



**Department of Energy**  
Savannah River Operations Office  
P.O. Box A  
Aiken, South Carolina 29802  
**DEC 21 2016**

The Honorable Joyce L. Connery  
Chairman  
Defense Nuclear Facilities Safety Board  
625 Indiana Avenue, NW, Suite 700  
Washington, DC 20004

Dear Chairman Connery:

**SUBJECT:** Transmittal of Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 2012-1 Implementation Plan (IP) Annual Report for Fiscal Year (FY) 2016

This letter transmits the Annual Report committed in Section 6 of the Department's IP. Included in the Annual Report are deliverables for the following annually occurring actions:

- Action 1-12: Update planning schedule to reflect Plutonium Fuel Form (PuFF) cells 1 through 5 deactivation actions for the upcoming 12 months.
- Action 3-3: Develop an updated F-Area drill plan that explicitly includes the participation expectations for all facilities and construction sites surrounding Building 235-F and planned drill dates. Annual updates are expected to be provided in December each calendar year until the hazard is removed or mitigated.
- Action 3-4: Execute at least one formally assessed drill each year based on a radiological release from Building 235-F that includes successful demonstration of the ability to adequately protect workers in all facilities and construction sites surrounding Building 235-F. Annual updates are expected to be provided in December each calendar year until the hazard is removed or mitigated.

We will continue to work with your staff to effectively respond to the concerns raised in the recommendation and complete the IP.

If you have any questions, please contact me or have your staff contact Tony Polk, Nuclear Materials Programs Division Director at (803) 208-2854.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jack R. Craig".

for Jack R. Craig  
Savannah River Site Manager

NMPD-17-0012

**(2) Enclosures:**

1. **Fiscal Year 2016 Annual Report for the  
United States Department of Energy IP  
for DNFSB Recommendation 2012-1**
2. **Building 235-F Exercise After-Action Report**

**cc w/encl:**

**Monica Regalbuto, EM-1**

**Stacy Charboneau, EM-3**

**Jim Hutton, EM-3.1**

**Ted Wyka, EM-3.111**

**Joe Olencz, AU-1.1**

**Fiscal Year 2016  
Annual Report  
for the  
United States Department of Energy  
Implementation Plan  
for  
Defense Nuclear Facilities Safety Board  
Recommendation 2012-1  
Revision 0**



***Savannah River Site Building 235-F Safety***

**Washington, DC 20585**

**December, 2016**

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## **EXECUTIVE SUMMARY**

This Annual Report fulfills the requirement of Section 6.0 of the United States Department of Energy (DOE) Implementation Plan (IP) for Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 2012-1, *Savannah River Site (SRS) Building 235-F Safety*. Section 6.0 states:

“To ensure that the various departmental implementing elements and the Board remain informed of the status of plan implementation, the Department will provide an annual, written report that identifies commitments completed during the year and summarizes progress made that year on open commitments.”

Submission of this Annual Report also addresses the following specific IP Actions:

Action 1-12: Update planning schedule to reflect Plutonium Fuel Form (PuFF) cells 1 through 5 deactivation actions for the upcoming 12 months.

Action 3-3: Develop an updated F-Area drill plan that explicitly includes the participation expectations for all facilities and construction sites surrounding Building 235-F and planned drill dates. Annual updates are expected to be provided in December each calendar year until the hazard is removed or mitigated.

Action 3-4: Execute at least one formally assessed drill each year based on a radiological release from Building 235-F that includes successful demonstration of the ability to adequately protect workers in all facilities and construction sites surrounding Building 235-F. Annual updates are expected to be provided in December each calendar year until the hazard is removed or mitigated.

In Fiscal Year (FY) 2016, the Department of Energy Savannah River (DOE-SR) continued momentum from FY 2015. Field work on one key 2012-1 commitment regarding restoring cells 6-9 infrastructure was completed. Substantial progress was made on restoring cell infrastructure in PuFF cells 3-5.

The Department of Energy entered FY 2016 under a Continuing Resolution (CR), which again restricted the funding available for DOE-SR projects, including 235-F Risk Reduction. Despite this, DOE-SR, in balancing risks and priorities, continued to allocate funds for the Project. Funding was provided for continuing technical and planning work, as well as beginning field activities to support the Material at Risk (MAR) removal.

Attachment 1 contains a table that lists specific IP Actions completed in FY 2016, those to be completed in FY 2017 and the planned completion dates for subsequent IP actions.

## **FISCAL YEAR 2016 PROGRESS**

DOE-SR made significant progress preparing for the initiation of deactivation activities, including substantial field progress. The key accomplishments in FY 2016 are as follows.

