



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

DEC 31 2014

The Honorable Peter S. Winokur  
Chairman  
Defense Nuclear Facilities Safety Board  
625 Indiana Avenue, NW, Suite 700  
Washington, DC 20004

Dear Mr. Chairman:

**SUBJECT:** Transmittal of Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 2012-1 Implementation Plan (IP) Annual Report for Fiscal Year 2014

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 1-6: Update planning schedule to reflect Plutonium Fuel Form 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.
- 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.

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 Patrick McGuire, Assistant Manager for the Nuclear Material Stabilization at (803) 208-3927.

Sincerely,

A handwritten signature in black ink that reads "David C. Moody".

David C. Moody  
Manager

NMPD-15-0033

Document transmitted contains  
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Does not contain OUC.

OUO file has been removed from the letter

Honorable Winokur

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Enclosure:  
Fiscal Year 2014 Annual Report  
for the United States Department  
of Energy IP for DNFSB  
Recommendation 2012-1  
Revision 1, 12/31/14

cc w/encl:

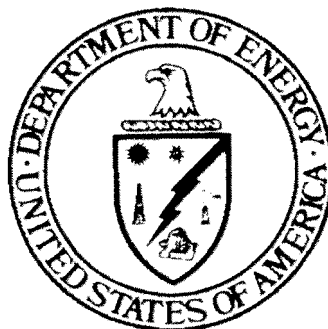
David Huizenga, EM-1  
Matthew Moury, EM-40  
Todd Lapointe, EM-41  
Mari-Josette Campagnone, HS-1.1

Enclosure: Letter, SUBJECT: Transmittal of Defense  
Nuclear Facilities Safety Board Recommendation 2012-1  
Implementation Plan Annual Report for Fiscal Year  
2014, dated

DEC 3 1 2014

**Fiscal Year 2014  
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 31, 2014**

Attachment 3 contains OUO. When separated from the attachment, this report does not contain OUO.

Attachment 3 has been removed from the report

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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*.

In Fiscal Year (FY) 2014, the Department of Energy Savannah River (DOE-SR) continued work it initiated in FY 2013 to reduce the hazards associated with Plutonium-238 material at risk (MAR) that remains as residual contamination in Building 235-F. The department completed field work on two key 2012-1 commitments regarding the removal, encapsulation or isolation of fixed combustibles (Action 2a-3) and the de-energization of unnecessary electrical equipment (Action 2b-2). Significant progress was made on a third commitment, upgrading the Fire Detection and Alarm System (FDAS), by completing the removal of old components, installing upgraded equipment, and conducting systems testing. Four issues emerged from this testing, all of which are projected to be resolved by 1/30/15. The department also made substantial progress in preparing to conduct the readiness assessments needed to support implementation of the Deactivation Basis for Interim Operations (BIO) in FY 2015.

The Department of Energy entered FY 2014 under a Continuing Resolution (CR), which again restricted the funding available for DOE-SR projects, including 235-F Risk Reduction. Despite this, in its balancing of risks and priorities, DOE-SR continued to allocate funds for the Project. Those funds provided for continuing technical and planning work to support the initiation of Material at Risk (MAR) removal and implementing the Deactivation BIO. This annual report contains tables that list specific IP Actions completed in prior years, actions completed in FY 2014, those planned for completion in FY 2015, and a projection of completion dates for subsequent IP actions. Projections assume full project funding of \$7M/year in FY 2015 and beyond.

Submission of this Annual Report also addresses completion of the annually occurring IP Actions described below.

Action 1-6: Update planning schedule to reflect Plutonium Fuel Form (PuFF) cells 1 through 5 deactivation actions for the upcoming 12 months. (Attachment 1)

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. (Attachment 2)

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. (Attachment 3)

## FISCAL YEAR 2014 PROGRESS

DOE-SR had one open action from FY 2013, (IP Action 1-2, which provided for issuance of the Deactivation BIO for 235-F). That action was deferred from 9/30/2013 to FY 14 and was completed on 10/31/13.

On November 28, 2014, DOE transmitted Implementation Plan schedule changes to DNFSB. The changes contain dates that are consistent with a planned \$7 million annual funding level for the 235-F Risk Reduction Project. The dates contained in the Action Tables of this Annual Report are consistent with the schedule changes.

