

Decommissioning Project Final Report 235-1F & 235-2F, Refrigeration Buildings Nos. 1 & 2.

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HISTORY OF REVISIONS

Revision	Date	Revised Section	Change
0	07/30/2025	N/A	Initial Issue

LIST OF ABBREVIATIONS AND ACRONYMS

ACM	Asbestos Containing Material
DOE-SROO	U.S. Department of Energy - Savannah River Operations Office
EPA	U.S. Environmental Protection Agency
EC&ACP	Environmental Compliance & Area Completion Projects
FAI	Final Acceptance Inspection
FDE	Facility Decommissioning Evaluation
ft.	foot, feet
GCO	Generator Certification Official.
MCC	Motor Control Center
PACM	Presumed Asbestos Containing Material
S&M	Surveillance and Maintenance
SCDES ¹	South Carolina Department of Environmental Services
SRNS	Savannah River Nuclear Solutions, LLC
SRS	Savannah River Site
yd ³	cubic yard, cubic yards

¹ South Carolina Department of Environmental Services (SCDES) was known as South Carolina Department of Health and Environmental Control (SCDHEC) prior to July 1, 2024, during the demolition of 235-1F and 235-2F.

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1.0 SUMMARY

The Refrigeration Buildings Nos. 1 & 2, 235-1F and 235-2F, located on the southeast corner outside of 235-F within F-Area of the Savannah River Site (SRS), were built in the mid-1970s. They contained chillers and support systems for providing chilled and cooling water. Building 235-1F was 950 sq. ft. prefabricated metal structure housing two (2) chillers, two (2) chilled water pumps, a 120-gallon horizontal refrigerant storage tank, an expansion tank, a steam reducing station, two (2) Motor Control Centers (MCC), a water monitoring and chemical injection system, a refrigerant monitor system, a safety shower, and distribution piping. Building 235-2F, a 475 sq. ft. prefabricated metal structure, contained one (1) chiller, three (3) chilled water pumps, a make-up water tank, a refrigerant monitor system, a safety shower, and distribution piping. The chilled water system used a 35% mixture of Ethylene Glycol, and the cooling water system contained corrosion inhibitors and biocide.

A baseline asbestos survey conducted on September 21, 2022, revealed the presence of both non-friable and friable asbestos in the buildings. All Asbestos Containing Material (ACM) was removed and properly disposed of by certified asbestos abatement personnel, adhering to all local, state, and federal regulations.

The refrigeration buildings were selected for decommissioning using the Simple Model as per the Facility Disposition Manual 1C, Procedure 501, and met the criteria of Other Industrial, Simple Model buildings as documented in the Facility Decommissioning Evaluation (FDE) (Reference 8.01). There was no evidence of contamination within the buildings, negating the need for a final verification survey.

Environmental Compliance and Area Completion Projects (EC&ACP) and Subcontractor CTI and Associates (CTI) completed the Dismantlement and Removal (D&R) process, which involved demolition of the buildings down to, but not including, the concrete slabs excluding the handrail protecting the storm drain. The completion of this process was verified through the Final Acceptance Inspection (FAI) on November 18, 2024 (Reference 8.02).

2.0 PURPOSE AND SCOPE

The purpose of this report is to document what was done to the facility as a part of the decommissioning project and the condition the facility was left in at the completion of the project. The requirement for this report is found in the Facility Disposition Manual 1C, Procedure 506, "Preparing a Decommissioning Project Final Report." Interactions with regulatory agencies, South Carolina Department of Environmental Services (SCDES) and U.S. Environmental Protection Agency (EPA), for concurrence on this report are governed by "Core Team Protocol for Review and Concurrence on Facility Decommissioning Evaluations and Decommissioning Project Final Reports" (Reference 8.03).

2.1 Facility Description

Refrigeration Buildings 235-1F and 235-2F, built in the mid-1970s, contain three chillers and support systems for the supply of chilled water and cooling water. The chilled water was mixed with 35% Ethylene Glycol for Building 235-F air handling units. The cooling water from the chiller units to the cooling tower contained corrosion inhibitors and biocide.

