June 30, 2005

Mr. Joe D. Jacobsen
Battelle Memorial Institute
Columbus Operations
Mail Stop: JS22
505 King Avenue
Columbus, OH 43201-2693

SUBJECT: NRC INSPECTION REPORT 070-00008/2005-001(DNMS)
BATTELLE COLUMBUS LABORATORIES DECOMMISSIONING PROJECT

Dear Mr. Jacobsen:

On June 14, 2005, the NRC completed inspection activities associated with the Battelle West Jefferson North Site in West Jefferson, Ohio. The purpose of the inspection was to determine whether decommissioning activities were conducted safely and in accordance with your NRC-approved decommissioning plan and NRC requirements. The inspection included three onsite visits, February 23 through 24, 2005, April 26, 2005, and May 16 through 19, 2005. Specifically, the inspection activities included reviews of your decommissioning support activities, and NRC confirmatory surveys and observations of verification surveys on the JN-4 north area, JN-3 foundation area, JN-1B fuel pool and transfer canal, and filter bed areas. In addition to the onsite inspections, on June 14, 2005, we completed an in-office review of the laboratory analysis results for radiological samples collected during the inspections. The inspectors presented preliminary inspection findings to members of your staff at the conclusion of each onsite inspection. On June 14, 2005, the NRC inspectors conducted a final exit meeting with you by telephone to discuss the results of the onsite inspections and the NRC's in-office review.

These inspections consisted of an examination of decommissioning activities at the Battelle/West Jefferson North facility as they relate to safety and compliance with the Commission's rules and regulations. Areas examined during the inspections are identified in the enclosed report. Within these areas, the inspections consisted of a selective examination of procedures and representative records, field observations of activities in progress, and interviews with personnel.

Based on the results of this inspection, the NRC did not identify any violations.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). The NRC's document system is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

We will gladly discuss any questions you have concerning this inspection.

Sincerely,

/RA/

Jamnes L. Cameron, Chief
Decommissioning Branch

Docket No. 070-00008
License No. SNM-00007

Enclosure: Inspection Report 070-00008/2005-001(DNMS)

cc w/encl: P. Weaver, Director, Battelle Columbus Laboratories Decommissioning Project
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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No.:	070-00008
License No.:	SNM-00007
Report No.:	070-00008/2005-001(DNMS)
Licensee:	Battelle Memorial Institute Battelle Columbus Laboratories Decommissioning Project
Facility:	West Jefferson North Site
Location:	West Jefferson, Ohio
Dates:	February 23 through 24, 2005 (onsite) April 26, 2005 (onsite) May 16 through 19, 2005 (onsite), and June 14, 2005 (in-office review)
Inspectors:	George M. McCann, Senior Health Physicist Peter J. Lee, Ph.D., CHP, Health Physicist Eugenio Bonano, Health Physicist
Approved By:	Jamnes L. Cameron, Chief Decommissioning Branch Division of Nuclear Materials Safety

EXECUTIVE SUMMARY

Battelle Memorial Institute
Battelle Columbus Laboratories Decommissioning Project (BCLDP)
Inspection Report No. 070-00008/2005-001(DNMS)

This decommissioning inspection focused on the licensee's and the site decommissioning contractor's performance related to decommissioning support activities, final status and confirmatory surveys; radiological safety; and transportation of waste off-site for disposal.

Final Status and Confirmatory Surveys

- The inspectors concluded that residual radioactive contaminants in the JN-1B fuel pool and transfer canal area, the JN-4 North Area, the JN-3 foundation area, the northern portion of the Active North Filter Bed, Active North Filter Bed discharge line, and the abandoned original North Filter Bed, including areas around the removed splitter box and dosing chamber were remediated to levels consistent with the licensee's decommissioning plan. (Section 1.0)

Radiation Safety Program

- The inspectors concluded that the licensee's radiation protection program for monitoring and controlling occupational radiological exposures for its workers from inhalation intakes was adequate. The inspectors also concluded that the licensee's control of radiological work areas and radioactive materials, which included posting, labeling, and controlling access, was adequate. (Section 2.0)

Management Organization and Controls

- The inspectors concluded that the licensee's oversight of decommissioning activities was adequate and in compliance with NRC regulations and license conditions. (Section 3.0)

