



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION I
2100 RENAISSANCE BLVD., SUITE 100
KING OF PRUSSIA, PA 19406-2713

May 12, 2015

Docket No. 03004530

License No. 19-00915-03

John Jensen
Director, Radiation Safety Officer
United States Department of Agriculture
Office of the Assistant Secretary
for Administration
Room 2L205
5601 Sunnyside Avenue
Beltsville, MD 20705

SUBJECT: NRC INSPECTION REPORT NO. 03004530/2014023, UNITED STATES DEPARTMENT OF AGRICULTURE (USDA), BELTSVILLE AGRICULTURAL RESEARCH CENTER, BELTSVILLE, MARYLAND

Dear Mr. Jensen:

On April 13, 2015, the U.S. Nuclear Regulatory Commission (NRC) conducted a safety inspection at the United States Department of Agriculture's (USDA) Low Level Radioactive Burial Site (LLRBS) at their Beltsville Agricultural Research Center (BARC) in Beltsville, Maryland. The purpose of this inspection was to confirm that packaged radioactive waste had been removed from an onsite storage building and to perform a confirmatory radiation survey of the building. Additional information in documents provided by USDA contractors was also examined as part of the inspection. The inspection consisted of observations by the inspectors, interviews with USDA and contractor personnel, and a review of work plans and records. The results of the inspection were discussed with you during an exit meeting on April 13, 2015, and are described in the enclosed report. No health and safety concerns were identified.

This report also discusses the analytical data obtained from the September 23-26, 2014, inspection by the NRC and representatives from our contractor, Oak Ridge Associated Universities (ORAU). During the September 23-26, 2014, inspection, ORAU representatives performed radiological measurements and collected soil samples for analysis. The results of ORAU's independent survey and sampling activities were provided to the NRC by ORAU in a report dated February 23, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15125A452). This report is available at www.nrc.gov; select **NRC Library**, then **ADAMS Public Documents**. The NRC staff will compare the information in this report to the data in your Final Status Surveys (FSS) Report when submitted.

Current NRC regulations and guidance are included on the NRC's website at www.nrc.gov; select **Nuclear Materials; Med, Ind, & Academic Uses**; then **Regulations, Guidance and Communications**. The current Enforcement Policy is included on the NRC's website at www.nrc.gov; select **About NRC, Organizations & Functions; Office of Enforcement; Enforcement documents**; then **Enforcement Policy (Under 'Related Information')**. You may also obtain these documents by contacting the Government Printing Office (GPO) toll-free at 1-866-512-1800. The GPO is open from 8:00 a.m. to 5:30 p.m. EST, Monday through Friday (except Federal holidays).

The NRC's Safety Culture Policy Statement became effective in June 2011. While a policy statement and not a regulation, it sets forth the agency's *expectations* for individuals and organizations to establish and maintain a positive safety culture. You can access the policy statement and supporting material that may benefit your organization on NRC's safety culture Web site at <http://www.nrc.gov/about-nrc/regulatory/enforcement/safety-culture.html>. We strongly encourage you to review this material and adapt it to your particular needs in order to develop and maintain a positive safety culture as you engage in NRC-regulated activities.

Please contact Mark Roberts at 610-337-5094 if you have any questions regarding this matter.

Sincerely,

/RA KModes f/

Marc S. Ferdas, Chief
Decommissioning & Technical Support Branch
Division of Nuclear Materials Safety

Enclosure: Inspection Report No. 03004530/2014023

cc w/enclosure: B. Clayman, EnergySolutions
M. Kurth, U.S. Army Joint Munitions Command Headquarters

Current NRC regulations and guidance are included on the NRC's website at www.nrc.gov; select **Nuclear Materials; Med, Ind, & Academic Uses**; then **Regulations, Guidance and Communications**. The current Enforcement Policy is included on the NRC's website at www.nrc.gov; select **About NRC, Organizations & Functions; Office of Enforcement; Enforcement documents**; then **Enforcement Policy (Under 'Related Information')**. You may also obtain these documents by contacting the Government Printing Office (GPO) toll-free at 1-866-512-1800. The GPO is open from 8:00 a.m. to 5:30 p.m. EST, Monday through Friday (except Federal holidays).

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M. Kurth, U.S. Army Joint Munitions Command Headquarters

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DATE	5/12/15		Via email on 5/12/15				

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U.S. NUCLEAR REGULATORY COMMISSION
REGION I

INSPECTION REPORT

Inspection No. 03004530/2014023
Docket No. 03004530
License No. 19-00915-03
Licensee: United States Department of Agriculture (USDA)

Address: 5601 Sunnyside Avenue
Beltsville, Maryland 20705

Facility: Low Level Radioactive Burial Site (LLRBS)
Beltsville Agricultural Research Center (BARC)
Beltsville, Maryland

Inspection Date: April 13, 2015

Inspectors: Mark C. Roberts
Senior Health Physicist
Decommissioning and Technical Support Branch
Division of Nuclear Materials Safety

James Cassata
Health Physicist
Commercial, Industrial, R&D, and Academic Branch
Division of Nuclear Materials Safety