Building 235-1F is a 950 square foot (ft.) prefabricated metal building that contains two (2) chillers, two (2) chilled water pumps, one (1) 120-gallon horizontal refrigerant storage tank, one (1) expansion tank, a steam reducing station, two (2) Motor Control Centers (MCCs), the water monitoring and chemical injection system, one (1) refrigerant monitor system, one (1) safety shower, and the distribution piping.

Building 235-2F is a 475 square ft. prefabricated metal building with one (1) chiller, three (3) chilled water pumps, one (1) make up water tank, one (1) refrigerant monitor system, one (1) safety shower, and the distribution piping.

A baseline asbestos survey of the refrigeration buildings was completed on 9/21/2022 stating existence of non-friable and friable asbestos. All Asbestos Containing Material (ACM) shall be removed and properly disposed of by certified asbestos abatement personnel in accordance with all local, state, and federal asbestos abatement regulations prior to the decommissioning of the 235-1F and 235-2F buildings. (Reference 8.01)

There are no ancillary structures. Before and after photos are included as Appendix A.

2.2 New Facility Information

SRS identified no new facility information during or resulting from the facility decommissioning.

3.0 DECOMMISSIONING MODEL APPROVAL

The facility was decommissioned using the Simple Model as described in Facility Disposition Manual 1C. The selection of the model was based on information reported in the FDE (Reference 8.01). Multiple walkdowns were performed by Savannah River Nuclear Solutions, LLC (SRNS) F-Area and Environmental Compliance & Area Completion Projects (EC&ACP) groups (i.e., Engineering, Project Management, Safety, Industrial Hygiene, Environmental Compliance Authority, etc.). A facility walkdown, including an overview, was not pre-scheduled with SCDES and EPA. The FDE submittal letter stated that SCDHEC and EPA could contact U.S. Department of Energy Savannah River Site Operations (DOE-SR) if the regulatory agencies were interested in an overview and field visit.

The FDE received SCDES concurrence of the Simple Model on January 25, 2024 and approval of comment response on February 20, 2024, and EPA concurrence on January 4, 2024 (References 8.04 and 8.05, respectively).

4.0 DECOMMISSIONING ACTIVITIES COMPLETED

235-1F and 235-2F, Refrigeration Buildings Nos 1 & 2, were demolished to, but not including the concrete slab. Stains identified on the concrete slab (lubricant oil under chiller units) were pressure washed and/or cleaned with an effective surfactant (e.g., BioSolve™) as part of the decommissioning activities for this facility. All interfacing utilities were isolated, disconnected, and plugged rendering the building cold and dark. All concrete slab penetrations and protrusions were cut off flush with the slab, plugged, and grouted in accordance with “Site D&D Policy on Decommissioning End Points for Slabs, Pits, Basements, and Basins” (Reference 8.06). The slab will pose no additional risk to Site workers. No additional barricades or sloping are required.

The proposed removal of the storm drain handrail was reversed when it was decided by the Project Team that the handrail removal would present a hazard to personnel working around 235-F and future decommissioning efforts in the 235-F complex.

5.0 WASTE MANAGEMENT

5.1 Salvage and Reuse

No material was salvaged or reuse in this decommissioning project.

5.2 Waste Disposal

See Table 1 for a list of all wastes generated during decommissioning. The decommissioning of scope G-SOW-F-00380 (Reference 8.07) containing the 607-3F Sewage Lift Station, 235-1F & 235-2F Refrigeration Buildings, and equipment removal of 235-F Supply Fans (1S1/2S1) all being done together. The waste generated was combined into one list as the aforementioned facilities were decommissioned as one project. 235-1F and 235-2F had ACM with wall mastic and piping insulation (References 8.8, 8.9, and 8.10), but no identified PACM. The totality of this project scope is the waste volume identified by the GCO group at SRNS.