Transportation Activities

- The inspectors determined that the licensee's shipment of radioactive materials was completed safely and in compliance with NRC and Department of Transportation regulations. (Section 4.0)

Report Details[1]

1.0 Final Status and NRC Confirmatory Surveys (83890)

1.1 Inspection Scope

The inspectors reviewed the licensee's final status survey results for the JN-1B fuel pool and transfer canal area, JN-4 North Area, JN-3 foundation area, a northern portion of the Active North Filter Bed, the Active North Filter Bed discharge line, and the abandoned original North Filter Bed including areas around the removed splitter box and dosing chamber. The inspectors performed independent and confirmatory radiological surveys, including collection of 16 removable contamination survey samples and 11 soil samples.

The inspectors' surveys included walkover surface scans of the soils of JN-4 North Area, JN-3 foundation area and the backfill soil from the JN-3 excavation using two inch by two inch sodium iodide scintillation detectors (see Table 1). The inspectors scanned the surfaces of the walls of the JN-1B fuel pool and transfer canal to evaluate levels of gross alpha and beta contaminants using calibrated survey meters which employed pancake Geiger-Mueller probes for beta scanning and zinc sulfide probes for alpha scanning. The inspectors also performed surveys, consisting of direct one-minute counts, at each location where a survey for removable contamination was performed.

1.2 Observations and Findings

The results of the licensee's final status surveys of the areas reviewed did not indicate any radiological contaminants above the licensee's unrestricted release limits, as described in its decommissioning plan.

For the walkover surveys, the inspectors derived a scan minimum detectable concentration (MDC) for the sodium iodide detectors of 9 picocuries per gram (pCi/g). The radiation levels measured by the inspectors in the JN-4 North Area, JN-3 foundation area and the backfill soil from the JN-3 excavation were indistinguishable from the natural background levels.

Six surface soil samples were collected from survey grids located in the JN-3 excavation area, which were directly below the former research reactor, two from the grounds adjacent to JN-4, two from the discharge line near the ANFB, and one background sample west of JN-10, an unaffected area. The soil samples were analyzed by the NRC's laboratory contractor, the Oak Ridge Institute for Science and Education (ORISE). Six samples previously counted by the licensee in its in-house laboratory were also sent to ORISE for radiological analysis. The licensee had identified low levels of cesium-137, cobalt-60, europium-152, europium-154, americium-241, strontium-90, plutonium-238, and plutonium-239 on its site as a result of past operations. The licensee used cesium-137 as a surrogate for the other radioisotopes present in the soil. The surrogate value was based on approved unrestricted release criteria specified in the licensee's decommissioning plan for residual radioactivity concentrations in soil. The licensee had determined that the maximum allowable concentration for the cesium-137

[1]A list of acronyms used in the report is included at the end of the Report Details.

in soil could not exceed 11pCi/g, in order to meet the unity rule for all the other radioisotopes. The highest concentration of cesium-137 identified in the 17 soil samples collected by the NRC was 0.23 ± 0.03 pCi/g. The results of ORISE's analysis of the six samples previously collected and analyzed by the license statistically agreed with the licensee's results. The ORISE analysis reports are publicly available through NRC's Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML051360402 and ML051580193.

The inspectors' surveys of the JN-1B fuel pool and transfer canal did not identify any radiation levels above normal background values.

Each survey for removable contamination covered an approximate surface area of 100 square centimeters. The samples were analyzed for gross alpha and gross beta contamination by ORISE using a low background alpha/beta proportional counter. The sample results were less than the laboratory's established MDCs for the counter, which were 9 disintegrations per minute (dpm) per wipe for gross alpha and 15 dpm for gross beta. The results of the analysis of the survey samples indicated that removable contamination was below the licensee's unrestricted release limits, as described in the licensee's decommissioning plan, of 20 dpm per 100 square centimeters for alpha contamination and 200 dpm per 100 square centimeters for beta contamination.

1.3 Conclusions

The inspectors concluded that residual radioactive contaminants in the JN-1B fuel pool and transfer canal area, the JN-4 North Area, the JN-3 foundation area, the northern portion of the Active North Filter Bed, Active North Filter Bed discharge line, and the abandoned original North Filter Bed, including areas around the removed splitter box and dosing chamber were remediated to levels consistent with the licensee's decommissioning plan.

