



## Department of Energy

Washington, DC 20585

October 7, 2010

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

Garry W. Flowers  
President and Chief Executive Officer  
Savannah River Nuclear Solutions, LLC  
6160 Executive Woodside Court  
Aiken, South Carolina 29803

WEA-2010-05

Dear Mr. Flowers:

This letter refers to the Office of Health, Safety and Security's Office of Enforcement investigation into the facts and circumstances surrounding the nitric acid spill event that occurred in F Area on August 18, 2009, and the electrical arc flash injury that occurred in the D Area powerhouse on September 23, 2009, at the Savannah River Site. Based on an evaluation of the evidence in this matter, the U.S. Department of Energy (DOE) has concluded that violations of 10 C.F.R Part 851, *Worker Safety and Health Program*, by Savannah River Nuclear Solutions, LLC (SRNS) occurred. Accordingly, DOE is issuing the enclosed Preliminary Notice of Violation (PNOV) with four Severity Level I violations and one Severity Level II violation. DOE withheld a contract fee in the amount of \$3,080,000 pursuant to the Conditional Payment of Fee clause under contract number DE-AC-09-08SR22470 between DOE and SRNS for significant failures in safety performance from a series of otherwise preventable incidents, including the events and conditions described within this PNOV. Therefore, in accordance with 10 C.F.R. § 851.5(c), no civil penalty is proposed for the violations identified in this PNOV.

DOE considers the events that resulted in several worker injuries and the associated violations to be of high safety significance. Our investigation confirmed your assessment of the conditions leading up to these events: SRNS had extensive deficiencies in its hazard assessment and control processes for decontamination and decommissioning work and in implementing its electrical safety program. The nitric acid spill was attributable to inadequate instructions provided to workers for assembly and installation of hot taps and leak collection devices. Further, SRNS did not adequately consider contingencies for known and foreseeable hazards from a potential failure of the acid line hot tap device, and these factors were further exacerbated by poor spill response planning. In the electrical arc event, a worker received serious burns when electricians and their supervisor elected to perform work on an energized electrical component without a permit or appropriate personal protective equipment. In both events, the adverse consequences were a direct result of failures to implement fundamental Occupational Safety and Health Administration requirements that are invoked under 10 C.F.R. Part 851 and are applicable to these work activities.

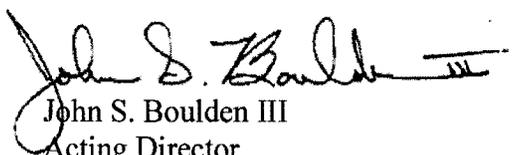


Notwithstanding these issues, DOE acknowledges SRNS's initial response to the events and the corrective actions that SRNS implemented to address the potential violations and prevent their recurrence. SRNS performed timely causal analyses of both events, thoroughly identified the associated noncompliances, and demonstrated a commitment to improving its work planning and control process. Additionally, SRNS implemented a safety improvement program intended to measurably improve SRNS's safety performance. DOE reinstated \$1 million of the initial \$4.08 million fee reduction as a result of the corrective actions initiated to date and the measurable progress in the associated SRNS safety program. The DOE Savannah River Operations Office will continue to monitor the effectiveness of SRNS's corrective actions implemented to address the deficiencies associated with the events to ensure that improvements are effectively implemented site-wide and that these conditions do not recur.

Pursuant to 10 C.F.R. § 851.42, *Preliminary Notice of Violation*, you are obligated to submit a written reply within 30 calendar days of receipt of the enclosed PNOV, and to follow the instructions specified in the PNOV when preparing your response. If no reply is submitted within 30 days, in accordance with 10 C.F.R. § 851.42(d)(2), this PNOV will constitute a final order. DOE does not intend to convene an enforcement conference for this enforcement action. You may request an enforcement conference if you believe that additional information pertinent to this action could best be conveyed through such a meeting. A request for an enforcement conference does not relieve SRNS of its obligation to reply to this PNOV within 30 days.

After reviewing your response to the PNOV, including any proposed additional corrective actions entered into DOE's Noncompliance Tracking System, DOE will determine whether further action is necessary to ensure compliance with worker safety and health requirements.