Approved By: Marc S. Ferdas, Chief
Decommissioning and Technical Support Branch
Division of Nuclear Materials Safety

EXECUTIVE SUMMARY

United States Department of Agriculture (USDA)
Low Level Radioactive Burial Site (LLRBS)
Beltsville Agricultural Research Center (BARC)
NRC Inspection Report No. 03004530/2014023

An announced onsite inspection was conducted on April 13, 2015, of the Low Level Radioactive Burial Site (LLRBS) decommissioning project at the USDA's Beltsville Agricultural Research Center (BARC) facility in Beltsville, Maryland. The inspection consisted of observations by the inspectors, interviews with USDA and contractor personnel, and a review of work plans and records. NRC staff conducted a confirmatory radiological survey of the empty BARC Sort and Segregation Building and confirmed that radioactive waste drums stored in the building had been shipped for processing. This report also discusses the analytical data obtained from the September 23-26, 2014, inspection and confirmatory radiological survey by the NRC and representatives from our contractor, Oak Ridge Associated Universities (ORAU). The NRC's program for overseeing the decommissioning of materials facilities is found in Inspection Manual Chapter (IMC) 2602, "Decommissioning Oversight and Inspection Program for Fuel Cycle Facilities and Materials Licensees." Based on the results of this inspection, no findings of safety significance were identified. ORAU confirmatory survey and sampling activities confirmed that radiological conditions were generally commensurate with the Derived Concentration Guideline Limits (DCGL) (i.e. site release criteria) contained in the USDA's decommissioning plan (DP). However, two of the samples analyzed did exceed the DCGLs in the USDA's DP. Discussions with the USDA indicated that they will review the data in the ORAU report and integrate a response in the Final Status Surveys (FSS) Report.

REPORT DETAILS

1.0 Summary of Facility Status

The BARC burial site consists of an array of approximately 50 burial pits where laboratory wastes from USDA research activities were disposed from 1949 through 1987. Buried wastes consisted primarily of contaminated laboratory containers, liquid scintillation vials, animal carcasses and wastes, and laboratory trash as well as a few discrete radioactive sources.

USDA shipped most of the waste and contaminated soil in intermodal containers to the EnergySolutions disposal facility in Utah. Soil that was between the burial pits, immediately above the burial pits, or immediately adjacent to a perimeter burial pit was stockpiled for survey and sampling. Soil consisting of the top cover of the burial pits and soil removed from the non-impacted perimeter of the burial pits for safety concerns was separately stockpiled and sampled. Discrete sources and larger containers of liquid wastes were segregated for special handling and stored in the locked BARC Sort and Segregation Building at the LLRBS. These wastes were separately processed and packaged for transfer to a licensed processing facility. Arrangements for the transfer of this material were completed after site demobilization.

USDA contractors conducted radiological surveys of the stockpiles and collected and analyzed representative soil samples for the radionuclides of concern. This soil is intended to be used as backfill if determined to have met the Derived Concentration Guideline Limits (DCGL) criteria. USDA divided the burial pit excavation into two Class 1 survey units (SU), (SUs 1 and 2), with a surrounding Class 3 SU (SU 3) in accordance with the guidance in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM). The two soil stockpiles were evaluated using the MARSSIM guidance as a Class 1 SU (adjacent soil, SU 4) and a Class 3 SU (non-impacted surface and perimeter soil, SU 5). The USDA contractors have completed Final Status Surveys (FSS) and are incorporating the data into an FSS report. The NRC's program for overseeing the decommissioning of materials facilities is found in Inspection Manual Chapter (IMC) 2602.

2.0 Confirmatory Survey & Sampling Activities

a. Inspection Scope (Inspection Procedures 87104, 86740, and 83890)

The NRC contracted with ORAU to perform confirmatory radiological survey activities at the LLRBS decommissioning project at the USDA's BARC facility in Beltsville, Maryland. The objective of the confirmatory survey activities was to generate independent radiological data for use by the NRC in evaluating the accuracy and adequacy of the USDA's procedures and FSS data. ORAU performed confirmatory radiological surveys and sampling in September 23-26, 2014, of areas that had been remediated and of soil stockpiles intended for use as backfill. ORAU provided their survey results in a report dated February 23, 2015 (ADAMS Accession No. ML15125A452).

The inspectors reviewed the waste disposal records for the completed radioactive waste shipment and the radiological survey results for the empty BARC Sort and Segregation Building. Inspectors also performed confirmatory radiological measurements within the building and in the building vicinity.

b. Observations and Findings

ORAU's confirmatory survey activities consisted of surface gamma scans, static gamma count rate measurements, static beta count rate measurements, and soil sample collection and analysis. The inspectors observed the ORAU personnel prepare equipment to be used during confirmatory activities and verified that the survey meters used were appropriately calibrated for their intended use. The inspectors also noted that ORAU staff performed pre- and post-measurement checks on equipment to verify acceptable operability. The inspectors also observed the soil sample collection process and how samples were handled and controlled prior to packaging and shipment. The soil sample chain of custody was maintained by ORAU staff and soil samples were transferred to the ORAU Radiological and Environmental Laboratory in Oak Ridge, Tennessee. Sample analyses were performed in accordance with the ORAU Laboratory Procedures Manual. The requested analyses included quantification of Hydrogen-3 (H-3) and Carbon-14 (C-14) as well as gamma spectrometry. As a result of significant rain during portions of the inspection, the inspectors made changes to the original inspection plan for safety concerns and sample availability. In lieu of collecting samples directly from SU 4, a series of split samples were obtained from USDA archived samples.