Restoring cell infrastructure in PuFF cells 6-9 Restoring the cell infrastructure included draining the water filled windows, removing the outer windows and cleaning the remaining inner windows. Lights were installed in the cavity to illuminate the interior of the cells. When lights were restored, a crack in the West Maintenance window of cell 6 was identified. Upon further investigation it was learned that the outer layers of glass in this area had been removed leaving a single pane providing the barrier to the cell. Engineering evaluated the cracked window and determined it was structurally sound. Also Radiological Protection performed contamination surveys to verify the crack was not allowing contaminants to migrate out of the confinement. An additional window was installed over the current window providing an additional barrier.

Enhanced characterization Enhanced characterization was performed on cells 6-9 by placing the detectors and Gamma Ray Imager in the window cavity. The Savannah River National Laboratory (SRNL) conducted these measurements. By increasing the count times and having the ability to see in the cells, the uncertainty of the measurements was greatly reduced. The SRNL report identified cell 6 as having a small amount of MAR to be removed and cells 7, 8 and 9 were near or below minimum detection levels. Based on this report the project team along with the DOE concluded that MAR removal in cells 7, 8 and 9 was complete. Having demonstrated the value of the enhanced characterization, the project and the DOE evaluated adjusting the schedule for the project to accelerate the characterization of cells 1-5 and associated wing cabinets. The project was able to make the schedule adjustments and redeploy resources with no impact to the funding or adjustments to the IP milestones. Completing the enhanced characterization will allow the project team to better understand the amount and location of the MAR and plan for its safe and efficient removal.

Electrical and Mechanical Isolation cells 6-9 Engineering completed the review of drawings and field walk downs to verify all penetrations into the cells were identified. Work packages were generated to direct the air gapping or blanking off of all penetrations. This was completed to ensure the safety of workers while working in the cells.

Restore cell infrastructure in cells 3-5. Like cells 6-9, the shield water was drained and the outer windows were removed. Lights were installed in the window cavity. Unlike cells 6-9, the manipulator masters (portion of manipulator located in the Shift Operating Base) were removed allowing better clearance at the window cavity.

Enhanced Characterization of cells 3-5 SRNL completed the enhanced characterization measurements of cells 3-5. The assay data is being analyzed.

Use of the Mock-up The mock-up continues to be used to refine techniques and keep the operators proficient on tasks that will be performed in the facility.

In-cell vacuum SRNL completed the design, building and acceptance testing of the in-cell vacuum cleaner. Operations supported an array of tests in the mock-up to refine the design of the vacuum and the electrical pass-through.

## **PLANNED PROGRESS FOR FISCAL YEAR 2017**

Funding has been allocated to the 235-F project for FY 2017. If more funds become available as the year progresses the DOE-SR team will plan and complete additional project work. The key specific activities that will be undertaken in FY 2017 are listed below.

1. Initiate Cell Infrastructure Restoration Cells 1 and 2. This includes establishing visibility into the cells by removing outer cell windows, cleaning the outer surface of the inner cell windows, and installing a protective mesh over the window area. It also includes establishing lighting (exterior to the cells).
2. Complete Enhanced Characterization Measurements for cells 1 and 2 from the Shift Operating Base. This involves SRNL taking its final set of measurements (in-cell measures) to gather the data needed for a final report on Non-Destructive Assay (NDA) results in cells 1 and 2.
3. Begin field repair of windows in East Maintenance (support for cells 1-5).
4. Complete enhanced characterization of the attached wing cabinets in East Maintenance.
5. Mechanically and electrically isolate cells 3-5. This ensures that to every extent practical, electrical or mechanical lines penetrating the cells have been isolated.
6. Remove MAR from cell 6. Waste will be removed and packaged for disposal. The Risk Reduction Team will deploy a vacuum designed by SRNL to remove fine particles. Additional assays will be conducted to determine the effectiveness of the MAR removal.
7. Develop and submit to the DOE a revised safety basis that will allow intrusive work to begin in cells 1 and 2.

## **ANNUAL UPDATE ON DRILL PERFORMANCE**

### **Action 3-4, Drill Conduct and After-Action Report Summary**

On April 19, 2016, the Savannah River Site (SRS) conducted the FY 2016 Site Evaluated Exercise, which also served as the required deliverable for Action 3-4 identified in the Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 2012-1, “Savannah River Site Building 235-F Safety.” Participants included the SRS Emergency Response Organization (ERO), Savannah River Nuclear Solutions (SRNS) and Centerra LLC, Savannah River (Centerra-SRS).

The drill scenario was based on a delivery truck carrying compressed gas cylinders impacting the 235-F when the driver had a seizure. The impact dislodged a gas cylinder which crashed into the East Maintenance. Building ventilation was compromised by the impact. Building 235-F was evacuated and protective actions were implemented for the remainder of F-Area. The event was classified as a Site Area Emergency, resulting in the activation of the site’s Emergency Operations Center. The Emergency Response Organization (ERO) for F-Area, as well as the site-level ERO, responded to the emergency, mitigated the situation, and planned for recovery and return to operation.

