Independent Assessment of Emergency Preparedness Capabilities at the Savannah River Site

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Office of Enterprise Assessments
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Acronyms

AEC	Area Emergency Coordinator
Ameresco	Ameresco, Inc.
BCF	Biomass Cogeneration Facility
BSRA	Battelle Savannah River Alliance, LLC
CAR	Consequence Assessment Room
CAS	Central Alarm Station
CR	Control Room
COVID	Coronavirus Disease
DNF	Defense Nuclear Facility
DOE	U.S. Department of Energy
DOE-SR	DOE Savannah River Operations Office
DWPF	Defense Waste Processing Facility
EA	Office of Enterprise Assessments
EDO	Emergency Duty Officer
EMS	Emergency Medical Services
ENN	Emergency Notification Network
EOC	Emergency Operations Center
EPHA	Emergency Planning Hazards Assessment
EPI	Emergency Public Information
ERO	Emergency Response Organization
FEC	Facility Emergency Coordinator
GE	General Emergency
HANM	H-Area New Manufacturing
HAOM	H-Area Old Manufacturing
HAZMAT	Hazardous Materials
IC	Incident Commander
JIC	Joint Information Center
LWO	Liquid Waste Organization
NNSA	National Nuclear Security Administration
SRFO	NNSA Savannah River Field Office
OE	Operational Emergency
OFI	Opportunity for Improvement
OSC	Operations Support Center
OST	Office of Secure Transportation
RAP	Radiological Assistance Program
RAP 3	RAP Region 3
REAC/TS	Radiation Emergency Assistance Center/Training Site
SM	Shift Manager
SOM	Shift Operations Manager
SRNL	Savannah River National Laboratory
SRNS	Savannah River Nuclear Solutions, LLC
SRR	Savannah River Remediation, LLC
SRS	Savannah River Site
SRSFD	Savannah River Site Fire Department
SRSOC	SRS Operations Center
SWMF	Solid Waste Management Facility
TSR	Technical Support Room
TEF	Tritium Extraction Facility
VEGP	Vogtle Electric Generating Plant

INDEPENDENT ASSESSMENT OF EMERGENCY PREPAREDNESS CAPABILITIES AT THE SAVANNAH RIVER SITE

Executive Summary

The U.S. Department of Energy (DOE) Office of Enterprise Assessments (EA) conducted an independent assessment evaluating whether the DOE Savannah River Operations Office (DOE-SR); National Nuclear Security Administration Savannah River Field Office (SRFO); Savannah River Nuclear Solutions, LLC (SRNS), the Savannah River Site management and operating contractor; Savannah River Remediation, LLC (SRR), the Defense Waste Processing Facility and F and H Tank Farms contractor; Ameresco, Inc. (Ameresco), the Biomass Cogeneration Facility contractor; and Centerra, the protective force contractor, established and validated their emergency response capabilities as required by DOE Order 151.1D, *Comprehensive Emergency Management System*. The assessment reviewed a five-year period, from October 1, 2015, to September 30, 2020. In June 2021, Battelle Savannah River Alliance, LLC (BSRA) became the Savannah River National Laboratory contractor, and although not responsible for validating response capabilities for the five-year period under review, is currently responsible for maintaining the facility-level response capabilities. Specifically, the site-level and facility-level exercise programs were assessed to determine whether Federal and contractor organizations validated specific emergency response capabilities to ensure that the site can respond effectively and efficiently to all operational emergencies with appropriate response measures to protect workers, responders, and the public.

EA identified the following strengths:

- During the five-year period, SRNS and SRR established and validated the emergency response capabilities derived from DOE-SR and SRFO approved emergency planning hazards assessments as required by DOE Order 151.1D.
- DOE-SR and SRNS routinely interface and coordinate with local, state, and Federal agencies and organizations responsible for offsite emergency response to supplement SRNS capabilities.
- DOE-SR, SRFO, SRNS, SRR, Ameresco, Centerra, and BSRA each maintain an appropriate emergency response organization consisting of the skills and disciplines necessary for adequate mitigation of emergency incidents.

EA also identified several weaknesses in the Savannah River Site emergency management program, including the following two findings that warrant a high level of attention from DOE-SR, SRNS, and Ameresco management:

- Ameresco did not annually validate its emergency response capabilities during the five-year period.
- SRNS has not maintained an adequate site-level exercise program to validate some important offsite interface emergency response capabilities based on the hazards identified in emergency planning hazards assessments.

In summary, DOE-SR, SRFO, SRNS, SRR, Centerra, and Ameresco maintain emergency preparedness and response capabilities. However, SRNS and Ameresco did not validate several of their capabilities during the five-year period. Without testing and validating key response capabilities, SRNS and Ameresco cannot ensure an effective and efficient response to all-hazard incidents and events and could potentially expose workers, responders, and the public to unnecessary risk. EA will monitor corrective actions implementation, as appropriate, and seek opportunities to evaluate future exercises and performance tests.

INDEPENDENT ASSESSMENT OF EMERGENCY PREPAREDNESS CAPABILITIES AT THE SAVANNAH RIVER SITE

1.0 INTRODUCTION

The U.S. Department of Energy (DOE) Office of Emergency Management Assessments, within the independent Office of Enterprise Assessments (EA), assessed the establishment and validation of emergency preparedness capabilities at the Savannah River Site (SRS). This assessment is part of a targeted review of emergency preparedness for high-hazard facilities within DOE, including the National Nuclear Security Administration (NNSA). This targeted review evaluated the processes for identifying and maintaining emergency response capabilities in a state of readiness to protect the health and safety of workers, responders, and the public for any incident, whether natural or manmade, that requires response action beyond normal operations.

The scope of the assessment was in accordance with the *Plan for the Assessment of Emergency Preparedness Capability at the Savannah River Site*, September 2021, which used the site-level and facility-level exercise programs to assess whether DOE Savannah River Operations Office (DOE-SR), NNSA Savannah River Field Office (SRFO), Savannah River Nuclear Solutions, LLC (SRNS), Savannah River Remediation, LLC (SRR), Ameresco, Inc. (Ameresco), and Centerra validated the emergency response capabilities derived from DOE-SR and SRFO approved emergency planning hazards assessments (EPHAs). DOE Order 151.1D, *Comprehensive Emergency Management System*, requires field offices to review and approve all EPHAs. DOE Order 151.1D also identifies the functional emergency response requirements for DOE and NNSA operations. These requirements include developing an integrated and comprehensive emergency management system to ensure that sites can respond effectively and efficiently to all operational emergencies (OEs) so that appropriate response measures are taken to protect workers, responders, and the public.

SRNS, as the management and operating contractor, has responsibility for managing and implementing the overall SRS emergency management program while collaborating with other site prime contractors to identify improvement items for emergency preparedness and response capabilities. SRNS must determine the necessary site and facility-level emergency response capabilities based on site-specific attributes, including types and forms of hazardous materials (HAZMAT), demographics, and geography. SRR, the Defense Waste Processing Facility (DWPF) and F and H Tank Farms contractor, and Ameresco, the Biomass Cogeneration Facility (BCF) contractor, are required to implement the facility-level emergency response capabilities stated in the SRS emergency plan. In June 2021, Battelle Savannah River Alliance, LLC (BSRA) became the Savannah River National Laboratory (SRNL) contractor, and although not responsible for validating response capabilities for the five-year period under review (during which time it was a SRNS responsibility), is currently responsible for maintaining the facility-level response capabilities. Centerra is the protective force contractor for SRS. DOE Order 151.1D requires facilities to prepare for incidents at the upper end of the potential consequence spectrum and emergency response staffs must plan for the protection of personnel, mitigation of potential HAZMAT releases, and establishment of appropriate short-term recovery actions.

Additionally, in accordance with DOE Order 151.1D, SRNS emergency planners plan how to acquire response capabilities, if necessary, from external sources, including surrounding communities, state authorities, Federal agencies, and offsite DOE and national assets. Some response capabilities deemed necessary for both low-probability and severe incidents would be a financial burden to maintain on site or could be rendered

unavailable if such an incident occurred. Accordingly, preparation for such an incident requires establishing agreements with offsite entities that enable integration into the SRNS emergency response.

2.0 METHODOLOGY

The DOE independent oversight program is described in and governed by DOE Order 227.1A, *Independent Oversight Program*, which is implemented through a comprehensive set of internal protocols, operating practices, assessment guides, and process guides. This report uses the terms "best practices, deficiencies, findings, and opportunities for improvement (OFIs)," as defined in DOE Order 227.1A.

As identified in the assessment plan, certain aspects of EA Criteria and Review Approach Document 33-09, *DOE O 151.1D Emergency Management Program*, provided a focused set of assessment objectives, criteria, and approaches. In addition, this assessment evaluated site-specific emergency planning and documented performance demonstrations over the past five-year period and was not intended to represent a full programmatic evaluation of the site's emergency management program. Due to DOE Coronavirus Disease (COVID) protocols, this assessment was conducted remotely with no onsite observations.

This assessment evaluated whether DOE-SR, SRFO, SRNS, SRR, Ameresco, and Centerra have established, and then validated over a five-year period, the SRS emergency response capabilities using scripted, scenario-driven, operations-based OE exercises designed to assess, evaluate, and improve performance in prevention, protection, mitigation, response, and recovery capabilities in a risk-free environment consistent with DOE order requirements. Operations-based exercises test and validate policies, plans, procedures, training, equipment, and interagency agreements. DOE operations-based exercises include functional exercises, full-scale exercises, and full-participation exercises. In addition, SRNS, SRR, and Ameresco may credit an actual emergency response for an operations-based exercise by providing a documented critique and an emergency response after-action report.

EA examined key documents, including exercise after-action reports, exercise packages, plans, procedures, manuals, and analyses. Interviews were conducted with key personnel responsible for developing and executing the emergency management program. The members of the assessment team, the Quality Review Board, and management responsible for this assessment are listed in appendix A.

3.0 RESULTS

The DOE Office of Environmental Management, through DOE-SR, provides oversight of SRS operations, excluding NNSA facilities. SRFO provides oversight of operations in NNSA facilities.

