numerous cycles of Washington State and other lawsuits over safety and whistle blower concerns; missed major TPA construction milestones; and information blackouts during Consent Decree negotiations.

The fast track approach to the construction of the WTP, with numerous construction stops, starts and delays due to design and technology issues has reinforced the feeling that DOE's path forward is flawed. The imposed secrecy on the expert technical teams charged with resolving the WTP technical issues; long periods of little to no public information during the cycle of legal actions and court imposed restrictions; and the lack of DOE participation at many public meetings has reinforced the public feeling that DOE is not fully sharing information on the numerous issues surrounding the WTP. The on-going litigation between Washington State and DOE is an issue that greatly impedes the communication of progress being made at the WTP.

Given this public environment, it will be a challenge for DOE to gain the public's trust and support. This trust can be rebuilt, but only if DOE can demonstrate to the general public that it fully understands all of the issues and is making measurable progress on a workable and achievable path forward.

The Board understands that DOE is currently under legal restrictions as to what may be communicated to the public. However, as these restrictions are lifted, DOE should actively communicate what they can and be fully prepared to discuss the full scope of the vitrification process from the origins of the waste in the tanks to its final disposal in a deep geologic repository.

High-Level Waste

The Board's perception of the HLW Authorization to Proceed is **skepticism**. Technical issues related to the high-level waste vitrification facility have on two occasions stopped or greatly slowed construction progress. In court filings, DOE has been willing to commit to a schedule for completion of this facility only because directed to by the Court. …

Direct Feed Low-Activity Waste (DFLAW) Project

The Board's perception of the DFLAW Project is **hopeful.** Given that the State of Washington does not believe the WTP can be fully operational prior to 2034 (and DOE maintains 2039 under the best-case scenario), DFLAW provides hope that at some point in the foreseeable future, DOE may begin to finally vitrify some of Hanford's tank waste. ….

2. **Review information about HLW and DFLAW that has been provided to the Board and propose approaches and techniques that may be used to effectively communicate information related to these facilities with both highly technical audiences and the general public.**

Overview:

On September 24, 2013, DOE released the Hanford Tank Waste Retrieval, Treatment, and Disposition Framework (Framework) document. This document describes a strategic framework for addressing the risks and challenges to completing the DOE mission by implementing a phased approach that would:

- Begin immobilization of the tank waste as soon as practicable through the DFLAW process.
- Process transuranic (TRU) tank wastes for disposal at the Waste Isolation Pilot Plant (WIPP).
- Resolve technical issues for the Pretreatment (PT) and High-Level Waste (HLW) Facilities, including determining how to adequately mix and sample the waste prior to processing, to enable design completion, and the safe completion of construction, startup and operations of these facilities.

The complexity of both the waste itself as well as the WTP facilities has led to difficult, and to date, unresolved technical issues for portions of the PT Facility and to a lesser extent the HLW Facility. Because the current design of WTP anticipates that all waste will be processed through the PT Facility, immobilization of any waste could not occur per the current plan until the technical issues involving the PT Facility are resolved.

Effective Communication with a General Audience

Effective communication with a general audience requires establishing common background information and inviting dialogue about the path forward and asking for feedback and questions. Given the history of delays, technical showstoppers, and cost overruns, special attention should be given to establishing what is different in the current environment that will disprove the previous pattern.

Tank Waste Origins and History

No discussion of any of the WTP facilities would be complete without discussing the waste in the tanks and the urgent need to get it into a safe, stable form for final disposition. All presenters should be prepared and have backup materials to at least address these topics at a summary level, should questions arise during their discussions:

- **General History of the Hanford Site**
    - Tank Storage History
    - Origins of the waste in the tanks
    - Tank age and condition of the tanks
        - Single Shell Tank Integrity
        - Double-Shell Tank Integrity
        - Tank capacity needed to be able to safely store waste
        - Leaking Tanks and the threat to the environment
        - Tank Retrieval (leaking and non-leaking) Progress and Plans
- **Safety Culture, Safety Conscious Work Environment, and Safety Foundation**
    - Tank Vapor Issues & History
    - Reporting of Concerns
- **History and Scope of the WTP**
    - WTP Facilities
        - Map of WTP Site with WTP Facilities shown
        - Brief Description of function of each facility
        - Current Construction Photos and Status
        - WTP Technical Issues
        - **High-Level Waste Authorization to Proceed**
            - Proposal for fixing problems
            - Timeline
            - Budget
            - Systemic changes that ensure this project will work
        - **Direct Feed Low Activity Waste Facility**
            - Proposal
            - Timeline
            - Budget
            - Systemic changes that ensure this project will work

- **Final Waste Disposition**
    - Deep Geologic Repository
    - TRU to WIPP
    - Interim Storage
- **Overview, Timeline and Budget for:**
    - Design and Construction
    - Technical Issues and Resolution
    - Remaining Open Issues

Effective Communication with a Technical Audience

Effective communication with a technical audience needs to engage out-of-the-box thinking and invite participation in puzzling through the challenges inherent in solving the technical challenges at the High-Level Waste Facility. Information shared should include:

- (generate questions that should be answered here)

High-Level Waste

Background

TBD – This material will be further developed follow a TWC Briefing on December 9th

Direct Feed Low Activity Waste Project

Background

In order to begin the process of vitrifying waste as soon as practicable and at the same time creating much needed waste tank capacity, the DFLAW project was created.

An alternative approach for immobilizing waste as soon as practicable, while simultaneously resolving the remaining technical challenges, was identified. By adopting the DFLAW option, in which the waste bypasses the PT Facility, waste immobilization could begin significantly earlier than if treatment of the waste is delayed until all technical issues are resolved and the PT and HLW Facilities are completed.

DOE divided the 56 million gallons of high-level tank waste into three major categories for treatment:

(1) Low-activity waste;

(2) Potential contact-handled transuranic waste (CH-TRU); and

(3) High-level waste, which is further subdivided into waste not requiring special handling (easier to process) and waste requiring special handling (harder to process).

The low-activity waste consists primarily of the supernate (liquid) portion of the tank waste with most of the solids and radioactivity removed before vitrification. Low-activity waste will be the largest tank waste stream by volume (approximately 90% of the volume), but the lowest in radioactivity content (approximately 10% of the curies). Since the low-activity waste makes up approximately 90% of the total volume of waste to be treated, it has the greatest influence on the total duration of the Hanford tank waste mission. The liquid form of this waste makes it susceptible to leakage.

Beginning LAW Facility operations before the PT Facility is operational would require a capability to remove the cesium and miscellaneous solids from the waste stream so that low-activity waste could be directly fed to the LAW Facility.

DOE's analyses of this approach indicate that a standalone Low Activity Waste Pretreatment System (LAWPS) Facility would best address this need. It would be located between the tank farms and the LAW Facility and would remove the solids and cesium and possibly other radioactive elements from the liquid waste stream. The LAWPS facility would provide the processing capability to support a DFLAW operation prior to the completion of PT. As this option uses mature technologies, it is felt that the technical risks associated with this alternative are low.

The DFLAW will require the supernate stream to be transferred to the LAW Facility for vitrification following interim pretreatment. Secondary liquid wastes generated from the LAW Facility offgas system would then be transferred back to the tank farms and likely volume-reduced through evaporation activities using the existing 242-A Evaporator in the tank farms.