



Laura C.

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STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

1315 W. 4th Avenue • Kennewick, Washington 99336-6018 • (509) 735-7581

May 19, 1997

Dr. James McClusky  
U.S. Department of Energy  
P.O. Box 550, MSIN: S7-50  
Richland, WA 99352



Dear Dr. McClusky:

Re: Regulatory Requirements for Tank Integrity Assessments

As partial fulfillment of Milestone M-32, the U.S. Department of Energy (USDOE) is required to complete integrity assessments of specific tank systems at the Hanford Facility. This letter is to clarify the requirements of Washington Administrative Code (WAC) 173-303-640 and the Washington State Department of Ecology's (Ecology) position on the requirements of this milestone.

Ecology considers the Double Shell Tank System to be an "enterable" tank system. Therefore, the integrity assessment must address cracks, leaks, corrosion, and erosion. In addition, WAC 173-303-640(2)(c) states that the assessment must determine the tank system has sufficient structural strength to ensure it will not collapse, rupture, or fail. To assess the structural strength of the tanks, USDOE must make some assessment of the internal corrosion that has occurred within the tanks. Ecology believes the condition of the tanks cannot be accurately predicted from process knowledge and must be based on physical testing for the following reasons:

1. The tanks have not been mixed, and the effectiveness of corrosion control measures cannot be predicted;
2. Waste acceptance criteria has varied over the life of the tanks;
3. Environmental conditions within the tanks (i.e., temperature, sodium hydroxide concentration, etc.) have not been clearly documented throughout the life of the tanks;
4. Environmental conditions have existed within the tanks that are outside current acceptable limits for corrosion inhibition; and
5. Records of construction inspections do not document acceptable QA/QC procedures with respect to welds.



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At a minimum, the physical testing of these tanks should be consistent with the Tank Structural Integrity Panel's (TSIP) draft guidance<sup>1</sup> and employ state-of-the-art technology for non-destructive examinations.

Ecology has published guidance for assessing and certifying tank systems that store and treat dangerous waste<sup>2</sup>. If integrity assessments performed on Hanford tank systems meet the standards of this guidance, compliance with the regulations will be achieved. Essential elements of tank integrity assessments include, but are not limited to the following:

1. An assessment must include the tank itself, the secondary containment, and ancillary equipment including piping, fittings, flanges, valves, and pumps as defined by WAC 173-303-040.
2. The assessment must be certified by a Independent, Qualified, Registered Professional Engineer (IQRPE). Guidance provided by the Environmental Protection Agency addressed the definition of "independent" and concluded that there must not be an appearance of a conflict of interest, and the IQRPE must be someone who is least subject to conscious or subconscious pressure to certify inaccurately. This interpretation was recently supported by the Hanford Advisory Board's Waste Management Sub-committee.
3. The integrity assessment report must include a signed, written statement certifying the accuracy, truthfulness, and completeness of the material presented and conclusions pertaining to the structural integrity of the tank in the report. The report must be sufficiently detailed to provide a basis for this certification.
4. The certification statement must be in accordance with WAC 173-303-810(13)(a) or an Ecology approved equivalent statement.
5. The initial integrity assessment report must include a recommended schedule of future tank system integrity assessments to ensure the tank retains its structural integrity and will not collapse, rupture, or fail. This recommended schedule for future integrity assessments must be based on the results of the current and past integrity assessments, age of the tank system, materials of construction, characteristics of the waste, methods of construction, documented construction QA/QC requirements, and any other relevant factors (WAC 173-303-640(2)(e)).

<sup>1</sup> "Guidelines for development of Structural Integrity Programs for DOE High-Level Waste Storage Tanks," Bandyopadhyay, Kamal, et. al., September 13, 1994.

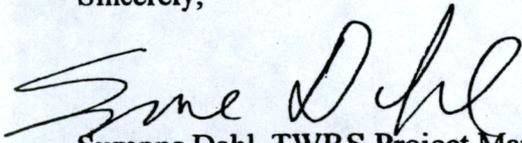
<sup>2</sup> "Guidance for Assessing and Certifying Tank Systems that Store and Treat Dangerous Waste," Washington State Department of Ecology publication No. 94-114.

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Milestone M-32 is to be completed in 1999. The WAC 173-303-620(2), Ecology's guidance<sup>1</sup>, and the TSIP guidance will be used to determine if USDOE has successfully completed the milestone.

If you have any questions, please contact Laura Cusack at (509) 736-3038.

Sincerely,

A handwritten signature in cursive script, appearing to read "Suzanne Dahl".

Suzanne Dahl, TWRS Project Manager  
Nuclear Waste Program

cc: Jackson Kinzer, USDOE  
James Rassmussen, USDOE  
Mary Lou Blazek, ODOE