

**STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY**

IN THE MATTER OF AN)	ORDER No. 00NWPKW-1250
ADMINISTRATIVE ORDER)	
AGAINST:)	
)	
U. S. Department of Energy)	
Office of River Protection – Hanford Site)	
WA7890008967)	
)	
U. S. Department of Energy)	
Richland Operations)	
WA7890008967)	
)	
CH2M Hill Hanford Group)	
Richland, Washington 99352)	

TO: Mr. Richard French, Manager
United States Department of Energy
Office of River Protection
2440 Stevens Center, MSIN: H6-60
Richland, Washington 99352

Mr. Keith Klein
United States Department of Energy
Richland Operations
P.O. Box 550, MSIN: A7-50
Richland, Washington 99352

Ms. Mary P. Delozier
CH2M Hill Hanford Group
2440 Stevens Center, MSIN: H6-08
Richland, Washington 99352

This is an Administrative Order requiring the United States Department of Energy (USDOE) and CH2M Hill Hanford Group (CHG) to comply with Chapter 70.105 Revised Code of Washington (RCW), the Hazardous Waste Management Act (HWMA), and Chapter 173-303 Washington Administrative Code (WAC), the Dangerous Waste Regulations, and by reference, Title 40, Code of Federal Regulations (CFR), by taking certain actions which are described below. Chapter 70.105 RCW authorizes the Washington State Department of Ecology (Ecology) to issue Administrative Orders requiring compliance, whenever it determines that a person has violated any provision of Chapter 70.105 RCW. RCW 70.105.005(2) states “The legislature hereby finds and declares: Safe and responsible management of hazardous waste is necessary to prevent adverse effects on the environment and to protect public health and safety.”

Ecology’s determination that violations have occurred is based on the following facts:

The USDOE, Ecology, and the United States Environmental Protection Agency (EPA), signed the Hanford Federal Facility Agreement and Consent Order (HFFACO), or Tri-Party Agreement (TPA), in part to ensure compliance with the Resource, Conservation and Recovery Act (RCRA), and the Washington HWMA, Chapter 70.105, RCW. The TPA included Major Milestone M-32 to address hazardous waste storage tank systems that failed to meet RCRA interim status requirements for tank systems. Milestone M-32 was incorporated into the TPA in 1993, and required the USDOE to, "Complete Identified Dangerous Waste Tank Corrective Actions" by September 30, 1999. Interim Milestones within M-32 required final plans and schedules for completion of Double Shell Tank (DST) Integrity Assessments.

In 1994, the USDOE submitted its Tank System Integrity Assessments Program Plan in satisfaction of interim TPA Milestone M-32-04 (and target Milestone M-32-T05). Among other requirements, M-32-04 required the USDOE to, "submit to Ecology a final plan and schedule for completion of the DST integrity assessments." In 1995, the USDOE issued its Double-Shell Tank Waste System Assessment Status & Schedule to identify the planned activities to meet the Integrity Assessment Program as described in the 1994 Tank System Integrity Assessments Program Plan. In 1996 the USDOE issued its Double-Shell Tank Integrity Examination In-Process Review, which referenced the 1994 Tank System Integrity Assessments Program Plan, 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 negotiation with Ecology." In 1997, the USDOE issued a DST System Integrity Program Plan to conduct tank integrity assessment work consistent with previous integrity assessment planning.

Throughout 1996 and 1997, Ecology met extensively with the USDOE, and its contractors, to clarify the requirements for completing DST integrity assessments by September 30, 1999. From 1997 through 1999 Ecology exchanged considerable correspondence with the USDOE, describing the requirements for successful completion of M-32 requirements regarding DST system integrity assessments. During this time, Ecology and the USDOE met with the Tank Structural Integrity Panel (TSIP), a group of nationally recognized tank system experts, from Brookhaven National Laboratories in New York. Ecology and the USDOE agreed to incorporate the TSIP's recommendations for ultrasonic testing examination of the DSTs as part of the DST Integrity Assessment Program. The use of the TSIP's guidelines is referenced in the USDOE's Tank Integrity Assessment Program planning documents.

