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

July 16, 2024

MEMORANDUM TO: Docket File 030-28641

THROUGH: Gregory G. Warnick, Chief
Decommissioning, ISFSI, and Operating Reactor Branch
Division of Radiological Safety and Security

Signed by Warnick, Gregory on 07/16/24

FROM: Stephanie G. Anderson, Senior Health Physicist
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SUBJECT: APPROVAL OF PHASE 2 FINAL STATUS SURVEY REPORT FOR BUILDING 181 AT ROBINS AIR FORCE BASE, GEORGIA

By email dated March 19, 2024 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML24190A103), the Department of the Air Force (the licensee) requested U.S. Nuclear Regulatory Commission (NRC) approval of the phase 2 final status survey report (FSSR) dated February 26, 2024 (ML24080A439). The FSSR provides the results of the final status survey following completion of phase 2 decommissioning activities at building 181 at Robins Air Force Base, Warner Robins, Georgia.

In summary, DIOR branch staff recommends approval of the FSSR. The document provides sufficient information to demonstrate that the facility meets the radiological criteria for unrestricted use as specified in Title 10 to the *Code of Federal Regulations* (10 CFR) Part 20, Subpart E, Radiological Criteria for License Termination. The approval of the FSSR will allow the licensee to apply for an amendment to Materials License 42-23539-01AF to request removal of the building from Condition 20.K of the license.

An environmental assessment of this license amendment was not necessary. The NRC conducted a comprehensive environmental assessment to support the approval of the original decommissioning plan. The work as described in the phase 2 FSSR did not alter the footprint of the original work or conclusions as presented in the NRC's environmental assessment dated September 19, 2017 (ML17207A232).

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).

Docket No. 030-28641
License No. 42-23539-01AF

cc:
D. Matos, Georgia Department of Natural Resources

Enclosure:
Safety Evaluation Report

APPROVAL OF PHASE 2 FINAL STATUS SURVEY REPORT FOR BUILDING 181 AT ROBINS AIR FORCE BASE, GEORGIA - DATED JULY 16, 2024

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DOCUMENT NAME: APPROVAL OF PHASE 2 FINAL STATUS SURVEY REPORT FOR BUILDING 181 AT ROBINS AIR FORCE BASE, GEORGIA
ADAMS ACCESSION NUMBER: **ML24192A219**

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Safety Evaluation Report

Background

Building 181 was constructed in the 1940s and was used for testing aircraft engines. The building footprint was approximately 70,000 square feet (6,500 square meters) and was divided into 12 separate cells. Cells 5 and 6 were later repurposed for removal of depleted uranium (DU) oxidation products from counterweights that were used in various aircraft. The radioactive material was possessed by the licensee under its Master Materials License 42-23539-01AF. The licensee issued permit GA-00462 to Robins Air Force Base (AFB) for the possession of radioactive material. During its historical review, the licensee could not easily ascertain when activities involving radioactive material were conducted under the license and associated permit.

A radiological scoping survey was conducted after operations involving DU permanently discontinued. The licensee's contractor could not clearly ascertain the date of this initial survey. A second scoping survey was conducted in August 2015. Both surveys identified the presence of DU contamination in cells 5 and 6 and a room between the two cells.

A characterization survey was conducted in late-2015 to delineate the extent of contamination in the building. The survey results indicated that both cells 5 and 6 required remediation. Lead-based paint was identified in the area. The survey also identified contaminated carpet, tiles, and equipment. The 2015 surveys did not include the soil under the building. The information gained from the 2015 surveys was used to help develop the decommissioning plan (DP) and site-specific derived concentration guideline levels (DCGLs).

The licensee submitted its proposed DP to the NRC in March 2017 (ML17094A481) explaining how it would decommission the building. A revised DP was submitted in June 2017 (ML17167A420). The NRC conducted a detailed review of the proposed DCGLs, DP, and final status survey plan. The NRC approved the DCGLs by memorandum dated June 29, 2017 (ML17166A370, not publicly available). The NRC issued a safety evaluation report by memorandum dated September 19, 2017 (ML17193A222). In addition, the NRC developed an environmental assessment to support the licensing action (ML17207A232). The NRC approved the DP, as amended, in September 2017 (ML17271A158). The approval allowed the licensee to commence with decommissioning of building 181.

The decommissioning process was expected to be conducted in two phases. Phase 1 included decontamination and removal of contaminated material necessary to support unrestricted release of the structure for demolition and disposal. The licensee's contractor conducted phase 1 decommissioning and associated final status surveys in 2017-2018 in accordance with the instructions provided in the NRC-approved DP.

