August 24, 2000

Mr. Harry Boston, Manager
U. S. Department of Energy
Office of River Protection
2440 Stevens Center
Richland, WA. 99352

Mr. Keith A. Klein, Manager
U. S. Department of Energy
Richland Operations
P. O. Box 550
Richland, WA. 99352

RE: Final Determination pursuant to the Hanford Federal Facility Agreement and Consent Order (HFFACO) regarding Notice of Penalty Incurred and Due N0. 00NWPKW-1249 issued for the U. S. Department of Energy's (DOE) failure to complete double-shell tank integrity assessments per HFFACO Milestone M-32.

Dear Messrs. Boston and Klein:

This letter follows expiration of the time allotted for HFFACO dispute resolution in this matter between the Washington State Department of Ecology (Ecology) and the U. S. Department of Energy (DOE). Enclosed, please find Ecology's Final Determination in the matter pursuant to HFFACO Part Two, Article VIII, Paragraph 30 (D).

Sincerely,

Tom Fitzsimmons, Director
Washington State Department of Ecology

Enclosure (1)

cc: Rick Albright, EPA Region 10
Mary Lou Blazek, OOE
Chuck Findley, EPA Region 10
Russell Jim, YIN
Merilyn Reeves, HAB
Hector Rodriguez, DOE-RL
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J. R. Wilkenson, CTUIR

FINAL DETERMINATION

Final Determination pursuant to the Hanford Federal Facility Agreement and Consent Order (HFFACO) regarding Notice of Penalty Incurred and Due No. 00NWPKW-1249 issued for the U. S. Department of Energy's (DOE) failure to complete double-shell tank integrity assessments per HFFACO Milestone M-32.

This determination concludes efforts at reaching a settlement through dispute resolution in these matters between the Washington State Department of Ecology (Ecology) and the U. S. Department of Energy (DOE) (hereafter the Parties). As such, this constitutes my final determination pursuant to HFFACO Part Two, Article VIII, Paragraph 30 (D). This determination has been made following review and consideration of Ecology's Administrative Record in this matter.

I. INTRODUCTION

DOE owns the Hanford Site. CH2M Hill Hanford Group (CHG) is currently contracted to DOE to manage the dangerous waste storage tank system on the Hanford Site. CHG recently assumed this responsibility from Lockheed Martin Hanford Corporation (LMHC). LMHC provided tank system management for DOE from October 1996 through January 2000. Prior to October 1996, DOE contracted with Westinghouse Hanford Company (WHC) to manage Hanford's tank waste system.

The dangerous waste storage tank system on the Hanford Site is composed of 177 underground steel tanks and their ancillary equipment. Twenty-eight of the 177 underground tanks are million-gallon capacity tanks with a steel lining enclosing the inner primary storage tank. These twenty-eight tanks, and their ancillary equipment, comprise the double-shell tank (DST) system.

DOE, Ecology and the U. S. Environmental Protection Agency (EPA) approved the HFFACO in part to ensure compliance with the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. 6901-6992k, and the Washington Hazardous Waste Management Act (HWMA), Chapter 70.105, Revised Code of Washington (RCW). The regulations codifying the requirements of RCRA and HWMA are found in the Title 40 Code of Federal Regulation (40 CFR) and in Washington Administrative Code (WAC) Chapter 173-303 respectively. The HFFACO included major milestone requirement M-32-00 to address various Hanford hazardous waste storage tank systems that fail to meet RCRA interim status requirements. Included within M-32 were requirements addressing the non-compliant status of the DSTs relative to structural integrity assessments as required by 40 CFR, Subpart J, 265.191 and WAC 173-303-640(2).

The M-32 series required completion of target, interim and ultimately major milestone M-32. Major milestone M-32-00 was incorporated into the TPA in 1994 and required DOE to "Complete Identified Dangerous Waste Tank Corrective Actions" by September 30, 1999. Target date M-32-T05 required that DOE submit to Ecology a "final plan and schedule for completion of the double-shell tank integrity assessments" with a target date of June 1994. Interim Milestone M-32-04 required completion of "double-shell tank interim status tank

actions," also by June 1994. On September 28, 1999, DOE submitted both its DST integrity assessment reports and a letter to Ecology stating major milestone M-32-00 had been completed.

From October 12, 1999, through March 30, 2000, Ecology conducted an inspection into completion of HFFACO Milestone M-32 and, specifically, completion of the DST integrity assessments. This inspection is summarized in Ecology's Milestone M-32 Inspection Report dated March 30, 2000.[1] This inspection was based in part upon integrity assessment reports issued by DOE on September 28, 1999 which concluded that Hanford's double-shell tanks were fit for continuous use. Following the inspection Ecology determined that DOE had not completed DST integrity assessments as required by Milestone M-32. Consequently, Ecology issued Administrative Order No. 00NWPKW-1250 against DOE (and identical Administrative Order No. 00NWPKW-1251 against CHG) on June 13, 2000, providing specific instructions to complete the assessment of the integrity of the DST system.[2] Also on June 13, 2000, Ecology issued Penalty No. 00NWPKW-1249 solely to DOE in the amount of $200,000[3] for failure to complete DST integrity assessments per Milestone M-32.[4]

DOE issued a letter dated June 20, 1999, asserting that it was initiating dispute resolution per HFFACO Article VIII regarding Ecology's Administrative Order Nos. 00NWPKW-1251 and 00NWPKW 1250 and Ecology's Notice of Penalty Incurred and Due 00NWPKW-1249.[5] On June 27, 1999, Ecology responded to DOE's notice to initiate dispute resolution and concurred that Penalty No. 00NWPKW-1249 was subject to dispute resolution per the HFFACO.[6] In its response letter, Ecology advised DOE that, pursuant to Paragraph 30, Article VIII of the HFFACO, Administrative Order Nos. 00NWPKW-1251 and 00NWPKW-1250 were not subject to dispute resolution because they were issued under Ecology's HWMA authority independent of the HFFACO. Therefore, this Final Determination is issued solely for resolution of disputes brought forth by DOE in relation to Notice of Penalty Incurred and Due No. 00NWPKW-1249.