The extent of emergency planning and preparedness required for the site directly corresponds to the types and scope of hazards present and the potential consequences of accidents or incidents, which are unique to specific facilities. SRNS and SRR have developed 18 SRS EPHAs that provide the technical basis for emergency planning and preparedness. SRNS, SRR, and Ameresco used EPHA results to identify and define personnel, resources, facilities, and systems-related capabilities in SCD-7, *Savannah River Site Emergency Plan*, and F-TRT-G-00010, Rev. 3, *Fire Department Emergency Response Baseline Needs Assessment*. Importantly, part of the SRS emergency response organization (ERO) is a site-level composite force structured as an integrated line and staff organization that responds to all emergency incidents within the SRS boundary. Nine facility-level EROs are established that respond to facility-specific incidents with support from site-level response capabilities, as needed. Additionally, the roles of local, state, and Federal agencies and organizations responsible for supplementing onsite response

capabilities are appropriately documented in formal assistance agreements with individual response organizations and agencies.

SRNS appropriately conducted four site-level operations-based exercises during the five-year period, from October 1, 2015, to September 30, 2020, using scenarios from the spectrum of potential OEs identified in the EPHAs. SRNS and SRR postulated incidents at the SRS EPHA facilities, and scenarios included the substances and material present at the site to test the integrated emergency response capabilities. Additionally, SRNS completed two severe events exercises using earthquakes as the initiators; one of the exercises included participation by local, state, and Federal organizations. Further, SRNS conducted exercises with postulated incidents involving an active assailant, which required an integrated ERO response. During the five-year period, SRNS formally evaluated its response to two actual site-level incidents. This assessment credited these incidents because SRNS categorized them as an OE, implemented the SRS emergency plan, and adequately documented the critique and responses in an after-action report.

Sections 3.1 through 3.4 discuss response capabilities specific to site-level ERO cadres and teams, facility-level ERO cadres and team, response facilities and systems, and offsite response interfaces, respectively. SRS has 10 unique site-level EROs, nine facility-level EROs, 28 primary or alternate response facilities and systems, and 35 offsite response interfaces.

3.1 Site-Level Emergency Response Organization

The objective of this portion of the assessment was to verify that DOE-SR, SRFO, SRNS, SRR, Ameresco, and Centerra have established and validated the SRS ERO structure and its emergency response capabilities, as required by DOE Order 151.1D. In accordance with the order, an ERO must consist of personnel with capabilities and resources based on the all-hazards planning basis. The site is required to designate and train a primary and at least one alternate for each ERO position, excluding first responders in the field. Each primary and alternate position must be available to implement the emergency management plan for initial and ongoing emergency response. A site must also establish an effective first responder capability to mitigate all emergencies, including emergency medical services (EMS), fire, HAZMAT, and rescue emergencies as derived through the baseline needs assessment, hazard survey, and threat and hazard identification risk assessment. Personnel from DOE-SR, SRFO, SRNS, SRR, Ameresco, and Centerra fill staff positions within the ERO. Finally, SRNS is required to validate each site-level capability over a five-year period.

SRS Fire Department

SRNS has adequately established and maintains fire department capabilities. The SRS Fire Department (SRSFD) provides the following emergency critical response capabilities:

- EMS at the advanced life support level (including response to mass casualties, active shooter incidents, and natural disasters)
- Structural fire suppression, investigation, and wildland firefighting support
- HAZMAT management (including response to weapons of mass destruction events and acts of terrorism)
- Technical rescue (including high/low angle, vehicle extrication, confined space, structural collapse, trench, tower, and surface water rescue).

SRNS has appropriately organized the fire department into four shift battalions, which includes the battalion chief and other officers. In addition, the department has paramedics, advanced emergency medical technicians, and emergency medical technicians. SRSFD has sole responsibility for emergency medical response at SRS under the direction of the SRS medical director. SRNS validated its fire department response capabilities during the five--year period, which included 34 postulated HAZMAT, EMS, or fire incident exercises and two actual incidents. In addition, SRNS validated EMS capability in parallel with the HAZMAT, fire, or active assailant response capabilities, which in some instances included patient transport to participating offsite medical centers.

Protective Force

Centerra provides site and facility access control and protection of site assets, including special response team personnel supported by canine services. Appropriate agreements are in place with Federal and state jurisdictions to provide additional personnel, equipment, and capabilities, if needed. During the five-year period, Centerra validated protective force capabilities in accordance with the site emergency plan, including support for incident response, in 27 exercises and two actual incidents.

Incident Commanders

SRNS and Centerra have appropriately implemented command and control for an onsite incident scene, consistent with the National Incident Management System Incident Command System. The initial assignment of the role of incident commander (IC) depends on the nature of the incident. For security incidents and active threats, the affected protective force lieutenant becomes the IC until relieved by a higher-ranking officer. For medical, fire, and HAZMAT incidents, the ranking SRNS fire department responder on the scene becomes the IC until succeeded later by a higher-ranking officer. As incidents warrant, command and control of the incident scene may transition to a unified command. For all facility-related incidents, the area emergency coordinator (AEC)/facility emergency coordinator (FEC) maintains command and control of facility operations. A facility incident scene coordinator integrates response activities with the designated IC (i.e., SRSFD or the protective force) depending on the type of incident. SRNS and Centerra validated their IC capability in 32 exercises and two actual incidents during the five-year period. The SRSFD served in the IC capacity 28 times and Centerra six times.

SRS Operations Center Staff

SRNS and Centerra have adequately established and maintain an SRS operations center (SRSOC) staff to receive reports of potential emergency conditions from the field. SRNS and Centerra continuously staff the SRSOC to provide monitoring, emergency, and dispatch functions in accordance with Manual Q12.3, *SRSOC Operating Manual*. In addition, general SRSOC responsibilities include notifying the protective force of SRSFD coded duress signals; providing onsite protective actions; categorizing and classifying emergencies; performing offsite notifications and issuing protective action recommendations; activating the site-level ERO; providing dose projections/consequence assessments; and providing overall direction and coordination of the site-level response.

SRNS has stationed an emergency duty officer (EDO) in the SRSOC to manage initial site-level response actions and to coordinate initial site response actions. Except for downgrading from or terminating incidents that cause activation of the site-level ERO, the EDO has the authority of the Emergency Operations Center (EOC) emergency director and DOE-SR/SRFO emergency manager, as appropriate, until ERO members staff these positions. In addition, the SRSOC has other communications specialists and dispatchers to support the EDO. SRNS and Centerra validated their SRSOC capability in 33 exercises and two actual incidents during the five-year period.

Emergency Operations Center Staff

DOE-SR, SRFO, SRNS, SRR, Ameresco, and Centerra have adequately established and maintain an EOC staff organization that provides emergency management coordination, consequence assessment, field response operations coordination, notification and reporting, recovery planning, field monitoring operations, external coordination and offsite liaison capabilities, and emergency public information (EPI). SRNS guides and supports emergency response efforts and resources used inside the SRS boundary through EOC operations. SRNS, SRR, Ameresco, and Centerra have staffed the EOC cadre with 180 personnel who fill 60 functional positions. DOE-SR, SRFO, SRNS, SRR, and Centerra validated their EOC cadre capability in four exercises and two actual incidents during the five-year period. However, Ameresco has not validated its participation in the EOC cadre capability. (See **OFI-Ameresco-1**.)

DOE-SR and SRFO Emergency Oversight

A DOE-SR or SRFO Senior Federal Official (SFO) is appropriately included as part of the ERO and provides the final authority to commit DOE and NNSA resources. The SFO provides guidance, approves releases of EPI and official situation reports, and concurs on event termination. In addition, the SFO approves the declaration of continuity of operations events, if applicable, and approves requests for offsite support not covered by pre-existing agreements. DOE-SR coordinates with SRFO for all emergency responses to NNSA facilities. For safeguards and security emergencies, the DOE-SR emergency manager is responsible for the overall direction of the emergency response, and Centerra is responsible for managing and implementing security response actions with the operating contractor's assistance. DOE-SR and SRFO have staffed the Federal ERO positions with 21 DOE-SR personnel who fill 7 functional positions and nine SRFO personnel who fill two functional positions. DOE-SR and SRFO validated their collective emergency oversight capabilities in four exercises and two actual incidents during the five-year period.

Emergency Public Information Staff

DOE-SR, SRFO, SRNS, SRR, Ameresco, and Centerra have adequately established and maintain an EPI staff that includes joint information center (JIC) staffing to disseminate information to the public during an emergency. The EPI staff provides the resources for DOE-SR, SRFO, contractors, and other stakeholders to coordinate the timely exchange of information among internal representatives and other external organizations involved in a response. In addition, the EPI staff advises and counsels the EOC emergency manager; drafts, secures approval for, and distributes incident messages and responds to media and public inquiries; monitors and disseminates information through social media; and coordinates media interviews and briefings. SRNS has staffed the EPI capability with 33 personnel who fill 10 functional positions. DOE-SR, SRFO, SRNS, SRR, and Centerra validated their EPI capability in four exercises and two actual incidents during the five-year period. However, Ameresco has not validated its participation in the EPI capability. (See **OFI-Ameresco-1**.)

Occupational Medicine Team

SRNS has adequately established an occupational medicine team to staff the primary SRS medical facility, the 719-5N Occupational Medicine Facility, which is equipped to handle personnel with non-life-threatening injuries, illnesses, or exposures, with or without contamination. SRNS transfers individuals with conditions requiring treatment beyond the scope of occupational medicine to an offsite facility with the appropriate level of care. During normal work hours, the SRNS medical director, physicians, advanced practice clinicians, and other personnel are available to assess the condition of patients, provide necessary urgent or emergency care, arrange for patient transfer to appropriate facilities as needed, and determine appropriate supplemental treatment. During off-hours, on-call occupational

medicine staff or the SRSFD IC determines whether EMS personnel should transfer an individual to an offsite medical facility for treatment. SRNS has staffed the occupational medicine team with 13 personnel. SRNS validated its occupational medicine team capability in three exercises and one actual incident during the five-year period.

Site Field Monitoring Team

SRNS and SRR have appropriately established and maintain an onsite field monitoring team (FMT) that uses members of both contractors' radiation protection departments, which consist of at least three two-person teams, to provide monitoring. SRNS dispatches the FMT to perform monitoring to determine safe evacuation routes and to conduct monitoring at the furthest distance from the source of where measurable HAZMAT readings are probable, which includes radiological and chemical monitoring within the boundaries of SRS property. In addition, the FMT maintains close coordination with the EOC consequence assessment team to assess the immediate consequences of a HAZMAT release. SRNS and SRR have staffed the FMT with 28 personnel who fill seven functional positions. SRNS and SRR validated their FMT capability in three exercises during the five-year period.

