



U.S. Department of Energy Hanford Site

June 20, 2024

24-WTP-0032
REISSUE

Ms. Stephanie Schleif
Program Manager
Nuclear Waste Program
Washington State Department of Ecology
3100 Port of Benton Boulevard
Richland, Washington 99354

Dear Ms. Schleif:

WASTE TREATMENT AND IMMOBILIZATION PLANT A-8 MILESTONE SERIOUS RISK NOTICE AND RECOMMENDATION FOR A JOINT SCHEDULE AMENDMENT

This letter is reissued with corrected citation. The U.S. Department of Energy (DOE) Hanford Site has made significant progress towards the initial operation of the Waste Treatment and Immobilization Plant's (WTP) Low-Activity Waste (LAW) Facility, including the successful heatup of Melters 1 and 2, the addition of glass "frit," and pouring of the first nonradioactive test glass, which help to meet the milestones in the Consent Decree, as amended, *State of Washington, et. al. v. United States Department of Energy, et. al.*, E.D. Wash., No. 2:08-CV-5085 (Consent Decree).

In April 2024, DOE corresponded and met with representatives from the Washington State Department of Ecology (Ecology) to discuss certain technical challenges arising during the LAW Facility commissioning process and potential schedule impacts associated with meeting the August 1, 2024, interim milestone A-8 for LAW Facility cold commissioning. At the time the parties discussed that the nature and extent of such potential schedule impacts associated with those technical challenges was not yet clear.

The commissioning process for this "first in kind" facility is comprehensive and dynamic. Several unforeseen technical obstacles uncovered during the commissioning process have been successfully and resolved in a timely manner, including:

- Plant cooling water pump cavitation
- Overheating in the startup and joule heater power supplies
- High temperatures in the melter discharge chambers
- A melter cooling panel leak.

Following the discussion in April 2024, DOE provided a follow-up briefing to Ecology on May 29, 2024, which included representatives from the Washington State Attorney General's

Office, Hanford Office of Chief Counsel, and the U.S. Department of Justice. Among other matters, that briefing was largely focused on technical issues with the glass former system, which has been an emergent challenge for the project's ability to supply the feed vessels in the LAW Facility. DOE's contractor consulted with experts specializing in bulk solids handling and processing who recommended modifications to the glass former system. Although modifications were implemented and the feed vessels successfully received 40,000 pounds of glass formers, DOE and its contractor continue to work to resolve and enhance the operation of the glass former system.

The issue with the glass former system is an example of the ongoing challenges, identified through a robust commissioning process, which imperil DOE's ability to meet the August 1, 2024, deadline to start cold commissioning. Other issues, such as those associated with the thermal catalytic oxidizer, steam plant Morrison tubes, and overall reliability of the mechanical handling system represent additional technical challenges actively being worked to resolution, but which likewise present some risk to the current deadline in the Consent Decree for starting LAW Facility cold commissioning.

In accordance with Section IV.C.3.a of the Consent Decree, DOE has determined that, due to the technical obstacles associated with the cold commissioning process, a serious risk has arisen that DOE may be unable to meet interim milestone A-8, "Start LAW Facility Cold Commissioning" (August 1, 2024).

The relatively minor technical difficulties impacting DOE's ability to finish the last remaining activities leading up to the start of cold commissioning are precisely the type of "obstacles" that the Consent Decree recognizes, could affect the assumptions on which the Decree's schedules were established. Appendix A, Section 2.b of the Decree acknowledges that "Because of the highly complex nature of the WTP, the milestones and schedule cannot anticipate all of the requirement changes and unknown technical obstacles that may be encountered and that may require time to remedy." The Section 2.c of the Decree also notes that "equipment failures" may occur and take "more time to remedy than anticipated." The current difficulties with the glass former system were not anticipated when interim milestone A-8 was established or when subsequently amended (most recently, in 2022). DOE and its contractor will continue to evaluate the ongoing technical challenges and potential schedule impacts associated with the start of the LAW Facility cold commissioning. DOE will also continue to keep Ecology apprised of developments in parallel with taking actions to mitigate any schedule impacts.