In 1997, the USDOE and its contractors submitted to Ecology their Tank Waste Transfer Piping/Pit System Integrity Assessment Report. This report certified the integrity of the DST transfer system (pipelines, valve pits, pump pits) as being fit for use. The USDOE and its contractors submitted to Ecology their DST Integrity Assessment Reports for the DSTs themselves in September 1999. This report certified the DSTs as fit for use. Taken together, these two (2) Integrity Assessment Reports comprise the Integrity Assessment for the DST system.

On September 28, 1999, the USDOE issued a letter notifying Ecology and the EPA that TPA Milestone M-32 had been completed. On the same date (September 28, 1999) the USDOE issued its DST Tank Integrity Assessment Reports. The cover letter to the DST Integrity Assessment Reports states, "Emerging safety issues have caused delays in some of the scheduled integrity assessment activities . . ." No explanation was given regarding what these safety issues were, why they precluded integrity assessment work, or which scheduled integrity assessment activities were prevented, due to safety issues. The cover letter also states that, "Scheduled ultrasonic inspection of six (6) DST's in support of the Integrity Assessment Reports has been completed." The USDOE and Ecology agreed to initial ultrasonic testing, in specific areas of each tank for six (6) of the twenty-eight (28) DSTs, to be completed by September 1999. However, ultrasonic testing of the six (6) DSTs examined in support of this Integrity Assessment Report failed to include ultrasonic testing in all required areas of the tanks, as required by the USDOE's own Integrity Assessment Program planning, directed by the TSIP, for minimum extent of ultrasonic examination, and failed to include examination of all areas of the DSTs agreed upon with Ecology as necessary for meeting M-32 requirements. The USDOE's own Engineering Reports and Integrity Assessment Program planning documents identify areas of high stress, or areas most susceptible to corrosion attack, within the DSTs, as requiring ultrasonic testing. These areas included the lower knuckle joint and weld, tank bottoms, and waste liquid/vapor interface areas. However, the ultrasonic testing conducted in the six (6) DSTs examined in support of the DST Integrity Assessment Reports, did not include examination of the lower knuckle area in four (4) DSTs, did not examine tank bottoms in five (5) DSTs, and did not thoroughly examine the liquid/vapor interface area in any of the six (6) tanks examined. Only one (1) of the six (6) DSTs examined was ultrasonic tested in all areas.

The USDOE's September 28th integrity assessment letter lists other integrity assessment work not yet completed, including integrity assessment examinations of eight (8) catch tanks, three (3) double contained receiver tanks, the 204AR Waste Unloading Station, and the A-350 List Station. All these items were included for integrity assessment examination by September 1999, in the USDOE's Integrity Assessment Program planning documents. This description of integrity assessment work not yet completed, includes much of the work agreed upon with Ecology for completion of M-32, much of the work specific in the USDOE's Integrity Assessment Program planning, and essential ultrasonic testing as recommended by the TSIP for meeting minimum requirements to assess the integrity of the DSTs.

On October 12, 1999, Ecology initiated an inspection into the completion of M-32. The findings from this inspection revealed that the USDOE has failed to complete Major TPA Milestone M-32 with respect to DST integrity assessments. Data describing potentially significant degradation mechanisms within the DSTs was ignored, or not adequately examined. An Independent, Qualified, Registered, Professional Engineer (IQRPE) certified the September 28, 1999, DST integrity reports as, "true, accurate, and complete."

However, these reports were not complete and accurate. The IQRPE for the DST Integrity Assessment Reports had knowledge, at the time of his certification, that the DST Integrity Reports did not include all ultrasonic examinations, as described in the

DST Integrity Program Plans, did not adequately report all known evidence of corrosion observed during integrity examinations, and did not report failure to maintain corrosion inhibiting chemicals within all DSTs requiring maintenance of these corrosion prevention specifications. The USDOE and its contractors failed to complete DST integrity assessments as described in its Tank System Integrity Program Plan (WHC-SD-WM-AP-017), or any of its subsequent integrity program documents, nor did it meet the TSIPs minimum requirements for adequate integrity assessment of the DSTs. Failure by the USDOE and its contractors to assess the integrity of the DST system places current tank waste management, future treatment of tank waste, and permitting of the DST system, in serious jeopardy.