Site Services Operations Support Center

SRNS has appropriately established and maintains a Site Services operations support center (OSC) in building 704-1N to assist with emergency incidents on the site. The site logistics coordinator in the EOC determines whether additional site resources (maintenance, logistical, and operational) are needed and has the capability to activate the Site Services OSC. SRNS has staffed the Site Services OSC capability with 20 personnel who fill five functional positions. SRNS validated its Site Services OSC capability in four exercises during the five-year period.

Site-Level Emergency Response Organization Cadres and Teams Conclusions

During the five-year period, DOE-SR, SRFO, SRNS, SRR, and Centerra adequately established, maintained, and validated the emergency response capabilities of the site-level ERO cadres and teams, as required by DOE Order 151.1D. Moreover, SRNS derived from its EPHAs an appropriate site-level ERO consisting of requisite skills and disciplines for mitigation of emergency incidents. However, during the five-year period, Ameresco did not participate in the validation of the EOC and EPI site-level capabilities.

3.2 Facility-Level Emergency Response Organization

The objective of this portion of the assessment was to verify that DOE-SR, SRFO, SRNS, SRR, BSRA, and Ameresco have established and validated the SRS facility-level ERO structure and its emergency response capabilities, as required by DOE Order 151.1D. Like a site-level ERO, as discussed above, a facility-level ERO must consist of personnel with capabilities and resources based on the all-hazards planning basis. EPHA facilities with facility-level EROs must evaluate facility-level emergency response capability and proficiency annually by initiating response to simulated, realistic emergency situations/conditions in a manner that, as nearly as possible, replicates an integrated emergency response to an actual event. DOE-SR and SRFO provide a Facility Representative for oversight of operational processes during incidents in Defense Nuclear Facilities (DNFs) that have an EPHA, which includes five SRNS facilities and two SRR facilities. Each facility-level ERO uses a typical on-shift staffing configuration consisting of key response positions in a control room (CR) from which emergency actions are directed and an OSC to provide maintenance, logistical, and operational support to the respective CR. Personnel from DOE-SR, SRFO, SRNS, SRR, and Ameresco fill staff positions within facility-level EROs. Further, SRNS, SRR, and Ameresco are required to validate each facility-level ERO capability annually. Finally, DOE-SR and SRFO exempted the following facilities from conducting the required

annual facility-level during 2020 due to COVID: the DWPF, F-Area, H-Area, F and H Tank Farms, Tritium, and K-Area.

Defense Waste Processing Facility Emergency Response Organization

SRR has adequately established and maintains a facility-level ERO for the DWPF, a DNF. The DWPF shift manager (SM) or vitrification CR manager in S-Area determines the appropriate initial emergency classification and notifies the EDO of an incident. Upon classification of an OE, the DWPF SM or vitrification CR manager assumes the responsibility and duties of the AEC, evaluates protective actions, and uses EPIP-DWPF-110, *AEC Emergency Response Actions*, to direct personnel. The AEC augments the CR staffing and activates the CR and OSC EROs. Key responsibilities of the DWPF ERO include assessing conditions, maintaining surveillance and control of operational processes, directing incident assessment and mitigation, and determining and implementing facility/area protective actions. SRR has staffed the DWPF ERO with 236 personnel who fill 14 functional positions.

However, SRR has not consistently conducted the required annual exercise to validate its DWPF ERO response capability. During the five-year period, SRR validated its DWPF ERO response capability in four exercises (fiscal years 2016, 2017, and 2019), two of which SRR conducted during fiscal year 2016. SRR did not evaluate its facility-level ERO response capability and proficiency during fiscal year 2018. DOE Order 151.1D requires EPHA facilities with facility-level EROs to evaluate facility-level emergency response capability and proficiency annually. (See **Deficiency D-SRR-1**.)

F-Area Complex Emergency Response Organization

SRNS and SRR have adequately established and maintain a facility-level ERO for the F-Area Complex, which consists of DNFs in F-Canyon, FB-Line, 235-F and F/H Laboratory, and the F-Tank Farm managed by SRR. F-Area is functionally divided into several facility-level EROs that are each responsible for their respective facilities. The staff in the incident facility provides the initial area and facility ERO, and personnel from other facilities supplement this organization as needed. During day-shift hours, the SRNS F-Area Complex shift operations manager (SOM) fills the roles of both AEC and FEC for most facilities in F-Area unless the incident is classified for the F-Tank Farm. In that scenario, the SRR H-Tank Farm SOM assumes duties as the FEC. In addition, F-Area uses a typical staffing configuration for its EROs that consists of key response positions in CRs from which the AEC directs emergency actions and associated OSCs to provide maintenance, logistical, and operational support to the respective CR. During off-shift hours (including nights, holidays, and weekends), the EDO serves as the AEC for all facilities in F-Area. Upon classification of an OE, the F-Area Complex SOM assumes the responsibility and duties of the AEC and operates from the 772-F CR; evaluates protective actions; and uses L2-1-EPIP-002, *F-Area Complex Emergency Response*, to direct personnel. The AEC augments the CR staffing and activates the CR and OSC EROs. Key responsibilities of the F-Area Complex ERO include assessing conditions, maintaining surveillance and control of operational processes, directing incident assessment and mitigation, and determining and implementing facility/area protective actions. SRNS has staffed the F-Area Complex ERO with 26 personnel who fill four functional positions. During the five-year period, SRNS validated its F-Area ERO response capability annually.

H-Area Facilities Emergency Response Organization

SRNS and SRR have adequately established and maintain a facility-level ERO for H-Area facilities, which consist of DNFs in Tritium facilities, H-Canyon/OF-H, HB-Line, and G-Area trailers and the H-Tank Farm managed by SRR. Many of these facilities process the various components produced in the fission reaction of nuclear fuels and targets. The H-Canyon SOM fulfills the responsibilities of the AEC

for all H-Area facilities. SRNS has functionally divided the H-Area ERO into several groups that are responsible for specific facilities. The staff in the incident facility provides the initial facility ERO, and personnel from non-incident facilities, as needed, supplement the incident facility ERO, except for the AEC/FEC. The H-Canyon CR first line manager serves as the FEC for H-Canyon/OF-H facilities and HB-Line. In addition, H-Area uses a typical staffing configuration for its EROs that consists of key response positions in CRs from which the AEC directs emergency actions and associated OSCs to provide maintenance, logistical, and operational support to the respective CR. Upon classification of an OE, the H-Canyon SOM assumes the responsibility and duties of the AEC using EPIP HCP-002, *H-Area Material Disposition Project Emergency Response*. The AEC augments the H-Canyon CR staffing and activates the CR and OSC EROs. SRNS has staffed the H-Area facilities ERO with 108 personnel who fill 12 functional positions. During the five-year period, SRNS validated its H-Area ERO response capability annually.

Liquid Waste Organization Facilities Emergency Response Organization

SRR has adequately established and maintains a facility-level ERO for Liquid Waste Organization (LWO) facilities, which consist of DNFs located in the F and H Tank Farms that receive, store, evaporate, process, and transfer high-level radioactive waste. During an emergency, the LWO SOM determines the appropriate initial emergency classification and notifies the EDO of an incident. Upon classification of an OE, the LWO SOM assumes the responsibility and duties of the FEC, evaluates protective actions, and uses EPIP-HLW-111, *FEC Emergency Response Actions*, to direct personnel. Each LWO facility has a dedicated CR (241-18F, 241-28H, and 241-2H) that SRR staffs for 24-hour operations and, during an emergency, functions as the central control point for incident response. The LWO FEC operates from the 241-2H CR, augments the CR staffing, and activates the CR and OSC EROs. Key responsibilities of the LWO ERO include assessing conditions, maintaining surveillance and control of operational processes, directing incident assessment and mitigation, and determining and implementing facility/area protective actions. If necessary, the F-Area or H-Area SOM will assume the AEC role. SRR has staffed the LWO ERO with 355 personnel who fill 14 functional positions.

However, SRR has not consistently conducted the required annual exercises to validate its LWO ERO capability. During the five-year period, SRR validated its ERO response capability in six exercises. SRR conducted two exercises each during fiscal years 2016 and 2018. SRR did not evaluate its facility-level ERO response capability and proficiency during fiscal year 2019. DOE Order 151.1D requires EPHA facilities with facility-level EROs to evaluate facility-level emergency response capability and proficiency annually. (See **Deficiency D-SRR-1**.)

Tritium Facilities Emergency Response Organization

SRNS has adequately established and maintains a facility-level ERO for Tritium facilities, which consist of DNFs located in H-Area. These DNFs include H-Area New Manufacturing (HANM), H-Area Old Manufacturing (HAOM), the Tritium Extraction Facility (TEF), and 234-7H. The primary purpose of the Tritium facilities is to process, load, and unload tritium and deuterium gases from various containers and receptacles for the U.S. Department of Defense. During an emergency, the Tritium SOM determines the appropriate initial emergency classification and notifies the EDO of an incident. Upon classification of an OE, the Tritium SOM assumes the responsibility and duties of the FEC; evaluates protective actions, and uses EPIP-TRIT-111, *FEC Response Actions*, to direct personnel. The SOM/SM in the HANM or TEF becomes the FEC once an emergency occurs in those facilities. For incidents occurring in HAOM or 238-H, the HANM SOM/SM will assume FEC responsibility and operate from the 233 CR. For an event affecting multiple Tritium facilities, the HANM FEC assumes overall responsibility for incident mitigation. In addition, the H-Canyon SOM, located in 221-H, assumes the duties and responsibilities of the AEC for H-Area, which includes the Tritium facilities. Tritium FECs located in HANM, HAOM and

TEF CRs augment the CR staffing and activate the CR and OSC EROs. SRNS has staffed the Tritium ERO with 227 personnel who fill 20 functional positions. SRNS annually validated its Tritium facilities ERO response capability during the five-year period.

