11-IEAV-0061

SUMMARY AND RESULTS LETTER REPORT – INDEPENDENT VERIFICATION OF THE HIGH FLUX BEAM REACTOR UNDERGROUND UTILITIES REMOVAL PROJECT, PHASE 3: TRENCHES 2, 3, AND 4 BROOKHAVEN NATIONAL LABORATORY UPTON, NEW YORK

E.M. Harpenau

This document was produced under contract number DE-AC05-06OR23100 between the U.S. Department of Energy and Oak Ridge Associated Universities.

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November 15, 2010

Ms. Terri Kneitel
U.S. Department of Energy
Brookhaven Site Office
53 Bell Ave., Building 464
Upton, NY 11973

SUBJECT: DOE CONTRACT NO. DE-AC05-06OR23100
SUMMARY AND RESULTS LETTER REPORT— INDEPENDENT VERIFICATION OF THE HIGH FLUX BEAM REACTOR UNDERGROUND UTILITIES REMOVAL PROJECT, PHASE 3: TRENCHES 2, 3, AND 4 BROOKHAVEN NATIONAL LABORATORY UPTON, NEW YORK
DCN: 5098-LR-02-0

Dear Ms. Kneitel:

Oak Ridge Institute for Science and Education (ORISE) personnel visited the Brookhaven National Laboratory (BNL) on September 7 through September 10, 2010, and September 20 through September 24, 2010. ORISE performed visual inspections, conducted independent measurement, and sampling of Trenches 2, 3, and 4, which are part of Phase 3 for the High Flux Beam Reactor (HFBR) Underground Utilities Removal Project. Trenches 2 and 3 were addressed during the first visit and Trench 4 during the second visit to BNL.

Spatial orientation to Building 801 and minimal survey area inside Trenches 2 and 3 limited satellite reception and the ability to utilize a global positioning system (GPS) as real-time data capture for the gamma scan surveys in these trenches. However, Trench 4 provided suitable conditions in which gamma scan data could be collected using the GPS.

ORISE performed high-density gamma scans of accessible surface areas using shielded sodium iodide detectors coupled to ratemeter-scalers with audible output. Scans for Trench 2 ranged from 4,000 to 22,000 gross counts per minute (cpm); Trench 3 from 3,000 to 5,000 gross cpm and Trench 4 from 2,600 to 9,500 gross cpm. ORISE personnel flagged the area where the elevated counts were observed in Trench 2 for further investigation. Additional scan evaluations were performed on remaining pipes and associated end-caps in the trenches with no elevated activity detected.

Eleven judgmental soil samples (5098M0041 through 5098M0051) were obtained throughout Trenches 2, 3, and 4. The sample locations were selected based on count rates observed during the scan survey or because of contamination potential from pipeline removal activities. ORISE personnel judgmentally selected the location for sample M0043 in response to the 22,000 cpm observed during the scan survey, and to ascertain whether the elevated counts were a result of soil

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contamination or radioactive shine from the trench's spatial orientation to the Target Room in Building 801. Gamma spectroscopy results of radionuclide concentrations in the soil ranged from 0.01 to 0.09 picocuries per gram (pCi/g) for cesium-137 and 0.22 to 0.49 pCi/g for radium-226. Radium-226 concentrations were considered to be in equilibrium with and derived from lead-214. Results for strontium-90 ranged from -0.27 to 0.87 pCi/g in the trenches. All concentrations for the radionuclides of concern were less than 10% of the respective cleanup goal.

A full verification survey report will follow at the completion of the HFBR Underground Utilities Removal Project. Please contact me at 865.241.8793 or Phyllis Weaver at 865.576.5321 should you have any questions.

Sincerely,

Evan M. Harpenau
Health Physicist/Assistant Project Manager
Survey Projects

EMH:fr

Enclosure

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