The Site Exercise was completed with a grade of “Met”. The overall performance of personnel assigned to F-Area indicated that the facility’s Emergency Response Organization (ERO), including the Technical Support Staff, is capable of responding effectively to a radiological release from Building 235-F and implementing protective actions to protect personnel in adjacent facilities and construction sites. Improvement opportunities were identified in the After-Action Report in the areas of:

- Protective Actions
- ERO Operations
- Facilities and Equipment

### **Protective Actions**

The protective action announcement was made after the classification declaration. The announcement should have been made sequential to the evacuation of 235-F perimeter.

**Lesson Learned:** Accurate and timely communication is vital to accident response and mitigation.

An individual tried to enter 707-F upon hearing the “remain indoors” announcement. However, the inner doors were locked and the proximity badge did not allow them access. The individual relocated to an adjacent building to remain indoors.

**Lesson Learned:** Building doors that are normally secured should be manned in the event of an emergency to allow access. Management will evaluate building access during an emergency.



## **ERO Operations**

The SOM did not use the SST phone to contact SRSOC. Instead a landline was used.

Lesson Learned: SST phones provide a direct link to SRSOC and are the fastest way to communicate.

## **Facilities and Equipment**

The MeetingPlace Conference did not work, which created a delay in establishing communications with the facility.

Lesson Learned: Alternate means of communication should be readily available in the event the primary communication system is not working.

MOX Services participated in a drill conducted on March 30, 2016 to demonstrate their ability to properly and promptly implement protective actions. MOX Services participation was assessed and their objectives were met.

## Attachment 1

### Table of IP Actions Completed and Planned

Action	IP Milestones Completed	Date
1-1	Complete project deactivation planning for PuFF Cells 1-9.	5/30/13
2a-1	Development of Building 235-F specific Transient Combustible Control Program.	2/15/13
2a-2	Evaluate fixed combustibles and define the fixed combustible removal, encapsulation, or isolation scope.	3/4/13
2b-1	Evaluate electrical components and define the scope for de-energization of components and the process for control of the resultant configuration.	3/4/13
2c-1	Complete evaluation of existing FDAS for functionality and maintainability.	10/30/12
2c-2	Develop a Fire Alarm and Detection Design Study that will recommend the PuFF FDAS system design enhancements (to include criteria, scope, and schedule) for S&M and deactivation phases.	4/1/13
3-1	Develop a Calendar Year (CY) 2013 drill schedule for F-Area detailing planned drill dates involving Building 235-F including participation by all facilities and construction sites surrounding Building 235-F.	1/31/13
3-2	Perform review of existing protective action plans and procedures to ensure that personnel are protected from the hazards associated with a radiological release from Building 235-F, and implement additional controls, as required.	2/28/13
3-3	Develop an updated F-Area drill plan that explicitly includes the participation expectation for all facilities and construction sites surrounding Building 235-F and planned drill dates. Continue to include in F-Area drill plan until the hazard is removed or mitigated.	4/1/13
3-4	Execute at least one formally assessed drill each year, based on a postulated radiological release from Building 235-F that includes successful demonstration of the ability to adequately protect workers in all facilities and construction sites surrounding Building 235-F.	8/30/13
1-2	Issue the Building 235-F Deactivation BIO (which supersedes the S&M BIO) to include deactivation activities in PuFF cells 6 through 9.	12/23/13
1-5	Update planning schedule to reflect PuFF cells 1 through 5 deactivation actions for the upcoming 12 months.	12/23/13
2a-3	Complete removal, encapsulation or isolation of fixed combustibles scope.	1/30/15
2b-2	Complete electrical de-energization scope, including equipment removal, as practical	1/30/15
2c-3	Complete installation and acceptance testing of the PuFF FDAS for S&M and deactivation phases. Note that installation and testing were conducted in FY 2014, but not all test deficiencies were resolved as of 9/30/2014.	1/30/15

<b>IP Milestones Completed (cont.)</b>		
1-4	Complete a Readiness Assessment (RA) for initiation of deactivation activities in PuFF cells 6 through 9 and implement the Deactivation BIO.	6/30/15
1-6	Update planning schedule to reflect PuFF cells 1 through 5 deactivation actions for the upcoming 12 months.	1/30/15
3-3	Develop an updated F-Area drill plan that explicitly includes the participation expectation for all facilities and construction sites surrounding Building 235-F and planned drill dates. Continue to include in F-Area drill plan until the hazard is removed or mitigated. <i>Note that this is required to be submitted in December of each year under the provisions of the IP.</i>	12/31/15
3-4	Execute at least one formally assessed drill each year, based on a postulated radiological release from Building 235-F that includes successful demonstration of the ability to adequately protect workers in all facilities and construction sites surrounding Building 235-F.	8/14/15
1-3	Restore cell infrastructure in PuFF cells 6 through 9.	7/31/15
1-10	Update planning schedule to reflect PuFF cells 1 through 5 deactivation actions for the upcoming 12 months.	1/29/16