Solid Waste Management Facility Emergency Response Organization

SRNS has adequately established and maintains a facility-level ERO for the Solid Waste Management Facility (SWMF), which is a DNF located in E-Area. The mission of SWMF is to store and/or dispose of solid and liquid wastes generated by the operation of SRS and other DOE and U.S. Department of Defense sites. The EDO serves as the AEC for SWMF facilities 24 hours a day. During an emergency, the SWMF SOM recommends an initial emergency classification and notifies the EDO of an incident. Upon classification of an OE by the EDO, the SWMF SOM assumes the responsibility and duties of the FEC, evaluates protective actions, and uses EPIP-SW-111, *FEC Emergency Response Actions*, to direct personnel. The FEC augments the CR staffing and activates the CR and OSC EROs. SRNS has staffed the SWMF ERO with 54 personnel who fill six functional positions. During the five-year period, SRNS appropriately validated its SWMF ERO response capability annually.

Savannah River National Laboratory Facilities Emergency Response Organization

SRNS has appropriately established, and BSRA currently maintains, a facility-level ERO for the SRNL, which is in 700-Area. BSRA personnel provide expert analytical and technical support to SRS facilities related to research, science and technology development and transfer; environmental restoration; and defense waste processing, including developmental efforts to support separations operations. The EDO assumes the duties and responsibilities of the AEC for 700-Area and SRNL. During an emergency, the Operations and Facilities SOM determines the appropriate initial emergency classification and notifies the EDO of an incident. Within SRNL, BSRA has appointed SOMs for all four shifts. Upon classification of an OE, the Operations and Facilities SOM assumes the responsibility and duties of the FEC, evaluates protective actions, and uses EPIP-ROD-002, *SRNL Emergency Response Facility Staff Actions*, to direct personnel. The FEC augments the 773-A CR staffing and activates the CR and OSC EROs. BSRA has staffed the SRNL ERO with 99 personnel who fill 19 functional positions. During the five-year period, SRNS validated its SRNL ERO response capability annually, which included response to an actual incident.

K-Area Complex Emergency Response Organization

SRNS has adequately established and maintains a facility-level ERO for K-Area Complex facilities, which consist of DNFs that include the Disassembly Basin, Purification Area, Assembly Area, Moderator Storage Areas, Material Storage Area, 163-67K Hanford Unirradiated Fuel Package Storage Area, and 163-70K Criticality Control Overpack Pad. The buildings are located near the center of the site, which is now under the management of environmental management operations. During an emergency, the K-Area SM determines the appropriate initial emergency classification and notifies the EDO of an incident. Upon classification of an OE, the K-Area SM assumes the responsibility and duties of the AEC, evaluates protective actions, and uses 6Q7-EPIP-002-KLC, *Emergency Control Room Staff Actions*, to direct personnel. The AEC augments the CR staffing and activates the CR and OSC EROs. SRNS has staffed the K-Area Complex ERO with 99 personnel who fill five functional positions. During the five-year period, SRNS validated its K-Area ERO response capability annually.

Biomass Cogeneration Facility Emergency Response Organization

Ameresco has adequately established and maintains a facility-level ERO for the BCF, which consists of three locations: the primary facility on Burma Road, one substation located in K-Area, and one substation located in L-Area. The mission of the BCF is to generate a portion of steam and some electric power to

SRS facilities. The BCF operations manager is responsible for the management and operation of the BCF, an Ameresco operated facility. The EDO assumes the duties and responsibilities of the AEC for the BCF. During an emergency, the BCF SOM determines the appropriate initial emergency classification and notifies the EDO of an incident. Ameresco has appointed SOMs for all four shifts. Upon classification of an OE, the BCF SOM assumes the responsibility and duties of the FEC, evaluates protective actions, and uses EPIP-BCF-111, *Emergency Response Actions*, to direct personnel. The FEC augments the BCF CR staffing and activates the CR and OSC EROs. Ameresco has staffed the BCF ERO with 17 personnel who fill three functional positions.

Nevertheless, in contrast to the annual requirement, Ameresco did not validate its ERO response capability at all during the five-year period. Consequently, Ameresco has not demonstrated its readiness to respond to simulated, realistic emergency situations/conditions in a manner that, as nearly as possible, replicates an integrated emergency response to an actual event. DOE Order 151.1D requires EPHA facilities with facility-level EROs to evaluate facility-level emergency response capability and proficiency annually. EA previously noted this issue as part of a deficiency in its *Office of Enterprise Assessments Assessment of the Savannah River Site Emergency Management Exercise Program – October 2018* assessment report. (See **Finding F-Ameresco-1** and **OFI-Ameresco-2**.)

DOE-SR and SRFO Facility Representative Operational Oversight

DOE-SR and SRFO Facility Representative operational oversight is appropriately included as part of the facility-level ERO and provides the required Federal representation for each DNF. The Facility Representatives typically support the facility-level ERO in the technical support room (TSR). However, during the five-year period, DOE-SR and SRFO Facility Representatives inconsistently participated in facility-level ERO response capability validations by not participating in 19 of 26 facility-level exercises. (See **OFI-DOE-SR-1** and **OFI-SRFO-1**.)

Facility-Level Emergency Response Organization Cadres and Teams Conclusions

DOE-SR, SRFO, SRNS, SRR, Ameresco, and Centerra have adequately established and maintain facility-level ERO cadres and teams, as required by DOE Order 151.1D. BSRA became the SRNL contractor, and although not responsible for validating response capabilities for the five-year period under review, adequately maintains the facility-level response capabilities. However, Ameresco did not validate its BCF ERO response capability and proficiency at all during the five-year period in contrast to the annual requirement. In addition, SRR did not conduct an annual exercise in fiscal year 2018 for the DWPF or in fiscal year 2019 for the LWO to demonstrate facility-level ERO response capability and proficiency. Additionally, DOE-SR and SRFO Facility Representatives have not consistently participated in facility-level exercises to validate that adequate operational oversight is being provided.

3.3 Response Facilities and Systems

The objective of this portion of the assessment was to verify that SRNS, SRR, BSRA, Ameresco, and Centerra have established and validated the SRS emergency facilities and systems commensurate with the associated hazards and threats identified in the all-hazards planning basis. In addition, sites such as SRS must establish and maintain backup capabilities for an EOC, as well as supporting equipment, as required by DOE Order 151.1D. Also assessed were other important emergency response facilities and systems identified by DOE-SR, SRFO, SRNS, SRR, Ameresco, and Centerra.

Emergency Operations Center

SRNS has adequately established and maintains its primary EOC at building 703-A. Accessible on a 24-hour basis, the EOC is the primary facility for coordinating emergency response and mitigation activities with offsite state, local, and Federal agencies and organizations. The EOC is a dedicated facility with a command room; TSR that is equipped with communications for connectivity with fire, medical, and other response teams; and consequence assessment room (CAR). SRNS has equipped the CAR with equipment and systems for consequence assessment of incidents with potential or actual HAZMAT involvement, including onsite and offsite meteorological data. In addition, the EOC has interface capability with the JIC to implement EPI protocols and procedures. Basic functions performed in the EOC include incident assessment, supporting facility response, reviewing protective actions, and coordinating offsite interfaces. Throughout the EOC, SRNS has provided systems and equipment needed to support EOC activities, including an information management system for collecting and disseminating incident information; non-secure and secure communication equipment with multiple primary and backup communications capabilities; and mapping capabilities. SRNS validated its EOC capability in three exercises and one actual incident during the five-year period.

Alternate Emergency Operations Center

SRNS has adequately established and maintains its alternate EOC in building 735-B, which is capable of supporting EOC functions. DOE Order 151.1D requires the alternate EOC to be located outside the emergency planning zone or located so that an incident does not impact both the alternate and primary facilities. The alternate EOC is a dedicated facility and has work areas for the command room, TSR, and CAR. Each work area has systems and equipment needed to support EOC activities, including an information management system for collecting and disseminating incident information. SRNS validated its alternate EOC capability in one exercise and one actual incident during the five-year period.

SRS Operations Center

SRNS has adequately established and maintains an SRSOC in building 703-A. SRNS and Centerra continuously staff the SRSOC to provide monitoring, emergency, and dispatch functions. The SRSOC is a dedicated facility and serves as the site's "E-911" center for immediate emergency response. The SRSOC can be isolated from the outside environment and operated as a self-contained unit. The SRSOC also has an independent ventilation filtration system, water supply, kitchen, and backup liquid propane generators. Numerous systems provide access to the site meteorological data, multiple communications capabilities, the National Warning System, and geographical information system computers. SRNS validated its SRSOC capability in 33 exercises and two actual incidents during the five-year period.

Alternate SRS Operations Center

SRNS has adequately established and maintains an alternate SRSOC in building 722-5A, which is capable of supporting SRSOC functions. The alternate SRSOC is a dedicated facility with work areas for the SRNS and Centerra staff and access to data and communications systems found in the SRSOC. SRNS did not validate its alternate SRSOC capability during the five-year period. (See **OFI-SRNS-1**.) SRNS did demonstrate the use of the alternate SRSOC for several days during a system upgrade project.

Joint Information Center

DOE-SR and SRNS have adequately established and maintain a JIC to disseminate information to the public. The JIC is a non-dedicated facility consisting of a series of rooms at the Applied Research Center, 301 Gateway Drive in New Ellenton, South Carolina, which is outside the SRS emergency planning zone.

SRNS Manual 6Q15.1, *Procedure 600, Public Information Operations*, guides JIC staff in converting the facility into areas designated as staff workrooms and a media briefing area. SRNS validated its JIC capability in four exercises and one actual incident during the five-year period.

Medical Facility

SRNS has adequately established and maintains a medical facility located on site at building 719-5N. This dedicated facility, staffed by occupational medicine personnel, responds to non-life-threatening injuries and occupational-related injuries, illnesses, and exposures. The facility also has a decontamination room with appropriate equipment and monitors, including a holding tank to capture water drainage from chemical and radiological decontamination efforts. Chelation therapy treatment for patients with transuranic uptakes can be performed at the medical facility. SRNS validated its medical facility capability in three exercises and one actual incident during the five-year period.

Central Alarm Station

Centerra has adequately established and maintains a central alarm station (CAS) and secondary alarm station that provides command and control of security-related incidents that require a protective force response. SRNS has interconnected the CAS with the SRSOC, which enables personnel in the SRSOC to maintain oversight of security-related incidents, as needed. Centerra validated its CAS capability in one exercise and one actual incident during the five-year period.

