



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION IV  
1600 EAST LAMAR BOULEVARD  
ARLINGTON, TEXAS 76011-4511

June 3, 2019

**MEMORANDUM TO:** Docket File 030-28641

**THROUGH:** Heather J. Gepford, PhD, CHP, Chief /RA/  
Materials Licensing and Decommissioning Branch  
Division of Nuclear Materials Safety

**FROM:** Robert J. Evans, PhD, PE, CHP, Senior Health Physicist  
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Division of Nuclear Materials Safety

**SUBJECT:** APPROVAL OF DECOMMISSIONING PLAN ADDENDUM AND  
FINAL STATUS SURVEY REPORT FOR ROBINS AIR FORCE  
BASE, GEORGIA

By Memorandum dated January 29, 2019 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML19031C834), the Department of the Air Force (licensee) requested U.S. Nuclear Regulatory Commission (NRC) approval of an addendum to the Decommissioning Plan (DP) dated March 21, 2017, as revised June 13, 2017 (ADAMS Accession Nos. ML17094A481 and ML17167A421) for Building 181 at Robins Air Force Base (AFB), Georgia. In addition, by Memorandum dated September 20, 2018 (ADAMS Accession No. ML19151A642), the licensee requested NRC review and approval of the Phase 1 Final Status Survey Report (FSSR) for Building 181.

The licensee previously conducted work in Building 181 involving depleted uranium (DU). The work resulted in contamination of building Cells 5 and 6. The licensee submitted a DP to the NRC in November 2016 to describe how they planned to decommission the building. The NRC subsequently approved the licensee's DP, as amended, in September 2017 (ADAMS Accession No. ML17271A158).

During 2017-2018, the licensee's contractor partially decommissioned Building 181 and conducted a final status survey of the accessible portions of the building in accordance with the NRC-approved DP. Collectively, this work was considered as Phase 1 of the decommissioning project. However, certain areas of the building cannot be radiologically surveyed until the building has been partially demolished. If the NRC approves the proposed addendum to the DP and the Phase 1 FSSR, the licensee and its contractors will be allowed to demolish and dispose of portions of the building in a controlled manner, while conducting radiological characterization and Phase 2 final status surveys during and after demolition.

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817-200-1234

This project was classified as a Group 4 decommissioning project in accordance with the guidance provided in NUREG-1757, "Consolidated NMSS Decommissioning Guidance," Volume 1, Revision 2. Table 1.2 from NUREG-1757 provides the principle regulatory features of the seven decommissioning groups. The principle regulatory features for a Group 4 decommissioning project, and the status of each feature, are provided below:

<b>Principle Regulatory Feature</b>	<b>Status</b>
NEPA compliance - completion of an environmental assessment (EA)	The EA and Finding of No Significant Impact (FONSI) were published in the <i>Federal Register</i> on September 19, 2017 (82 FR 43794; ML17207A232)
Restricted or unrestricted use	The licensee has requested unrestricted use
DP required - Yes or No	The DP was approved by NRC on September 25, 2017, via Amendment 28 to License 42-23539-01AF (ML17271A158)
DP review documentation	The expanded EA and Safety Evaluation Report were both issued on September 19, 2017 (ML17027A232 and ML17193A222)
Radioactive material disposition documentation	Radioactive material will be dispositioned as described in the DP and implementing procedures; waste shipment records for Phase 1 decommissioning were submitted to NRC by Memorandum dated April 11, 2019 (ML19121A541)
Method for demonstrating site is suitable for release - survey or demonstration	Phase 1 FSSR was submitted to NRC by Memo dated September 20, 2018 (ML19151A642); Phase 2 FSSR will be submitted to NRC at a later date
Confirmatory or side-by-side survey	NRC conducted an inspection during Phase 1 decommissioning; see NRC Inspection Report 030-28641/2017-007 (ML19095B598)
Closeout inspection	The NRC plans to conduct a second inspection concurrently with Phase 2 decommissioning work
<i>Federal Register</i> Notice (FRN) used to inform the public of NRC staff actions	The receipt of DP was announced in FRN 82 FR 20639 dated May 3, 2017; the approval of EA and FONSI were announced in FRN 82 FR 43794 dated September 19, 2017. The NRC staff does not plan to announce approval of addendum because the conclusions as documented in original EA/FONSI will not change
Documentation used to support license termination	The licensee will submit its Phase 2 FSSR to NRC for review and approval; after completion of all decommissioning activities and approval of Phase 2 FSSR, the licensee plans to terminate Permit GA-00462-03/03AFP at Robins AFB