II. HISTORY OF M-32

In June 1994, DOE submitted its Tank System Integrity Assessments Program Plan in satisfaction of target milestone M-32-04-T05.[7] After review of DOE's program plan, Ecology became concerned that DOE was not committed to funding or obtaining sufficient technical data to provide an integrity assessment of the DSTs or meet the DST integrity assessment requirements of M-32.

[1] Milestone M-32 Inspection Report, March 30, 2000, file No. 99.166.

[2] Administrative Order No. 00NWPKW-1250, June 13, 2000.

[3] In its June 13, 2000 transmittal letter, Ecology indicated that it would hold in abeyance half the penalty ($100,000) pending DOE's compliance with the order. For the reasons described in this final determination, Ecology has decided to not hold in abeyance any portion of the penalty.

[4] Notice of Penalty Incurred and Due No. 00NWPKW-1249, June 13, 2000.

[5] Letter 00-ORL-065, DOE to Ecology regarding Election to Exercise Resolution Rights Under Article VIII of the HFFACO, June 20, 2000.

[6] Letter, Ecology to DOE regarding Response to DOE dispute resolution for penalty 00NWPKW-1249 and Administrative Order 00NWPKW-1251, June 27, 2000.

[7] Tank System Integrity Assessments Program Plan, WHC-SD-WM-AP-017, Rev. 1, May 24, 1994.

Throughout 1996 and 1997, Ecology met and exchanged electronic mail with DOE and its contractors on the issues of adequate funding and technical scope of DST integrity assessments. During this time Ecology agreed with DOE to an initial examination by nondestructive examination (ultrasonic testing) of six of the twenty-eight DSTs. This agreement was based in large part on tank integrity examination guidance provided by the Tank Structural Integrity Panel (TSIP), an independent group of tank structural experts from the Brookhaven National Laboratories, New York. Ecology agreed with DOE that the initial ultrasonic testing of six DSTs would be sufficient for integrity testing requirements in support of the overall DST integrity assessments to meet M-32-00 requirements by September 1999, so long as no significant defects were discovered through this testing.

On December 20, 1995, as a result of concerns regarding DOE's slipping schedules for completing ultrasonic testing of the DSTs, Ecology issued its first formal letter concerning DOE's lack of progress towards completing DST integrity assessments.[8] This letter advised DOE that the state might take enforcement action if DOE did not restore funding and scheduling adequate to complete DST integrity assessments per M-32 requirements.

On March 15, 1996, Ecology issued a second letter to DOE expressing concerns that DOE was not meeting commitments or scheduling sufficient to meet M-32 requirements, specifically the requirements of M-32-04.[9] In this letter Ecology advised DOE that the state might revoke the DST interim status permit status unless scheduling and funding for completion of M-32 DST integrity assessments were restored.

In April 1996, Ecology's DST integrity assessment project manager exchanged electronic mail messages with DOE's M-32 representative expressing concerns that DOE's DST integrity assessment contractors had advised the Defense Nuclear Facilities Safety Board that ultrasonic testing of the six DSTs would not be completed until September 1999 rather than within federal fiscal year 1995 as scheduled in DOE's Tank System Integrity Assessments Program Plan.[10]

On May 8, 1996, Ecology issued a third letter to DOE expressing concerns that DOE had not conducted DST integrity assessments per the schedule provided in their Tank System Integrity Assessments Program Plan issued to Ecology to satisfy M-32-04-T05.[11] This letter required that DOE submit a recovery schedule for meeting M-32 DST integrity assessment requirements and coordinate M-32 DST integrity assessment activities with the RCRA permitting schedule for the DST system.

[8] Letter, Ecology to DOE regarding Tank Integrity Requirements for Milestone M-32-04-T05, December 20, 1995.

[9] Letter, Ecology to DOE regarding Double-Shell Tank System Integrity Assessment (Milestone M-32-04), March 15, 1996.

[10] Electronic Mail; Laura Cusack (Ecology) to Dale Jackson (DOE) regarding Completion of ultrasonic testing of six DSTs by 1999 rather than 1995 per M-32-04, April 10, 1996.

[11] Letter, Ecology to DOE regarding Double-Shell Tank Integrity Assessment Schedule, May 8, 1996.

On May 29, 1996, Ecology issued a fourth letter to DOE advising DOE that failure to fund the TSIP and submit a recovery schedule for completion of DST integrity assessments would force the state to require ultrasonic testing of all twenty-eight DSTs.[12]

On July 10, 1996, DOE responded by letter to Ecology's May 8th and May 29th letters,[13] advising Ecology that the TSIP would remain involved in DST integrity assessment activities until at least February 1997 and that DOE would complete six DST integrity assessments by July 1998.

On May 19, 1997, Ecology issued a fifth letter to DOE clarifying the regulatory requirements for meeting M-32 requirements to assess the integrity of the DSTs.[14] In this letter Ecology provided specific performance measures for assessing the integrity of the DST system and advised DOE that the TSIP guidance would be used, in part, to determine if M-32 had been completed. This letter reminded DOE that DST integrity assessments were required by major milestone M-32-00 and that completion of the milestone was due by September 1999.

Concurrent with these exchanges of correspondence, Ecology met with DOE and its contractors in formal M-32 Project Managers' Meetings throughout 1996 and 1997. These meetings were documented in formal M-32 Project Managers' Meeting Minutes.[15] The following issues were the primary issues discussed and documented at these meetings:

1. Restoration of slipping scheduling for conducting DST integrity assessments.

2. DOE funding of the TSIP to provide an independent, expert technical basis for DST integrity assessment examinations.

3. Procurement of an independent engineer to independently certify the accuracy and completeness of the DST integrity assessments.

4. Coordination of M-32 DST integrity assessment deliverables with issuance of the DST final status RCRA permit.

5. Clarification of the technical scope of integrity assessment examinations required to meet M-32 requirements and sufficient to meet DST permitting requirements regarding integrity assessments for the DST system.