Security Operations Center

Centerra has adequately established and maintains a security operations center (SOC) for use by the protective force and law enforcement to direct security response in support of non-security-related incidents. Centerra typically establishes a SOC as a command post for security-related incidents, established near incident location, and includes senior response supervision and operational interfaces. Additionally, the IC may request the mobile command post for security or operational incidents, providing supplementary communications and computer resources to assist the IC in managing the incident. Centerra validated its SOC capability in one exercise and one actual incident during the five-year period.

Defense Waste Processing Facility Control Room

SRR has adequately established and maintains a DWPF CR located in building 210-S, which is the S-Area Supervisory CR. The CR is a dedicated facility and has the necessary instrumentation and controls to operate, monitor, and assess processes during normal operations and emergencies. The S-Area Supervisory CR has communications equipment (telephone, emergency radio, normal SRS telephones) to notify and communicate with the SRSOC and the TSR located in the EOC. If the S-Area Supervisory CR is uninhabitable, the field operating station on the second level in building 221-S is the alternate CR. SRR validated its CR capability in four exercises during the five-year period.

Defense Waste Processing Facility Operations Support Center

SRR has appropriately established and maintains a DWPF OSC located in building 210-S. The OSC serves as an assembly point for DWPF emergency response personnel. The alternate OSC is an area in and around the alternate CR on the second level of building 221-S. SRR has emergency response cabinets near the OSC stocked with equipment and supplies needed by emergency response teams during an incident. SRR validated its OSC capability in four exercises during the five-year period.

F-Area Control Room

SRNS has adequately established and maintains an F-Area CR located in building 772-F. The CR is a dedicated facility and has the necessary instrumentation and controls to operate, monitor, and assess processes during normal operations and emergencies. The SRNS AEC directs emergency response from the 772-F CR and has communications equipment (telephone, emergency radio, normal SRS telephones) to notify and communicate with the SRSOC and the TSR located in the EOC. If the 772-F CR is uninhabitable, the 772-1F CR is the alternate emergency response facility from which the AEC directs emergency response. SRNS has incorporated the capabilities of an OSC into the F-Area CR, which permits its use for dispatching and coordinating emergency response team activities (search, first aid, maintenance, operations, etc.) in the incident facility. SRNS validated its F-Area CR capability in four exercises during the five-year period.

H-Area Control Room

SRNS has adequately established and maintains an H-Area CR located in the H-Canyon CR. The CR is a dedicated area and has the necessary instrumentation and controls to operate, monitor, and assess processes during normal operations and emergencies. The SRNS AEC and FEC direct emergency response from the H-Canyon CR, which has communications equipment (telephone, emergency radio, normal SRS telephones) to notify and communicate with the SRSOC and the TSR located in the EOC. If the H-Canyon CR is uninhabitable, 701-1H is the alternate CR from which the AEC directs emergency response. SRNS validated its H-Area CR capability in four exercises during the five-year period.

H-Area Operations Support Center

SRNS has adequately established and maintains an H-Area OSC located in building 221-H. The OSC serves as an assembly point for SRNS emergency response personnel. The OSC is used for dispatching and coordinating emergency response team activities (search, first aid, maintenance, operations, etc.) in the incident facility. The H-Area alternate OSC is located in building 701-1H. SRNS has emergency response cabinets near the OSC stocked with equipment and supplies needed by emergency response teams during an incident. SRNS validated its H-Area OSC capability in four exercises during the five-year period.

Liquid Waste Operations Control Room

SRR has adequately established and maintains a primary Liquid Waste Operations CR located in building 241-2H. In addition, each Liquid Waste Operations facility has a dedicated CR that SRR staffs for 24-hour operations and, during an emergency, functions as the central control point for incident response. The CRs are dedicated facilities and have the necessary instrumentation and controls to operate, monitor, and assess processes during normal operations and emergencies. The SRR FEC directs emergency response from the 241-2H CR and has communications equipment (telephone, emergency radio, normal SRS telephones) to notify and communicate with the SRSOC and the TSR located in the EOC. If the 241-2H CR is uninhabitable, the FEC relocates to another Liquid Waste Operations CR in either 241-18F or 241-28H. SRR validated its Liquid Waste Operations CR capability in six exercises during the five-year period.

Liquid Waste Operations Support Center

SRR has adequately established and maintains dedicated Liquid Waste Operations OSCs in buildings 241-18F, 707-H, and 704-56H. Each OSC serves as an assembly point for Liquid Waste Operations emergency response personnel. SRR has emergency response cabinets near each OSC stocked with

equipment and supplies needed by emergency response teams during an incident. SRR validated its Liquid Waste Operations OSC capability in six exercises during the five-year period.

Tritium Facilities Control Room

SRNS has adequately established and maintains the Tritium facilities CRs located in HANM, HAOM, and TEF. SRNS staffs each CR for 24-hour operations and, during an emergency, functions as the central control point for incident response. The CRs are dedicated facilities and have the necessary instrumentation and controls to operate, monitor, and assess processes during normal operations and emergencies. Each CR has communications equipment (telephone, emergency radio, normal SRS telephones) to notify and communicate with the SRSOC and the TSR located in the EOC. The TEF command center has a designated alternate location in HANM. SRNS validated its Tritium facilities CR capability in four exercises during the five-year period.

Tritium Facilities Operations Support Center

SRNS has adequately established and maintains the primary Tritium facilities OSC in building 248-H. The OSC serves as an assembly point for SRNS emergency response personnel. Tritium alternate OSCs are located in buildings 264-H and 249-H. SRNS has emergency response cabinets near the OSCs stocked with equipment and supplies needed by emergency response teams during an incident. SRNS validated its Tritium facilities OSC capability in four exercises during the five-year period.

Solid Waste Management Facility Communications Room

SRNS has adequately established and maintains an SWMF communications room located in building 704-37E. The communications room is a dedicated facility and has the necessary communications to assess and manage emergencies. The SWMF alternate communications room is located in building 642-E. SRNS validated its SWMF communications room capability in five exercises during the five-year period.

Solid Waste Management Facility Operations Support Center

SRNS has appropriately established and maintains the SWMF OSC in building 704-59E. The OSC serves as an assembly point for SRNS emergency response personnel. The SWMF alternate OSC is located in building 642-E. SRNS has emergency response cabinets near the OSCs stocked with equipment and supplies needed by emergency response teams during an incident. SRNS validated its SWMF OSC capability in three exercises during the five-year period.

SRNL Facilities Control Room

BSRA has adequately established and maintains an SRNL facilities CR located on the service floor of building 773-A. The CR is a dedicated facility and has the necessary communications to assess and manage emergencies. The SRNL facilities alternate CR is located in building 776-1A. SRNS validated its SRNL facilities CR capability in four exercises and one actual incident during the five-year period.

SRNL Facilities Operations Support Center

BSRA has adequately established and maintains the SRNL facilities OSC in building 773-A. The OSC serves as an assembly point for BSRA and SRNS emergency response personnel. The OSC is used for dispatching and coordinating emergency response team activities (search, first aid, maintenance, operations, etc.) in the incident facility. The SRNL facilities alternate OSC is located in building 776-1A. BSRA has emergency response cabinets near the OSCs stocked with equipment and supplies needed by

emergency response teams during an incident. SRNS validated its SRNL facilities OSC capability in four exercises and one actual incident during the five-year period.

K-Area Complex Control Room

SRNS has adequately established and maintains a K-Area Complex CR located in building 105-K. The CR is a dedicated area and has the necessary communications, instrumentation, controls, and displays for the nuclear, process water, electrical, safety and accident monitoring, and support systems to assess and manage emergencies. Based on the EPHA, an alternate CR is not required because there are no HAZMAT release scenarios that result in the CR being uninhabitable. SRNS validated its K-Area Complex CR capability in four exercises during the five-year period.

K-Area Complex Operations Support Center

SRNS has adequately established and maintains the K-Area Complex OSC capability adjacent to the CR in building 105-K. The CR serves as an assembly point for SRNS emergency response personnel. SRNS has emergency response cabinets near the OSC stocked with equipment and supplies needed by emergency response teams during an incident. SRNS validated its K-Area Complex OSC capability in four exercises during the five-year period.

Biomass Cogeneration Facility Control Room

Ameresco has adequately established and maintains a BCF CR located in building 684-1G. The CR is a dedicated facility and has the necessary instrumentation and controls to operate, monitor, and assess processes during normal operations and emergencies. Ameresco has incorporated the capabilities of an OSC into the BCF CR, which permits its use for dispatching and coordinating emergency response teams.

Nevertheless, as discussed previously in Section 3.2, Ameresco has not demonstrated it used the BCF CR during a simulated, realistic emergency situation during the five-year period. (See **Finding F-Ameresco-1** and **OFI-Ameresco-2**.)

Personnel Decontamination Facilities

SRNS and SRR have adequately established and maintain personnel decontamination capabilities and facilities at numerous locations throughout SRS. Procedure 5Q 1.2-203, *Handling Radiological Injuries, Contamination Cases, and Suspected Intakes of Radioactive Material*, lists the various SRNS personnel decontamination facilities. Most locations handle routine personnel decontamination and emergency decontamination of personnel with minor or no injuries. SRNS performs decontamination of personnel with medical concerns (injury or illness) at building 719-5N or at offsite medical facilities. SRNS and SRR validated their personnel decontamination capabilities in 17 exercises during the five--year period.

Emergency Information System

SRNS has adequately established and maintains WebEOC® as the primary information management system that provides collection and dissemination of information during an emergency. WebEOC® is a web-based emergency management system that provides access to real-time emergency incident information shared simultaneously among the ERO during the response and recovery phases of an emergency to ensure a common operating picture. SRNS distributes the WebEOC® program across two computer servers to minimize the risk of the program becoming inoperable due to a server failure. The program remains independent of the SRS network and firewall constraints, which enables operation in standalone mode, and is immune to the potential degradation of the SRS infrastructure. Additionally,

WebEOC® information is available over the intranet to authenticated outside agencies (e.g., DOE Headquarters and the States of South Carolina and Georgia). SRNS validated its WebEOC® capability in four exercises and two actual incidents during the five-year period.