During decommissioning, the contractor encountered problems that were not foreseen during development of the original DP including discovery of a subsurface vault. The licensee and its contractor developed an addendum to the DP to describe the planned approach to conduct phase 2 decommissioning and associated final status survey work during and after controlled demolition of the building. The phase 1 final status survey report (FSSR) was submitted to the NRC in September 2018 (ML19151A642), and the addendum was submitted to the NRC in January 2019 (ML19031C834). The NRC subsequently approved both the addendum and phase 1 FSSR in June 2019 (ML19134A359).

Phase 2 included the decommissioning work and radiological surveys necessary to support the unrestricted release of the site including soil and building material below the floor slab. An early

draft final phase 2 FSSR was submitted to the NRC in January 2020 (ML20035C476). This report described the phase 2 survey measurements that had been completed at that time. This report was reviewed as part of the 2019-2020 inspection as described below.

The work was delayed between 2020-2022 due to funding issues and the COVID-19 pandemic. The NRC was notified in January 2023 that the work was about to resume (ML23044A036). A status update and proposed schedule were provided to the NRC in June 2023 (ML23213A078). At that time, the work planned for the remainder of 2023 included remediation of lead-based paint and asbestos, followed by demolition of the remainder of the building. The soil beneath the building would be tested after removal of the substructure. All activities were to be performed under the regulatory authority of the contractor's NRC radioactive materials license (17-29441-01) and a project-specific license agreement between the licensee and the contractor. The decommissioning project was subsequently completed in late-2023.

After conclusion of the phase 2 final status survey, the site was backfilled, graded, and revegetated. All waste, equipment, and materials were removed or demobilized from the site.

NRC Review of Phase 2 FSSR

The licensee submitted the final phase 2 FSSR to the NRC by email dated March 19, 2024 (ML24190A103). The FSSR was dated February 26, 2024 (ML24080A439). This FSSR described the remainder of the phase 2 radiological survey activities at building 181 dating back to the end of phase 1 work.

The final status survey was divided into three survey units. The survey units are described in the addendum to the DP. Survey unit FSS-10 included the cell 6 subsurface vault. Survey unit FSS-15 included the soil under cells 5 and 6. Finally, survey unit FSS-16 included the soil adjacent to cells 5 and 6. Portions of FSS-10 were designated as class 1 survey units in accordance with the guidance provided in NUREG-1575, revision 1, "Multi-Agency Radiation Site Survey Implementation Manual (MARSSIM)." The remainder of the survey units were designated as class 3 survey units.

Per MARSSIM, the NRC-approved DP, and the addendum to the DP, radiological scanning was required for 100-percent of class 1 surfaces and 10-percent of class 3 surfaces. A minimum of 15 direct static measurements were required to be collected in each survey unit. Swipe samples for removable contamination were required at each measurement location. For the areas with soil, the minimum number of required samples was nine per applicable survey unit. For accessible soil surfaces, the contractor conducted gamma walkover surveys using a field instrument for detection of low energy radiation (FIDLER).

The contractor collected background data at a nearby reference area. The contractor collected nine soil samples and nine surface survey measurements. In addition, the contractor collected one duplicate sample from each set of samples. The median of the measurements was selected as the background value. For surface scans, the contractor established an investigation level of twice background.

Section 5.0 of the FSSR provided the survey results. Survey unit FSS-10 consisted of three subareas, survey unit FSS-15 consisted of one area, and survey unit FSS-16 consisted of two subareas. In summary, the data indicate that all final status survey measurements were less than the NRC-approved surface DCGL of 2,570 disintegrations per 100 square centimeters (dpm/100 cm^2) and soil DCGL of 4.6 picocuries per gram (pCi/g):

- FSS-10A was a class 1 survey unit. The survey included 24 surface grids. Fixed-point measurements and smear samples were collected in every grid. The maximum total contamination measurement was 963 dpm/100 cm^2, while the maximum removable contamination was 33 dpm/100 cm^2.

- FSS-10B was a class 3 survey unit with 298 surface grids. The contractor scanned 10-percent of the grids and collected fixed and removable measurements from 45 grids. The maximum total contamination measurement was 845 dpm/100cm^2, while the maximum removable contamination was 81 dpm/100 cm^2.

- FSS-10C was a class 3 survey unit with 114 surface grids. The contractor scanned 10-percent of the grids and collected fixed and removable measurements from 19 grids. The maximum total contamination measurement was 832 dpm/100 cm^2, while the maximum removable contamination was 51 dpm/100 cm^2.