In response to Ecology's concerns, DOE proposed a HFFACO milestone change package to create a new M-32 milestone series that would coordinate DST integrity assessments with issuance of the DST RCRA Part B permit as Ecology had suggested.[16] Ecology discussed

[12] Letter, Ecology to DOE regarding Future Funding for TSIP Support of the DST Integrity Assessments, May 29, 1996.

[13] Letter 96-WSD-120, DOE to Ecology regarding Double-Shell Tank (DST) Integrity Assessment Schedule, July 10, 1996.

[14] Letter, Ecology to DOE regarding Regulatory Requirements for Tank Integrity Assessments, May 19, 1997.

[15] M-32 Project Managers' Meeting Minutes, 1996–1997.

[16] Draft HFFACO Change Control Form M-32-96-02, October 17, 1996.

DOE's change package at length with DOE but could not come to agreement on technical requirements within the change package. DOE did not elect to formally dispute Ecology's objections. Rather, DOE and Ecology concluded the M-32 Project Manager's Meeting series by signing a consensus agreement in November 1997 known as the Double-Shell Tank System Integrity Program Plan.[17] The purpose of this plan was to demonstrate general consensus by Ecology and DOE regarding the requirements for completion of DST integrity assessments by September 1999 as described in DOE's 1994 Tank System Integrity Assessments Program Plan. The 1997 consensus agreement referenced the TSIP guidelines for tank integrity assessments as a technical basis for conducting the DST integrity assessments.

At the conclusion of the M-32 Project Managers' Meetings in 1997, Ecology chose to forego formal enforcement against DOE for failure to complete M-32-04 and elected to rely instead on completion of DST integrity assessments, including delivery of integrity assessment reports, by the September 1999 M-32-00 major milestone deadline. Ecology was assured, through DOE's signature to the 1997 consensus agreement, that DOE would perform integrity assessment of the DST system, as specified in DOE's 1994 integrity program plan and in accordance with TSIP guidelines for ultrasonic inspection, and that DST integrity assessment reports would be completed by September 1999 to complete the requirements of M-32-00. Further, Ecology had documented its concerns and requirements for completing M-32 tank integrity assessments in the formal correspondence to DOE listed above. Therefore, after conclusion of the M-32 Project Manager's Meetings, little interaction between the parties occurred throughout 1998.

During the summer of 1999, DOE approached Ecology to propose deletion of M-32 interim milestones, unrelated to DST integrity assessments, that addressed projects no longer in progress. At this time Ecology became aware that DOE had not completed much of the DST ultrasonic testing recommended by the TSIP and that DOE considered submittal of its 1994 Tank System Integrity Assessments Program Plan as the action required to meet M-32 requirements. On July 15, 1999, following its receipt of this information, Ecology issued its sixth letter concerning requirements for DST integrity assessments relative to meeting M-32 requirements.[18] This letter advised DOE that DST integrity assessments, including the scope of examination required by the TSIP, remained due September 1999 with completion of M-32-00.

On September 28, 1999, DOE issued two letters to Ecology. One letter asserted that M-32-00 had been completed.[19] The second letter included the integrity assessment reports for all six DST tank farms (which contain all twenty-eight DSTs) as attachments.[20] This letter stated that ultrasonic inspections of six DSTs and assessment of the DST transfer system had been completed, but that "emerging safety issues" had prevented some of the scheduled integrity assessment activities, including assessment of three double-contained receiver tank systems,

[17] Double-Shell Tank System Integrity Program Plan, Rev. 0, November 1997.

[18] Letter, Ecology to DOE regarding Regulatory Requirements under M-32 and Approval to Delete M-32-08, July 15, 1999.

[19] Letter 99-EAP-512, Completion of (Tri-Party Agreement) Major Milestone M-32-00, September 28, 1999.

[20] Letter 99-OPD-050, Progress Towards Completing Activities Outlined in the Double-Shell Tank (DST) System Integrity Program Plan, September 28, 1999.

eight catch tank systems, the 204-AR Unloading Station, and the A-350 Lift Station. The letter did not specify what emerging safety issues prevented this work.

From October 12, 1999, through March 30, 2000, Ecology conducted an inspection into completion of M-32. The findings from this inspection revealed that DOE had not completed ultrasonic inspection of the DSTs as stated in their September 28, 1999 letter, had not acknowledged known operation of some DSTs outside corrosion control specifications in its DST integrity assessment reports, had not completed integrity assessment activities in accordance with its 1994 Tank System Integrity Assessments Program Plan, and had not met the requirements specified in formal correspondence between the parties. Further, Ecology's inspection revealed that DOE had not completed inspection of the DST transfer system, including essential components of that system.

III. HISTORY OF DISPUTE

A. Initiation of HFFACO Dispute Resolution

On June 20, 2000, DOE responded to Ecology's issuance of its penalty and administrative order by letter invoking dispute resolution per HFFACO Article VIII. DOE's June 20th letter alleges "inaccuracies in the recitation of facts expressed in both documents [both order and penalty]." On June 27, 2000, Ecology responded to DOE's invocation of dispute by advising DOE that Ecology's penalty (00NWPKW-1249) was issued in accordance with HFFACO Article IX, Stipulated Penalties, and was therefore subject to HFFACO dispute resolution, but because the administrative orders were issued outside of the HFFACO under Ecology's HWMA regulatory authority, they were not subject to dispute resolution.

B. Attempts at Resolution at Project Manager Level

Ecology met with DOE and CHG tank waste project representatives on June 29, July 10, and July 13 in an attempt to resolve the dispute at the project manager level. During the first two dispute resolution meetings, DOE and CHG representatives presented no evidence of the alleged "inaccuracies" in Ecology's notice of penalty or notice of administrative order; rather they focused on attempting to convert Ecology's administrative orders to new HFFACO milestones. Ecology reiterated that the administrative orders were not subject to dispute resolution and asked that DOE present the inaccuracies referenced in its June 20th letter at the final dispute resolution meeting scheduled for July 13th. At the July 13th meeting, DOE representatives presented a listing of "draft" dispute resolution items, which they offered as reason to vacate the penalty and orders.[21] Ecology repeated that the order was not subject to dispute resolution and reviewed the dispute resolution items for application against the penalty only. The individual dispute items focused on DOE's allegation that milestone M-32-00 did not require actual completion of DST integrity assessments. Rather, DOE argued, the submittal of its 1994 Tank System Integrity Assessments Program Plan satisfied the requirements of interim milestone M-32-04 and, therefore, major milestone M-32-00.