Safety Alarm System

SRNS has adequately established and maintains a safety alarm system (SAS) as the primary means of providing emergency information to onsite personnel. SRNS notifies personnel in the incident facility of emergency conditions through alarms and public address (PA) announcements. In addition, the SAS is the primary means for notifying personnel outdoors within the incident area. Individual facility CRs can activate the facility PA system. The central CR for each area has override capability for activating the entire PA system for the area and controls the activation of the SAS protective action signal. Additionally, the CAS can activate the protective action signal, if requested to do so. SRNS validated its SAS capability in 34 exercises and 2 actual incidents during the five-year period.

Emergency Notification Network

SRNS has adequately established and maintains an emergency notification network (ENN) as the primary means of notifying offsite authorities of incidents categorized or further classified as an emergency. The ENN is essentially a dedicated parallel telephone system among state and county 24-hour warning points, EOCs, and Vogtle Electric Generating Plant (VEGP). ENN telephones for SRS use are in the SRSOC, EOC CAR, and EOC command room. SRNS validated its ENN capability in four exercises and two actual incidents during the five-year period.

Response Facilities and Systems Conclusions

SRNS, SRR, and Centerra have adequately established, maintained, and validated capabilities for all primary emergency response facilities, alternate facilities, and key emergency management systems. BSRA became the SRNL contractor, and although not responsible for validating facility and systems capabilities for the five-year period under review, currently maintains response capabilities, which were not included as part of this assessment. However, during the five-year period, Ameresco did not validate its BCF CR response capability to a simulated, realistic emergency situation.

3.4 Offsite Response Interface Capabilities

The objective of this portion of the assessment was to verify that DOE-SR and SRNS have established and validated coordination and response capabilities with the local, state, and Federal organizations responsible for emergency response or that may be used to supplement response capabilities based on hazards identified in the all-hazards planning basis, as required by DOE Order 151.1D.

DOE Headquarters Watch Office

DOE-SR and SRNS have adequately established and maintain an interface capability with the DOE Headquarters notification point, collocated with the DOE Headquarters EOC. Upon receiving an event notification, the watch office duty officer routinely notifies the appropriate personnel responsible for activating a DOE or NNSA emergency management team. SRNS validated its interface capability in four exercises and two actual incidents during the five-year period.

DOE Headquarters Emergency Operations Center

DOE-SR and SRNS have adequately established and maintain interface capabilities with the DOE Headquarters EOC, located in the Forrestal Building in Washington, D.C. A backup EOC is located in Germantown, Maryland. Both facilities can communicate with SRS via telephone, the emergency communications network, facsimile, and classified/unclassified video teleconferencing. The performance criteria used by DOE-SR, SRNS, and DOE Headquarters to assess the adequacy of the interface consists of sending initial and follow-on notifications and maintaining a telephone liaison. SRNS validated its interface capability in four exercises during the five-year period.

Aerial Measuring System

DOE-SR and SRNS have adequately established and maintain interface capabilities with the Aerial Measuring System (AMS), which provides fixed and rotary wing aircraft equipped with radiological monitoring instrumentation to assess airborne and ground deposition of radioactive materials. AMS organizes, evaluates, and interprets information collected by the Data and Assessment Group located at the Federal Radiological Monitoring and Assessment Center and distributes the curated information to appropriate emergency management centers and agencies. NNSA administers the AMS, which operates out of Nellis Air Force Base in Las Vegas, Nevada, and Joint Base Andrews in Maryland. AMS also has a regional capability, AMS Region 3, located at SRS to conduct the traditional AMS response missions of deposition mapping and lost/stolen source recovery. AMS Region 3 has established agreements to use DOE-SR and U.S. Customs and Border Protection aircraft and has qualified Radiological Assistance Program (RAP) Region 3 (RAP 3) personnel to staff the AMS Region 3 teams. The AMS Region 3 teams perform response actions in accordance with Q18 Volume 4, *Aerial Measuring System Region 3 Management Plan*. SRNS validated its interface capability in one exercise during the five-year period.

National Atmospheric Release Advisory Center

DOE-SR and SRNS have adequately established and maintain interface capabilities with the NNSA Atmospheric Release Advisory Capability for assessment of HAZMAT released into the atmosphere. DOE Order 151.1D requires that facilities maintain the capability to use the National Atmospheric Release Advisory Center (NARAC) as part of near real-time consequence assessment activities. The Lawrence Livermore National Laboratory operates the Atmospheric Release Advisory Capability at the NARAC. NARAC's mission is to provide timely and accurate real-time assessment advisories to emergency managers for rapid decision-making during an emergency response involving a nuclear, radiological, or chemical release. SRNS validated its NARAC interface capability in one exercise during the five-year period.

Radiological Assistance Program

DOE-SR and SRNS have adequately established and maintain interface capabilities with the RAP, which provides a first response resource in assessing an emergency incident and advising decision-makers on further steps to evaluate and minimize the hazards of a radiological incident. RAP provides resources (e.g., trained personnel and equipment) to monitor offsite radiological hazards. NNSA implements RAP regionally, coordinating between the emergency response elements of the state, local, and Federal agencies. The 28-person RAP 3 team is located at SRS. DOE Order 151.1D requires that facilities with general emergencies (GEs) involving radiological material releases ensure adequate planning for offsite radiological monitoring support to local and state governments. SRNS does not have offsite field monitoring teams and relies on the integration of other potential state and Federal monitoring teams, including the RAP 3 team, to provide the primary offsite monitoring capability for an SRS radiological incident. The RAP 3 team performs response activities, including patient monitoring at offsite hospitals,

in accordance with Q18 Volume 1, *Radiological Assistance Program Region 3 Management Plan.*

During the five-year period, SRNS validated RAP patient monitoring support at the Augusta University Medical Center. However, during this period, SRNS has not validated its RAP field monitoring capability, including the seven EPHA-based radiological scenarios that would result in a GE declaration that could require RAP to monitor for offsite consequences. (See **Finding F-SRNS-1** and **OFI-SRNS-1**.)

Radiation Emergency Assistance Center/Training Site

DOE-SR, SRFO, and SRNS have adequately established and maintain interface capabilities with the Radiation Emergency Assistance Center/Training Site (REAC/TS). DOE Order 151.1D requires that facilities conduct planning for medical treatment associated with incidents identified in the all-hazards planning basis. REAC/TS provides 24/7 emergency response and subject matter expertise for advice and consultation on medical management of radiation incidents. Oak Ridge Institute for Science and Education operates REAC/TS, located in Oak Ridge, Tennessee, which provides a multipurpose facility for handling victims of radiation emergencies and other types of physical injuries.

However, SRNS did not validate its REAC/TS interface capability during the five-year period. SRNS has documented one EPHA scenario for unplanned nuclear criticalities that would potentially require integration with REAC/TS during a response. Furthermore, REAC/TS could be a necessary resource in the radiological GEs based on seven documented EPHA scenarios that could involve inhalation of radiological material by workers, responders, or the public. (See **Finding F-SRNS-1** and **OFI-SRNS-1**.)

Federal Bureau of Investigation

DOE-SR has adequately established and maintains interface capabilities with the Federal Bureau of Investigation (FBI) to respond to any incident at SRS involving terrorists or other security incidents. DOE-SR has integrated FBI technical specialists into the SRS ERO structure and concept of operation. An initial FBI response to SRS includes personnel from the FBI Columbia, South Carolina Field Office. The FBI may deploy special agents to support response activities, investigations, and intelligence sharing at the EOC and incident command post, in accordance with the memorandum of understanding between DOE-SR and the FBI for incident response resolution. The FBI may assume IC responsibilities during security or law enforcement emergencies or integrate into the existing unified command structure. SRNS validated its FBI interface capability in one exercise and two actual incidents during the five-year period.

Office of Secure Transportation Host Site

DOE-SR, SRFO, and SRNS have adequately established and maintain interface capabilities with the Office of Secure Transportation (OST), in accordance with DOE Order 151.1D. As a host site, DOE-SR, SRFO, SRNS, and Centerra coordinate applicable aspects of emergency planning, preparedness, and readiness with OST and integrate these aspects into a documented process to manage and control an OST event scene inside the SRS boundary. DOE-SR, SRFO, and SRNS include OST hazards in the site emergency management program. In addition, DOE Order 151.1D requires DOE OST host sites to conduct an exercise no less than once every five years to assess and validate emergency response training related to the host site's ability to respond effectively to an OST emergency at the host site. However, SRNS did not validate its OST host site interface capability during the five-year period. (See **Finding F-SRNS-1** and **OFI-SRNS-2**.)

South Carolina 24-Hour Warning Point

DOE-SR and SRNS have adequately established and maintain an interface capability with the South Carolina 24-Hour Warning Point, located in Columbia, South Carolina. Upon receiving an event notification, the warning point duty officer notifies the appropriate personnel responsible for activating state response personnel. SRNS validated its interface capability with the South Carolina 24-Hour Warning Point in four exercises and two actual incidents during the five-year period.

South Carolina Emergency Management Division

DOE-SR and SRNS have adequately established and maintain interface capabilities with the State of South Carolina EOC organizations that have emergency response or control responsibilities relevant to SRS. The South Carolina Emergency Management Division, Office of the Adjutant General, coordinates overall state response; activates the State EOC in Columbia, South Carolina; and oversees the local implementation of recommended protective actions. The *South Carolina Emergency Operations Plan* establishes policies and procedures for preparedness and response to all types of hazards that may affect the State of South Carolina. The *South Carolina Operational Radiological Emergency Response Plan*, which is appendix II of the *South Carolina Emergency Operations Plan*, provides the concept of operations for responding to radiological accidents at fixed nuclear facilities. Part 6 of the *South Carolina Operational Radiological Emergency Response Plan* and the *South Carolina Technical Radiological Emergency Response Plan* contain specific response actions for an incident at SRS. In addition, South Carolina provides representatives to the SRS EOC and SRS JIC to coordinate emergency response activities and public information.

During the five-year period, SRNS validated its South Carolina Emergency Management Division protocol to provide a representative in SRS response facilities during four exercises. However, SRNS did not validate its interface capability with the South Carolina State EOC during the five-year period. (See **Finding F-SRNS-1** and **OFI-SRNS-1**.)