Table 1: Waste Generation

Waste Classification	Waste Source	Disposed to	Total Volume
LLW	N/A	N/A	N/A
ACM	235-1F and 235-2F Structure walls and pipe insulation for ACM.	3 Rivers Landfill	30 yd ³ Friable ACM 120 yd ³ Non-Friable ACM
PCB	N/A	N/A	N/A
CSR	Demolition of structures.	C&D Landfill.	150 yd ³

LLW – Low-level radioactive waste
 N/A – Not applicable
 ACM – Asbestos Containing Material
 GCO – Generator Certification Official

PCB – Polychlorinated biphenyl
 CSR – Clean Structural Rubble
 PACM – Presumed Asbestos Containing Material

6.0 FINAL FACILITY CONDITION

6.1 Final Facility Condition and Remaining Hazards

Decommissioning activities were completed by CTI and Associates, Inc. Any remaining holes were filled to the top of elevation with grout. All interfacing utilities were isolated, disconnected, and plugged. All coarse debris was removed from the remaining slab. All concrete slab penetrations greater than 2 in. in diameter were cut off flush with the slab, plugged, and grouted in accordance with Reference 8.06. Slab protrusions were cut off flush with the slab. Any stains identified on the concrete slab during decommissioning were pressure washed and/or cleaned as much as reasonably achievable with an effective surfactant. The handrail protecting the storm drain along the southern sidewalk outside of 235-2F was not removed because of a Project Team decision for safely decommissioning 235-F. No remaining hazards exist from these structures.

6.2 Risk Assessment Summary

A review of the existing characterization data, process/building history, sample data and walkdowns of the facility prior to decommissioning supported the determination that these buildings 235-1F and 235-2F met the criteria of Clean Building, Simple Model as described in Manual 1C, Procedure 501.

This decision was supported by the information reported in the FDE (Reference 8.01). No chemical or hazardous radioactive materials were associated with this structure other than commonly used materials of construction, which were managed as waste during demolition in accordance with established Savannah River Site (SRS) practices. The amounts of such materials were described in Section 5.2 of this report. Since there was no

evidence of contamination on the slab before demolition or on the facility remnants after structure demolition, no final verification survey was required.

6.3 Post Decommissioning Requirements

The remaining concrete slab is free of physical, chemical, and radiological hazards; therefore, it needs no further decommissioning action. No surveillance and maintenance (S&M) activities were identified for the remaining slab because it poses no threat to human health or the environment while awaiting area completion.

7.0 CONCLUSIONS/RECOMMENDATIONS

235-1F and 235-2F, Refrigeration Buildings Nos 1 & 2 for 235-F, were demolished, and the foundation has been left in place. The remaining structure is free of physical, chemical, and radiological hazards; therefore, it needs no further decommissioning action. No S&M activities were identified for the remaining structure because it poses no threat to human health or the environment while awaiting area completion. The storm drain handrail remains in place and is in good condition. All decommissioning activities have been completed, including waste disposal in accordance with federal and state regulations.

In accordance with the “Memorandum of Agreement for Achieving an Accelerated Cleanup Vision at the Savannah River Site,” this report will be maintained as a record for reference and use in the 235-F Area Completion, Record of Decision. To ensure facility remnants are addressed during the completion process, Buildings 235-1F and 235-2F should be added to Federal Facility Agreement for the Savannah River Site Appendix K.2, D&D Facilities (or Remnants) that Require No Further Evaluation or No Response Action.