[21] Draft items for dispute against Ecology's Penalty No. 00NWPKW-1249 and Administrative Order No. 00NWPKW-1250 and 00NWPKW-1251.

Ecology disagreed with this allegation and referred to DOE's integrity program planning documents, the body of correspondence from Ecology to DOE reiterating DST integrity assessment requirements, the TSIP guidelines, the integrity assessment program planning documents, and the M-32 Project Managers' Meeting minutes. Ecology referred to the language of M-32-00 requiring completion of identified tank corrective actions, to the language of M-32-04 requiring completion of interim status tank actions, and to the language of M-32-04-T05 requiring a final plan and schedule for completion of DST integrity assessments. The parties agreed that the dispute could not be resolved at the project managers' level and that the issues should be heard by the Interagency Management Integration Team (IAMIT) at its next regularly scheduled meeting (July 25, 2000). The parties agreed that DOE must submit a written statement of dispute by July 20, 2000 as required by Article VIII, Paragraph 30 (A) of the HFFACO.

C. DOE's Statement of Dispute to the IAMIT

On July 20, 2000, DOE submitted a written statement of dispute (dated July 19, 2000).[22] Although the letter referenced only Ecology's Administrative Orders 00NWPKW-1250 and 00NWPKW-1251 as subjects for dispute, the text of this letter disputed Ecology's Penalty No. 00NWPKW-1249 as well. DOE's statement of dispute contends:

1. M-32 was established with the provision to "evolve, in both scope and schedule" to accommodate discovery and correction of then unknown conditions, and with the understanding that the major milestone's September 1999 completion date might change to accommodate such activities.

2. Interim milestone M-32-04 was completed in 1994 with the submittal of a required DST integrity program plan that included proposed schedules for specific DST integrity assessment activities. The schedules indicated that these activities would not be completed before the end of fiscal year 1999, and thus identified a need to extend the M-32 completion date beyond September 1999.

3. After submitting its 1994 Tank System Integrity Assessments Program Plan in satisfaction of M-32-04-T05, DOE entered into negotiations with Ecology intended to change major milestone M-32 to reflect the actions and schedules contained in the plan. The parties' inability to reach agreement on technical issues resulted in delays that made achievement of the originally proposed schedules impossible.

4. During 1996 and 1997, DOE and Ecology met to negotiate the details of the proposed integrity assessment program and in 1997 agreed to a new integrity assessment program plan which superseded the 1994 integrity program plan issued by DOE in satisfaction of interim milestone M-32-04. The 1997 integrity program plan included visual examinations and utilization of in-service leak tests for all twenty-eight of Hanford's DSTs to, "confirm that the tanks are not

[22] Letter 00-OSD-080, DOE to Ecology and EPA regarding Transmittal of Statement of Dispute for Administrative Orders No. 00NWPKW-1250 and No. 00NWPKW-1251, dated June 13, 2000.

leaking." The 1997 integrity plan also included ultrasonic testing of six of the twenty-eight DSTs, but did not identify any specific extent of ultrasonic testing. The plan included a "tentative" schedule for assessment activities.

5. In 1997, DOE invited Ecology, "to engage in negotiations that would translate the 1997 program plan into HFFACO milestones, but Ecology declined without explanation."

6. DOE provided Ecology with an integrity assessment that the DSTs were fit for use in September 1999. On September 28, 1999, DOE notified Ecology that major milestone M-32 was completed since no new integrity assessment program milestones were established, and that the activities governed by the existing interim M-32 milestones had been completed.

The Statement of Dispute concludes by requesting that the penalty be withdrawn and that the administrative orders be withdrawn as unnecessary since the work specified in the orders is, "properly the subject of the HFFACO, and that further integrity assessment activities should be performed pursuant to appropriate HFFACO milestones."

At the parties' July 25, 2000 IAMIT meeting, DOE presented its case for withdrawal of penalty and conversion of the orders to HFFACO milestones. The IAMIT was unable to resolve the dispute.

IV. FINDINGS AND FINAL DETERMINATION

A. Findings Regarding Specific Dispute Elements Noted Within DOE's July 19, 2000 Statement of Dispute (SOD)

As listed Section III, DOE's July 19, 2000 SOD contained six major dispute items. These dispute items are repeated below along with my findings for each:

1. *M-32 was established in 1994 with the provision to "evolve, in both scope and schedule," to accommodate discovery and correction of then unknown conditions, and with the understanding that the major milestone's September 1999 completion date might change to accommodate such activities.*

Finding: Major milestone M-32-00 required DOE to "Complete *Identified* Dangerous Waste Tank Corrective Actions" by September 1999. Interim milestone M-32-04 required DOE to "*Complete* Double-Shell Tank Interim Status Tank Actions" by June 1994. Target milestone M-32-04-T05 required DOE to "Submit to Ecology a *Final* Plan and Schedule for *Completion* of the Double-Shell Tank Integrity Assessments" by a target date of June 1994. (Emphasis added.) Major milestone M-32-00 indicated that "Completion of interim milestone tasks may identify the need for additional actions or interim milestones in the future." This language indicates the authors of the HFFACO envisioned M-32 might need to be changed if completion of interim milestones as written revealed the need for additional actions or interim milestones. However, M-32-00 ultimately required that all corrective actions identified within the M-32 series be

completed by September 1999. Major milestone M-32 also stated that "Any new interim milestones will subsequently be established via the change process in section 12 of the action plan".