The attached slide deck from the May 29 briefing discussed above outlines DOE's preliminary recovery plan (see Attachment 1). DOE is considering several options for resolving the ongoing challenges, including receiving premixed material to temporarily bypass the existing glass former system, as well as, in the long term, improving the overall reliability of the system via additional modifications.

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On June 18, DOE and Ecology conferred on the status of the cold commissioning process and to identify an appropriate extension of interim milestone A-8. Based on current information, including the successful receipt of glass formers and preparation of the tuning fee batch to support addition of tuning feed into the melter by the end of June 2024, DOE believes that a modest 4-month extension of interim milestone A-8 is necessary (i.e., until November 29, 2024) and recommends that the parties jointly move the court for entry of that new deadline. To that end, U.S. Department of Justice counsel will be in touch with counsel for Ecology to discuss filing such a joint motion.

If you have any questions, please contact me at (509) 373-9820.

Sincerely,

ROBERT IRWIN
Digitally signed by ROBERT
IRWIN
Date: 2024.06.20 14:32:28
-07'00'

Robert M. Irwin
Acting Assistant Manager
Waste Treatment and Immobilization Plant

WTP:RMI

Attachments:

1. May 29 A-8 milestone status briefing
2. June 18 A-8 milestone status briefing

cc w/attachs:

B. A. Hartman, BNI
M. Woods, ODOE
BNI Correspondence

Attachment 1
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Waste Treatment and Immobilization Plant
May 29th A-8 milestone status briefing

11 Pages (Including Cover Sheet)



THE HANFORD SITE

Cold Commissioning A-8 Milestone Status

Mat Irwin, Acting Assistant Manager
Waste Treatment and Immobilization Plant

Approved for Public Release;
Further Dissemination Unlimited

May 29, 2024

Low-Activity Waste Facility Problem Solving

- The Low-Activity Waste (LAW) Facility construction and commissioning is complex and has experienced several unforeseen technical obstacles requiring resolution. Examples include:
 - Plant cooling water pump and forebay redesign (complete)
 - Startup and joule heater power supplies (complete)
 - Water chemistry (complete)
 - LAW off-gas caustic scrubber gasket and spray nozzle (complete)
 - LAW off-gas carbon bed pressurization (complete)
 - LAW melter in-leakage and high temperature in discharge chamber (complete)
 - LAW glass former delivery from truck (complete)
 - Melter 2 cooling panel coolant leak Troubleshoot and Repair (complete)