South Carolina Department of Health and Environmental Control

DOE-SR and SRNS have adequately established and maintain interface capabilities with the South Carolina Department of Health and Environmental Control (SCDHEC), which coordinates hazard assessment for areas within the state that are beyond SRS boundaries. In addition, the SCDHEC recommends protective actions to state and local government officials and serves as the principal point of contact for technical information. For HAZMAT releases, regardless of size, SCDHEC also dispatches response teams to SRS to monitor/assist in response actions. Additionally, SCDHEC coordinates all monitoring and assessment activities for that portion of the ingestion exposure emergency planning zone within the State of South Carolina. However, SRNS did not validate its SCDHEC field monitoring and assessment interface capabilities during the five-year period. (See **Finding F-SRNS-1** and **OFI-SRNS-1**.)

Georgia 24-Hour Warning Point

DOE-SR and SRNS have adequately established and maintain an interface capability with the Georgia 24-Hour Warning Point, located in Atlanta, Georgia. Upon receiving an event notification, the warning point duty officer notifies the appropriate personnel responsible for activating state response personnel. SRNS validated its interface capability with the Georgia 24-Hour Warning Point in four exercises and two actual incidents during the five-year period.

Georgia Emergency Management Agency/Homeland Security

DOE-SR and SRNS have adequately established and maintain interface capabilities with the State of Georgia EOC organizations that have emergency response or control responsibilities relevant to SRS. The Georgia Emergency Management Agency/Homeland Security coordinates overall state response, including implementing recommended protective actions and activating the State Operations Center in Atlanta, Georgia, or the Forward EOC in Waynesboro, Georgia. The *State of Georgia Emergency Operations Plan* establishes policies and procedures for preparedness and response to all types of hazards that may affect the State of Georgia. Specific response actions for an SRS accident are contained in annex C of the *State of Georgia Radiological Emergency Plan*. The *State of Georgia Radiological Emergency Plan* addresses ingestion pathway response actions in annex F. In addition, Georgia provides representatives to the SRS EOC and SRS JIC to coordinate emergency response activities and public information.

During the five-year period, SRNS validated its Georgia Emergency Management Agency/Homeland Security protocol to provide a representative in SRS response facilities during four exercises. However, SRNS has not validated its interface capability with the Georgia Emergency Management Agency/Homeland Security EOC. (See **Finding F-SRNS-1** and **OFI-SRNS-1**.)

Georgia Department of Natural Resources

DOE-SR and SRNS have adequately established and maintain interface capabilities with the Georgia Department of Natural Resources (DNR), the lead agency for coordinating hazard assessment for areas within the state that are beyond SRS boundaries. In addition, the Georgia DNR recommends protective actions to state and local government officials and serves as the principal point of contact for technical information. Additionally, the Georgia DNR coordinates all monitoring and assessment activities for that portion of the ingestion exposure emergency planning zone within the State of Georgia. However, SRNS did not validate its Georgia DNR field monitoring and assessment interface capabilities during the five--year period. (See **Finding F-SRNS-1** and **OFI-SRNS-1**.)

Aiken County Emergency Medical Services

DOE-SR has adequately established and maintains interface capabilities with the Aiken County EMS through a mutual aid agreement. Aiken County EMS has ambulances that may be available for response, depending upon call volume, with variable response times. In cases where the county requests mutual aid resources from the site, the SRSFD operates in three-hour windows and recalls personnel as necessary to maintain minimum staffing level requirements. SRNS validated its interface capability in two exercises during the five-year period.

Aiken Regional Medical Centers

SRNS has adequately established and maintains interface capabilities with Aiken Regional Medical Centers, located in Aiken, South Carolina, for the transport, acceptance, and treatment of radiologically, or chemically contaminated or potentially contaminated, injured patients from SRS. For radiological incidents, SRNS will provide radiological control technicians at the hospital to assist as needed. SRNS will provide an industrial hygienist at the hospital to assist as needed for chemical incidents. SRNS validated its interface capability with the Aiken Regional Medical Centers in two exercises during the five-year period.

Doctors Hospital

SRNS has adequately established and maintains interface capabilities with Doctors Hospital for the transport, acceptance, and treatment of radiologically, or chemically contaminated or potentially contaminated, injured patients from SRS. Doctors Hospital, located in Augusta, Georgia, is a Level 2 trauma center. For radiological incidents, SRNS will provide radiological control technicians at the hospital to assist as needed. SRNS will provide an industrial hygienist at the hospital to assist as needed for chemical incidents. SRNS validated its interface capability with Doctors Hospital in three exercises during the five-year period.

Augusta University Medical Center

SRNS has adequately established and maintains interface capabilities with Augusta University Medical Center, located in Augusta, Georgia, for the transport, acceptance, and treatment of radiologically, or chemically contaminated or potentially contaminated, injured patients from SRS. Augusta University Medical Center is the closest Level 1 trauma center to SRS and is accessible by ground and air ambulance. For radiological incidents, SRNS will provide radiological control technicians at the hospital to assist as needed. SRNS will provide an industrial hygienist at the hospital to assist as needed for chemical incidents. SRNS validated its interface capability with the Augusta University Medical Center in three exercises during the five-year period.

Vogtle Electric Generating Plant

DOE-SR and SRNS have adequately established and maintain interface capabilities with VEGP's operator, Southern Nuclear Operating Company (SNC). The proximity of SRS and VEGP requires both organizations to maintain coordinated planning efforts in response to a declared emergency at each site. In general, SRNS and SNC provide response capabilities and assistance to each other, as detailed in the respective emergency plans. The SRNS response to SRS emergencies includes the use of the ENN to notify SNC of a radiological or chemical emergency at SRS and to provide any protective action recommendations. In addition, the SRS offsite interactions staff in the SRS EOC provides periodic information, including HAZMAT and meteorological data, to SNC. Furthermore, SRNS dispatches a liaison to the SNC Emergency Operations Facility in Birmingham, Alabama, if requested. Additionally, SNC assesses the impact on the VEGP site and implements any protective actions necessary to protect the health and safety of plant personnel or visitors, which may include radiological monitoring within about 10 miles of VEGP in the State of Georgia, as requested by DOE-SR, and providing results to SRS and Georgia.

During the five-year period, SRNS validated the SNC notification interface capability in four exercises and two actual incidents. However, SRNS did not validate its SNC radiological monitoring, liaison, and hazard and meteorological information interface capability during the five-year period. (See **Finding F-SRNS-1** and **OFI-SRNS-1**.)

Local Fire Departments

DOE-SR has adequately established and maintains interface capabilities with the following local fire departments through individual mutual aid agreements for the mitigation of emergencies that necessitate the combined effort of several fire departments:

- Aiken County South Carolina (includes 21 Aiken County Fire Departments)
- Allendale County South Carolina (includes 4 Allendale County Fire Departments)
- Barnwell County South Carolina (includes 11 Barnwell County Fire Departments)

- Burke County South Carolina
- Augusta-Richmond County Georgia.

In addition, DOE-SR has adequately established and maintains interface capabilities for statewide South Carolina firefighter mobilization that supports the SRSFD, if needed. In 2019, DOE-SR entered into a mutual aid agreement with the South Carolina Emergency Management Division, enabling activation of the *South Carolina Fire Fighter Mobilization Plan*. The firefighter mobilization plan is a state plan to assist any fire department in the state with resources if an event such as a fire, rescue, terrorism attack, HAZMAT event, or natural disaster occurs that exceeds the capabilities of the local fire department. Additionally, DOE-SR has approved a modified security plan to expedite responder access to SRS, when needed. However, during the five-year period, SRNS did not validate its interface capabilities with local fire departments or the *South Carolina Fire Fighter Mobilization Plan*. (See **Finding F-SRNS-1** and **OFI-SRNS-1**.)

Local and State of South Carolina Law Enforcement

DOE-SR has adequately established and maintains interface capabilities with the following local law enforcement agencies through individual mutual aid agreements for law enforcement to support the protection of special nuclear material and other national security assets, people, equipment, and property located at SRS:

- South Carolina Law Enforcement Division
- Aiken County South Carolina Sheriff's Office
- Allendale County South Carolina Sheriff's Office
- Barnwell County South Carolina Sheriff's Office
- Richmond County Georgia Sheriff's Office (provides explosive ordnance disposal response resources).

During the five-year period, SRNS validated its interface capability with the South Carolina Law Enforcement Division in two actual incidents and its interface capability with the Aiken County South Carolina Sheriff's Office in one exercise and one actual incident. However, SRNS did not validate its interface capabilities with the Sheriff's Offices of Allendale County South Carolina, Barnwell County South Carolina, or Richmond County Georgia during the five-year period. (See **Finding F-SRNS-1** and **OFI-SRNS-1**.)

U.S. Department of Agriculture Forest Service

DOE-SR and SRNS have adequately established and maintain interface capabilities with the U.S. Forest Service (USFS) for wildland fire management and response. The USFS is the primary agency in charge of wildland fire protection at SRS, under an agreement with DOE-SR. The SRSFD will respond with the USFS to attack and suppress wildland fires at SRS within the improved roadside confines of a 200-foot pre-connected hand line. Additionally, when wildland fires occur in radiologically contaminated areas, the SRSFD will support the USFS as agreed upon in the memorandum of agreement and documented in Manual 2Q2, section 6, *Wildland Fire Procedure*, which details the interface between the SRSFD and the USFS. However, during the five-year period SRNS did not validate its interface capability with the USFS. (See **OFI-SRNS-1**.)

Aiken County South Carolina Emergency Management Agency

DOE-SR and SRNS have adequately established and maintain interface capabilities with the Aiken County Council chairperson for emergency response or control relevant to SRS incidents. The Aiken

County Emergency Management Agency director activates the county EOC and coordinates notification and implementation of protective actions within the county. In addition, the county activates and directs operations at designated reception/shelter facilities. Detailed information on county response is contained in annex Q1 of the *Aiken County Emergency Operations Plan.* Aiken County has the option of sending representatives to the JIC to coordinate public information. Additionally, for incidents that do not involve nuclear processes but may affect Aiken County populations (e.g., a transportation accident on site involving the release of toxic chemicals off site), the county's 24-hour warning point receives a verbal notification via the ENN and printed notification via facsimile. During the five-year period, SRNS validated its interface capability with the Aiken County 24-hour warning point in four exercises and two actual incidents and its interface capability with the Aiken County EOC in one actual incident.