The USDOE and its contractors failed to meet the requirements of Article VII within the TPA, with respect to completion of Major TPA Milestone M-32. Due to the USDOE's failure to complete Major TPA Milestone M-32, Hanford's DST system remains non-compliant with RCRA and HWMA waste storage tank requirements per 40 CFR, Part 265.191, Subpart J, Tank Systems, and WAC 173-303-400(3)(a), Interim Status Facility Standards.

For these reasons, and in accordance with Chapter 70.105 RCW, **IT IS ORDERED** that the USDOE and CHG take the following actions:

1. On or before September 17, 2000, the USDOE and CHG must submit a written report to Ecology documenting all of the following:
 - A. Identification of all components comprising the DST system, based on the RCRA TSD boundary of the DST system incorporated in the final status RCRA Part B Permit. The Double-Shell Tank System is comprised of the twenty-eight (28) DSTs and their ancillary equipment. Ancillary equipment within the DST system includes all subordinate tank systems and their vaults, transfer pipelines, pump pits, valve pits, lift stations, catch tanks, the 204-AR Unloading Station, and any other component necessary to treat, store, or transfer, hazardous and/or mixed waste, within the RCRA permitted boundaries of the DST system. This report must include a map and description defining the RCRA TSD boundary of the DST system proposed for final status RCRA permitting. The description of all DST system components within this required report must identify, by name, equipment number, and location, all components of the DST system. This description must include a tabular presentation including, but not limited to, all underground storage tanks, above ground storage tanks, transfer pipelines, valve & pump pits, secondary containment structures, and tanks within vaults, double contained receiver tanks, and any other component of the DST system, that has been, or may be, used for transferring, storing, or treating, waste.
 - B. Development of ultrasonic testing equipment, or an equivalent technology, for assessing material thickness and defects of the predicted maximum stress region of the lower knuckle base metal of double-shell tanks. This report must include cost of development of this equipment, identification of vendors contracted for developing such equipment, technical specifications for such equipment, data

quality requirements for such equipment, and an estimated schedule for delivery, and deployment of the equipment, into DSTs. This report must be updated and submitted to Ecology by March 31, 2001, with subsequent updates submitted to Ecology every six (6) months thereafter, until such equipment is developed and deployed.

C. Results of ultrasonic testing of the primary tank walls in two (2) DSTs not previously examined by ultrasonic testing. This report must include a copy of the original ultrasonic testing data report and a tabular summary of observations made during ultrasonic testing, including average and minimum wall thickness, of a continuous scan of the vertical wall of each DST. The observations from this continuous wall scan may be reported in 12" high by 15" wide segments that are adjoining, or overlapping, so long as the total of all segments comprise the entire length and width of the ultrasonic examination scan of the vertical wall. This report must include size of pits, cracks, and other relevant information, as determined by a technical expert qualified, trained, and experienced, in interpreting ultrasonic data as a Non-destructive Examination (NDE) Level III Inspector. Specific requirements for this vertical wall scan are described below. This report shall also include a comparison between the ultrasonic data obtained to specified material thickness, material specifications, and construction standards and codes. This report must include a listing and evaluation of wall thinning, pitting, or cracks in excess of 50% of the acceptance criteria values in Table 1 of Acceptance Criteria for Non-Destructive Examination of Double-Shell Tanks (WHC-SD-WM-AP-036, Rev. 0). This report must include a summary review and interpretation of data by a technical expert qualified, trained, and experienced in interpreting ultrasonic data as a Non-destructive Examination (NDE) Level III Inspector. Any video surveillance employed in support of this ultrasonic examination must be retained in the facility's operating record and be available upon request by Ecology. This report must include a schedule identifying each of four (4) more DSTs, not previously examined by ultrasonic testing, for completion of ultrasonic testing by September 30, 2001. Selection of the tanks to be examined may utilize either the tank selection criteria established in the document Description of Double-Shell Tank Selection Criteria for Inspection (WHC-SD-WM-ER-529), or as recommended to Ecology by written request from the USDOE, describing the rationale for tank selection, and as approved by Ecology. The selection of any DST to be ultrasonically examined may be altered upon a request by the USDOE providing an explanation of the rationale for the change and subsequent approval of this request by Ecology. This ultrasonic testing must be performed in at least the following areas of each DST selected for examination:

- Examination of at least a 30 inch wide vertical scan of the entire height of the exterior side of the primary tank walls, within the limits of the equipment employed, to include the interface between the waste level within the tank, and the vapor space above the waste. This 30 inch vertical wall scan must be located to include vertical welds and their adjacent heat-affected zones of shell courses that are accessible from the riser in which the equipment is

deployed, and are within a single 30 inch wide scanning path. Priority for inclusion of vertical welds within the vertical scan path should be given to welds in the highest stress areas of the primary tank wall.

- Examination of a 20 foot length of the circumferential weld joining the transition wall plate with the lower knuckle including the adjacent heat-affected zones within the limits of the equipment employed.
 - All weld examinations including welds, must include examination of the heat-affected zone on both sides of all weldments.
 - Data gathered from the ultrasonic examinations must be evaluated against the specified material thickness, applicable material specifications, and construction standards and codes.
 - Data gathered from the ultrasonic examinations must also be compared between all tanks examined, to determine the range of material thinning among the tanks examined.
2. A summary of the history and current status of maintenance of corrosion inhibiting chemical adjustments (corrosion specifications) of the waste contained in each of the twenty-eight (28) DSTs. This summary must include a description of the chemical adjustment specifications required to retard corrosion, including the technical justifications for these specifications. This summary must include a description of all corrosion mechanisms (i.e., stress-corrosion cracking) impacted by maintenance of corrosion inhibiting chemical adjustments. This summary must include a description of the effects of temperature on the effectiveness of corrosion inhibiting chemical adjustments, a tabular listing of the tank waste temperature within each DST, and a description of the temperature monitoring equipment active in each DST.
 3. Submittal of a plan specifying frequency and conditions under which visual examination by remote camera surveillance will be conducted from the inside of any DST primary tank, scope of such examination, requirements for record storage, method of promulgating requirements for such visual examinations and requirements for documentation, and remedy of any significant structural deficiencies observed. The purpose of this visual examination is to assess any visible degradation, of the inside of the primary tank structure of any DST subject to such examination, when operational conditions provide the opportunity to view these areas. A DST examined pursuant to this plan will not require a subsequent examination, unless the USDOE is directed otherwise by Ecology. All examinations conducted pursuant to this plan must be reported to Ecology within sixty (60) days of completion of each visual examination. This visual examination must include the maximum area visible with the best available video equipment used in remote field applications in the tank farms. These visual examinations shall include interior tank walls, tank bottoms, if exposed, tank waste/vapor interface areas when tank bottoms are not exposed, and the dome structure. All videotapes from visual examination must be maintained in the facility's Operating Record, and be available to Ecology upon request. Upon review of this

plan by Ecology, the USDOE shall make any required revisions and re-submit the plan to Ecology within thirty (30) days of receipt of Ecology's review. If the second review of a revised plan is unacceptable, Ecology may revise the plan and return it to the USDOE for implementation. This plan will be implemented by the USDOE within sixty (60) days, upon approval by Ecology. These visual examinations may not be required during emergency pumping operations, or for documented and legitimate safety concerns, upon concurrence with Ecology.