The NRC staff considered whether a consultation with the Environmental Protection Agency (EPA) was required per the EPA-NRC Memorandum of Understanding dated October 9, 2002 (see Appendix H to NUREG-1757, Volume 1, Revision 2). An EPA consultation was not required because the NRC-approved surrogate derived concentration guideline level for uranium-238 (4.6 picocuries per gram) does not exceed the value specified in the Memorandum of Understanding (74 picocuries per gram).

The NRC staff's review of the DP addendum and Phase 1 FSSR is complete. The NRC staff recommends approval of the DP addendum and Phase 1 FSSR. The addendum provides sufficient detail to describe how the licensee and its contractor will conduct characterization and final status surveys during building demolition. The results of the Phase 1 final survey demonstrate that portions of the building meet the radiological criteria for license termination as required by 10 CFR Part 20, Subpart E. The approval of the DP addendum and Phase 1 FSSR will allow the licensee and its contractor to demolish portions of the building, dispose of the waste as non-radioactive material, and conduct additional characterization and final status surveys during and after building demolition. The licensee and its contractor will present the results of the Phase 2 final status surveys to the NRC at a later date.

An amendment to Materials License 42-23539-01AF, Condition 20.W, will be necessary since the NRC-approved DP will be revised by the approval of the addendum. The Safety Evaluation Report to support this licensing action is provided in the enclosure to this Memorandum.

In summary, the NRC staff recommends an amendment to Materials License 42-23539-01AF, Condition 20.W, to approve the DP addendum dated January 29, 2019, and the licensee's Phase 1 FSSR dated September 20, 2018. An environmental assessment of this change is not necessary. The NRC conducted a comprehensive environmental assessment to support the approval of the original DP. The work as described in the addendum to the DP does not alter the footprint of the original work or conclusions as presented in the NRC's Environmental Assessment dated September 19, 2017 (ADAMS Accession No. ML17207A232).

Docket No.: 030-28641

License No.: 42-23539-01AF

cc:

D. Matos, Georgia Department of Natural Resources

J. Richards, U.S. Environmental Protection Agency, Region 4

Enclosure: Safety Evaluation Report

**Safety Evaluation Report  
Decommissioning Plan Addendum and Phase 1 Final Status Survey Report for  
Building 181, Robins Air Force Base, Georgia**

Executive Summary

By Memorandum dated January 29, 2019 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML19031C834), the Department of the Air Force (licensee) requested U.S. Nuclear Regulatory Commission (NRC) approval of an addendum to the Decommissioning Plan (DP) dated March 21, 2017, as revised June 13, 2017 (ADAMS Accession Nos. ML17094A481 and ML17167A421). The DP describes the licensee's plans to remove depleted uranium (DU) contamination from portions of Building 181 at Robins Air Force Base (AFB), Georgia, and to survey the building after the completion of decommissioning. By Memorandum dated September 20, 2018 (ADAMS Accession No. ML19151A642), the licensee also requested the NRC approval of the Phase 1 Final Status Survey Report (FSSR) for portions of Building 181. The NRC staff reviewed the two documents and discussed the proposed changes with the licensee and its contractors. The licensee responded to final NRC comments and questions about the DP addendum and Phase I FSSR by Memorandum dated April 11, 2019 (ADAMS Accession No. ML19121A541).

The DP addendum provides sufficient detail describing how the licensee and its contractor will conduct characterization and final status surveys during and after building demolition. Further, the results of the Phase 1 final status survey meet the release criteria presented in the NRC-approved DP. Therefore, the NRC staff recommend approval of the DP addendum and the Phase 1 FSSR. This approval will allow the licensee and its contractors to demolish portions of Building 181, dispose of the rubble as industrial waste, and conduct Phase 2 characterization and final status surveys during and after demolition. The licensee and its contractor will present the results of the Phase 2 final status survey to the NRC at a later date.