Sincerely,



John S. Boulden III  
Acting Director  
Office of Enforcement  
Office of Health, Safety and Security

Enclosure

cc: Doug Landis, SRNS  
Jack R. Craig, SR

**Preliminary Notice of Violation**

Savannah River Nuclear Solutions, LLC  
Savannah River Site

WEA-2010-05

A U.S. Department of Energy (DOE) Office of Enforcement investigation into the facts and circumstances surrounding the nitric acid spill event that occurred at the 221-1F building on August 18, 2009, and the electrical arc flash injury that occurred in the 484-D powerhouse on September 23, 2009, at the Savannah River Site, identified multiple violations of DOE worker safety and health requirements by Savannah River Nuclear Solutions, LLC (SRNS).

The August 18, 2009, spill event occurred while workers were draining a nitric acid line during decontamination and decommissioning (D&D) work at the 221-1F building. A failure in the hot tap assembly resulted in the release of approximately one quart of nitric acid. Three workers sustained injuries from the spill and response, and two other workers were exposed to nitric acid. On August 24, 2009, a secondary event occurred during spill recovery activities and completion of line number 5 draining. No workers were injured in the second event.

The September 23, 2009, electrical arc incident occurred when electricians and their supervisor were performing troubleshooting and repair work on an energized 480 volt circuit breaker. The electrical arc was generated when a metal tool fell inside the breaker cabinet and contacted the energized "A" phase of the breaker. An electrician sustained first, second, and third degree burns to his arms and face.

DOE's investigation identified four Severity Level I violations and one Severity Level II violation involved deficiencies in general requirements and hazard identification, hazard prevention and abatement, electrical power transmission and distribution operations, personal protective equipment (PPE), and training and information. The Savannah River Operations Office administered a contract fee reduction in the amount of \$3.08 million for safety performance failures from multiple incidents, including the nitric acid spill event and electrical arc flash injury, pursuant to the Conditional Payment of Fee clause under contract number DE-AC09-08SR22470 between DOE and SRNS. Therefore, in accordance with 10 C.F.R. § 851.5(c), DOE proposes no civil penalty for the violations identified in this Preliminary Notice of Violation (PNOV).

In accordance with 10 C.F.R. § 851.42(b), and Part 851, Appendix B, *General Statement of Enforcement Policy*, the violations are listed below. SRNS may be required to post a copy of this PNOV in accordance with 10 C.F.R. § 851.42(e).

## VIOLATIONS

### I. Nitric Acid Hot Tap Failure and Spill Response

#### A. General Requirements and Hazard Identification

Title 10 C.F.R. § 851.10, *General requirements*, paragraph (a), states that “[w]ith respect to a covered workplace for which a contractor is responsible, the contractor must: (1) [p]rovide a place of employment that is free from recognized hazards that are causing or have the potential to cause death or serious physical harm to workers; and (2) [e]nsure that work is performed in accordance with: (i) [a]ll applicable requirements of [10 C.F.R. Part 851]; and (ii) [w]ith the worker safety and health program for that workplace.”

Title 10 C.F.R. § 851.21, *Hazard identification and assessment*, paragraph (a), states, in pertinent part, that “[c]ontractors must establish procedures to identify existing and potential workplace hazards and assess the risk of associated workers injury and illness. Procedures must include methods to: (1) [a]ssess worker exposure to chemical, physical, biological, or safety workplace hazards through appropriate workplace monitoring; . . . (5) [e]valuate operations, procedures, and facilities to identify workplace hazards; [and] (6) [p]erform routine job activity-level hazard analyses.” In accordance with subsection (c) of the same section, “[c]ontractors must perform [these activities] initially to obtain baseline information and as often thereafter as necessary to ensure compliance with [the requirements of 10 C.F.R. Part 851, Subpart C].”

Appendix A, Section 8, *Occupational medicine*, paragraph (d) requires that “[c]ontractors must provide the occupational medicine providers access to hazard information by promoting its communication, coordination, and sharing among operating and environment, safety, and health protection organizations. (1) Contractors must provide the occupational medicine providers with access to information on the following: (i) [c]urrent information about actual or potential work-related site hazards (chemical, radiological, physical, biological, or ergonomic); . . . (iii) [a]ctual or potential work-site exposures of each employee; . . .” Paragraph (f) of § 8 provides, in pertinent part, that “[a] record, containing any medical, health history, exposure history, and demographic data collected for the occupational medicine purposes, must be developed and maintained for each employee for whom medical services are provided.”