Action	IP Milestones to be Completed in FY2017	Date
3-3	<p>Develop an updated F-Area drill plan that explicitly includes the participation expectation for all facilities and construction sites surrounding Building 235-F and planned drill dates. Continue to include in F-Area drill plan until the hazard is removed or mitigated.</p> <p><i>Note that this is required to be submitted in December of each year under the provisions of the IP.</i></p>	12/31/16
3-4	<p>Execute at least one formally assessed drill each year, based on a postulated radiological release from Building 235-F that includes successful demonstration of the ability to adequately protect workers in all facilities and construction sites surrounding Building 235-F.</p>	4/25/17
1-12	<p>Update planning schedule to reflect PuFF cells 1 through 5 deactivation actions for the upcoming 12 months.</p>	1/31/17

Action	“Out-Year” IP Milestones Completion Projections	Projected Due Date
1-8	If needed, complete a readiness assessment for initiation of deactivation activities in PuFF cells 1 through 5 and implement the revised Deactivation BIO.	7/31/18
1-9	Using enhanced characterization techniques, identify a list of significant components and/or equipment to be removed for MAR reduction in cells 1 through 5.	1/31/19
1-11	Restore cell infrastructure in PuFF cells 1 through 5.	11/30/18
1-13	Update planning schedule to reflect PuFF cells 1 through 5 deactivation actions for the upcoming 12 months.	1/31/18
1-14	Complete the deactivation of cells 1 through 9. This will include waste removal.	1/31/20
1-15	Using enhanced characterization techniques, derive a final [Post Deactivation] MAR value to be used for end-state selection and regulatory acceptance. This will demonstrate mitigation of the hazard and resultant risk reduction.	6/30/20
1-16	Revise the 235-F Deactivation BIO once the MAR is removed and acknowledge the facility meets the requirements of 10 CFR Part 830 to protect the maximally exposed off-site individual to within the established DOE-S TD-3309 evaluation guidelines and protect the co-located and facility worker within the accepted Savannah River Site guidelines of 100 rem.	5/31/21

Attachment 2

235-F Schedule FY2017-FY2018

	FY17 2017									FY18 2018														
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Install gloves in cell 6																								
Waste Removal/Decon 6																								
Demonstate vacuum in cell 6																								
Recharacterize Cells 6																								
Complete design for shield windows on cells 1&2																								
Remediate shield windows																								
Perform enhanced characterization on cells 1&2																								
Complete design for East maint windows cells 3-5																								
Remediate East maint.																								
Develop technique and test equipment for assaying																								
Perform enhanced characterization in East																								
Approve design for cells 3-5 mechanical isolation																								
Execute work package for mechanical isolation																								
Approve design for cells 3-5 electrical isolation																								
Electrical isolation cells 3-5																								
Remediate East maint.																								
Prepare Safety Basis change for cells 1&2 intrusive work																								
Implement BIO for cells 1&2																								
Develop grouting technique																								
Perform enhanced characterization in East																								
Decon/ waste removal cells																								
Grout select components in																								
Design/develop method for waste removal in cells 1&2																								
Electrical/mechanical																								

Planning activities

Field Work

IP Milestones

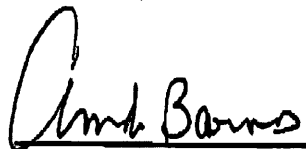
**Attachment 3  
2017 F-Area Complex EP Drill Schedule**

**Emergency Preparedness Coordinator: Batersa Mitchem  
Facility Point of Contact: Amanda Barnes**

	<b>APRIL</b>
<b>Date</b>	<b>04/25/17</b>
<b>Type</b>	<b>235-F Radiological Release with Protective Actions</b>  <b>(Evaluated)</b>  <b>(MOX and SRR will be invited to participate).</b>

**APPROVAL:**

Amanda Barnes  
**F-Area Complex Operations Manager**

  
\_\_\_\_\_  
**Signature**

11/22/16  
**Date**



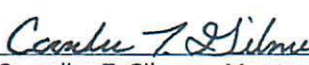
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## Building 235-F Exercise After-Action Report

Defense Nuclear Facilities Safety Board Recommendation  
2012-1, Action 3-4

Approved by:

 _____ Michael L. Gilles, Facility Manager, F-Area Complex	<u>6/8/16</u> Date
 _____ Cornelius T. Gilmore, Manager, Emergency Management	<u>6/3/2016</u> Date
 _____ Donald R. Ludwick, Manager, Emergency Services	<u>6/7/16</u> Date
 _____ Gregory E. Floyd, Director, SS&ES	<u>6-13-16</u> Date
 _____ Richard M. Sprague, Vice President, Technical Services	<u>06/14/16</u> Date



# 2016 Building 235-F Exercise After-Action Report

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## EXECUTIVE SUMMARY

As outlined in the Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 2012-1, Action 3-4, Savannah River Site (SRS) committed to executing at least one formally assessed exercise based on a radiological release from Building 235-F that includes successful demonstration of the ability to adequately protect workers in adjacent facilities and construction sites. This report serves as the deliverable for this action.