NRC Review of DP Addendum

The NRC approved the DP for Building 181 on September 25, 2017 (ADAMS Accession No. ML17271A158). The DP described the methodology that the licensee and its contractors would use to decommission Building 181 and radiologically survey the building during and after decommissioning. The licensee's contractor conducted the Phase 1 decommissioning and final status surveys in 2017-2018 in accordance with the instructions provided in the DP.

During decommissioning, the contractor encountered problems that were not foreseen during development of the original DP. For example, the contractor discovered a subsurface area that was larger than expected, and the contractor discovered radioactive contamination at a location adjacent to the building. The licensee and its contractor developed an addendum to the DP to describe the approach that will be used to conduct the Phase 2 final status surveys during and after controlled demolition of the building. The contractor will conduct these Phase 2 final status surveys to demonstrate that the remaining portions of the building, inaccessible during the Phase 1 surveys, are suitable for unrestricted release. The addendum does not change the NRC-approved derived concentration guideline levels (DCGLs) for surface and soil/volumetric contamination or the design of the survey units.

The NRC staff reviewed the DP addendum using the guidance provided in Section 11.3.2 of NUREG-1757, Volume 1, Revision 2, "Consolidated Decommissioning Guidance: Decommissioning Process for Materials Licensees." The addendum describes the process that

Enclosure

the licensee and its contractors will use to survey five areas that are new, or different, than was described in the original DP. The five areas include:

- Subsurface vault under Room 6A1
- Piping and pipe chase under Room 6B1
- Soil under Cells 5 and 6 floor slabs
- Underside of pavement and soil under the concrete apron and pavement west of Cell 6
- Sink and shower drain lines from Room 6B1 restroom and any other drain lines encountered under the pavement west of Cell 6

The contractor cannot sufficiently survey or remediate these areas until it has access to these areas. Partial building demolition is necessary to allow the contractor to access these areas. When the contractor is able to access the areas, the contractor will conduct radiological baseline (characterization) surveys to ascertain the extent and level of contamination in these areas. Based on this information, the contractor will either remediate the areas or conclude that the areas meet the release criteria.

The addendum explains that some of the excavated material, such as building drains, will be surveyed and managed as material and equipment. For material and equipment, the NRC-approved surface contamination limit is provided in Section 2.2 of the DP and Section 3 of the addendum. In addition to the NRC-approved surface contamination limit, in the DP addendum, the licensee proposed to use an ambient gamma radiation count rate of twice background as a screening value. The proposed gamma count rate limit provides an additional level of confidence that the material and equipment being released will not exceed the release limits.

Section 5 of the addendum describes the health and safety considerations, primarily industrial hazards such as access to confined spaces and exposure to asbestos-containing material. This section includes the approach the contractors will take and the radiological controls that will be used to protect workers during demolition activities. These radiological controls include access control, air sampling, and ventilation requirements. A third-party general contractor will physically demolish the building. The general contractor is expected to have a stand-alone industrial health and safety program to protect all workers during demolition activities.

Section 6 of the addendum provides the instructions for final status surveying of the five areas mentioned above. Material (drains, concrete blocks) removed during decommissioning that may have surface contamination will be surveyed as materials and equipment. These surveys will include measurement of total (fixed and removable) and removable contamination as well as measurement of surface gamma count rates. Material left in place will be surveyed as part of the final status survey. The building surface surveys will include, as appropriate, surface scans, fixed-point measurements, and swipe samples. Water and volumetric samples will be collected as necessary in the voids and pits. In general, the licensee and its contractors plan to survey and release the below-grade structures prior to demolition. After building demolition, the licensee and its contractor will conduct a final status survey of the soil beneath Cells 5 and 6.