4. Submittal of a plan specifying requirements for visual examination of the exterior of transfer piping (or transfer piping encasement when the primary piping is enclosed with secondary containment), when exposed during construction, or other activities. The purpose of this visual examination is to assess any visible degradation of pipelines. This plan shall specify scope of examination, documentation of findings and conclusions from examinations, record storage location, and method of promulgating requirements for such examinations. Upon review of this plan by Ecology, the USDOE shall make any required revisions and re-submit the plan to Ecology within thirty (30) days of receipt of Ecology's review. If the second review of a revised plan is unacceptable, Ecology may revise the plan and return it to the USDOE for implementation. This plan will be implemented within sixty (60) days, upon approval by Ecology. All visual examinations must be documented and recorded on videotape. The documentation and videotapes from visual examination must be maintained in the facility's Operating Record, and be available to Ecology upon request. These visual examinations may not be required during emergency pumping operations, or for documented and legitimate safety concerns, upon concurrence with Ecology.
5. On or before December 16, 2000, the USDOE and CHG must submit a written report to Ecology, documenting all of the following:
 - A. A tabular listing describing the disposition of all double-shell tank transfer system components that will not remain in use beyond June 30, 2005. This listing must describe when each component will be officially removed from service. This listing must provide a description of the disposition, for approval by Ecology, of each component upon removal from service including the following:
 - Stabilization (i.e., liquids and waste removed within twelve [12] months, or sooner, from the date of removal from service).
 - Isolation (i.e., administrative and/or engineering controls in place to prevent use within twelve [12] months, or sooner, from the date of removal from service).
 - Monitoring (i.e., equipment and frequency to be employed to ensure each component remains free of liquids and waste upon removal from service, to be in place within twelve [12] months, or sooner, from the date of removal from service).

- A description of the final disposition of each component upon removal from service (i.e., inclusion within a RCRA Closure Plan).
6. On or before July 18, 2001, the USDOE and CHG must submit a written report to Ecology documenting the following:
- A. Results of ultrasonic testing, or other testing as agreed upon with Ecology, of the primary tank walls of waste storage tanks within the 204-AR Unloading Station, A-350 Lift Station, 244-S Double-contained Receiver Tank, and AZ-151 Catch Tank. This ultrasonic testing must include a scan at least 12 inches wide of the vertical primary tank wall of each tank examined. If conditions within any tank structure prevent a continuous wall examination, a spot check of wall thickness along the vertical axis of the tank at intervals no greater than 6 inches may be employed, upon prior approval by Ecology. This report must include a copy of the original ultrasonic testing data reports, and a tabular summary of thickness measurements and other observations made during ultrasonic testing. This report must include a comparison between the ultrasonic data obtained to specified material thickness, material specifications, and construction standards and codes. This report must include a listing of any defects exceeding nominal wall thickness. This report must include a summary review and interpretation of data by a technical expert qualified, trained, and experienced in interpreting ultrasonic data as a NDE Level III Inspector. Any video surveillance employed in support of this ultrasonic examination must be retained in the facility's Operating Record, and be available upon request by Ecology.
 - B. Results of static leak tests of the primary tank for the following:
 - Double Contained Receiver Tanks; 244-BX, 244-TX and 244-A
 - Catch Tanks; 241-ER-311, S-304, U-301B, TX-302C, AX-152, AZ-151, and UX-302A
 - 204-AR Unloading Station
 - A-350 Lift Station
7. On or before September 30, 2001, the USDOE and CHG must submit a written report to Ecology documenting results of ultrasonic testing of the primary tank walls in four (4) DSTs not previously examined by ultrasonic testing. This report must meet all the requirements and conditions set forth in Section (1)(C) of this Order. This report must include a schedule identifying each of four (4) additional DSTs, not previously examined by ultrasonic testing, for completion of ultrasonic testing by September 30, 2002.