Contrary to these requirements, SRNS failed to identify existing and potential workplace hazards associated with D&D activities for the 221-1F building nitric acid line number 5 on August 18, 2009, and during spill recovery efforts on August 24, 2009. SRNS did not identify hazards resulting from the configuration and attributes of the work environment and did not abate them until after the line number 5 hot tap mechanical failure. In addition, SRNS failed to provide the medical service provider with information regarding actual or potential worker exposures associated with the August 18 event. Specific examples are listed below:

1. SRNS did not identify workplace hazards or assess the risk of worker exposure from a potential spill of concentrated nitric acid based on the configuration of the scaffold used to access and perform work on nitric acid line number 5, in accordance with SRNS procedures. SRNS Manual 8Q, Employee Safety Manual, Procedure 122, *Hazard Analysis* (revision 4, dated August 20, 2009), provides the methodology and requirements for the site's hazard analysis program.<sup>1</sup> Hazard analyses and work controls specific to SRNS D&D project work are developed according to SRNS Procedure FDP 2.05, *Site D&D Work Control Procedure* (revision 11, dated March 10, 2009), a sub-tier procedure to SRNS Procedure Manual 1C, *Facility Disposition Manual*. The work package that included the assisted hazard analysis (AHA) applicable to the work being performed on August 18, 2009, AHA# FDD-11705, *221-1F Mechanical Isolation Verification*, (revision 0, dated April 7, 2009), did not identify the structural barriers that would likely hinder an employee from rapidly evacuating from the scaffold in the event of a potential emergency (e.g., a hazardous chemical spill). Additionally, contrary to the *Technical Work Document Controls* and *Work Instructions* sections in AHA # FDD-11705, SRNS did not ensure that there was a free and clear path of egress from the scaffold.
2. At the onset of the line number 5 draining evolution, SRNS did not obtain information regarding the chemical compatibility of nitric acid with the various hot tap assembly components (e.g., the tap drill bit and stop ring, valves, fittings, hoses, vent rig, or the leak collection rig) and spill recovery materials. As a result, SRNS could not identify and assess the hazards associated with the hot tap assembly and the spill recovery system components when they were subjected to a 66 percent acid solution during non-routine applications. Therefore, AHA# FDD-11705, *221-1F Mechanical Isolation Verification*, and AHA # FDD-11916, *221-1F Recovery Plan for Nitric Acid Spill*, (revision 0, dated August 21, 2009) did not accurately characterize the existing or potential hazards employees could encounter during the assigned work evolutions using these devices.
3. When SRNS determined that the volume of nitric acid to be drained from line number 5 exceeded the projected value of two gallons, (as documented in AHA # FDD-11705), SRNS did not reevaluate work package AHA # FDD-11705 for new or changed hazards, nor did SRNS perform activity-level hazard analyses for the new tasks associated with the significant change in work scope. Draining activities were halted, disrupting the work evolution for an activity that was normally performed as a continuous task. Because of the halt in draining the acid, workers had to perform new tasks, such as repositioning the hot tap vent, repositioning drain valves, and disconnecting and reconnecting gravity drain lines. The resulting changes constituted "major changes" to the approved work scope as defined by SRNS Procedure FDP 2.05, *Site D&D Work Control Procedure*, and were "non-routine," as defined by SRNS Procedure FDP 2.18, *Site D&D Hazard Analysis Guidance* (Manual C2, Procedure 2.18, revision 1, dated March 13, 2006). In addition, although Procedure FDP 2.18 and Manual 8Q, *Employee*

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<sup>1</sup> The *Savannah River Nuclear Solutions LLC Worker Safety and Health Program* (S-SHP-B-00005, revision 0, dated June 25, 2009) contained within the *SRNS Integrated Safety Management System Description* (SRNS-RP-2008-00087, revision 0, dated August 15, 2008), constitutes the SRNS worker safety and health program as required by 10 C.F.R. § 851.10. Document S-SHP-B-0005 invokes SRNS Manual 8Q as the SRNS implementing procedure for hazard identification and assessment required by § 851.21.