In 1997 DOE proposed a change package for new M-32 interim milestones. Because Ecology disagreed with DOE's proposal, no new milestones were created to replace existing interim and major M-32 requirements. DOE did not seek an extension of M-32 as provided for in Section 12 of the HFFACO Action Plan, nor did it dispute Ecology's formal correspondence, summarized in Section II of this Final Determination, describing the requirements for completing M-32. Therefore the requirements of M-32-00, to complete identified dangerous waste tank corrective actions by September 1999, remained in place as written.

2. *Interim milestone M-32-04 was completed in 1994 with the submittal of a required DST integrity program plan that included proposed schedules for specific DST integrity assessment activities. The schedules indicated that these activities would not be completed before the end of federal fiscal year 1999, and thus identified a need to extend the M-32 completion date beyond September 1999.*

Finding: Interim milestone M-32-04 states "Complete Double-Shell Tank Interim Status Tank Actions." DOE contends this interim milestone was met with submittal of its 1994 DST integrity assessment program plan. This plan was required by target milestone M-32-04-T05 within interim milestone M-32-04. M-32-04-T05 required more than simply a plan and schedule. It required specifically a "*final* plan and schedule for *completion* of the double-shell tank integrity assessments." DOE's 1994 DST integrity assessment program plan listed "all existing DST systems" as the scope of integrity assessments for the DST system and listed completion of ultrasonic examination of six DSTs by end of federal fiscal year 1996. In view of DOE's slipping schedules for completing DST integrity assessment activities in 1995, and to coordinate completion of DST integrity assessments with issuance of the DST Part B permit, Ecology negotiated with DOE in good faith throughout 1996 and 1997. Ecology reiterated the requirements for completion of DST integrity assessments, including the scope of ultrasonic examinations, during the M-32 Project Managers' Meetings. Ecology advised DOE, in the formal letters summarized in Section II of this Final Determination, that DST integrity assessments would be required by September 1999, for completion of M-32-00.

The DST integrity assessment reports DOE issued on September 28, 1999, failed to include the minimum scope of ultrasonic examinations agreed to with Ecology and documented in formal correspondence from 1995 through 1999. Also, DOE's September 1999 DST integrity assessment reports note that one DST had not been maintained within corrosion inhibiting specifications and discount this as unimportant to assessment of the DST's integrity. However, DOE issued a tank corrosion study in February 1996, in part to "Demonstrate compliance with applicable federal, state and local waste storage requirements."[23] This report documented that six DSTs had been operated outside of corrosion control specifications for at least two or more years. The report also concluded that the monitoring system for corrosion control in Hanford's

[23] Evaluation of Alternatives for Upgrading Double Shell Tank Corrosion Monitoring at Hanford, WHC-SD-ER-538, Rev. 0, February 23, 1996.

double-shell tanks was inadequate and that even within DSTs managed to the corrosion control specifications there were regions that could promote localized corrosion of the tanks' walls. This report concludes that ultrasonic testing of the DSTs was an essential component of monitoring for corrosion effects in the DSTs. Through a Freedom of Information Act (FOIA) request, Ecology obtained correspondence between DOE's contractors that documented that some DSTs had not been maintained to corrosion inhibiting specifications for up to fifteen years.[24]

Therefore, DOE failed to "Complete Identified Dangerous Waste Tank Corrective Actions" as required by major milestone M-32-00 or to "Complete Double-Shell Tank Interim Status Tank Actions" as required by interim milestone M-32-04 which Ecology allowed until September 1999 to complete.

Section 4.0, Cost and Schedule, of DOE's 1994 Tank System Integrity Assessments Program Plan states that "All of the compliant DST tank systems will be assessed in five years." This statement clarifies that the integrity assessments of the DSTs would be completed by 1999 while integrity assessment of those portions of the DST system requiring upgrades to meet regulatory requirements (i.e. non-compliant pipelines) might not be completed by September 1999. Section 4.0 of DOE's integrity assessment plan included a schedule supporting completion of DST integrity assessment activities by September 1999, with the exception of issuance of the written DST integrity assessment reports. This schedule included completion of ultrasonic examination of six DSTs by end of federal fiscal year 1996 and completion of WAC dangerous waste requirements for all 28 DSTs by end of federal fiscal year 1997. The only tank integrity assessment item scheduled for completion beyond September 1999 was issuance of the written DST integrity assessment reports.

Upon receipt of DOE's Tank System Integrity Assessments Program Plan, Ecology became concerned that DOE would not meet the schedule it presented in this plan. Ecology participated in the Project Managers' Meetings with DOE as summarized in Section II in this Final Determination in large part to resolve the state's concerns with DOE's failure to complete the scheduling it presented in its Tank System Integrity Assessments Program Plan. Ecology documented its expectations and clarifications for meeting DST integrity assessment requirements for completion of M-32 in the correspondence summarized in Section II in this Final Determination.

In May 1996, DOE issued its Double-Shell Tank Integrity Examination In-Process Review.[25] This document summarized the status of DST integrity assessment activities and stated "The latest revision of the Tri-Party Agreement requires a DST waste system integrity assessment be done in accordance with WAC 173-303-640 by September 30, 1999 or at a later date determined by negotiations with Ecology." This document further establishes that no date later than September 1999 was negotiated with DOE for completion of the DST integrity assessments.

[24] Ecology Freedom of Information Act request and responses (DOE No.' 2000-013 and 2000-014), December 9, 1999.

[25] Double-Shell Tank Integrity Examination In-Process Review, WHC-SD-WM-PD-047, May 8, 1996.

3. *After submitting its 1994 Tank System Integrity Assessments Program Plan in satisfaction of M-32-04-T05, DOE entered into negotiations with Ecology intended to change major milestone M-32 to reflect the actions and schedules contained in the plan. The parties' inability to reach agreement on technical issues resulted in delays that made achievement of the originally proposed schedules impossible.*

Finding: Upon receipt of DOE's 1994 Tank System Integrity Assessments Program Plan, Ecology became aware that DOE's schedule for completing the DST integrity assessments was slipping and essential integrity assessment activities were not funded for completion. As a result, Ecology engaged in the M-32 Project Managers' Meetings described in Section II in this Final Determination. Ecology engaged in negotiations with DOE to extend the DST integrity assessment schedules rather than hold DOE to schedules that had already slipped. The M-32 Project Managers' Meeting series ended in 1997 with the agreement that the initial scope of DST integrity assessments would be completed in September 1999 including the initial ultrasonic testing of six of the twenty-eight DSTs. Rather than causing delays, these negotiations resulted in adding up to three years to DOE's integrity assessment program plan scheduling for some of the most time consuming integrity assessment activities (i.e. ultrasonic testing).