The results of the contractor's final status surveys during Phase 2 work will be presented to the licensee for review, and subsequently to the NRC for review and approval. The Phase 2 FSSR is expected to justify a future licensee request to release the building footprint and the soil underneath former Cells 5 and 6 for release for unrestricted use. If the Phase 2 FSSR is approved by the NRC, the licensee is expected to terminate the radioactive materials permit associated with Building 181.

## NRC Review of the Phase 1 FSSR

The NRC staff reviewed the licensee's Phase 1 FSSR dated August 2018, submitted to the NRC by Memorandum dated September 20, 2018 (ADAMS Accession No. ML19151A642). The purpose of the staff's review was to verify that the results of the final status survey demonstrate that the area or building meets the radiological criteria for license termination. The NRC staff reviewed the FSSR using the guidance provided in Section 4.5 of NUREG-1757, Volume 2, Revision 1, "Consolidated Decommissioning Guidance: Characterization, Survey, and Determination of Radiological Criteria."

According to the FSSR, the objective of the final status survey was to collect sufficient data to demonstrate that the residual radioactive contamination has been mitigated sufficiently to remove the site from federal and state controls and permits. The DP provides a detailed listing of the rooms and areas that required remediation and final status surveying, and the DP provides the NRC-approved DCGLs for comparison to the final status survey results.

The August 2018 FSSR provided the final status survey results from previously impacted rooms, walls, floor slab, roof, and outdoor pavement. The Phase 1 FSSR also provided the baseline (characterization) surveys of areas that were missed, or data lost, during the original 2015 baseline survey. These extra areas included Room 3D, Room 3E, roof, and building vents.

The final status survey consisted of scan surveys, fixed-point (static) measurements for total contamination, and removable (swipe) surveys at each fixed-point location. The licensee's survey results indicate that the highest total, fixed-point contamination measurement was 2,255 disintegrations per minute per 100-square centimeters (dpm/100 cm<sup>2</sup>), with a DCGL of 2,570 dpm/100 cm<sup>2</sup>. The highest removable (loose) contamination measurement was 126 dpm/100 cm<sup>2</sup>. Although there is no formal DCGL for removable contamination, all sample results were less than the 10 percent value (257 dpm/100 cm<sup>2</sup>) used in the derivation of the site-specific DCGL. No soil samples were collected as part of the Phase 1 final status survey.

The Phase 1 FSSR provided documentation demonstrating that the survey instrumentation was calibrated and functionally checked on a daily basis. For quality control, the contractor collected over a hundred-additional smear and fixed-point measurements, equivalent to approximately 10 percent of the total number of sample points collected as part of the final status survey. None of the samples collected for quality control reasons exceeded the surface contamination DCGL.

The NRC staff reviewed the FSSR data, in part, to determine if the contractors collected a sufficient number of samples in each survey unit. The DP specified that at least 15 fixed-point samples will be collected in each survey unit. The actual number of static measurements (and associated swipe samples) ranged from 24 to 125, depending on the survey unit. In summary, the contractor collected a sufficient number of samples in each survey unit.

The contractors developed 21 survey units. Seventeen survey units were included in the Phase 1 final status survey. Two of the remaining survey units were considered part of the baseline survey (Room 3D, Room 3E, and the floor of Cell 4). The remaining two survey units included the soil underneath and adjacent to Cells 5 and 6. These two survey units will be included in the Phase 2 final status survey. Additional survey units will be developed, as needed, during Phase 2 activities.

The scope of the Phase 1 final status survey did not include surveys below the floor slab; these areas will be final surveyed during building demolition. However, the contractor collected some data from pipe vaults located below the surface. This information was collected as part of the baseline (characterization) survey. The contractors will systematically survey these areas during demolition activities. If the results are below the DCGL and if the survey design meets the requirements of the DP, the contractor will consider the survey results as final status survey results. If the results indicate that remediation will be necessary, the contractor will remediate the area as needed prior to the final status survey.

The licensee included the occupational air sampling results in the Phase 1 FSSR. The contractor collected 34 air samples over 23 working days. The combined dose of all samples was calculated to be 7.41 derived air concentration-hours, which correlates to 18.5 millirem of total dose. This calculated value was well below the occupational dose limit of 5,000 millirem per year as specified in 10 CFR 20.1201(a). During high-risk activities involving airborne radioactive and hazardous materials, the workers wore respirators that would have resulted in lower internal doses than calculated based on the air sampling results.