On April 19, 2016 an exercise was conducted that involved an external event, impacting Building 235-F, resulting in an unfiltered radioactive release. The intent of this exercise was to demonstrate the ability of the F-Area Emergency Response Organization (ERO) to adequately protect workers in all facilities and construction sites surrounding 235-F. Waste Solidification Facility (WSB), Centerra LLC, Savannah River Site (Centerra-SRS) and Savannah River Nuclear Solutions (SRNS) were participants in this exercise. (Unless needed otherwise for clarification, "SRS" will be used throughout the remainder of this document when referencing SRNS, WSB and Centerra-SRS exercise participants.)

SRS Players' and Controllers' performance was assessed using the established Objectives, Criteria, and Lines-of-Inquiry (LOIs) contained in the SRNS Assessment Performance Objectives & Criteria manual, Functional Area 13 (FA-13), "Emergency Preparedness." The exercise was conducted safely and without incident by all Players, Controllers and Observers. Participants met the objectives as outlined in the scenario manual for a satisfactory exercise. Positives were noted in the orderly command structure of the F-Area Complex's Control Room; the Incident Command Post (ICP); and the Radiological Protection Department's (RPD) fire department dress down zones. The exercise identified a few opportunities for improvement (OFI) and one weakness with the phone lines in the Technical Support Room of the SRS Emergency Operations Center (EOC). Improvements that were identified are referenced in Attachment 1.

As required by Manual 6Q, SRS Emergency Plan Management Program Procedures, EMPP-006, "Standards for the Development and Conduct of Facility Emergency Preparedness Drills," the corrective action for the Weakness is included in this report as Attachment 2. The OFI will be addressed by promulgating this report as a Lessons Learned document to appropriate personnel. These actions will be reviewed and revised as necessary, assigned to the appropriate personnel for action, and tracked to closure in the Site Tracking, Analysis, and Reporting (STAR) database.

The overall performance of F-Area's ERO, as demonstrated in this exercise, indicates that the facility is capable of responding effectively to a radiological release from 235-F and implementing protective actions to protect personnel in facilities and construction sites surrounding 235-F. As required by the Implementation Plan, SRS will continue to conduct drills/exercises involving radiological releases from Building 235-F at least annually.

**Note:** MOX Services participated in a drill conducted on March 30, 2016 to demonstrate their ability to properly and promptly implement protective actions. MOX Services participation was assessed and their objectives were met.  
Savannah River Remediation did not participate in the drill or the exercise.

## SCENARIO SUMMARY

## 2016 Building 235-F Exercise After-Action Report

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A delivery truck carrying compressed gas cylinders was enroute to 292-2-F to deliver nitrogen gas cylinders for the 235-F nitrogen backup system. As the truck entered the 235-F complex at the main entrance on the northeast side of building 235-F, the driver had a seizure, causing the driver's foot to fully depress the accelerator pedal. Vehicle speed rapidly increased and the truck crashed into the northeast side of 235-F at Door 153, penetrating through the door into the airlock, and causing obvious structural damage to the building. The truck driver was seriously injured and remained in the cab of the truck.

The impact damaged the truck railings. One cylinder fell, breaking the valve stem and projected off the truck into Door 153, penetrated the door and entered into the building. The cylinder crashed into the East Maintenance Area, Room 1002, hitting walls and equipment. Fan instrumentation modules in the wall of Room 1002 were damaged. Radiological contamination in the East Maintenance Area was dislodged and became airborne through Door 153. A Roof Tunnel 4Lo Vacuum alarm was activated in the 235-F Shift Operations Base (SOB) when fan instrumentation was damaged, generating a process upset. Fans E-1 through E-4 and S-1 through S-6 shut down due to the 4Lo activation. The E-5 fan recovered from the event and returned 235-F back to negative pressure momentarily. Due to the release of contamination, Constant Air Monitors (CAM) received High Alpha Activity alarms in the SOB and Corridor 1001. The F-Area Complex 772-1F Control Room (CR) detected the audible and visual process upset and CAM alarms in the 235-F SOB.

The jersey bouncers around the northeast side of the building were removed and Doors 1004 (outer doors to Door 153) were opened in order to allow an Argos Monitor to be installed in 235-F. F-Area Complex personnel assigned to secure the building for the Argos Monitor installation witnessed the accident and noticed the driver was motionless in the cab of the truck. The F-Area Complex personnel moved to an upwind location and notified the SOM of the accident, potential critical injury to the truck driver, and damage to the building. An operator assumed Incident Scene Coordinator (ISC) duties.

The SOM notified SRSOC of the incident and requested both fire and Emergency Medical Services (EMS) assets. Additionally, the SOM dispatched RPD personnel and a First Aid Responder with a medical kit and proper Personal Protective Equipment (PPE) to the ISC.