8.0 REFERENCES

- 8.1 G-FDE-F-00061, Rev. 1, dated November 20, 2023, "Facility Decommissioning Evaluation Building for 235-1F, 235-2F, Refrigeration Buildings Nos. 1 & 2."
- 8.2 G-SDD-F-00019, Rev. 0, dated November 18, 2024, "FAI-51, Final Acceptance Inspection of Buildings 235-1F, 235-2F, 607-3F, and S1 Fans (G-SOW-F-00380)."
- 8.3 SRNS-RP-2021-00120, Rev. 1, dated August 2022, "Core Team Protocol for Review and Concurrence on Facility Decommissioning Evaluations and Decommissioning Project Final Reports."
- 8.4 SRNS-OS-2024-00077, Rev. 0, dated February 20, 2024, "SCDHEC Approval of the Savannah River Site's Responses to the Regulatory Comments on the Facility Decommissioning Evaluation (FDE) for Buildings 235-1F And 235-2F, Refrigeration Buildings Nos. 1 & 2 (G-FDE-F-00061, Revision 1, November 20, 2023)."
- 8.5 SRNS-OS-2024-00010, Rev. 0, dated January 4, 2024, "EPA Approval of the Facility Decommissioning Evaluation Building 235-1F & 235-2F, Refrigeration Buildings Nos. 1 & 2, Revision 1, G-FDE-F-00061, November 20, 2023."
- 8.6 SDD-2005-00170, Rev. 2, dated October 22, 2020, "Environmental Compliance and Area Completion Projects (EC&ACP) Deactivation & Decommissioning (D&D) Policy on Decommissioning End Points for Slabs, Pits, Basements, and Basins."
- 8.7 G-SOW-F-00380, Rev. 0, dated April 1, 2024, "Decommissioning of 607-3F Sewage Lift Station, 235-1F & 235-2F Refrigeration Buildings, and Equipment Removal of 235-F Supply Fans (1S1/2S1)."
- 8.8 Q-APG-F-00321, Rev. 0, dated September 21, 2022, "Environmental Compliance & Area Completion Baseline Asbestos Inspection Report for 235-1F."
- 8.9 Q-APG-F-00319, Rev. 0, dated September 21, 2022, "Environmental Compliance & Area Completion Baseline Asbestos Inspection Report for 235-2F."
- 8.10 Q-APG-F-00363, Rev. 0, dated February 28, 2023, "Asbestos Inspection Report for Building 235-F Post Deactivation Abatement."

9.0 APPENDIX

Appendix A – Before and After Photos of the Facility/Structure

Appendix A - Before and After Photos of the Facility/Structure



Figure 1: 235-1F from Northeast (Before)

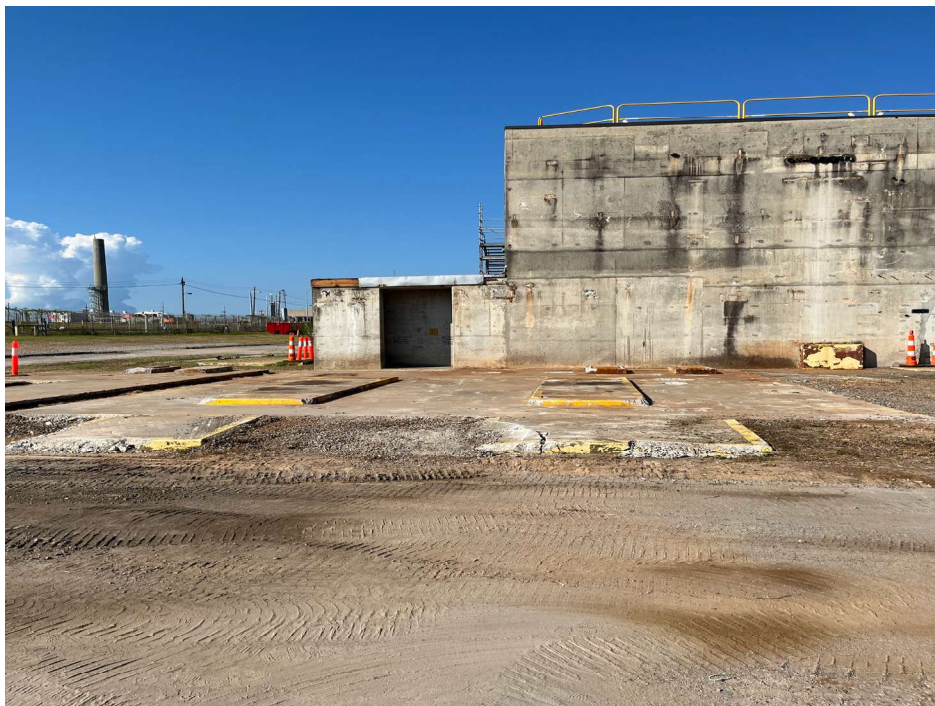


Figure 2: 235-1F and 235-2F from East (After)

Appendix A - Before and After Photos of the Facility/Structure (Continued)



Figure 3: 235-2F from Southeast (Before)



Figure 4: 235-1F and 235-2F from North (After)