8. On or before September 30, 2002, the USDOE and CHG must submit a written report to Ecology documenting results of ultrasonic testing of the primary tank walls in four (4) DSTs not previously examined by ultrasonic testing. This report must meet all the requirements and conditions set forth in Section (1)(C) of this Order. This report must include a schedule identifying each of four (4) additional DSTs, not previously examined by ultrasonic testing, for completion of ultrasonic testing by September 30, 2003.
9. On or before September 30, 2003, the USDOE and CHG must submit a written report to Ecology documenting results of ultrasonic testing of the primary tank walls in four (4) DSTs not previously examined by ultrasonic testing. This report must meet all the requirements and conditions set forth in Section (1)(C) of this Order. This report must include a schedule identifying each of four (4) additional DSTs, not previously examined by ultrasonic testing, for completion of ultrasonic testing by September 30, 2004.
10. On or before September 30, 2004, the USDOE and CHG must submit a written report to Ecology documenting results of ultrasonic testing of the primary tank walls in four (4) DSTs not previously examined by ultrasonic testing. This report must meet all the requirements and conditions set forth in Section (1)(C) of this Order. This report must include a schedule identifying each of four (4) additional DSTs, not previously examined by ultrasonic testing, for completion of ultrasonic testing by September 30, 2005.
11. On or before September 30, 2005, the USDOE and CHG must submit a written report to Ecology documenting results of ultrasonic testing of the primary tank walls in four (4) DSTs not previously examined by ultrasonic testing. This report must meet all the requirements and conditions set forth in Section (1)(C) of this Order.
12. On or before March 31, 2006, the USDOE and CHG must submit a written Integrity Assessment Report for the Double-Shell Tank System, to Ecology, documenting all of the following: An Assessment of the Integrity of the Double-Shell Tank System. The Double-Shell Tank System is comprised of twenty-eight (28) DSTs and their ancillary equipment. Ancillary equipment within the Double-Shell Tank System includes all subordinate tank systems and their vaults, transfer pipelines, pump pits, valve pits, lift stations, catch tanks, the 204-AR Unloading Station, and any other component identified in item (1)(A) of this Order. This integrity assessment must be completed, documented in a report to Ecology, and certified by an Independent, Qualified, Registered, Professional Engineer (IQRPE), on or before March 31, 2006. This Integrity Assessment Report must include information and data sufficient to determine that the DST system is fit-for-use, and will not collapse, rupture, or fail, under normal operating conditions. This report must be accompanied by a schedule and recommendations for future integrity assessments sufficient to ensure the system will not collapse, rupture, or fail, under normal operating conditions. This Integrity Assessment Report must document, at a minimum, all information gathered for the

Double-Shell Tank System to meet the requirements of 40 CFR, Subpart J, Part 265.191(1), (2), (3), (4), (5)(i) and (5)(ii), including the following at a minimum:

40 CFR 295.191(1) -- Design Standards: A thorough description of the materials used in construction, construction methods employed, quality control, and testing performed on materials, and the final structure, prior to being placed in service, all engineering codes referenced for construction, design operating specifications, and a presentation of all calculations employed to determine each structure's design strength, and useful life. An evaluation of the design life of each DST must be described, based on all ultrasonic data gathered, waste compatibility with the materials of construction, history of corrosion protection, operational history, visual examinations, and any other sources of tank integrity assessment information gathered, as required in this Order, for each tank.

This report must include, at a minimum, a tabular listing by component equipment number, of all transfer pipelines within the DST system, describing the materials of construction, and compliance with secondary containment requirements.

40 CFR 265.191(2) -- Hazardous characteristics of the wastes that have been, or will be, handled: A thorough presentation describing the compatibility of the waste stored in each tank with the tank structure and materials. This presentation must include the following at a minimum: Waste chemical characteristics and properties such as corrosivity, temperature, homogeneity, organic content, specific gravity, gas retention & generation, flammability, and a comparison between the waste currently stored and/or proposed to be stored, in each tank to the design operating specifications for each tank.

40 CFR 265.191(3) -- Existing corrosion protection measures: A thorough description and history of all corrosion protection measures employed for all transfer systems (i.e., caustic flushes), and within each DST since completion of construction. This history must include a description of all sampling and analysis performed to monitor the status of corrosion inhibitor adjustments to the chemical composition of the waste within each DST, or transferred through DST system transfer lines.