DOE-SR made meaningful progress preparing for the initiation of deactivation activities, including important field progress. The key accomplishments in FY 2014 are as follows:

Fixed Combustible Removal (Action 2a-3) The removal of fixed combustibles was completed on 9/24/2014 in accordance with F-ESR-F-00192, Revision 1, "Evaluation and Removal Plan for Building 235-F Fixed Combustibles." The plan was accomplished through two work packages: one for wall removal, and another for removal of all other fixed combustibles. Completion is documented in these work packages.

Electrical De-Energization (Action 2b-2) The de-energization of unnecessary electrical circuits was completed on 9/24/2014 in accordance with E-ESR-F-00061, Revision 1, "Plan for De-energization of Electrical Components at 235-F Savannah River Site." The plan was accomplished through two work packages: one for panel MPP 24, and another for all other required de-energization. Completion is documented in these work packages.

FDAS Upgrade (Action 2c-3) Upgrades were carried out in accordance with F-ESR-F-00193, Revision 1, "Building 235-F Fire Detection & Alarm System Upgrades Design Study." The Execution of the upgrades was governed by two work packages: one for D&R of the existing FDAS and one for installation and testing of the upgraded system. Installation was completed and testing was performed. Four items to be resolved were generated through the acceptance testing process:

1. Problems with induced voltage in cabling connecting buildings 292-2 F and 235-F.
2. Problems with induced voltage in heat detector cabling in the 235-F cable trays.
3. Problems with fire alarm horn sound levels failing to meet or exceed ambient sound levels by 15 dB within two rooms.
4. Problems with fire panel batteries failing a load test.

These items will be resolved and functionality of the upgraded FDAS system verified before putting the upgraded system into service. This action is projected to be completed by 1/30/15.

Use of the Mock-up. The mock-up was fully developed in FY 2014 to support a wide range of activities. These include training, conduct of JPMs, process and procedure validation, tool testing and development, logistics and ergonomics planning, equipment selection and check-out, and a range of similar activities. Process development for manipulator replacement was the major focus for the mock-up. The mock-up now includes fully functioning manipulators, supplied air, simulated ventilation and air flow, a containment hut built to the actual dimensions expected to be needed, and a variety of task-specific containment enclosures.

DOE-SR has the team and infrastructure in place to begin intrusive work on PuFF cells 6-9 in FY 2015.

### **PLANNED PROGRESS FOR FISCAL YEAR 2015**

Full funding has been allocated to the 235-F project for FY 2015. The key specific activities that are planned in FY 2015 are listed below:

1. Implement the Deactivation BIO, complete SRNS and DOE Readiness Assessments, and authorize work to begin in PuFF cells 6-9.
2. Complete cells 6-9 infrastructure restoration. 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 to protect it from impact during future evolutions such as manipulator replacement. It also includes establishing lighting (exterior to the cells) and installing gloves.
3. Complete Enhanced Characterization for cells 6-9. This involves Savannah River Nuclear Laboratory (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 6-9.
4. Begin field repair or replacement of manipulators on cells 6-9. Field conditions will dictate the degree of repair or replacement.



## IP Actions Completed and Planned

**Table 1**

Action	IP ACTIONS COMPLETED IN PRIOR FISCAL YEARS	Completion 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

**Table 2**

<b>Action</b>	<b>IP ACTIONS COMPLETED IN FY 2014</b>	<b>Completion Date</b>
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.	10/31/13
1-5	Update planning schedule to reflect PuFF cells 1 through 5 deactivation actions for the upcoming 12 months.	12/31/13
2a-3	Complete removal, encapsulation or isolation of fixed combustibles scope.	9/24/14
2b-2	Complete electrical de-energization scope, including equipment removal, as practical	9/24/14
3-4	Execute at least one formally assessed drill each year...	5/14/14

**Table 3**

<b>Action</b>	<b>IP ACTIONS PLANNED FOR COMPLETION IN FY 2015</b>	<b>Planned Completion Date</b>
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.	12/31/14
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
1-6	Update planning schedule to reflect PuFF cells 1 through 5 deactivation actions for the upcoming 12 months.	12/31/14
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
1-3	Restore cell infrastructure in PuFF cells 6 through 9.	7/31/15
1-4	Complete a Readiness Assessment (RA) for initiation of deactivation activities in PuFF cells 6 through 9 and implement the Deactivation BIO.	5/31/15

