Annual Report to the Defense Nuclear Safety Board on the F-Area Nuclear Material Storage Building (235-F)

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August 15, 2024

Annual 235-F Report

Purpose:

On November 02, 2021, the Defense Nuclear Facilities Safety Board (DNFSB) issued a letter to the Secretary of Energy regarding Building 235-F located at the Savannah River Site (SRS). The letter requested that the Department of Energy (DOE) provide a status update to five questions on an annual basis:

1) Progress made to deactivate and decommission Building 235-F
2) Results of radiological surveys and inspections to verify that contamination is not spreading
3) Status and schedule of the final end-state determination with regulatory authorities
4) Results of structural integrity inspections, and any corrective actions identified and implemented from these inspections
5) Any changes to the status of the E-5 ventilation system and sand filter, including any maintenance activities performed

1) Progress Made to Deactivate and Decommission Building 235-F

Deactivation was completed in February 2023 and the building is in long-term safe storage awaiting decommissioning with minimal surveillance and maintenance.

The current Documented Safety Analysis (DSA) supports the facility's surveillance and maintenance state and will continue to do so until changes are made to the facility; at which time design will follow the change process to ensure the DSA is updated and approved to document necessary changes.

Decommissioning activities for FY24 and FY25 include planning and design, update to the Safety Basis Documents to address decommissioning, and identification of technical resources to develop a ventilation strategy, grouting strategy, and demolition and removal of ancillary equipment adjacent to 235- F. The project schedule is dependent upon an approved baseline and receipt of funding. Currently design is scheduled to begin in FY25, grouting is scheduled to begin in late FY27 with field work completion in FY29. Project closeout is planned for FY30.

Demolition and Removal (D&R) of 235-F exterior ancillary equipment and facilities started in FY23 and is planned until FY25. The scope includes but is not limited to asbestos abatement and removal of exterior conduit, piping, and ductwork, and D&R of office trailers, cooling tower, electrical substation, diesel generator/components and security entry point. D&R of the ancillary equipment and facilities will support eventual decommissioning of 235-F.

FY24 Demolition & Removal Photos

Cooling Water Lines-Before

During

After

Roof Top Cameras, Lighting, Junction Boxes and Ventilation Supply Fans Ductwork-Before And After

FY24 To-Go D&R Scope

235-F Diesel Generator

607-3F Sanitary Lift Station

235-1F Refrigeration Building

235-2F Refrigeration Building

2) Results of Radiological Surveys and Inspections

- Radiological Protection Personnel perform routine surveys of Building 235-F at entry as part of the work group.

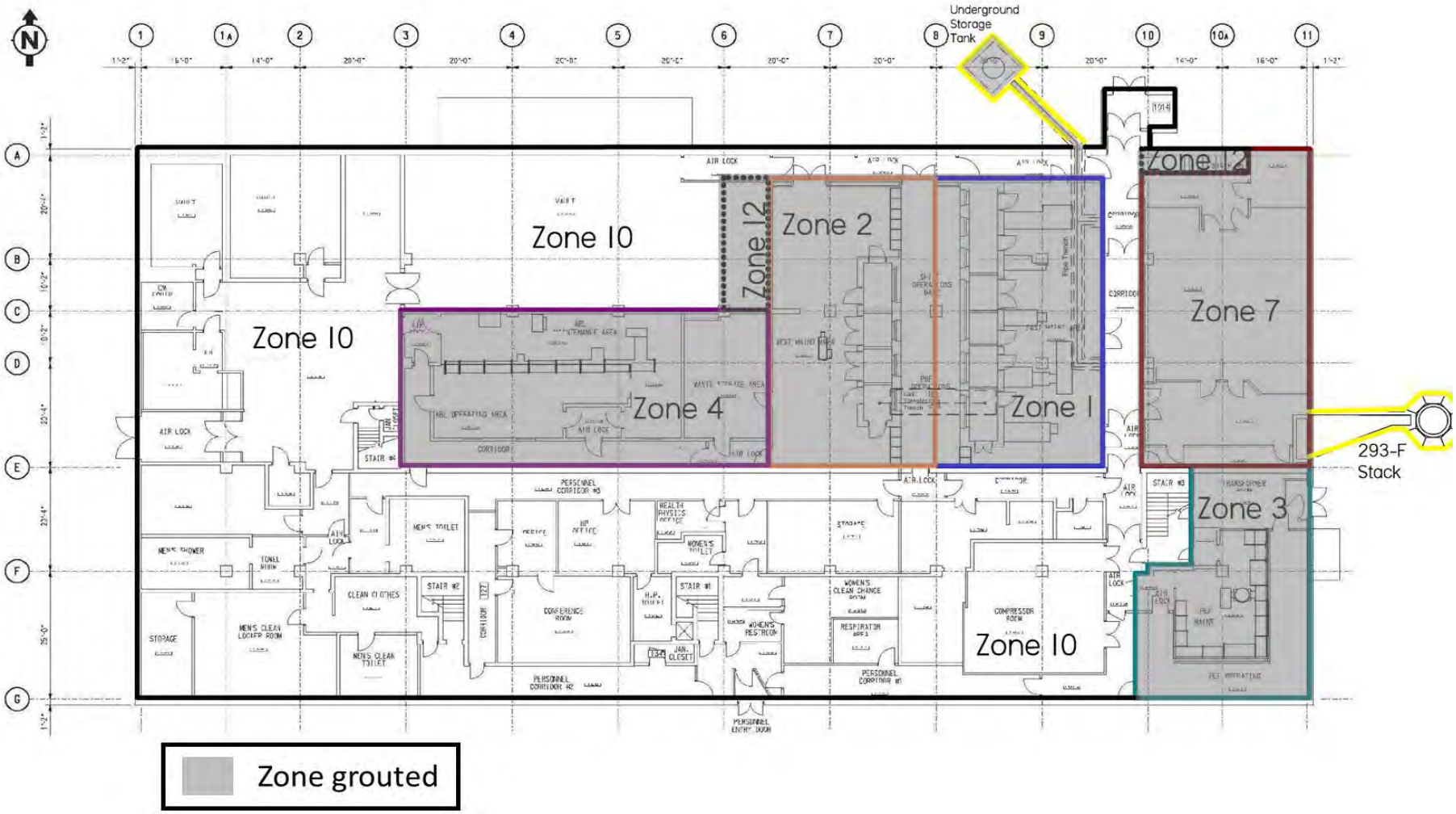
- May 2024 - Radiological Protection personnel surveyed the facility during entry for the Level III lock inspection. No spread of contamination was found.