The SOM directed an evacuation for the 235-F building and perimeter area then issued a Remain Indoors protective action for the remainder of the area.

The SOM determined that the event met the criterion for a Site Area Emergency, SAE-1.1, *External Event Impacting 235-F, Unfiltered Release*. The SOM contacted the SRSOC and informed the Emergency Duty Officer (EDO) of the additional event details. The two discussed the event and agreed on a declaration time for the Site Area Emergency. After classification, the SOM assumed the role of Area Emergency Coordinator (AEC).

The Savannah River Site Fire Department (SRSFD) arrived at the designated upwind location and received a turnover briefing from the ISC and RPD, which included a description of the event, the extent of injury, operational concerns, and known hazards. The Fire Department Captain assumed the position of Incident Commander (IC) for the event and established an

## 2016 Building 235-F Exercise After-Action Report

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Incident Command Post (ICP). The ISC informed the AEC that the ICP was established and the FDIC had assumed command.

EMS was directed by the IC to the injured driver. The patient was found entrapped in the cab, unconscious, seriously injured, and contaminated. The FD/EMS extracted the patient out of the vehicle then packaged the driver for removal from the contaminated area per procedures. The EMS crew wrapped the patient in a second blanket, placed him in an ambulance, and transported to a local hospital. RPD personnel were designated to accompany the patient to the hospital in the ambulance per procedure.

RPD personnel established appropriate radiological boundaries per established procedures. Personnel that had been in the incident scene areas were monitored for contamination. Hot, warm and clean zones were set up to handle doffing of contaminated Proper Protection Equipment (PPE). Personnel leaving the contaminated area were dressed down according to guidelines to minimize the spread of contamination.

A mitigation strategy for facility stability was developed by the IC with concurrence from the AEC. The extent of release was determined and stopped per SRSFD mitigation. RPD developed measures useful for preventing or slowing movement of contamination from the impacted area.

Upon arrival at the EOC, the Technical Support Room (TSR) staff established contact with the F-Area Complex Control Room and received a briefing on the status of the emergency event. Once the damaged inner door (door 153) was adequately covered; the 235-F northeast entrance outer doors were closed; the spilled mixed hazardous waste from the truck was diked from the outfall; and the E5 Fan was verified as operating. The IC and AEC reported to the TSR Coordinator that the facility was in a safe and stable condition, allowing the TSR Coordinator to discuss termination of the event and initiation of recovery planning with the Emergency Director and Emergency Manager.

As directed, the TSR Coordinator assumed the role of Recovery Manager, formed the recovery team comprised of other EOC staff members, and developed a Recovery Plan Outline. Once the Recovery Plan Outline was completed, the Recovery Manager briefed the Emergency Director and Emergency Manager and requested approval of the outline. After approval of the Recovery Plan, the emergency classification was terminated by the Emergency Director.

## 2016 Building 235-F Exercise After-Action Report

### EVALUATION SUMMARY

The overall rating for this exercise was "MET".

Detailed Controller/Evaluator comments, which provide an in-depth assessment of each objective and criterion evaluated during the exercise, are included as Attachment 1. Some criteria are not listed in Attachment 1, which appears to be a break in numbering. Those criteria were either not evaluated or had no Strengths, Good Practices, Improvement Items, Weaknesses or Deficiencies identified, in which case the criterion is evaluated as "Met".

Objective	Rating
1: Safety	Met
2: Protective Actions	Met
3: Mitigation	Met
4: Radiological and Chemical Monitoring	Met
5: Emergency Categorization and Classification	Met
6: ERO Operations	Met
7: First Aid and Medical	Met
8: Notifications and Communications	Met
9: Offsite Interactions	Not Evaluated
10: Consequence Assessment	Met
11: Public Information	Not Evaluated
12: Recovery and Reentry	Met
13: Facilities and Equipment	Met
14: Exercise Control and Conduct	Met

# 2016 Building 235-F Exercise After-Action Report

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## ATTACHMENT 1 – Detailed Comments

### **Objective 1: Demonstrate Facility and site ERO members perform response activities safely.**

This Objective was MET, indicating that player performance met expectations. Players at all venues conducted response activities safely and in accordance with site policy and practices.

#### **Criterion 1.01: Facility and site ERO members perform response activities safely. (Critical)**

##### Strength

The Centerra Lieutenant observed a fire ant bed, barricaded with orange traffic cones and warned all personnel in and around the area of the hazards. The ant bed was treated immediately after the exercise.

##### Good Practice

Safety was a primary focus area during the exercise. The Safety Engineer and Lead Controller discussed the potential hazards in detail prior to the exercise with the players and the controller organization. The exercise was conducted with no injuries in a safe manner.

### **Objective 2: Demonstrate the ability to develop and implement appropriate protective actions in accordance with approved procedures.**

This Objective was MET, indicating that player performance met expectations. Players determined and implemented appropriate protective actions throughout F-Area.