**Table 4**

<b>Action</b>	<b>“OUT-YEAR” IP ACTION COMPLETION PROJECTIONS</b>	<b>Projected Completion Date</b>
1-7	Revise the Hazard Analysis, and if necessary the Building 235-F Deactivation BIO to include deactivation activities in PuFF cells 1 through 5.	7/30/18
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
1-10	Update planning schedule to reflect PuFF cells 1 through 5 deactivation actions for the upcoming 12 months.	1/29/16
1-11	Restore cell infrastructure in PuFF cells 1 through 5.	11/30/18
1-12	Update planning schedule to reflect PuFF cells 1 through 5 deactivation actions for the upcoming 12 months.	1/31/17
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

## **ANNUAL UPDATE ON DRILL PERFORMANCE**

Action 3-4, "Execute at least one formally assessed drill each year..."

On May 14, 2014, the Savannah River Site (SRS) conducted the FY 2014 Site Evaluated Exercise to implement Action 3-4 identified in the Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 2012-1, "Savannah River Site Building 235-F Safety." The drill scenario involved:

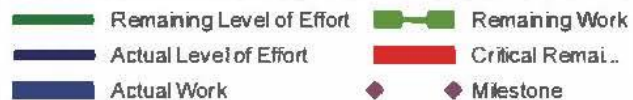
- Severe storms leading to electrical loss for purge and annulus ventilation fans in tanks 33 and 34
- The impact of a nitrogen delivery truck to the northeast entry doors to 235-F resulting in a projectile and release of airborne radioactive contamination

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. Overall, the drill objectives were judged to be partially met. Improvement opportunities were identified in the areas of:

- Radiological and chemical monitoring
- Staffing and activating the Emergency Response Facilities
- Timely notification to off-site agencies
- Adequacy of facilities and equipment
- Exercise conduct and control

Attachment 3 is the After Action Report (Action 3-4 Deliverable) detailing drill conduct including lessons learned. Corrective actions to address the areas for improvement are tracked in the Site Tracking, Analysis and Reporting System (STAR)

BL Coku	Activity ID	Activity Name	RD	Start	Finish	Total Float	Comments	FY2015					FY2016
								FQ4	FQ1	FQ2	FQ3	FQ4	FQ1
<b>235-F RISK REDUCTION (PUFF)</b>													
<b>235-F BIO / TSR REV 1</b>													
<b>TRAINING</b>													
	235FRR-LV1-T2	FACILITY ENTRY TRAINING	23d	Nov-17-14 A	Feb-02-15	-36d							
	235FRR-LV1-T1	BIO/TSR TRAINING	23d	Dec-01-14 A	Feb-02-15	-36d							
<b>FACILITY MODIFICATIONS</b>													
	235FRR-LV1-FM2	LOW DP ALARM FACILITY MODIFICATIONS	9d	Sep-04-14 A	Jan-06-15	-22d							
	235FRR-LV1-FM1	D3 DAMPER FACILITY MODIFICATIONS	7d	Oct-02-14 A	Dec-31-14	-22d							
	235FRR-LV1-FM3	BREATHING AIR INSTALLATION	48d	Oct-08-14 A	Mar-18-15	-33d							
	235FRR-LV1-FM4	FIRE DETECTION AND ALARM SYSTEM	15d	Oct-22-14 A	Jan-15-15	3d							
<b>PROCEDURES</b>													
	235FRR-LV1-O3	PROCEDURES	15d	Sep-29-14 A	Jan-15-15	-36d							
<b>ASSESSMENTS</b>													
	235FRR-LV1-A1	CONDUCT FACILITY SELF ASSESSMENT	14d	Feb-03-15	Feb-26-15	-36d							
	235FRR-LV1-A2	INDEPENDENT VALIDATION READINESS ASSESSMENT	14	Mar-02-15	Mar-24-15	-36d							
	235FRR-LV1-A3	DOE READINESS REVIEW ASSESSMENT	12d	Mar-26-15	Apr-16-15	-36d							
<b>RR (ACTION 1-4) (RA) Implement Deactivation BIO - Cells 6 through 9</b>													
	V235RR-N1600	(ACTION 1-4, RA) IMPLEMENTATION OF RA FOR DEACTIVATION BIO / TSR IS COMPLETE FOR CELLS 6 THRU 9 (M.1 DATE IS 9/30/13)	0d		May-06-15*	12d	5/30/15						
	V235RR-PB 01	COMPLETE CONTRACTOR RA DBIO	0d		Mar-24-15*	-36d	D1/3D/15						
<b>RR (ACTION 1-6) Update Schedule to Reflect Actions for 2015</b>													
	V235RR-FY15010	(Action 1-6) UPDATE SCHEDULE TO REFLECT PuFF CELLS 1 THRU 5 DEACTIVATIONS FOR 2015 COMPLETE	0d		Dec-22-14*	9d	Due 12/31/14						
<b>RISK REDUCTION</b>													
<b>RISK REDUCTION OPERATIONS</b>													
	235FRR-LV1-O2	INSTALL CELL GLOVES	126d	Oct-06-14 A	Aug-06-15	-38d							