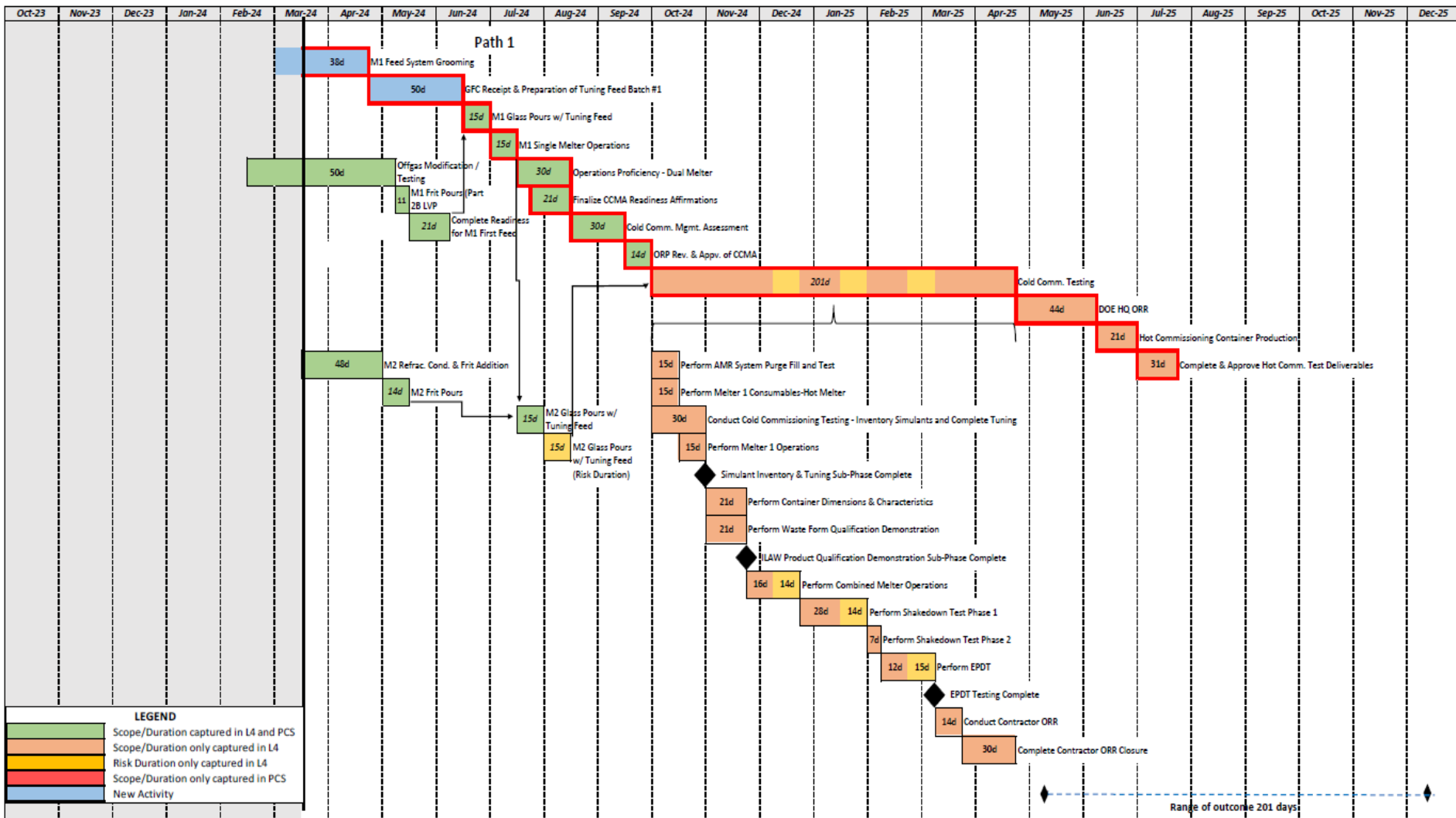
Low-Activity Waste Facility Problem Solving (cont.)

- Glass former receipt and delivery into the melter feed prep vessel (complete)
- Melter 2 heatup and transition to joule heating (complete, greater than 30 days faster than Melter 1)
- Tuning feed introduction to Melter 1 (forecast mid-June)
- Power supply software update (working to resolve over last month, resolved on Melter 2 on May 22)
- Thermal catalytic oxidizer off-gas in-leakage (emerged over last month during preps for safety instrumented function [SIF] tests)
- Sodium hydroxide leakage during receipt (identified May 16, pressure test on May 27 satisfactory)
- Carbon bed bypass valve erratic operation during SIF testing (occurred on May 21)

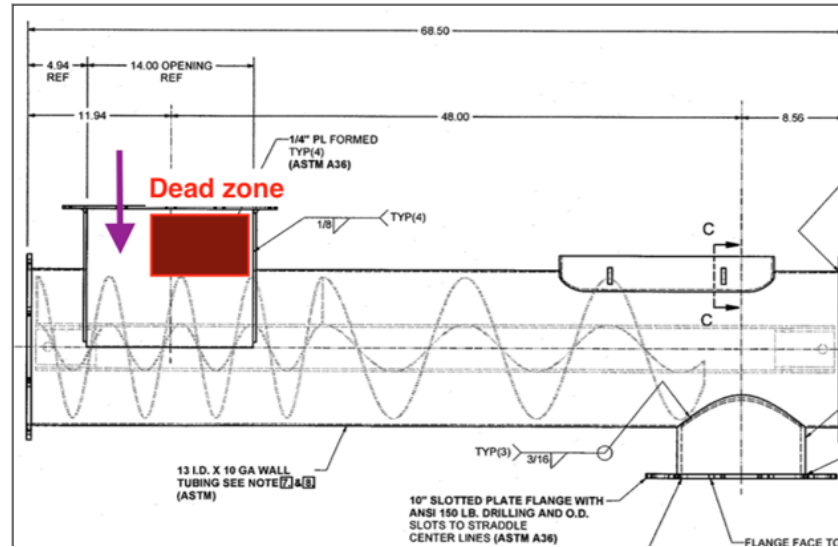
Direct-Feed Low-Activity Waste – Where We Are Today