*Safety Manual*, Procedure 122, *Hazard Analysis*, requires a hazard category determination (HCD) for non-routine activities, no HCD was performed. An HCD is intended to determine the appropriate hazard analysis tool and level of management approval and provides an opportunity to evaluate work activities in order to determine the likelihood of an accident and/or the consequences of a potential accident.

4. For the August 18 event, SRNS did not calculate an estimate of inhalation uptake of nitric acid vapors for workers in the immediate vicinity of the nitric acid line number 5 release or for the workers assisting with the emergency evacuation of the work area. Thus, SRNS did not provide the site occupational medical provider with access to actual and potential nitric acid exposure information for these workers. Consequently, SRNS was unable to develop an exposure history for the workers who received medical treatment for exposure to nitric acid.

Collectively, these deficiencies constitute a Severity Level I violation. As explained in Part 851, appendix B, section VI(b)(1), “[a] Severity Level I violation is a serious violation. A serious violation shall be deemed to exist in a place of employment if there is a potential that death or serious physical harm could result from a condition which exists, or from one or more practices, means, methods, operations, or processes which have been adopted or are in use, in such place of employment.”

#### B. Hazard Prevention and Abatement

Title 10 C.F.R. § 851.22, *Hazard prevention and abatement*, paragraph (a), states that “[c]ontractors must establish and implement a hazard prevention and abatement process to ensure that all identified and potential hazards are prevented or abated in a timely manner.” Under this subsection, “(1) [f]or hazards identified . . . during the development of procedures, controls must be incorporated in the appropriate . . . procedure” and under subsection (2), “[f]or existing hazards identified in the workplace, contractors must: . . . (iii) [p]rotect workers from dangerous safety and health conditions.” Under subsection (b), contractors must “select hazard controls based on the following hierarchy: (1) [e]limination or substitution of the hazards where feasible and appropriate; (2) [e]ngineering controls where feasible and appropriate; (3) [w]ork practices and administrative controls that limit worker exposures; and (4) [p]ersonal protective equipment.”

Title 10 C.F.R. § 851.23, *Safety and health standards*, subparagraph (a)(7) requires contractors to comply with 29 C.F.R. Part 1926, *Safety and Health Regulations for Construction*.

Title 29 C.F.R. § 1926.28, *Personal protective equipment*, paragraph (a), requires employers to be “responsible for requiring the wearing of appropriate personal protective equipment in all operations where there is an exposure to hazardous conditions or where this part indicates the need for using such equipment to reduce the hazards to the employees.”

Title 29 C.F.R. § 1926.95, *Criteria for personal protective equipment*, paragraph (a), requires that “[p]rotective equipment, including personal protective equipment for eyes, face, head,

and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.”

Title 29 C.F.R. § 1926.102, *Eye and face protection*, subparagraph (a)(1), requires that “[e]mployees shall be provided with eye and face protection equipment when machines or operations present potential eye or face injury from physical, chemical, or radiation agents.”

Title 29 C.F.R. § 1926.50, *Medical services and first aid*, paragraph (g), requires “[w]here the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use.”

Contrary to the above requirements, SRNS failed to implement appropriate hazard prevention and abatement controls required to address the risk to workers from existing and potential workplace hazards. Inappropriate modifications in the application of the hot tap assembly and leak collection device resulted in unanticipated mechanical failures of the engineering controls. SRNS was unable to immediately control or abate the collateral hazards resulting from these failures with the available project control mechanisms. Specific examples are listed below:

1. SRNS did not follow work practices and administrative controls associated with the proper use of the hot tap’s packing gland and stop ring, which would have prevented corrosion and mechanical failure of the hot tap assembly and the resulting nitric acid spill. The manufacturer’s instructions for installation and draining activities (*EST D-Series Tapping Tool Instructions*, DC9060 12/95 revision 6, 04/05) provided a detailed protocol, which is designed to prevent a hot tap assembly from leaking and subsequently exposing personnel to line contents. SRNS deviated from this protocol by: (1) not tightening the gland follower to the specified torque immediately after drilling and periodically thereafter; (2) incorrectly applying Teflon® tape to the packing gland follower threads; and (3) leaving the hot tap assembly exposed to the contents of line number 5 for an extended period.
2. SRNS did not provide suitable emergency equipment for quick drenching of the eyes and body for workers involved in the line draining work on August 18, 2009. SRNS procedure 8Q 52, *Safety Showers and Eyewash Facilities* (revision 8, dated January 26, 2005), which is an element of the SRNS Worker Safety and Health Program, requires that “installation, testing, inspection, and use of safety shower/eyewash equipment must comply with ANSI [American National Standards Institute] Z358.1 (latest revision).” ANSI Z358.1-2004, *American National Standard for Emergency Eyewash and Shower Equipment, Plumbed and Self-Contained Eyewash Equipment*, 5.4.2 states that “[e]yewash units shall . . . [b]e in accessible locations that require no more than 10 seconds to reach. The eyewash unit shall be located on the same level as the hazard