On September 28, 1999, DOE issued its DST integrity assessment reports for all twenty-eight DSTs under a cover letter titled "Progress Towards Completing Activities Outlined in the Double-Shell Tank (DST) System Integrity Program Plan." This letter notified Ecology of the status of integrity assessment activities including reasons for failure to complete the integrity assessment activities agreed to with Ecology and contained in DOE's integrity assessment program plans. This notice does not contain any assertions that DOE's failure to complete integrity assessment activities was due to prolonged negotiations with Ecology. In fact the only reason DOE's September 28th notice provided for failing to complete scheduled DST integrity assessment activities was that, "[e]merging safety issues have caused delays in some of the scheduled integrity assessment activities, therefore, some of the integrity assessment activities will not be completed until FY 2000."

4. *During 1996 and 1997 DOE and Ecology met to negotiate the details of the proposed integrity assessment program and in 1997 agreed to a new integrity assessment program plan which superseded the 1994 integrity program plan issued by DOE in satisfaction of interim milestone M-32-04. The 1997 integrity program plan included visual examinations and utilization of in-service leak tests for all twenty-eight of Hanford's DSTs to, "confirm that the tanks are not leaking." The 1997 integrity plan also included ultrasonic testing of six of the twenty-eight DSTs, but did not identify any specific extent of ultrasonic testing. The plan included a "tentative" schedule for assessment activities.*

Finding: In its dispute statement, DOE claims the extent of ultrasonic testing was not identified; however, the M-32 Project Managers' Meetings were convened in part to define this specific issue. In fact, during the 1996 and 1997 M-32 Project Managers' Meetings, the parties met with TSIP representatives and agreed to adopt the TSIP's guidelines for non-destructive examination (ultrasonic testing) of high-level waste tanks. The January 23, 1997 M-32 Project

Managers' Meeting minutes document the meeting with the TSIP on that date and include the TSIP's conclusions that welds, the knuckle region, and the tank bottoms were important areas for ultrasonic inspection. At DOE's request, the TSIP summarized this meeting in a letter report issued to DOE's contractors in February 1997.[26] Section (2), Extent of Examination, of the report stated that ultrasonic examinations for each DST should include at least one vertical weld and at least one bottom plate, and that the knuckle region warranted the greatest immediate effort. The 1997 consensus agreement reached by DOE and Ecology reflects the acceptance of the TSIP's guidelines and states that "[t]o satisfy the technical basis described above and to be consistent with the TSIP guidelines, DOE RL will carry out the following plan."

The January 1997 TSIP guidelines, referenced in DOE's 1999 DST integrity assessment reports and adopted in the 1997 consensus agreement, specified the extent of ultrasonic examination in Chapter 5, Nondestructive Examination.[27] Section 5.3.1 of this chapter states that "A sampling will be conducted in accessible regions believed to have the potential for leakage; regions of concern are the liquid-vapor interface . . ., the knuckle region, and weldments where stress levels may be conducive to stress corrosion cracking, the bottom plate, or the vapor region where lower pH may lead to cracking or pitting." This document described the ultrasonic examination of each DST, including a listing of each region to be examined, methods of examination, extent of examination, frequency of examination, and test acceptance levels. Regions of each DST to be ultrasonically examined included the liquid-vapor interface, liquid-sludge interface, lower knuckle regions, external surface (wall of tank), and the tank bottom, where accessible.

Ecology issued a letter to DOE on May 19, 1997 to document the agreement that the TSIP guidelines would be used to guide testing to ensure that DST integrity assessments met the requirements of WAC 173-303-640. Ecology issued a letter on July 15, 1999, citing concerns with the limited scope of DOE's ultrasonic inspection of Hanford DSTs. As such, the extent of ultrasonic inspection was clearly defined, documented and communicated to DOE. However, the minimum scope of non-destructive examination (ultrasonic examination) required by the TSIP guidelines and Ecology's correspondence was not completed by DOE in its September 1999 integrity assessment reports. Despite these deficiencies, DOE certified the integrity reports as complete and accurate even though they lacked the scope of examination on which DOE had agreed to base this conclusion.

In its dispute statement DOE cites in-service leak tests for all twenty-eight DSTs as confirming in part that the tanks are not leaking. The DSTs have not had leak tests performed on them since their construction in the mid to late 1970s. DOE is confusing leak detection monitoring with leak testing. The DSTs are equipped with in-tank leak detectors to monitor accumulation of liquids in the annular space between the primary and secondary walls, and each DST is equipped with liquid level monitors within the primary containment space. However, liquid level monitoring and leak detection devices are not designed or operated to provide leak test information or data. Although general inferences can be drawn from leak monitoring

[26] Letter report, Kamal Bandyopadhyay (Brookhaven National Laboratory) to Keith Scott (representing DOE) regarding Review of the Ultrasonic Inspection Status of the Hanford Double-Shell Tanks, February 27, 1997.

[27] Guidelines for Development of Structural Integrity Programs for DOE High-Level Waste Storage Tanks, BNL-52527, January 1997.

equipment, data from these devices do not replace specific leak testing procedures. Both liquid level monitoring and in-tank leak detection in Hanford's DSTs are subject to various levels of error in measurement due to the complexity and type of wastes stored, size of the tanks, limitations of the equipment used, and error of measurement inherent within each type of monitoring device used. Ecology has discovered numerous instances of Hanford's DST leak detection and liquid level monitoring devices being poorly maintained, out of calibration or insufficient for detecting leaks. In July and September 1998 Ecology issued a penalty and administrative order to DOE for failure to maintain adequate leak detection in the DSTs.