3) Status & Schedule for Final End State Determination

The Regulatory Process for End-State Determination is complete and includes approval from both the U.S. Environmental Protection Agency (EPA) and the South Carolina Department of Environmental Services (SCDES) for in-situ decommissioning.

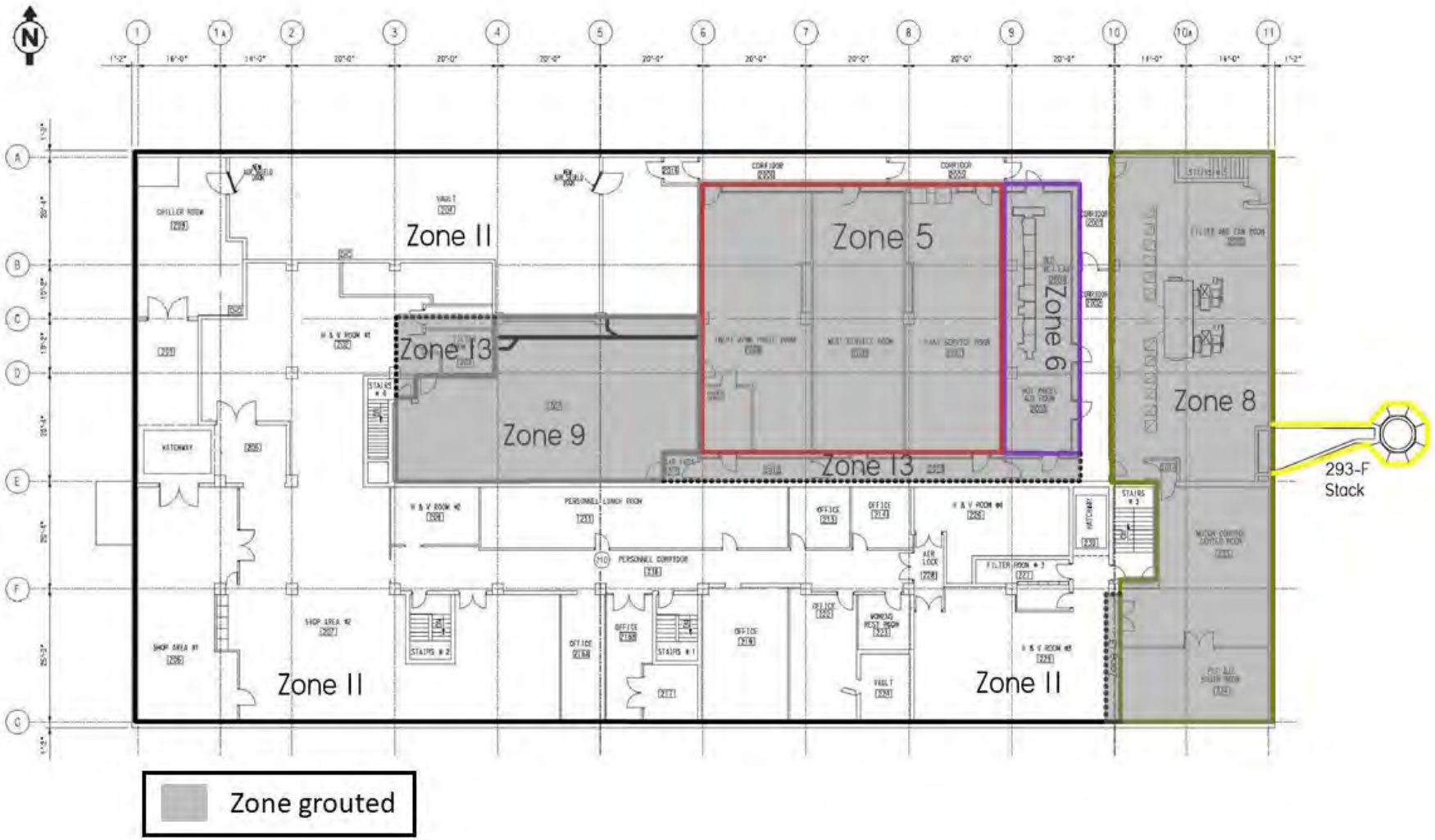
235-F Planned Grouting End State

First Floor Plans



235-F Planned Grouting End State

Second Floor Plans



4) Structural Integrity Inspections & Actions Identified and Implemented

- **Structural Integrity Inspections**

  The structural integrity inspections are performed every 5 years. **The last inspection conducted in February 2022 found no conditions requiring repair.** The inspection results are documented in the 235-F Facility 2021 SIP Report (T-ESR-F-00036).

  The next inspection is scheduled to be completed by February 2027.

- **Enclosure Integrity Inspections**

  The 235-F Enclosure Integrity Program (EIP) is described in the Safety Basis, AC 5.7.2.15. The EIP Program consists of radiological surveys, visual inspections, and smoke leak testing of the enclosures to verify the integrity of the structure and the pressure boundary.

An EIP was performed in the facility (Actinide Billet Line (ABL), Old Metallurgical Laboratory (OML), Plutonium Experimental Facility (PEF), and Plutonium Fuel Form (PuFF)) in parallel with the Level III Lock Inspection entry on May 20, 2024. This inspection was performed as a recommendation from the last EIP Engineering Evaluation in May 2023. **The radiological values from surveys performed throughout the building were similar to the March 2023 inspection. Radiological surveys found no spread of contamination during entry.**

Two items were identified during the inspection. The PuFF Cell 8 manipulator thru-tube has minor in-leakage, and an in-leak associated with the access port on PEF Hood 2. The PEF Hood 2 has negligible holdup quantities based on assay results. The access port and PEF Hood 2 were never operational. Facility engineering is not recommending immediate repairs be made to either of the two items during the inspection. **Neither is impacting the differential pressure readings on the enclosures and no increase in contamination was found at the locations.** The 2024 inspection is documented in SRNS-E1740-2024-00004, 235-F Enclosure Integrity Program Inspection Report.

The current planned periodicity of inspections is once a year with the next inspection planned by March 2025.