#### **Criterion 2.01: Determine/implement protective actions for the facility/area. (Critical)**

##### Good Practice

The appropriate protective actions of Evacuation for 235-F perimeter and the Remain Indoors for all of F-Area were implemented upon assessing the event.

##### Improvement Item

The Remain Indoors protective action announcement was made after the classification declaration but was in a reasonable time frame. The SOM stated the Remain Indoors announcement should have been made sequential to the Evacuation of 235-F perimeter. The initial announcement was made with the incorrect wind direction but, was self-corrected on the follow-up announcement.

## 2016 Building 235-F Exercise After-Action Report

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**Criterion 2.04: Perform personnel accountability. (Major)**

Good Practice

The accountability for Building 235-F was completed within 5 minutes of the evacuation.

**Criterion 2.06: Non-essential personnel perform protective actions as instructed. (Major)**

Good Practice

All F-Area Complex and WSB personnel implemented protective actions and adhered to PA instructions as directed to do so.

Improvement Item

Upon hearing the remain indoors announcement an individual tried to enter the southeast entrance of 707-F, however the inner doors were locked and the individual's proximity badge did not allow him to enter. Therefore, the individual left 707-F and went to 772-F to remain indoors. Management should evaluate building access during an emergency.

**Objective 3: Demonstrate the ability to properly mitigate, stabilize conditions and gain control over the emergency situation in accordance with procedures.**

This Objective was MET, indicating that player performance met expectations. Players took actions to provide patient care and minimize or stop hazardous material releases in progress safely.

**Criterion 3.03: SRSFD personnel mitigate the emergency effectively. (Major)**

Good Practices

1. Fire Department responders arrived quickly on the scene and acted decisively to ensure their own safety; manage patient care; perform scene size-up; and implement initial mitigative actions. They did not have definitive information relative to patient contamination, but took appropriate precautions to address the life-threatening injuries and included RPD personnel in the transport.
2. Absorbent material was placed around the drains to prevent mixed hazardous waste from getting to the outfalls. Fire Department responders also retrieved the shipping manifest from the vehicle to get the total number of cylinders and confirm the type of compressed gas present.

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**Criterion 3.04: Security personnel mitigate the security crisis effectively/properly. (Major)**

Good Practice

Centerra Law Enforcement provided good support to the fire department all while assuring safety and security was still the main focus.

**Criterion 3.05: Appropriate actions are taken to protect and account for emergency responders at the scene. (Major)**

Good Practice

All SRSFD personnel were tracked during their on-scene operations as required by the SRSFD accountability procedure.

**Criterion 3.06: Alarm Response and Abnormal Conditions.**

Good Practice

Control Room personnel promptly pulled Alarm Response Procedures and Abnormal Operating Procedures upon receiving the alarms.

**Objective 4: Demonstrate the ability to minimize exposure and control chemical and radiological conditions as appropriate in accordance with primary emergency response priorities.**

This Objective was MET, indicating that player performance met expectations. RPD personnel utilized good techniques and practices in minimizing the spread of contamination.

**Criterion 4.01: Monitor and control radiological and chemical conditions and exposures in the incident facility consistent with the emergency response priorities, procedures, and guidelines. (Critical)**

Good Practices

1. RPD Inspectors continually monitored portable air samples and ensured personnel not in PPE were radiologically safe. Electronic Personal Dosimeters (EPDs) were monitored by RPD during the SRSFD personnel exit of the dress down area and this information was passed on to the RPD FLM.
2. RPD Inspectors established an area for potentially contaminated firefighters to dress down and monitored the contamination and air activity routinely in this area. The RPD inspectors did an excellent job of directing and assisting the SRSFD personnel in doffing their bunker gear. The RPD inspectors segregated the highly contaminated equipment from other gear and ensured the area was secured (covered with tarp)

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before exiting the area. Very good technique of frequent glove changes, especially during personnel surveying.

**Objective 5: Accurately categorize/classify, upgrade, downgrade and/or terminate the emergency in a timely manner and in accordance with approved procedures.**

This Objective was MET, indicating that player performance met expectations. Events in progress were evaluated against established criterion to appropriately categorize and classify the emergency accurately within the 15 minutes timeframe.

**Criterion 5.01: Initial event categorization/classification is made appropriately. (Major)**

**Good Practice**

The event was correctly classified as a Site Area Emergency approximately nine minutes after the 4-Lo Vacuum Alarm. The classification was made by the AEC in conjunction with the EDO. The EDO Information Form was completed and faxed to the SRSOC. The Incident Command Post (ICP) was promptly notified of the declaration to encourage situational awareness.

**Objective 6: Activate and operate emergency response facilities in an effective and timely manner based on the type and extent of emergency in accordance with approved procedures.**

This Objective was MET, indicating that player performance met expectations. Emergency Response Organization (ERO) members reported to their assigned facilities and performed their assigned duties as expected. Good command and control, communications and use of procedures were demonstrated.