The visual examinations on which DOE relies to confirm that the DSTs are not leaking included views taken within the annular space of only a portion (less than 30%) of each DST. Combined with the lack of leak test data described above, the visual examinations provide only cursory and partial information regarding the structural condition of the DSTs, making thorough non-destructive examination of the DSTs all the more important.

In its dispute statement DOE claims the 1997 consensus agreement between DOE and Ecology superseded DOE's 1994 Tank System Integrity Assessments Program Plan which DOE had submitted to meet M-32-04-T05. The 1997 consensus agreement was not meant to supersede DOE's 1994 Tank System Integrity Program Plan. In fact, one of the primary purposes of the M-32 Project Managers' Meeting series in 1996–1997 was to re-establish schedules that had slipped for completing the integrity assessment work described in the 1994 Tank System Integrity Assessment Program Plan. Therefore, the 1997 consensus agreement between Ecology and DOE was signed by the parties to supplement DOE's 1994 Tank System Integrity Assessments Program Plan and to signify Ecology's concurrence with the general approach for obtaining an integrity assessment of the DSTs by September 1999.

The 1997 consensus agreement contains no statements that it supersedes DOE's 1994 Tank System Integrity Assessments Program Plan. In fact, the signature page of the 1997 consensus agreements states: "The signatures below constitute a consensus of agreement between DOE-RL, its Contractors, and the Washington State Department of Ecology that the work scope and direction contained in the plan, when carried out will meet the requirements of WAC 173-303-640." Therefore, the purpose of this plan was not to supersede DOE's 1994 Tank System Integrity Assessments Program Plan, but to demonstrate general consensus by Ecology and DOE for completion of DST integrity assessments as required by WAC 173-303-640. Further, during the years between signing of the consensus agreement and issuance of its DST integrity assessment reports in September 1999, DOE never advised Ecology that it considered the 1997 consensus agreement to have superseded its 1994 Tank System Integrity Program Plan. Ecology issued letters to DOE on May 19, 1997 and July 15, 1999 which advised DOE of the requirements for completing DST integrity assessments to meet M-32 commitments by September 1999, yet DOE still did not advise Ecology that it considered the 1997 consensus agreement to have superseded its 1994 Tank System Integrity Program Plan. The first notice Ecology received that DOE considered the 1997 consensus agreement to have superseded its 1994 Tank System Integrity Program Plan was contained within DOE's July 19, 2000 Statement of Dispute in this matter.

In its dispute statement DOE claims the schedules for DST integrity assessment activities as presented in the 1997 consensus agreement were "tentative." The "tentative" notation in Section 10 of the 1997 consensus agreement referred to deliverable items listed in this section as "TBD" (to be determined) indicating these items might be accomplished at a different time than indicated in the deliverables schedule, and to note that DST integrity assessment activities would continue beyond federal fiscal year 2000. During the 1996-1997 M-32 Project Managers' Meetings, the parties agreed that flexibility in conducting specific integrity assessment activities might be needed and in that sense might be tentative; however, the core requirements for completing DST integrity assessments per M-32 requirements were specified by the TSIP guidelines, in the meetings and correspondence described in Section II in this Final Determination, in DOE's own integrity program planning documents and by the unqualified scheduled items (i.e. items not labeled TBD) provided in Section 10 of the 1997 consensus agreement. Ecology issued a letter to DOE on May 19, 1997 describing regulatory requirements for completing DST integrity assessments per M-32 requirements by 1999 including completion of the activities described in the TSIP guidelines. On July 15, 1999, as the deliverable date approached for completion of M-32, Ecology issued a letter to DOE documenting that DOE had confirmed DST integrity assessments would be completed by September 30, 1999 and expressing concerns that the limited scope of ultrasonic testing on six DSTs was not representative of conditions within all twenty-eight DSTs. DOE did not respond to Ecology's letters or issue any correspondence on its own initiative that indicated DOE considered schedules for completion of DST integrity assessments to be "tentative." In fact, the first notice Ecology received that DOE considered the completion of DST integrity assessment activities to be tentative was contained within DOE's July 19, 2000 Statement of Dispute.

5. *In 1997, DOE invited Ecology, "to engage in negotiations that would translate the 1997 program plan into HFFACO milestones, but Ecology declined without explanation."*

Finding: It is irrelevant whether DOE invited Ecology, or whether Ecology declined, to negotiate HFFACO interim milestones or an extension of the M-32-00 major milestone in order to translate the 1997 program plan into HFFACO milestones. Because the parties did not reach agreement or any such HFFACO changes, the existing requirements remained in force. In any event, addition of more interim milestones would not, in and of themselves, change the date for completion of the major milestone.

In any event, records of the 1996–1997 M-32 project managers' meetings document that Ecology negotiated extensively with DOE on their proposed M-32 milestone change package, M-32-96-09, for establishment of new M-32 interim milestones for DST integrity assessments. However, due to irreconcilable differences with DOE, Ecology elected to rely on completion of the interim status corrective tank actions required by M-32 as described in the M-32 subordinate milestones, M-32-04 and M-32-04-T05, and clarified by the TSIP's guidelines and the large volume of correspondence between the parties throughout 1996 to 1999. Ecology advised DOE at that time of its intent to rely on completion of the DST integrity assessments by the due date of major milestone M-32 in September 1999. Further, Ecology documented the requirements for completion of DST integrity assessments in a large volume of correspondence throughout 1995–

1999, and the parties completed the M-32 project manager's meeting series by signing the 1997 consensus agreement.

