

March 18, 2020

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Dummit Ecology

State of Washington Department of Ecology
Attn: Ms. Daina McFadden
3100 Port of Benton Blvd
Richland, WA 99354

Dear Ms. McFadden:

Comments below are regarding the WTP draft Preliminary Risk Assessment and Direct Feed LAW (DFLAW) Risk Assessment Work Plan, for which comments are being accepted from February 24th until April 9, 2020. Some comments are relevant to the recently requested Temporary Authorization for Construction of the Low Activity Waste Pretreatment System, which feeds the DFLAW configuration.

The Focus sheet page 1 says this review includes a draft Preliminary Risk Assessment. The statement of basis document (SOB) does not say “draft” for the Preliminary Risk Assessment. Which is correct?

Permit Conditions should prohibit transfer of any EMF liquid or ETF brine waste to the City of Richland for solidification prior to shipping back to IDF for storage or disposal. These wastes can contain considerable tritium or carbon-14 and the destination of the technetium-99 is uncertain.

Ecology should insist on an updated solid waste acceptance criteria for IDF before allowing DFLAW operation.

In the Emissions Study, 24590-WTP-ES-PE-001, Rev 1, Table 2-2 shows there is 0 concentration of ammonia in the DFLAW Feed used to create “bounding” results. Yet the 242-A Evaporator Waste Analysis Plan has identified ammonia in the evaporator condensate, which means the ammonia came from the tank waste. In addition, ammonia at up to 0.04 Molar was identified in the DFLAW waste acceptance criteria per letter 15-WTP-0023. And Double Shell Tank Ventilation systems are regulated for ammonia release. Is there more ammonia therefore in the Table 2-6 abated emissions for DFLAW than the reported 2.56 grams per second (221 kg/day)? Is all of this ammonia from the slip stream from the off-gas treatment system? What is the ppm concentration of ammonia projected in the DFLAW stacks? Does it exceed health criteria?

Similarly, document 24590-WTP-RPT-ENV-18-001, *Pre-Demonstration Risk Assessment for the Hanford Tank Waste Treatment and Immobilization Plant*, has a 0 concentration of ammonia in the DFLAW feed on page A-5. Ecology should ask for a justification of 0. Most detection limits are not even that low.

Note that permit condition III.10.C.3.e.ii requires the feed to be *analyzed* for ammonia. What if it's not 0? Will the feed not be accepted because the contribution of ammonia from the tank

waste feed was not analyzed in the emissions report? As a result, Ecology should question other feed assumptions for chemicals in the DFLAW feed. Are other species similarly undercounted?

I saw that the *Emissions Study for the Hanford Tank Waste Treatment and Immobilization Plant*, 24590-WTP-ES-PE-17-001, Rev 1 is not identified as a draft or preliminary document, yet it references in Section 6, project calculation, 24590-WTP-M4C-V20T-00001, **Rev B**, *Emissions Estimate for DFLAW and Integrated WTP Configurations*. Revision B of a project calculation is not a final document, and it may have assumptions that have not been verified. Ecology should ask for a QA review of the impacts of using an incomplete calculation, and require that unverified assumptions be included in the emissions report.

Document 24590-WTP-ES-PE-17-001 references a subcontractor test report 24590-101-TSA-W000-0009-166-00001, Rev B, *Final Report – Regulatory Off-Gas Emissions Testing on the DM1200 Melter System Using HLW and LAW Simulants*. This document is very dated and it predates the DFLAW configuration. Many off-gas system changes have been made since then. Ecology should ask for a QA review of the impacts of using an outdated test document. Was the emissions testing prototypic? Did it include the complete treatment train? Include the EMF? The recycle from the EMF?

The Statement of Basis document cites a “phased (stepped) approach” to permit the WTP TSD Unit. I would appreciate if Ecology would provide the regulatory basis and decision document that allows this, since construction has been occurring without benefit of a final design. WAC 173-303-806 requires a final design as part of a permit 180 days *before physical construction is expected to begin*. The phased approach to permitting has been costly and wasteful, and it did not save the time or money promised in 2002, or 2007, or any time after that. Can you provide the details of the phased permitting agreement?