- Balance of Facilities (BOF):
 - Nearly all utilities have been operating for over a year – ammonia is the exception
- Effluent Management Facility (EMF):
 - Fully operational with water over 1 year ago
 - EMF prestarts are in process, scheduled to be brought back on-line this summer
- Analytical Laboratory (LAB):
 - LAB ventilation system functioning in automatic with open-source method in progress
- LAW Facility:
 - Melter 1 is idling at 2,100°F; poured four containers of glass
 - Melter 2 is idling at 2,100°F; first frit pour completed May 21
 - Performing melter feed system grooming
 - Cascade flow ventilation is stable and operating well

Cold Commissioning Management Assessment Current Working Schedule



Glass Former System Obstacle



Rotary valve (top)



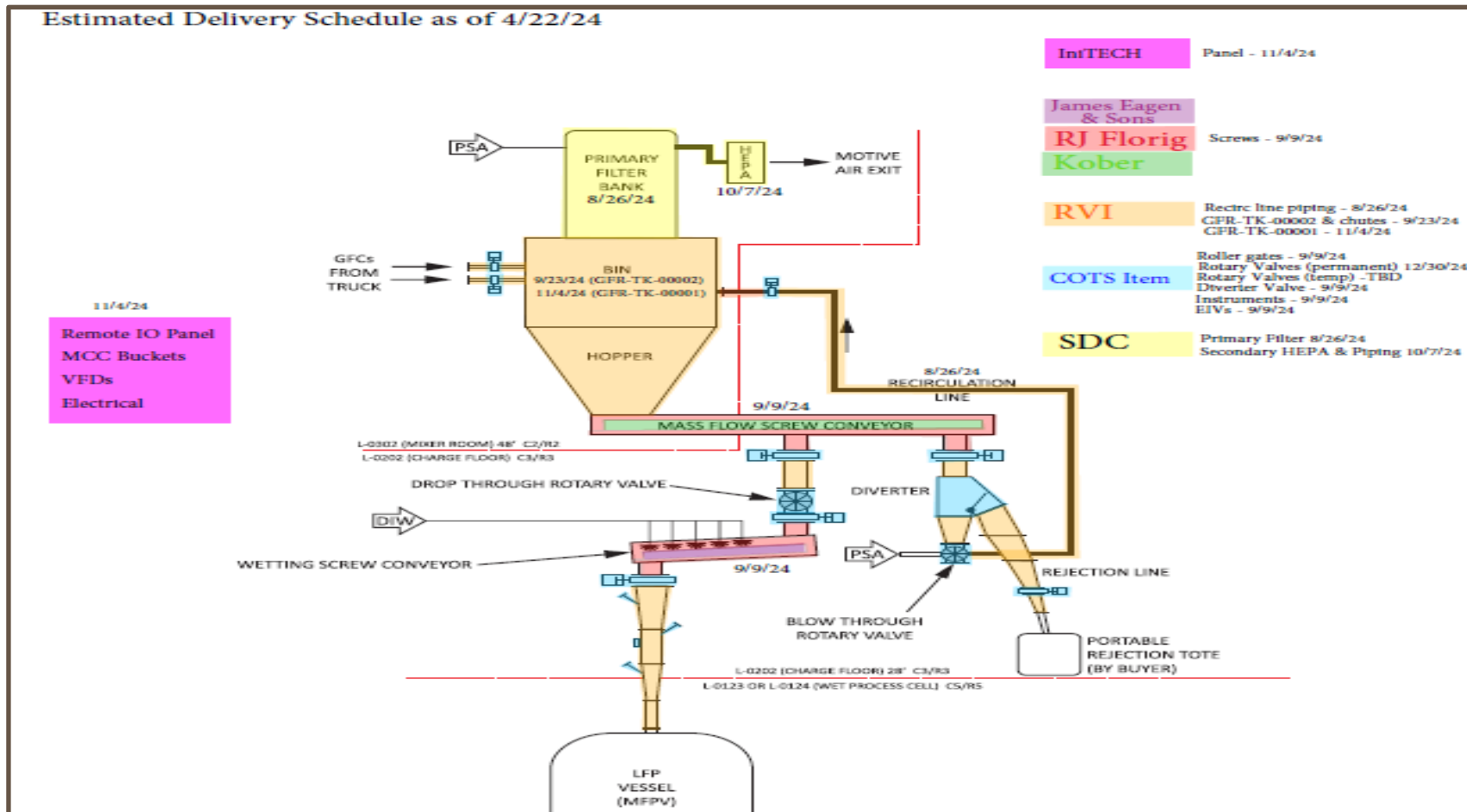
Rotary valve (bottom)