2.0 Radiation Protection (83822 and 87104)

2.1 Inspection Scope

The inspectors performed walk-down tours of Building JN-1, and the JN-3 and JN-4 outdoor areas, observing decommissioning activities to determine whether work was performed in accordance with regulatory and licensee requirements. The inspectors reviewed licensee records of workplace air sampling that were associated with current decommissioning activities. The inspectors also reviewed the licensee's HP-OP-011, "Release of Materials from Controlled Areas," Revision 5 and Work Instructions (WI)-2806, "Excavation and Trench Sampling and Surveys," Revision 1, for the JN-3 work.

2.2 Observations and Findings

During the remediation of the high energy cell, fuel pool, and transfer canal in Building JN-1B, the licensee conducted air sampling to monitor workers' exposures. The licensee had implemented engineering controls to reduce the airborne concentrations and to control exposures to workers. In addition, workers in areas where airborne concentrations were likely to exist wore respirators with protection factors of at least 50. The licensee's air sampling results for the period of March and April 2005 indicated that

airborne concentrations of radioactive materials were at or near the licensee's MDC of approximately 1 derived air concentration, as defined in 10 CFR Part 20, for beta-emitting radionuclides. The concentration of gamma-emitting radionuclides was not distinguishable from background radiation levels.

The licensee routinely performed radiological air sampling in and around buildings being decommissioned. The instruments in use by the licensee had certificates demonstrating calibration within the specified frequency. In addition, the instruments available to the staff to perform air sampling surveys were appropriate for the expected radiological conditions. The licensee had posted, labeled, and controlled radiological work areas and radiological waste materials in accordance with NRC regulations and license conditions.

2.3 Conclusion

The inspectors concluded that the licensee's radiation protection program for monitoring and controlling occupational radiological exposures for its workers from inhalation intakes was adequate. The inspectors also concluded that the licensee's control of radiological work areas and radioactive materials, which included posting, labeling, and controlling access, was adequate.

3.0 Management Organization and Controls (88005)

3.1 Inspection Scope

The inspectors reviewed the BCLDP Oversight Assessment Reports (OAR) OA-05-02, "HP Technician Training/Procedure Qualification," OA-05-04, "Evaluation of Implementation of the Respiratory Protection Program," and the BCLDP Oversight Audit Logbook No. 2. The inspectors also interviewed the BCLDP staff regarding their understanding of, and compliance with, program oversight commitments.

3.2 Observations and Findings

The licensee's radiation safety staff, consisting of a radiation safety officer, a health physicist, and project director, conducted daily routine oversight activities. These activities included periodic management audits, attending daily planning meetings, daily walking tours through all the buildings undergoing decontamination on the site, and reviewing contractor work plans and decommissioning procedures. The licensee oversight staff recorded detailed information regarding their observations of decommissioning work activities. The audit reports OAR OA-05-02, contained two audit findings, and OA-05-04, contained one finding. The licensee tracked the identified deficient items, and took timely corrective actions to address the audit findings.

3.3 Conclusions

The inspectors concluded that the licensee's oversight of decommissioning activities was adequate and in compliance with NRC regulations and license conditions.

4.0 Transportation Activities (86740)

4.1 Inspection Scope

The inspectors interviewed the individual responsible for the radioactive materials shipping program and reviewed selected shipping documents.

4.2 Observations and Findings

On May 18, 2005, the licensee made seven radioactive waste shipments to a waste processor in Memphis, Tennessee, for final waste consolidation. The wastes were shipped as excepted packages of limited quantity. The wastes consisted of contaminated soils from the former well injection distribution and extraction system (WIDE) System filter bed area. The licensee used U.S. Department of Transportation (DOT) approved packages and labels for the shipments. The licensee surveyed the shipments to verify that radiation and removable contamination levels met DOT requirements. The licensee's waste manifests included required information.

4.3 Conclusions

The inspectors determined that the licensee's shipment of radioactive materials was completed safely and in compliance with NRC and Department of Transportation regulations.