Allendale County South Carolina Emergency Management Agency

DOE-SR and SRNS have adequately established and maintain interface capabilities with the Allendale County Council chairperson for emergency response or control relevant to SRS incidents. The Allendale County Emergency Management Agency director activates the county EOC and coordinates notification and implementation of protective actions within the county. In addition, the county activates and directs operations at designated reception/shelter facilities. Detailed information on county response is contained in annex Q1 of the *Allendale County Emergency Operations Plan*. Allendale County has the option of sending representatives to the JIC to coordinate public information. Additionally, for incidents that do not involve nuclear processes but may affect Allendale County populations (e.g., a transportation accident on site involving the release of toxic chemicals off site), the county's 24-hour warning point receives a verbal notification via the ENN and printed notification via facsimile. During the five-year period, SRNS validated its interface capability with the Allendale County 24-hour warning point in four exercises and two actual incidents. However, SRNS has not validated its interface capability with the Allendale County EOC. (See **Finding F-SRNS-1** and **OFI-SRNS-1**.)

Barnwell County South Carolina Emergency Management Agency

DOE-SR and SRNS have adequately established and maintain interface capabilities with the Barnwell County Council chairperson for emergency response or control relevant to SRS incidents. The Barnwell County Emergency Management Agency director activates the county EOC and coordinates notification and implementation of protective actions within the county. In addition, the county activates and directs operations at designated reception/shelter facilities. Detailed information on county response is contained in annex Q1 of the *Barnwell County Emergency Operations Plan*. Barnwell County has the option of sending representatives to the JIC to coordinate public information. Additionally, for incidents that do not involve nuclear processes but may affect Barnwell County populations (e.g., a transportation accident on site involving the release of toxic chemicals off site), the county's 24-hour warning point receives a verbal notification via the ENN and printed notification via facsimile. During the five-year period, SRNS validated its interface capability with the Barnwell County 24-hour warning point in four exercises and two actual incidents and its interface capability with the Barnwell County EOC in one actual incident.

Burke County Georgia Emergency Management Agency

DOE-SR and SRNS have adequately established and maintain interface capabilities with the Burke County Council chairperson for emergency response or control relevant to SRS incidents. The Burke County Emergency Management Agency director activates the county EOC in Waynesboro, Georgia, and coordinates notification and implementation of protective actions within the county. In addition, the county activates and directs operations at designated reception/shelter facilities. Detailed information on county response is contained in annex C of the *Burke County Emergency Operations Plan*. Burke County has the option of sending representatives to the JIC to coordinate public information. Additionally, for

incidents that do not involve nuclear processes but may affect Burke County populations (e.g., a transportation accident on site involving the release of toxic chemicals off site), the county's 24-hour warning point receives a verbal notification via the ENN and printed notification via facsimile. During the five-year period, SRNS validated its interface capability with the Burke County 24-hour warning point in four exercises and two actual incidents. However, SRNS has not validated its interface capability with the Burke County EOC. (See **Finding F-SRNS-1** and **OFI-SRNS-1**.)

Offsite Response Interface Capabilities Conclusions

DOE-SR and SRNS have adequately established and maintain response capabilities with the local, state, and Federal organizations responsible for emergency response or that may be used to supplement response capabilities based on hazards identified in the all-hazards planning basis. Interrelationships with local, state, and Federal organizations are appropriately prearranged and documented in formal plans, agreements, understandings, or other prearrangements for mutual assistance detailing emergency measures provided by non-SRS entities. However, SRNS did not validate 19 of its 35 offsite response interface capabilities during the five-year period. Specifically, SRNS did not validate Federal interface requirements with RAP, REAC/TS, and OST; four state response agencies; 11 county emergency management, fire, and sheriff departments; and one private company during the five-year period. Consequently, during some low probability, severe incidents, preparedness may be inadequate to ensure the protection of workers, responders, and the public.

4.0 BEST PRACTICES

There were no best practices identified as part of this assessment.

5.0 FINDINGS

Findings are deficiencies that warrant a high level of attention from management. If left uncorrected, findings could adversely affect the DOE mission, the environment, the safety or health of workers and the public, or national security. DOE line management and/or contractor organizations must develop and implement corrective action plans for findings. Cognizant DOE managers must use site- and program-specific issues management processes and systems developed in accordance with DOE Order 226.1 to manage the corrective actions and track them to completion.

Ameresco, Inc.

Finding F-Ameresco-1: Ameresco has not evaluated its facility-level emergency response capabilities and proficiency annually. (DOE Order 151.1D, attachment 4, paragraph 15)

Savannah River Nuclear Solutions, LLC

Finding F-SRNS-1: SRNS has not maintained an adequate site-level exercise program to validate some important offsite interface emergency response capabilities based on the hazards identified in EPHAs: (DOE Order 151.1D, attachment 4, paragraph 15)

- SRNS did not validate its RAP interface capability, which provides the primary means of offsite radiological field monitoring for the State of South Carolina and DOE, during the five-year period. (DOE Order 151.1D, attachment 4, paragraphs 7, 10, and 15)

- SRNS did not validate its REAC/TS interface capability during the five-year period. (DOE Order 151.1D, attachment 4, paragraph 15)
- SRNS did not validate its OST host site emergency response interface capability for an event scene inside the SRS boundary during the five-year period. (DOE Order 151.1D, attachment 4, paragraph 15)
- SRNS did not validate its interface capabilities with four of the six Georgia and South Carolina State response agencies (i.e., the South Carolina State EOC, South Carolina Department of Health and Environmental Control, Georgia Emergency Management Agency/Homeland Security EOC, and Georgia Department of Natural Resources) during the five-year period. (DOE Order 151.1D, attachment 4, paragraph 15)
- SRNS did not validate its interface capabilities with Southern Nuclear Operating Company during the five-year period. (DOE Order 151.1D, attachment 4, paragraph 15)
- SRNS did not validate its interface capabilities with any of the five county fire departments (Aiken, Allendale, Barnwell, Burke, and Augusta-Richmond) or the *South Carolina Fire Fighter Mobilization Plan* during the five-year period. (DOE Order 151.1D, attachment 4, paragraph 15)
- SRNS did not validate its interface capabilities with three of the four county sheriff departments (i.e., Allendale, Barnwell, and Richmond) during the five-year period. (DOE Order 151.1D, attachment 4, paragraph 15)
- SRNS did not validate its interface capabilities with the Allendale and Burke County EOCs during the five-year period. (DOE Order 151.1D, attachment 4, paragraph 15)

6.0 DEFICIENCIES

Deficiencies are inadequacies in the implementation of an applicable requirement or standard. Deficiencies that did not meet the criteria for findings are listed below, with the expectation from DOE Order 227.1A for site managers to apply their local issues management processes for resolution.

Savannah River Remediation, LLC

Deficiency D-SRR-1: SRR did not evaluate its DWPF and LWO facility-level emergency response capability and proficiency annually. (DOE Order 151.1D, attachment 4, paragraph 15)

7.0 OPPORTUNITIES FOR IMPROVEMENT

EA identified six OFIs to assist cognizant managers in improving programs and operations. While OFIs may identify potential solutions to findings and deficiencies identified in assessment reports, they may also address other conditions observed during the assessment process. These OFIs are offered only as recommendations for line management consideration; they do not require formal resolution by management through a corrective action process and are not intended to be prescriptive or mandatory. Rather, they are suggestions that may assist site management in implementing best practices or provide potential solutions to issues identified during the assessment.

DOE Savannah River Operations Office

OFI-DOE-SR-1: Consider ensuring that Facility Representatives consistently participate in facility-level ERO validations by requiring:

- Facility Representatives to maintain training and ERO cadre qualifications
- Facility Representatives assigned to participate in the annual facility-level exercise to validate ERO capability.

NNSA Savannah River Field Office

OFI-SRFO-1: Consider ensuring that Facility Representatives consistently document their participation in facility-level ERO validations by requiring:

- Facility Representatives to maintain training and ERO cadre qualifications
- Facility Representatives assigned to participate in the annual facility-level exercise to validate ERO capability.

Ameresco, Inc.

OFI-Ameresco-1: Consider participating to the level necessary with SRNS to ensure validation of Ameresco's site-level response capabilities in the EOC and JIC.

OFI-Ameresco-2: Consider validating facility-level emergency response capabilities and proficiency annually by:

- Requesting the assistance of the SRNS Emergency Management organization to facilitate a training, drill, and exercise program consistent with other EPHA facilities
- Developing and conducting an annual facility-level exercise to validate the ERO, CR, and associated emergency systems.

Savannah River Nuclear Solutions, LLC

OFI-SRNS-1: Consider ensuring that all emergency response capabilities are appropriately documented and periodically validated by:

- Creating a facility-level after-action report template that includes a participant list, level of participation, and simulations
- Maintaining a rolling five-year matrix to monitor the validation of site-level and facility-level response capabilities.

OFI-SRNS-2: Consider ensuring that an effective interface is established and validated as an OST host site by:

- Obtaining the latest version of the OST *Concept of Operations between NNSA Host Sites and the Office of Secure Transportation* and, if necessary, updating SRNS plans and procedures to be consistent with the OST concept of operations
- Training the SRNS ERO, as necessary, on the revised procedures
- Conducting an OST-focused exercise once every five years to validate SRNS host site capability.

Appendix A
Supplemental Information

Dates of Assessment

Remote Assessment: December 6, 2021, to February 11, 2022

Office of Enterprise Assessments (EA) Management

John E. Dupuy, Director, Office of Enterprise Assessments
William F. West, Deputy Director, Office of Enterprise Assessments
Kevin G. Kilp, Director, Office of Environment, Safety and Health Assessments
David A. Young, Deputy Director, Office of Environment, Safety and Health Assessments
Kevin M. Witt, Director, Office of Nuclear Safety and Environmental Assessments
Charles C. Kreager, Director, Office of Worker Safety and Health Assessments
Jack E. Winston, Director, Office of Emergency Management Assessments
Joseph J. Waring, Director, Office of Nuclear Engineering and Safety Basis Assessments

Quality Review Board

William F. West, Advisor
Kevin G. Kilp, Chair
Joseph Lewis
Michael A. Kilpatrick

EA Assessors

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