and the path of travel shall be free of obstructions that may inhibit the immediate use of the equipment. For a strong acid or strong caustic, the eyewash should be immediately adjacent to the hazard.” SRNS did not provide an adequate number of personal wash units to potentially exposed workers. The single emergency personal wash equipment that was available was not at the same level as or immediately adjacent to the hazard (the hot tap and drain rig). Therefore, it was also not accessible within 10 seconds of a potential nitric acid exposure. For the worker on the north end of the scaffold, the travel path to the emergency equipment was obstructed by an I-beam and piping.

3. SRNS did not require the worker assigned to help co-workers remove their PPE during normal doffing procedures or emergencies (the “cut-out person”) to wear the same level of PPE as the others. *Site D&D Instructions for the Use of Chemical Resistant Suits*, Procedure No. FDP 2.10 (revision 3, dated August 10, 2009), did not require the same level of protection for the cut-out person, even though the cutout person is potentially exposed to the same chemical hazards when cutting a co-worker out of a contaminated personal protective suit.

Collectively, these deficiencies constitute a Severity Level I violation.

## II. Electrical Arc Flash Injury

### A. Electrical Power Transmission and Distribution Operations

Title 10 C.F.R. § 851.23, *Safety and health standards*, subparagraph (a)(3) requires contractors to comply with 29 C.F.R. Part 1910, *Occupational Safety and Health Standards*. Section 1910.269, *Electric power generation, transmission, and distribution*, subparagraph (a)(3), *Existing conditions*, states that “[e]xisting conditions related to the safety of the work to be performed shall be determined before work on or near electric lines or equipment is started. Such conditions include, but are not limited to, the nominal voltages of lines and equipment, the maximum switching transient voltages, the presence of hazardous induced voltages, the presence and condition of protective grounds and equipment grounding conductors, the condition of poles, environmental conditions relative to safety, and the locations of circuits and equipment, including power and communication lines and fire protective signaling circuits.”

Title 10 C.F.R. § 851.24, *Functional areas*, paragraph (a) states that “[c]ontractors must have a structured approach to their worker safety and health program,” and paragraph (b) requires that in implementing this structured approach, “[c]ontractors must comply with the applicable standards and provisions in [A]ppendix A of [Part 851], entitled *Worker Safety and Health Functional Areas*.” Appendix A, § 10, *Electrical Safety*, states that “[c]ontractors must implement a comprehensive electrical safety program appropriate for activities at their site. This program must meet the applicable electrical safety codes and standards referenced in § 851.23.” SRNS documented its electrical safety program in Manual 18Q, *Safe Electrical Practices and Procedure Manual*, which references American National Standards Institute C-2, *National Electrical Safety Code* (NESC). NES (2007 Edition), Section 42, *General rules for employees*, subsection 420(C)(5), states that “[n]o employee shall approach or bring

any conductive object, without a suitable insulating handle, closer to any exposed energized part”, which is one foot for electrical components energized at 0.301 kV to 0.750 kV.

Title 29 C.F.R. § 1910.269, subparagraph (1)(2), *Minimum approach distances*, subparagraph (i) states that [t]he employer shall ensure that no employee approaches or takes any conductive object closer to exposed energized parts than set forth in Table R-6 through Table R-10, unless: . . . [t]he employee is insulated from the energized part (insulating gloves or insulating gloves and sleeves worn in accordance with paragraph (1)(3) of this section are considered insulation of the employee only with regard to the energized part upon which work is being performed).”

