



U.S. Department of Energy

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Office of River Protection

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SEP 04 2003

03-TOD-063

Mr. Michael A. Wilson, Program Manager
Nuclear Waste Program
State of Washington
Department of Ecology
1315 W. Fourth Avenue
Kennewick, Washington 99336

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EDMC

Dear Mr. Wilson:

COMPLETION OF HANFORD FEDERAL FACILITY AGREEMENT AND CONSENT ORDER (HFFACO) MILESTONE M-48, SUBMIT RESULTS OF FOUR DOUBLE-SHELL TANKS (DST) NOT PREVIOUSLY EXAMINED

The HFFACO Milestone Series, M-48-11, requires the Ultrasonic Testing (UT) of the primary tank walls in four (4) DSTs not previously examined be submitted to the State of Washington Department of Ecology (Ecology) by September 30, 2003. The attached documents contain the UT results for Tanks 241-AP-101, 241-AP-103, 241-AP-105 and 241-AZ-102. This submittal completes Milestone M-48-11.

The examination of these four tanks revealed no crack-like indications in the walls or in any of the weld heat affected zones, and no pitting exceeding the established acceptance criteria. However, several areas on Tank 241-AZ-102 met the nominal 50% of the acceptance criteria used by Hanford Tank Farms for reporting and tracking localized plate thinning, pitting and cracking. Six areas of reportable thinning (8 in.² total) were identified in vertical weld scans in Plate #2. In addition, three areas of reportable wall thinning to a maximum depth 18% of wall thickness (0.27 in.² total) were identified in the heat-affected zone in the vertical weld on Plate #1, to a maximum depth of approximately 17% of wall thickness.

An attempt was made in examining the tank bottom thickness on Tank 241-AZ-102 using a remote probe on the Remote Ultrasonic Test Inspection (RUTI) robotic crawler in the ventilation slots of the insulating concrete spacer pad between the primary tank and secondary liner. A video camera located at the end of the retractable probe showed cracking and spalling in the air slots. The ventilation slots were found to have many small concrete pieces that had spalled off which prevented easy access using the retractable probe. Additional air slot examinations were attempted by the RUTI, but all of the accessible slots showed some form of degradation. The effort to inspect the tank bottom and obtain thickness measurements via these air slots was terminated because at one point the probe became temporarily lodged inside an air slot. A management decision was made to halt further attempts to scan the AZ-102 tank bottom due to the possibility of the RUTI probe being permanently wedged between spalled concrete inside an air slot. Another DST will be selected for tank bottom thickness measurements to meet the

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requirements of M-48-14. The condition of the insulating concrete issue was documented in the CH2M HILL Hanford Group, Inc. (CH2M HILL) Problem Evaluation Request System (PER-2003-3066) and the U.S. Department of Energy (DOE) Occurrence Report RP-CHG-TANKFARM-2003-0039. The condition of the spalled and cracked concrete in the insulated concrete spacer is currently being evaluated.

Tank 241-AP-103 showed a linear indication approximately 2.9 inches in length in the weld heat affected zone on Plate #5 vertical weld during normal scanning. Additional evaluation suggested that this indication, which would not have been identified during original zero beam radiography, most likely represented a small region of incomplete weld fusion (i.e., the weld metal stopped slightly short of complete plate penetration at the time of new construction). This linear indication was evaluated by an independent examiner and is not considered a defect that could change over time. However, this area will be re-evaluated during the next scheduled UT examination of 241-AP-103. In addition, a gouge of approximately 1.4 inches was identified as a construction artifact and not a defect that would affect structural integrity.

The DSTs (not previously examined) 241-SY-101, 241-SY-102, 241-SY-103 and 241-AP-104, are tentatively scheduled for UT testing in Fiscal Year (FY) 2004, subject to approval by Ecology.

The following criteria were used as the basis for the selection of DSTs to be examined in FY 2004:

- Minimize interference with other planned tank farm activities and upgrades.
- Minimize movement of UT crawler, ancillary and support equipment between tank farms.
- Tanks 241-SY-101 and 241-SY-103 were selected for additional examination of the primary tank bottom, based on weighted prioritization considering the tank age, temperature, and material of construction.

Ecology approval by October 30, 2003, is requested for the four tanks selected for examination in FY 2004. The Office of River Protection will commit personnel and resources for this planned work scope at the beginning of FY 2004.

During FY 2003, visual inspections of 10 DSTs were conducted, which included Tanks 241-SY-101, 241-SY-102, 241-SY-103, 241-AP-101, 241-AP-102, 241-AP-103, 241-AP-104, 241-AP-105, 241-AP-106, and 241-AN-105. For each tank, four annulus risers and one in-tank riser were inspected.

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The video inspection data was reviewed for the SY Farm tanks and no significant corrosion was identified and no degradation of the primary or secondary tank walls has been observed. The corrosion and mill scale observed on some of the primary annulus surfaces is consistent with normal weathering of the carbon steel tanks. 1992 annulus inspections videos were used as baseline comparison for the FY 2003 inspections. No significant changes were noted in the SY Farm tanks annuli over the eleven-year span between inspections. The AP and AN tank farm video inspections were performed, but the analysis and the inspection reports will be completed in the first quarter of FY 2004. The delay was due to the extensive time required for rescan of the vertical weld area in Tank 241-AP-103 and unexpected spalling and cracking in the air slots of Tank 241-AZ-102.

If you have any questions, you may contact me, or your staff may contact Vic L. Callahan, Tank Farms Technical Engineering Division, (509) 373-9880.

Sincerely,



Roy J. Schepens
Manager

TOD:VLC

Attachments:

1. RPP-13546
2. RPP-13802
3. RPP-15764
4. RPP-15765

cc w/attachs:

TPA Administrative File

cc w/o attachs:

D. I. Allen, CH2M HILL
S. D. Fowler, CH2M HILL
M. N. Jarayssi, CH2M HILL

ATTACHMENT 1

RPP-13546

Ultrasonic Inspection Results for Double-Shell Tank 241-AP-101 – FY 2003

ATTACHMENT 2

RPP-13802

Ultrasonic Inspection Results for Double-Shell Tank 241-AP-103 – FY 2003

ATTACHMENT 3

RPP-15764

Ultrasonic Inspection for Double-Shell Tank 241-AP-105 – FY 2003

ATTACHMENT 4

RPP-15765

Ultrasonic Inspection Results for Double-Shell Tank 241-AZ-102 – FY 2003