- FSS-15 was a class 3 survey unit consisting of surface soil. The contractor conducted a gamma walk-over survey and collected nine soil samples, two judgmental soil samples, and one duplicate sample. The walkover survey included 18,436 data points. Three values exceeded the investigation level. In response, the contractor collected two judgmental samples as noted above. All 12 soil sample results were less than 1 pCi/g above background.

- FSS-16A was a class 3 survey unit consisting of concrete slabs. Sixteen fixed point and removable contamination samples were collected. The maximum total contamination measurement was 660 dpm/100 cm^2, while the maximum removable contamination measurement was 51 dpm/100 cm^2.

- Finally, FSS-16B was a class 3 survey unit consisting of soil. The area was initially identified as impacted, and additional remediation was conducted. The classification was changed to class 1 as a precaution. The area was surveyed with a walkover scan survey with 2,536 data points. No value exceeded the investigation level of twice background. Twelve post-remediation soil samples plus one duplicate sample were collected. The maximum sample result was 2.138 pCi/g.

As documented in Section 7.0 of the FSSR, all phase 2 final status survey measurements and soil sample results were less than the building surface DCGL of 2,570 dpm/100 cm^2 and soil DCGL of 4.60 pCi/g. The criteria for unrestricted radiological release established in the DP had been met.

The data collected during phase 2 activities and associated analyses support the removal of building 181 from the Robins AFB radioactive materials permit and removal from the NRC license. As noted below, all wastes associated with this project have been removed from the site. The contractor concluded that no further field action was required regarding building 181, and the project was considered complete pending approval of the phase 2 FSSR.

NRC Inspections and Confirmatory Surveys

The NRC conducted three inspections during the decommissioning project. The first inspection was conducted between December 2017 and December 2018 (ML19095B598). The inspector

observed phase 1 decommissioning and conducted selected confirmatory measurements. The second inspection was conducted in December 2018 and included a review of the base permit (ML19036A865). The third inspection included limited confirmatory measurements in July 2019 and an in-office review of the draft phase 2 FSSR in February 2020 (ML20127J012 and ML20035C476). No findings of significance or non-compliances were identified during the three inspections. The NRC did not conduct an inspection during final portion of the phase 2 decommissioning work.

A verification survey (equivalent to a confirmatory survey) was conducted in building 181 in February 2018 by staff from Wright-Patterson Air Force Base (ML19220A478). The verification survey included fixed point measurements and swipe sampling. All static measurements and swipe samples were below the respective DCGLs. This was the only verification survey conducted by the licensee's staff.

Status of Wastes

The wastes included radioactive, non-radioactive, and hazardous wastes. The media included building debris, materials, and equipment (M&E), and wastewater.

All hazardous wastes were removed from the facility prior to phased demolition. The building infrastructure, concrete rubble, and other demolition debris were disposed of as a local municipal landfill as construction debris. The debris was screened periodically by technicians to validate non-radiological classifications. Dump trucks hauling debris were screened for elevated dose rate prior to leaving the site. No indication of radiological contamination was discovered during the demolition project.

Prior to demolition of Cells 5 through 8, all remaining, non-radioactive, hazardous materials (e.g., asbestos, lead paint, PCB items, mercury switches) were collected, packaged, and staged for release to the Robins AFB Environmental Group. All wastes underwent due diligence radiological surveys to validate classification as non-radiological. Non-radioactive hazardous wastes were shipped for disposal in 2020 (see Appendix C of the FSSR).

The radiologically contaminated wastes generated during phase 1 decontamination efforts were shipped for disposal at an off-site, licensed facility in 2018. Certificates of waste disposal were provided by email dated July 2, 2024 (ML24190A091).

The water from the building sump did not contain depleted uranium contamination, met the approved release criteria for discharge, and was transferred to the base for treatment as wastewater.

The M&E were radiologically surveyed in accordance with the contractor's procedures. Health physics technicians performed scanning, static, and smear measurements on accessible surfaces to assess the radiological conditions of equipment and material destined for release.

Perimeter air monitoring for radioactive airborne contamination was performed throughout the demolition of the facility, and no samples exhibited concentrations exceeding the regulatory limits for airborne releases. Material and equipment surveys were performed throughout the demolition process to ensure radioactive contamination was not present on previously inaccessible surfaces or equipment.

Conclusions

The FSSR provides sufficient information to demonstrate that building 181 at Robins Air Force Base was final surveyed in accordance with instructions provided in NRC guidance documents. The results of the survey demonstrate compliance with the criteria specified in 10 CFR Part 20, Subpart E, for release for unrestricted use. The NRC staff recommend approval of the FSSR. This will allow the licensee to free-release the property for unrestricted use, request amendment of the license to remove the site from the license and terminate the site-specific permit.