235-F PuFF Risk Reduction  
 Level | Schedule

Data Date: Dec-17-14

Issue Date: Dec-18-14

TASK filter: CCG - 235-F RISK REDUCTION -LV1.

--(Bk Colu)	Activity ID	Activity Name	RD	Start	Finish	Total Float	Comments	FY2015					FY2016
								FQ4	FQ1	FQ2	FQ3	FQ4	FQ1
	235FRR-LV1-O1	D&R SHIELD WINDOWS	122d	Nov-20-14 A	Jul-30-15	-38d							
	235FRR-LV1-O3	LAMP WEST SIDE CELLS	4d	Aug-03-15	Aug-06-15	-38d							
	235FRR-LV1-O4	PERFORM INTRUSIVE ENHANCED CHARACTERIZATION	32	Aug-10-15	Oct-05-15	-10d							
	235FRR-LV1-O5	REPAIR MANIPULATORS	32d	Sep-08-15	Nov-02-15	-2							
	V235RR-PBI03	BEGIN FIELD MANIPULATOR REPAIR / REPLACEMENT	0d	Sep-22-15*		-2	9/30/15						
<b>ENGINEERING</b>													
	235FRR-LV1-E1	ENGINEERING	146d	Sep-30-13 A	Sep-14-15	2d							
<b>RR (ACTION 1-3) Restore cell infrastructure in PuFF cells 6 through 9</b>													
	V235RR-LWC090	(ACTION 1-3) RESTORE CELL INFRASTRUCTURE IN PuFF CELLS 6 THRU 9 REPORTED TO DOE (PEMP M.1 DATE IS 9/30/13)	0d		Aug-13-15*	-38d	6/30/15						
	V235RR-PBI02	COMPLETE RESTORATION OF IN-CELL SERVICES TO AID DEACTIVATION	0d		Aug-08-15*	-21d	6/30/15						
	V235RR-PBI04	COMPLETE ENHANCED CHARACTERIZATION - PBI	0d		Oct-05-15	-10d	9/30/15						
<b>FDAS UPGRADE (SR 2C)</b>													
<b>RR (ACTION 2C-3) Installation and Acceptance Testing of the PuFF FDAS</b>													
	V235RR-DFB060	(Action 2c-3) Installation and acceptance testing of the PuFF FDAS COMPLETE.	0d		Jan-26-15*	3d	1/30/15						

Attachment 2

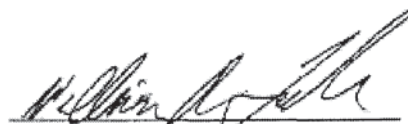
## 2015 F-AREA COMPLEX EP DRILL SCHEDULE

Emergency Preparedness Coordinator: Batersa Mitchem  
Facility Point of Contact: William Tadlock

	APRIL
Date	04/29/15
Type	235-F Radiological Release with Protective Actions  (Evaluated)  (MOX and SRR will be invited to participate)

APPROVAL:

William Tadlock  
F-Area Complex Facility Manager

  
Signature

11/4/14  
Date