40 CFR 265.191(4) -- Documented age of the tank system: The age of each component of the DST system, including the DSTs and their ancillary equipment, as described in item (1)(A) of this Order, must be described, including the completed construction date, the date placed in service, and date each DST first received waste.

40 CFR 265.191(5) -- Results of a leak test, internal inspection, or other tank integrity examination, for each tank, must include the following:

40 CFR 265.191(5)(i) -- Examination of the primary tank of each of the twenty-eight (28) DSTs by ultrasonic testing as described in (1)(C) of this Order, and results of ultrasonic testing of the following:

- ~ Examination of a 20 foot long circumferential scan of six (6) DSTs at a location in the vertical portion of the primary tank wall corresponding to a static liquid/vapor interface level, that existed in any given DST, for any five (5) year period, within its operational history. This examination must extend 12 inches above the highest static liquid/vapor interface level that existed in any given DST for any five (5) year period within its operational history, within the limits of the equipment employed. The DSTs selected for this examination may be selected per the tank selection criteria established in the document Description of Double-Shell Tank Selection Criteria for Inspection (WHC-SD-WM-ER-529), or as recommended to Ecology by written request from the USDOE, describing the rationale for tank selection, and as approved by Ecology. Findings and conclusions from this examination data may necessitate examination of additional DSTs in this area, or may be required upon review of this Integrity Assessment Report by Ecology.
- ~ Examination of a 20 foot long circumferential scan of the predicted maximum stress region of the lower knuckle base metal of six (6) DSTs as selected per the selection criteria within the Description of Double-Shell Tank Selection Criteria for Inspection (WHC-SD-WM-ER-529), or other selection criteria as approved by Ecology. Findings and conclusions from this examination data may necessitate examination of additional DSTs in this area, or may be required upon review of this Integrity Assessment Report, by Ecology.
- ~ Examination of tank bottoms through accessible air slots of six (6) DSTs as selected per the selection criteria, within the Description of Double-Shell Tank Selection Criteria for Inspection (WHC-SD-WM-ER-529) or other selection criteria as approved by Ecology. This examination must include all areas accessible within the limits of the best available equipment and must extend at least ten (10) feet towards the center of the tank from the lower knuckle joint, unless a different scope of examination is approved by Ecology due to constraints and conditions encountered in the tank annulus and air slots. Findings and conclusions from this examination data may necessitate examination of additional DSTs in this area, or may be required upon review of this Integrity Assessment Report by Ecology.
- ~ Data gathered from all ultrasonic examinations of all DSTs must be compared between the corresponding areas of all DSTs examined to determine the range of material thinning among all DSTs examined.
- ~ Data gathered from all ultrasonic testing examination required within this Order must include review and interpretation by a technical expert qualified, trained and experienced in interpreting ultrasonic data as a (NDE) Level III Inspector.
- ~ This Integrity Assessment Report must include results from examinations of the tank systems listed in items (1)(C) and (2) of this Order.

- ~ All results from examinations, not subject to the specific requirements of this Order, of failed equipment removed from each DST, corrosion probes existing in each tank, results of testing on simulated tank structures or materials, and studies of the effects of waste stored within each tank on the tank's materials of construction, must be incorporated in the assessment report for each DST examined. The Integrity Assessment Report must include all corrosion studies of any transfer pipelines described in item (1)(A) of this Order. This Integrity Assessment Report must include a schedule for continuing integrity assessments of DST transfer system components, sufficient to ensure they will not collapse, rupture or fail under normal operating conditions.
- ~ Leak and/or pressure testing regimen and specifications for all transfer systems described in item (1)(A) of this Order.
- ~ A summary, in tabular form or otherwise, of the observations and conclusions from all visual examinations by direct observation, or remote camera surveillance, taken within the annuli of each DST. This summary must include observations and conclusions from all visual examinations by direct observation, or remote camera surveillance, taken within DST system ancillary equipment (i.e., valve pits, pump pits, double-contained receiver tanks, catch tanks, transfer pipelines). All videotapes from remote camera surveillance must be retained in the facility's operating record and available to Ecology upon request.