5.0 Exit Meeting

The NRC inspectors presented preliminary inspection findings to members of the facility management team following each onsite inspection. On June 14, 2005, the inspectors discussed the final inspection findings with the BCLDP Radiation Safety Officer. The licensee acknowledged the findings presented. The licensee did not identify any documents or processes reviewed by the inspectors as proprietary.

PARTIAL LIST OF PERSONS CONTACTED

P. Weaver, BCLDP West Jefferson Site Project Manager
J. Jacobsen, BCLDP West Jefferson Radiation Safety Officer
J. Staehr, Project Manager, Closure Services
S. Zoller, Closure Services Radiation Safety Officer
G. Henderson, Closure Services
J. Hallren, BCLDP West Jefferson Radiation Safety Officer
J. Griffen, Department of Energy
D. Ringlet, Closure Services
D. Kent, K2 Environmental

State of Ohio
Charles McCracken, Ohio Department of Health, Bureau of Radiation Protection

INSPECTION PROCEDURES USED

IP 83890	Closeout Inspection and Survey
IP 87104	Decommissioning Inspection Procedure for Materials Licensees
IP 83822	Radiation Protection
IP 88005	Management Organization and Controls
IP 86740	Transportation Activities

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened	None
Closed	None
Discussed	None

PARTIAL LIST OF DOCUMENTS REVIEWED

DOE Contract No. DE-AC-00OR22750 Proposed Verification Survey Plan for Building JN-3 and Filter Bed Areas, Battelle Columbus Operations, West Jefferson Site, West Jefferson, Ohio, dated October 8, 2004

Decontamination and Decommissioning Operations Site Characterization Sampling Procedure, SC-SP-004.2, Revision 3, November 8, 2002

Decommissioning Plan Battelle Memorial Institute Columbus Operations, DD-93-19, Revision 5, dated October 16, 2003

Radiological Characterization and Final Status Plan for Battelle Columbus Laboratories Decommissioning Project, West Jefferson Site, DD-97-02, Revision 0

National Emission Standard for Hazardous Air Pollutants Evaluation Report for Demolition of Buildings JN-1, JN-2, and JN-3

Radiological Characterization and Final Status Plan for Battelle Columbus Laboratories Decommissioning Project West Jefferson Site, DD-97-02, Revision 0

Facility Post-Decontamination Final Status Survey for Baseline Areas, SC-OP-002, Revision 0

Radioactive Contamination Monitoring Requirements for Facility Surface Characterization, SC-OP-004, Revision 0

Baseline Reference Values for Facility Radiological Characterization Surveys, SC-OP-007, Revision 0

Establishing a Surface Reference Grid for Walls, Floors, and Ceilings for a Detailed Characterization Survey, SC-OP-010, Revision 0

Release of Materials from Controlled Areas, HP-OP-011, Revision 5

Excavation and Trench Sampling and Surveys, WI-2806, Revision 1

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
BCLDP	Battelle Columbus Decommissioning Laboratories Project
CFR	Code of Federal Regulations
DNMS	Division of Nuclear Materials Safety
DOT	Department of Transportation
dpm	Disintegrations per minute
MDC	Minimum detectable concentration
NRC	Nuclear Regulatory Commission
ORISE	Oak Ridge Institute for Science and Education
PARS	Publicly Available Records
WI	Work Instructions

NRC SURVEY INSTRUMENTATION NOTE: Meters are calibrated annually						
Survey Meter	Instrument Model	Instrument Serial	Detectors Model	Detector Serial	Calibration Date	Calibration Due
Ludlum NRC kit #1	2241-2	130055	44-10 (2x2 Sodium Iodide)	PR110269	06/06/04	06/06/05
Ludlum NRC kit #5	2241-2	132190	44-10 (2x2 Sodium Iodide)	PR110268	07/21/04	07/21/05
Ludlum NRC kit #5	2241-2	132190	44-9 (Geiger-Mueller Pancake)	PR110251	07/21/04	07/21/05
Ludlum NRC kit #3	2241-2	131397	44-10 (2x2 Sodium Iodide)	PR110264	12/21/04	12/21/05
Ludlum NRC kit #3	2241-2	131397	44-9 (Geiger-Mueller Pancake)	PR110153	12/21/04	12/21/05

Table 1: NRC Survey Instrumentation used during inspection period