6. *DOE provided Ecology with an integrity assessment that the DSTs were fit for use in September 1999. On September 28, 1999, DOE notified Ecology that major milestone M-32 was completed since no new integrity assessment program milestones were established and that the activities governed by the existing interim M-32 milestones had been completed.*

Finding: On September 28, 1999 DOE issued two letters to Ecology. One letter asserted that M-32 had been completed. The second letter was a cover letter to DOE's DST integrity assessment reports and titled, "Progress Towards Completing Activities Outlined in the Double-Shell Tank (DST) System Integrity Program Plan." This letter presented the DST integrity assessment reports as attachments and stated that ultrasonic inspection for six DSTs had been completed. This letter also stated that integrity assessment reports had been completed for the DST transfer system (DST ancillary equipment such as piping, valve pits, and other DST transfer system components). This letter then cited "emerging safety issues" as having prevented integrity assessment examination of a large number of DST system components including three double-contained receiver tank (DCRT) systems, eight catch tanks, the 204-AR Unloading Station and the A-350 Lift Station.

Ecology's M-32 inspection revealed that the six DSTs selected for ultrasonic examination were not ultrasonically examined in all areas required by DOE's own integrity assessment program plans, as described by the TSIP guidelines or as agreed to with Ecology. In fact, of the six DSTs ultrasonically examined, only two received examinations in the critical lower knuckle area and only one received examination of the tank bottom. Only one of the six DSTs was ultrasonically examined in all areas, yet DOE contends that the ultrasonic examination of the six DSTs was completed.

DOE submitted its integrity assessment report for the DST transfer system in 1997.[28] This report, taken together with DOE's September 1999 DST integrity reports, comprise the current assessment of the integrity of the entire DST System. Ecology's inspection revealed that DOE's 1997 DST transfer system assessment report was also incomplete and inaccurate. DOE prepared a DST transfer system program plan to direct the integrity assessment of the DST transfer system; however, 50% of the transfer system units scheduled for integrity assessment examinations in DOE's DST transfer system integrity assessment program plan were not examined including some critical and essential components of the DST transfer system (i.e., 204-AR Unloading Stations, AA and AB valve pits, catch tanks and DCRTs). The integrity assessment data sheets for 27% of the valve pits inspected in support of this integrity report state visibility was very poor and that 9% of the valve pits examined had visible degradation. Yet the Piping/Pit report concludes, "no global degradation of the system (DST transfer system) is occurring" and the report was certified as being "accurate and complete."

[28] Double-Shell Tank Waste Transfer Piping/Pit System Integrity Assessment Report, HNF-SD-WM-ER-623, June 10, 1997.

The three DCRT systems, the 204-AR Unloading Station and the A-350 Lift Station that were not examined due to "emerging safety issues" are critical components of the DST system and were listed as part of the scope of DOE's DST integrity assessment program plan. Although questioned by Ecology inspectors, DOE has not explained what emerging safety issues prevented examination of any or all of these DST system units or completion of the full scope of nondestructive examination of the six DSTs selected for ultrasonic testing.

B. Final Determination

Hanford's DST system stores highly radioactive, toxic and corrosive mixed wastes. The DST system will be needed for decades to come to store mixed waste retrieved from single-shell tanks and as an integral component of future tank waste treatment facilities. The DSTs have been in service for over twenty years and are approaching the end of their design life. The DSTs had not received an assessment of their structural integrity until issuance of DOE's September 28, 1999 DST integrity assessment reports which Ecology has found to be deficient in scope and content. Therefore obtaining a thorough, accurate and timely assessment of the DST system remains an essential activity to be completed in support of the Hanford Site cleanup.

Ecology recognized the importance of the DST system to continuation of the cleanup mission at the Hanford Site early on. To this end Ecology met with DOE and its contractors throughout 1996 and 1997 to define the scope and schedule for DST integrity assessments as required by HFFACO milestone M-32. Ecology documented its concerns and requirements for adequate DST integrity assessments to meet M-32 requirements in a large volume of correspondence to DOE and its contractors from 1995 through 1999. Ecology insisted on the participation of the TSIP to provide expert, third-party guidance regarding the extent and scope of integrity examinations for the DSTs.

At the conclusion of Ecology's October 12, 1999 through March 30, 2000 inspection into completion of M-32, Ecology discovered that DOE had not completed an adequate assessment of the DST system as agreed upon with Ecology, as specified in HFFACO milestone M-32, as specified by the TSIP, or as described in DOE's own integrity assessment program planning documents. Nevertheless, prior to issuance of Administrative Order Nos. 00NWPKW-1250 and 00NWPKW–1251 and Penalty No. 00NWPKW-1249, Ecology initiated negotiations with DOE and its contractors, on a good faith basis, to collaboratively develop the administrative orders with the goal of providing a firm but technically feasible compliance schedule to secure an adequate assessment of the DST system. Ecology agreed to hold one half ($100,000) of the $200,000 penalty amount in abeyance pending completion of the requirements of the administrative orders.

Unfortunately DOE's disputes in this case indicate DOE does not consider a thorough and timely assessment of the DST system to be a priority. This is particularly disturbing to Ecology given the history of M-32 presented in Section II of this Final Determination. This history reflects a pattern of resistance to conducting an adequate and timely assessment of the DST system. DOE's arguments demonstrate a continued lack of commitment for securing a thorough, accurate and timely integrity assessment of the DST system. These arguments also indicate that DOE did not negotiate in good faith while developing the administrative orders.

Therefore, I find that DOE has, for a number of years, resisted efforts to obtain adequate, required, and critically important integrity assessments of its DST system, and that Ecology acted within its authority when issuing its penalty in this matter. Further, I find that withholding half ($100,000) of Ecology's penalty in this matter is no longer warranted. Consequently, immediately on receipt of this Final Determination, DOE shall remit the entire penalty amount of $200,000 assessed by Notice of Penalty Incurred and Due No. 00NWPKW-1249. This penalty amount shall be payable to the Department of Ecology and sent to the Washington State Department of Ecology, Cashiering Section, P.O. Box 5128, Olympia, WA. 98509-5128.

Ecology's Administrative Order 00NWPKW-1250 (and 00NWPKW-1251) was issued pursuant to Ecology's regulatory authority under the State of Washington's Hazardous Waste Management Act and is therefore not subject to HFFACO dispute resolution.

Approved this 24th day of August, 2000.

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Tom Fitzsimmons
Director