**Criterion 6.01: Activated ERO members must report and perform their assigned duties. (Critical)**

**Good Practices**

1. ERO personnel provided very good support to the SOM/AEC. The facility ERO arrived quickly; announced their positions and began performing their tasks without delay.
2. The overall function of the TSR was organized and efficient. The individual members appeared to understand their functions and immediately took action upon arrival. The TSR checklists and the WebEOC displays were utilized throughout the event. Hand written forms were provided to the administrative person and the notes were added to WebEOC.



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**Criterion 6.02: Demonstrate command and control.**

Good Practice

The Captain did an excellent job in establishing goals and objectives for the SRSFD and effectively mitigated the incident scene.

**Criterion 6.03: Demonstrate effective communications.**

Good Practice

1. Communications among the TSR staff were very good, making good use of the communications channels and information sources provided by the Fire Department Specialist and the Operations Oversight Representative.
2. Public Address (PA) announcements were clear, concise and at the proper frequencies as stated in the procedures.
3. The TSC conducted several detailed briefings and requested each position provide updates on things they were involved in. Several good discussions occurred to determine the team's approach to event stability and review of the termination criteria. The TSC and Engineering provided good updates and follow-up on questions asked by the Emergency Director (Role-player).

Improvement Item

SOM did not use the SST phone in order to contact SRSOC. Instead, a landline was used which could have potentially delayed response.

**Criterion 6.04: Demonstrate effective use of procedures.**

Good Practice

The facility ERO utilized their checklists and ensured they were complete. The Day Relief SOM did a good job of ensuring the appropriate procedures were in use and filled out to completion by control room personnel. He also assisted the AEC in making certain all actions were complete in the AEC/FEC checklist.

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**Objective 7: Demonstrate the ability to provide appropriate medical care for injured personnel in accordance with approved procedures.**

This Objective was MET, indicating that player performance met expectations. Injured personnel were provided EMS assistance to the level of injury.

**Criterion 7.02: Emergency Medical Services personnel provide proper emergency medical care for injured and/or contaminated/injured personnel. (Major)**

Good Practice

Fire Department EMS personnel demonstrated proper assessment and treatment of the critically injured person. The paramedics did a good job in describing treatment and preparation techniques for transport.

**Objective 8: Perform all onsite and offsite notifications in accordance with approved procedures.**

This Objective was MET, indicating that player performance met expectations. Players performed the required onsite notifications adequately. No offsite notifications were made during this exercise.

**Objective 10: Assess the actual or potential onsite and offsite consequences and develop onsite protective actions and offsite protective action recommendations in accordance with approved procedures.**

This Objective was MET, indicating that player performance met expectations. Players assessed the potential consequences of a hazardous material release as part of the continuing evaluation of protective actions onsite. Wind direction and habitability surveys were constantly monitored by players to ensure safety.

**Objective 12: Perform recovery activities in accordance with approved procedures.**

This Objective was MET, indicating that player performance met expectations. Players developed an appropriate Recovery Plan Outline and ensured that all applicable termination criteria were met before recommending termination of the emergency.

**Objective 13: Demonstrate the adequacy and functionality of facilities and equipment to support emergency operations.**

This Objective was MET, indicating that facilities and equipment were adequate and met expectations. A weakness was noted in the inoperability of the conference lines, but the TSR staff was able to communicate by dialing directly through the landline to the facility.

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**Criterion 13.01: Facilities and equipment are adequate, functional and safe to operate. (Critical)**

Weakness

The MeetingPlace Conference was not working and users had trouble establishing communications with the facility. The Communicator did a good job of dialing directly to the facility in order to save time.

**Objective 14: Demonstrate the ability of the Controller/Evaluator organization to effectively conduct an exercise.**

This Objective was MET. A scenario was developed based on hazards assessments, the exercise was controlled safely, and the performance was evaluated appropriately. Strengths were noted in the depiction of realism of the props and verbal visualizations provided by the controllers.

**Criterion 14.02: Effectively control a drill/exercise in accordance with the rules of conduct and in a manner that maximizes free-play by participants and ensures that sufficient opportunity is provided for all objectives to be met. (Major)**

Strength

Props and staging were well planned out and provided a realistic depiction of the actual event(s) in progress.

Good Practice

Controllers did a good job of providing verbal visualizations to the players at the incident scene.

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### ATTACHMENT 2 – Corrective Actions

- 1) Develop a Lessons Learned document from the 235-F Exercise and disseminate to affected F-Area personnel.
  - a) Deliverables include a copy of the briefing package and completed rosters documenting completion. Assigned to Batersa Mitchem.
- 2) Evaluate and/or issue a work order to repair phone lines or MeetingPlace conference lines in the Technical Support Room that are in operable. Assigned to Michael Davenport.