Permit Conditions are silent on the LAWPS/TSCR used ion exchange columns, which will involve unknown, expensive disposal and additional worker risk and exposure. Ecology should prohibit operation of the DFLAW configuration until DOE has identified a funded pathway, covered by NEPA, for disposal of the loaded ion exchange columns that will be created in order to feed the plant. We should not be piling up new orphan wastes and new unfunded costs just to look like DOE is treating something.

Recent reports associated with the LAWPS/TSCR feed project for the DFLAW configuration include DNFSB’s February 21, 2020 Hanford Weekly Report¹, which notes that “the contractor is moving ahead with plans to change their [Tank Side Cesium Removal Project] strategy for controlling flammable gas hazards in expended [loaded] ion exchange (IX) columns. Their previous strategy mitigated the hazard by restricting access to the spent IX column storage pad during periods when weather might reduce or stop the natural ventilation flow that is expected to remove flammable gases from the spent IX media. *The revised strategy will credit the ion exchange columns as an engineered control to contain hydrogen detonations.*” Ecology should

¹ See

<https://www.dnfsb.gov/sites/default/files/document/20231/Hanford%20Week%20Ending%20February%2021%202020.pdf>.

ask whether the TSCR design has sufficient safety underpinning to be constructed – including the storage pad. Per the Notice of Construction in 19-ECD-0074², the columns are **passively vented**. If hydrogen deflagrates and the columns “contain the detonation,” what happens to the cesium inside? Will the deflagration not produce projectiles, but instead release radioactive material to the air? The design appears immature at this point.

In letter 20-ECD-0010³, the DOE Office of River Protection requested three temporary authorizations to begin construction of LAWPS/TSCR facilities. ORP noted that Ecology established a policy to not issue temporary authorizations without having a draft permit available (which follows public review). ORP requested Ecology to ignore this policy because construction forces will be idled, there could be an 8 week delay, it could cost \$500,000 a month, and there would be a day for day slip in the LAWPS/TSCR schedule. ORP claimed to have written their own “permit conditions” to replace ones not available in a draft permit, but no such section is included in letter 20-ECD-0010.

The TPA Monthly Report for February 2019 indicated that ORP was informed on January 29, 2020, that Ecology was not going to issue the temporary authorizations to allow pouring of the concrete pad for the tank-side cesium removal unit, the ion exchange column storage pad, and installation of the transfer lines *until the draft Resource Conservation and Recovery Act permit was completed*. Why wait so long to complain?

WAC-173-303-830 accepts justifications for a Temporary Authorization when the temporary authorization is necessary to achieve one of the following objectives before action is likely to be taken on a modification request:

- (I) To facilitate *timely implementation* of closure or corrective action activities;
- (II) To allow treatment or storage in tanks, containers, or in containment buildings in accordance with 40 C.F.R. Part 268;
- (III) To prevent disruption of ongoing waste management activities;
- (IV) To enable the permittee to respond to sudden changes in the types or quantities of the wastes managed under the facility permit; or
- (V) To facilitate other changes to *protect human health and the environment*.

ORP’s justifications do not appear to be valid. There has been no confidence or validity to DOE schedule projections since 2007. Even now, there has been an unfavorable schedule variance of \$3.4 Million for defective LAW refractory, and a 4 week delay to waste feed delivery technology, as described on page 37 of the February 2020 TPA Monthly Report. Delay to ensure the permitting is correct is not a dire situation, especially since the hydrogen safety issue is not resolved. Waiting for a draft permit will not impact timely implementation as a result. Allowing construction now, without a safety basis, will not protect human health or the environment.

Thank you for the opportunity to review this submittal.

² 19-ECD-0074, U.S. DEPARTMENT OF ENERGY, OFFICE OF RIVER PROTECTION SUBMITTAL TO THE WASHINGTON STATE DEPARTMENT OF HEALTH TOC-ENV-NOC-5293, REV. 0, RADIOACTIVE AIR EMISSIONS NOTICE OF CONSTRUCTION APPLICATION FOR THE STORAGE OF SPENT ION EXCHANGE COLUMNS, September 30, 2019.

³ 20-ECD-0010, SUBMITTAL OF THE REQUEST FOR TEMPORARY AUTHORIZATIONS TO SUPPORT THE LOW-ACTIVITY WASTE PRETREATMENT SYSTEM OPERATING UNIT GROUP PERMIT, March 11, 2020.