Title 29 C.F.R. § 1910.269, paragraph (c), *Job briefing*, states that “[t]he employer shall ensure that the employee in charge conducts a job briefing with the employees involved before they start each job. The briefing shall cover at least the following subjects: hazards associated with the job, work procedures involved, special precautions, energy source controls, and personal protective equipment requirements . . . . If the work or operations to be performed during the work day or shift are repetitive and similar, at least one job briefing shall be conducted before the start of the first job of each day or shift. Additional job briefings shall be held if significant changes, which might affect the safety of the employees, occur during the course of the work . . . . A brief discussion is satisfactory if the work involved is routine and if the employee, by virtue of training and experience, can reasonably be expected to recognize and avoid the hazards involved in the job. A more extensive discussion shall be conducted (i) [i]f the work is complicated or particularly hazardous.”

Contrary to these requirements, SRNS failed to implement the requirements for operating and maintaining electrical power transmission and distribution systems by identifying existing conditions of electrical equipment before starting work, including the presence of electrical energy, the nominal voltages of lines and equipment, the presence of hazardous induced voltages, the presence and condition of protective grounds and equipment grounding conductors, environmental conditions relative to safety, and the locations of circuits and equipment. In addition, SRNS did not perform a job briefing to convey to workers the hazards associated with the job, applicable work procedures, and protective equipment requirements. Specific examples are listed below:

1. SRNS did not correctly categorize the type and scope of work for the troubleshooting and repair tasks performed on the energized electrical circuit breaker. The troubleshooting work package that was used did not identify the presence of workplace electrical hazards or assess the risk of worker exposure to high-voltage electrical energy and subsequent injury or shock. Electrical workers and their supervisor performed repair work on the energized breaker under a Safe Work Permit for troubleshooting activities (dated July 1, 2009) that was inconsistent with the limitations prescribed in the SRNS Manual 1Y, *Conduct of Maintenance*, Procedure 8.03, *Troubleshooting* (revision 6, dated April 4, 2007). Manual 1Y restricts troubleshooting tasks to those who are specifically described in the work package and requires workers to stop troubleshooting activities when unanticipated problems or conditions are encountered or when confronting conditions that are outside the boundaries of the work order. In addition, workers did not implement

SRNS Manual 8Q requirements for completing a hazard analysis for all proposed activities; the hazard analysis must include a clearly defined scope of work, a list of subtasks, identification of work environment hazards, and identification of work methods, tools, and equipment.

2. SRNS did not issue an energized electrical work permit when electrical workers performed tasks on an energized breaker. Manual 18Q prohibits work on or near energized electrical circuit conductors unless such work is authorized through an energized electrical work permit. In addition, SRNS performed repair work on defective electrical equipment that was not de-energized and locked out as required by Manual 18Q.
3. SRNS did not perform a walkdown of the troubleshooting and repair work activities to assess the existing conditions and the unique hazards associated with the circuit breaker troubleshooting and repair tasks, as required by Manual 8Q, Procedure 122.
4. SRNS did not ensure that workers used the flash protection/hazard boundary and incident energy information contained on the flash hazard label affixed to the circuit breaker cabinet door. The flash hazard label functions as an assessment of electrical energy hazards, alerts workers to safe approach distances, and indicates the types and levels of PPE required.
5. SRNS did not ensure that workers remained outside the minimum approach distance to live electrical components and that they refrained from taking a conductive object near exposed energized parts. Workers introduced a hammer, a wrench, a racking bar, and a conductive torpedo level into the energized circuit breaker cabinet.
6. SRNS did not perform either a job briefing for the unique and non-routine breaker troubleshooting task or an additional job briefing when the task assignment changed from troubleshooting to performing repair work on the inoperative breaker. SRNS Manual 18Q requires supervisors to conduct a job briefing that informs workers of the electrical hazards, work scope, shock and flash protection boundaries, work procedures involved, special precautions, energy source controls, PPE requirements, and special tools. SRNS did not identify the work hazards and incident energy level from the arc flash label, the appropriate level of PPE, or the specific repair activities and tools to be used.

Collectively, these deficiencies constitute a Severity Level I violation.

