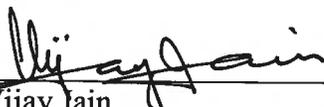


Alternate Method for Mercury Removal from the Liquid Waste System – Evaluation Team Charter

SRR-LWE-2015-00086

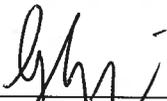
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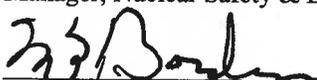
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Purpose

This Charter provides background and outlines Team membership, Team member roles and execution strategy of a Systems Engineering Evaluation (SEE) which supports an effort to reduce mercury in HLW processing streams. It is possible that removal of mercury in Defense Waste Processing Facility (DWPF) may not be sufficient to meet system removal requirements and also prevent significant recycling of mercury (Hg) to the tank farm. The purpose of the SEE is to identify and examine options to determine the best possible alternative means to remove mercury from the Liquid Waste System (LWS) (excluding DWPF) and provide a recommendation for implementation of a preferred option(s). In this context, mercury removal includes mercury retrieval, processing, storage and disposal.

Background

Mercury continues to be a difficult constituent in the LWS flowsheet and has led to facility issues such as Process Vessel Vent (PVV) system performance and increased saltstone Hg inventory. Mercury levels within the LWS are being encountered which are higher than previously predicted. This may be attributed to ineffective removal of mercury from the waste streams being processed. This problem is simply stated:

“There is a risk that re-establishing DWPF Mercury removal and recovery may be insufficient and DWPF recycle will continue to contain high levels of mercury.”

It is possible that removal of mercury in DWPF may not be sufficient to meet system removal requirements. As one part of an overall strategy to reduce the High Level Waste (HLW) System mercury level, an alternate method(s) of removing mercury from the LWS, excluding DWPF process stream, must be established.

This mission is simply stated:

“Recommend an option or options to reduce or sequester the level of mercury in the LWS (excluding DWPF)”

The Charter of this Team is to perform a SEE to identify and examine options for the removal of mercury from the LWS excluding DWPF process and provide a recommendation for implementation of a preferred option(s).

Membership

The Team will be managed through the Chief Technology Officer or delegate (team leader). The team leader is responsible for coordination of team meetings and managing the team scope and schedule.

The Team shall consist of subject matter experts (SMEs) selected for their specific knowledge relating to the LWS (Tank Farms) and mercury removal. The Team will comprise of core members who, in addition to participating in team activities will be responsible for screening and evaluating options, and supplemental SMEs who will be participants as needed by the SEE process.

The following functional areas will be represented within the Team:

- Operations
- Engineering
- Savannah River National Laboratory (SRNL)
- Nuclear Safety
- Flowsheet
- System Planning
- External SME

Evaluation Scope

The team will review the historical and current condition of the mercury removal process. This will include review of design function and past performance history of the system. The team will review recent analysis of mercury sampling and the attempt to reconcile the mercury flowsheet for LWS. The team will also review current understanding of disposal methods of mercury.

The team will identify and evaluate potential options for removal of mercury from LWS excluding DWPF process stream, which will include mercury retrieval, mercury processing (as applicable), storage and disposal. The identification of potential options will be guided by the following criteria which a candidate option shall meet:

FUNCTION 1: Remove Mercury from the LWS (excluding DWPF) process streams
No performance requirement has been set. Options will be evaluated on their ability to remove mercury from LWS (excluding DWPF) process streams.

FUNCTION 2: Disposition Removed Mercury
PReq 2-1: All removed mercury shall be either disposed of through existing waste disposal paths or captured and held for further treatment prior to final disposal.

REQUIREMENT 1: Option shall not constrain planned LWS operations.

The team will use the above information to perform an alternative study to develop alternatives and recommend the best option(s) for removal of mercury from the LWS excluding DWPF process stream. The team will use alternative study methods defined in E7 Manual procedure 2.15 Alternative Studies and System Engineering Methodology Guidance Manual, WSRC-IM-98-000033, Appendix A.

The team will present their findings, including any recommendations, to the Savannah River Remediation (SRR) Senior Review Group (SRG).

After the SRR SRG presentation, a final report will be prepared, reviewed, approved and issued.

Evaluation Schedule

A preliminary evaluation schedule is shown in Table 1.

Table 1 Evaluation Schedule

8/19	Prerequisites and Planning (documents sent to the Team)
8/26	Kick Off
9/9	Option Review
9/16	Option Review and Screening
9/23	Mid-point data development
9/30	Data Review and Finalization, Weight Criteria and Evaluate
10/7	Sensitivity Analysis, Pre-Mortem, Recommendations