40 CFR 265.191(5)(ii) -- Certification by an Independent, Qualified, Registered, Professional, Engineer (IQRPE): This Integrity Assessment Report must be certified by an IQRPE that meet the following requirements:

- ~ To meet the requirements for "independent," the IQRPE must not be employed by any company that is either operated, or exists, as a prime contractor of the Hanford contract team. The IQRPE cannot have worked for any company as described above for a period of one (1) year prior to undertaking the review of Hanford tank integrity assessment work.
- ~ To meet the requirement for "qualified" the IQRPE must be an engineer experienced in examination of tank storage systems. Certification by the National Association of Corrosion Engineers (NACE) is desirable, but not required.
- ~ To meet the requirement for "registered professional engineer," the IQRPE must be registered as a professional engineer with the Washington State Department of Licensing.
- ~ Any IQRPE shall make the following certification unless another certification statement is agreed to with Ecology:

“I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and all attachments, and that, based on my assessment of the plans and procedures utilized for obtaining this information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.”

13. On or before September 30, 2007, the USDOE and CHG must submit a written report to Ecology documenting all of the following:

- Re-examination of six (6) DSTs by ultrasonic testing in all areas previously examined to provide comparative data from which to calculate corrosion rates in each of the six (6) DSTs examined. Selection of the tanks to be re-examined may utilize the tank selection criteria established in the document Description of Double-Shell Tank Selection Criteria for Inspection (WHC-SD-WM-ER-529) or other criteria as approved by Ecology. The selection of each DST to be re-examined must consider elapsed time, from previous ultrasonic testing, sufficient to assess measurable wall thinning with the ultrasonic equipment used. Re-examination of the predicted maximum stress region of the lower knuckle base metal may not be required, if prior approval is obtained from Ecology for deleting this portion of the ultrasonic re-examination. This report must provide a calculated corrosion rate for each DST, include all calculations, include a thorough description of all terms and/or factors used in the calculations, and include a thorough of all codes, studies and assumptions used in deriving the calculated corrosion rate for each of the DSTs selected.
- The documents required to be submitted under the terms of this Order shall be addressed to:

Washington State Department of Ecology
Attn: Bob Wilson
1315 West Fourth Avenue
Kennewick, Washington 99336-6018

Failure to comply with this Order may result in the issuance of civil penalties, or other actions, whether administrative or judicial, to enforce the terms of this Order. This Order may be appealed. Your appeal must be filed with within thirty (30) days of your receipt of this Order at the following address:

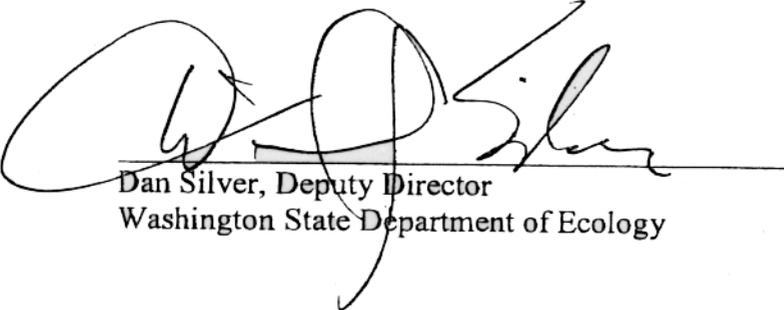
Pollution Control Hearings Board
P.O. Box 40903
Olympia, Washington 98504-0903

At the same time, your appeal must also be sent to:

Washington State Department of Ecology
c/o The Enforcement Officer
P.O. Box 47600
Olympia, Washington 98504-7600

Your appeal alone will not stay the effectiveness of this Order. Stay requests must be submitted in accordance with RCW 43.21B.320. These procedures are consistent with Chapter. 43.21B RCW.

DATED this thirteenth day of June 2000 at Kennewick, Washington.



Dan Silver, Deputy Director
Washington State Department of Ecology