In addition, the licensee's staff conducted an independent confirmatory survey and subsequent data analysis between February 2018 and June 2018. The confirmatory survey was included as an attachment to the licensee's September 20, 2018, letter. The survey included floor scans, static measurements, and swipe sampling. The floor scans were conducted in Cells 5 and 6 to identify any locations with elevated count rates for fixed point and swipe sampling. Based on the scan survey results, no additional fixed/swipe sample measurements were necessary. Fixed-point and swipe sample measurements were collected at 83 locations. All fixed-point measurements were less than the NRC-approved DCGL. All swipe sample results were less than 10 percent of the DCGL.

#### NRC Inspection and Confirmatory Survey

The NRC conducted a routine inspection intermittently between December 2017 through December 2018 to observe the performance of decommissioning activities at Robins AFB. The inspection was documented in NRC Inspection Report 030-28641/2017-007 dated May 3, 2019 (ADAMS Accession No. ML19095B598). The inspectors concluded that the licensee and its contractors conducted remediation activities at Building 181 in accordance with the NRC-approved DP.

The inspectors conducted a confirmatory survey to verify the results of the licensee's final status survey. The confirmatory survey included selected surface scans, fixed-point measurements, and removable contamination measurements. The highest fixed-point measurement was 256 dpm/100 cm<sup>2</sup> (beta contamination) with a DCGL of 2,570 dpm/100 cm<sup>2</sup>. No detectable radioactivity was identified on the swipe samples. The confirmatory survey results were less than the NRC-approved release criteria, suggesting that the licensee's decommissioning and final status survey activities were effective.

## Status of Waste

Section 4 of the DP provides the general instructions for waste disposals. The DP states that items shall be disposed as low-level radioactive waste and/or mixed waste, depending on the results of waste characterization samples. By Memorandum dated April 11, 2019 (ADAMS Accession No. ML19121A541), the licensee submitted the shipping manifests and related paperwork demonstrating that waste collected during Phase 1 decommissioning had been shipped offsite for disposal in 2018. The waste included packaged radioactive material, hazardous material (lead and asbestos), and mixed waste.

## Phase 2 Decommissioning and Radiological Surveys

Regulation 10 CFR 30.36(j) states, in part, that as a final step in decommissioning, the licensee shall conduct a radiation survey of the premises where the licensed activities were carried out and will document the results in a survey report. The licensee is expected to submit the Phase 2 FSSR to the NRC after completion of Phase 2 decommissioning. The combination of the Phase 1 and Phase 2 FSSRs, in conjunction with confirmatory surveys completed by the NRC and licensee, should sufficiently demonstrate that the site meets the release criteria established in 10 CFR 20.1402. Until the NRC has reviewed and approved the Phase 2 FSSR, and the NRC has been given an opportunity to conduct a Phase 2 inspection and confirmatory survey, the building footprint around and under Cells 5 and 6 cannot be released for unrestricted use.

## Conclusions

The NRC staff have reviewed the licensee's proposed DP addendum and Phase 1 FSSR. The addendum provides instructions describing how the licensee and its contractors will conduct the remaining radiological surveys during and after building demolition. The Phase 1 FSSR provides sufficient information to demonstrate that the 17 survey units that were final surveyed as part of the Phase 1 decommissioning meet the DCGL specified in the NRC-approved DP. Based on this review, the NRC staff has determined that the licensee has demonstrated that the portions of Building 181 specified in the FSSR meet the radiological criteria specified in 10 CFR Part 20, Subpart E, for license termination. The NRC staff recommend approval of both documents, to allow the licensee to release portions of Building 181 for unrestricted use and to conduct Phase 2 decommissioning work.

APPROVAL OF DECOMMISSIONING PLAN ADDENDUM AND FINAL STATUS SURVEY  
 REPORT FOR ROBINS AIR FORCE BASE, GEORGIA, - DATED JUNE 3, 2019

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