5) E-5 Ventilation System and Sand Filter

The E-5 Fans draw a vacuum on the process areas of Building 235-F. There were no changes to the E-5 Ventilation System and Sand Filter Status. The E-5 Fans have continued to operate with no issues during the past year. One fan is in standby when the other fan is in operation. The fan run times are equalized by rotating the operation. Ventilation readings are taken daily. Periodic preventive maintenance is conducted, which includes vibration readings, belt changes, and lubrication.

On May 7, 2023, maintenance on the E-5#2 Fan belt was performed during rotation from E-5#1 Fan. Also in May 2023, replacement of the Pressure Safety Valve (PSV) on the Backup Nitrogen System for the Damper Operations of the E-5 Fans was performed. No other maintenance was performed in the last year.

The 292-2F Fan House and 294-2F Sand Filter are inspected every five years for structural integrity. The last inspection was performed in July of 2022, and is documented in the 2022 Structural Integrity Program Inspection Report for 294-2F (T-ESR-F-00040). The Filter Media was found to perform its design function. The next inspection is scheduled to be completed by July 2027.

The Sand Filter efficiency is checked every 18 months. The last test was performed on March 20, 2024, and the Filter Media passed with a 99.99 percent efficiency rating. The Fans and the Sand Filter remain in good working order and will remain functional while Building 235-F is in long term safe storage and decommissioning.

Conclusion

- DOE completed deactivation of the 235-F Facility in February 2023. Radiological Survey Results verify that contamination is not spreading, and Structural Integrity and Ventilation System/Sand Filter Inspections conclude that systems are performing as required.

- The SCDES and the EPA has approved the in-situ decommissioning end state of the 235-F Facility.

- Responsibility for the facility has been transferred to the Office of the Assistant Manager for Infrastructure and Environmental Stewardship (AMIES) for continued surveillance and maintenance, and decommissioning activities.

- The Office of the Assistant Manager for Nuclear Material Stabilization personnel will continue to support AMIES, as requested, during the surveillance and maintenance, as the plans and designs for the decommissioning are implemented.

- The facility confinement is effective with no spread of contamination.

Q & A Session