Outlet end of screw feeder

LAW Glass Former Reagent System Modifications (Late 2023)

LAW glass former reagent – replace LAW mixer function with reliable, proven technology to deliver powder glass forming chemicals to melter feed preparation vessel



- The cold commissioning management assessment is a contract requirement to evaluate readiness of the Waste Treatment and Immobilization Plant for DOE to authorize the safe introduction of the cold commissioning simulant and associated hazards in LAW. The following work is required prior to verifying readiness:
 - Affirmation and readiness open item closure
 - Condition report resolution (246)
 - Chemical safety management plan (CSMP) resolution: (condition reports, chemical management, nitrogen oxide)
 - Completion of final Safety Instrument Function tests for offgas

- Environmental requirements field implementation: (CMs and design change packages)
- Ammonia readiness
- System description documents (SDD) revision: (issue final 19)
- Fire impairment resolution:
- Hand valve and manifold implementation
- LAB methods and fume hoods
- Alarm severities implementation

- Unforeseen technical obstacles such as those experienced with the GFR system are impacting the project's ability to supply the feed vessels in the LAW Facility to support meeting the A-8 milestone
- DOE recommends the parties pursue a joint amendment of the A-8 milestone schedule:
 - When – mid-June – informed by the ability to add tuning feed to Melter 1 in the same timeframe and commissioning progress at that point
 - How long? DOE believes needed extension is minor (i.e., months, not years)
- DOE is committed to drive performance 24/7 to mitigate technical challenges and drive towards initiating cold commissioning and maintain transparent, timely progress communications

Attachment 2
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Waste Treatment and Immobilization Plant
June 18th A-8 milestone status briefing

4 Pages (Including Cover Sheet)



THE HANFORD SITE

Cold Commissioning A-8 Milestone Status

Mat Irwin, Acting Assistant Manager
Waste Treatment and Immobilization Plant

Approved for Public Release;
Further Dissemination Unlimited

June 18, 2024

Technical Challenges

- Glass Former Vendor non-Hanford related Safety Event on June 7 and impacts to ability to receive first feed the week of June 10.
- Steam Plant Morrison Tube Cracking
- Sample system erratic magnetic switch
- TCO leak repair
- Carbon Bed Permissive repair

Completed Work

- Both power supply overcurrent software updates complete
- Melter 2 inleakage completed and offgas placed in automatic
- Vessel sampling and glass former recipe developed by VSL and PNNL
- 5 shipments of NaOH received and one batch pumped to LCP-1
- Melter 1 Feed hoses replaced and multiplexors for thermocouples replaced
- 2 additional test glass containers lidded
- First bulk work metric weekly focus session completed

- Unforeseen technical obstacles such as those experienced with the GFR system are impacting the project's ability to meet Interim Milestone A-8: Start LAW Facility Cold Commissioning (August 1, 2024).
- In accordance with the Consent Decree process, DOE intends to transmit a serious risk notification letter to Ecology (and Oregon).
- Shortly thereafter, DOE recommends the parties pursue a joint amendment of the A-8 milestone schedule:
 - How long? DOE believes minor extension of four months is needed (i.e., November 29, 2024).
- DOE remains committed to drive performance 24/7 to mitigate technical challenges and drive towards initiating cold commissioning and maintain transparent, timely progress communications.