The inspectors noted that ORAU's February 23, 2015, report concluded that all confirmatory gamma scans taken were within background levels for the areas surveyed, with the exception of the western end of SU 4. The western end of SU 4 could not be appropriately surveyed due to the elevated background exposure rate as a result of waste drums stored in the BARC Sort and Segregation Building at the time of the survey. As a compensatory measure, soil samples from the western perimeter of SU 4 were collected and analyzed. The analytical results demonstrated that the soil adjacent to the storage building was well below the DCGL values. As an additional compensatory measure, the inspectors made radiation exposure rate measurements in this area during the April 13, 2015, inspection and all measurements were shown to be indistinguishable from background.

Soil samples from the burial pits excavation (SUs 1 and 2) indicated radionuclide concentrations well below the DCGL values. Soil samples taken from SU 3 and SU 5 were also less than the DCGL values. Two of the split samples collected from the archived SU 4 samples contained radionuclide concentrations that exceeded the DCGL criteria. One sample exceeded the H-3 DCGL and one sample exceeded the sum of fractions DCGL with consideration of the H-3, C-14, and cesium-137 (Cs-137) concentrations. The inspectors discussed these elevated readings with USDA.

The inspectors toured the empty BARC Sort and Segregation Building and visually determined that all radioactive waste drums were no longer present. The inspectors

reviewed the waste disposal records for the completed radioactive waste shipment and noted that the completed records and manifests met the NRC and Department of Transportation regulations. The inspectors also reviewed signed copies of manifests returned to the shipper indicating that the wastes had been received at the treatment facility in good condition and no discrepancies reported.

The inspectors reviewed the radiological survey results for the empty BARC Sort and Segregation Building and performed confirmatory radiological measurements within the building and in the building vicinity. The inspectors made radiation exposure rate measurements using a Ludlum Model 19 Micro R Meter (NRC # 033513, calibrated May 21, 2014) and direct measurements on building floor and wall surfaces using a Ludlum Model 26 integrated GM Survey Meter (NRC # 46184G, calibrated September 29, 2014). All confirmatory measurements were indistinguishable from background measurements and equivalent to the licensee's recorded measurements.

c. Conclusions

Based on the results of these inspections, no health and safety concerns were identified. ORAU confirmatory survey and sampling activities confirmed that radiological conditions were generally commensurate with the DCGLs (i.e. site release criteria) contained in the USDA's decommissioning plan (DP). However, two of the samples analyzed did exceed the DCGLs in the USDA's DP. Discussions with the USDA indicated that they will review the data in the ORAU report and integrate a response in the FSS Report.

3.0 Exit Meeting

The results of the inspection were discussed with John Jensen on April 13, 2015 at the conclusion of the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

D. Jackson, Senior Remediation Project Manager, USDA
J. Jensen, Radiation Safety Officer, USDA

Contractors

D. Caputo, Remediation Project Management, TerranearPMC
H. Kleiser, President, TerranearPMC
B. Clayman, Project Manager, EnergySolutions
G. Rice, Waste Manager, EnergySolutions

INSPECTION PROCEDURE USED

Inspection Procedure 87104, Decommissioning Inspection Procedure for Materials Licensees
Inspection Procedure 86740, Inspection of Transportation Activities
Inspection Procedure 83890, Closeout Inspection and Survey

ITEMS OPEN, CLOSED, AND DISCUSSED

None

LIST OF DOCUMENTS REVIEWED

Revised Final Decommissioning Plan (DP), Low Level Radioactive Burial Site, USDA BARC, January 2012 (ADAMS Accession No. ML120600551)
NRC Temporary Job Site Remobilization Notification, EnergySolutions, March 15, 2015
Radiological Survey for BARC – Sort and Segregation Building – Empty, April 1, 2015
Radioactive Waste Shipping Papers for April 3, 2015 waste shipment; includes April 6, 2015 confirmation of receipt at processing facility
Survey Report for the Confirmatory Survey Activities of the U.S. Department of Agriculture Low Level Radioactive Burial Site, Beltsville, Maryland, ORAU, February 2015 (ADAMS Accession No. ML15125A452)

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
BARC	Beltsville Agricultural Research Center
C-14	Carbon-14
Cs-137	Cesium-137
DCGL	Derived Concentration Guideline Limit
DP	Decommissioning Plan
FSS	Final Status Surveys
H-3	Hydrogen-3
LLRBS	Low Level Radioactive Burial Site
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual (NUREG-1575)
NRC	Nuclear Regulatory Commission
ORAU	Oak Ridge Associated Universities
SU	survey unit
USDA	United States Department of Agriculture