## B. Personal Protective Equipment

Title 29 C.F.R. § 1910.269, paragraph (g), *Personal protective equipment*, requires PPE to meet the requirements of Subpart I of Part 1910. Subpart I at § 1910.132, *General Requirements*, paragraph (d), *Hazard assessment and equipment selection*, subparagraph (1) requires the employer to “[a]ssess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE)” and to “[s]elect, and have each affected employee use, the types of PPE that will protect the

affected employee from the hazards identified in the hazard assessment” and “[c]ommunicate selection decisions to each affected employee.” Paragraph (a), states that “[p]rotective equipment, including personal protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be provided, [and] used. . . wherever it is necessary by reason of hazards of processes or environment. . . encountered in a manner capable of causing injury or impairment in the function of any part of the body through . . . physical contact.”

Contrary to these requirements, SRNS failed to assess the electrical hazards associated with the circuit breaker troubleshooting and repair tasks in order to determine the required PPE. In addition, SRNS failed to implement hazardous energy control procedures to prevent worker exposure to energized electrical equipment. Workers used a work package for the troubleshooting and repair activities that did not provide controls appropriate to perform energized electrical tasks. Specific examples are listed below:

1. SRNS did not perform hazard assessments of the breaker troubleshooting and repair activities in order to select PPE that protected workers from energized parts (shock hazard) and arc flash incident energy (flash hazard). SRNS Manual 18Q requires managers to provide PPE for electrical work in compliance with applicable codes, but it does not contain specific procedures for performing electrical hazard assessments of the workplace in order to select proper PPE.
2. SRNS workers did not don appropriate PPE for performing energized work on a 480 volt breaker with a calculated arc flash hazard rating of 87.6 calories/cm<sup>2</sup>. The circuit breaker cubicle arc flash hazard information was contained on the arc flash label affixed to the front of the breaker cabinet, but workers did not use this information to select PPE for the troubleshooting and repair activities. A contributing factor was that Manual 18Q does not provide workers with clear guidance for controlling electrical hazards associated with energized equipment above 40 calories/cm<sup>2</sup>.

Collectively, these deficiencies constitute a Severity Level I violation.

### C. Training and Information

Title 29 C.F.R. § 1910.269, subparagraph (a)(2), *Training*, states that “(i) [e]mployees shall be trained in and familiar with the safety-related work practices, safety procedures, and other safety requirements in this section that pertain to their respective job assignments. Employees shall also be trained in and familiar with any other safety practices, including applicable emergency procedures . . . that are not specifically addressed by this section but that are related to their work and are necessary for their safety . . . (vi) The training shall establish employee proficiency in the work practices required by this section and shall introduce the procedures necessary for compliance with this section. (vii) The employer shall certify that each employee has received the training required by paragraph (a)(2) of this section. This certification shall be made when the employee demonstrates proficiency in the work practices involved and shall be maintained for the duration of the employee's employment.”

Title 29 C.F.R. § 1910.269, subparagraph (a)(2), item (iii) also states that “[t]he employer shall determine, through regular supervision and through inspections conducted on at least an annual basis, that each employee is complying with the safety-related work practices required by this section.” Subparagraph (a)(2), item (iv) requires that “[a]n employee shall receive additional training (or retraining) under any of the following conditions: (A) If the supervision and annual inspections required by paragraph (a)(2)(iii) of this section indicate that the employee is not complying with the safety-related work practices required by this section, or (B) If new technology, new types of equipment, or changes in procedures necessitate the use of safety-related work practices that are different from those which the employee would normally use, or (C) If he or she must employ safety-related work practices that are not normally used during his or her regular job duties.”

Contrary to these requirements, SRNS failed to implement an electrical worker safety and health training program that ensured that workers were familiar with and proficient in the safety-related work practices applicable to the high-voltage work performed on the energized circuit breaker. In addition, SRNS failed to provide adequate supervision to detect unsafe work practices for tasks that electrical workers routinely performed and failed to provide appropriate instruction for techniques that were used infrequently. Specific examples are listed below:

1. The SRNS electrical safety program, as documented in Manual 18Q, did not contain provisions for conducting annual inspections to ensure that each electrical worker is consistently complying with the safety-related work practices for their job assignments and implementing the instructions provided in electrical safety training. Manual 18Q prescribes only a general requirement for management to conduct periodic inspections of workplaces and electrical equipment. SRNS had not evaluated the work practices of the electrical workers involved in the circuit breaker troubleshooting and repair activity before the event to ensure that they were using safe techniques for performing specific job tasks in accordance with prescribed instructions.
2. SRNS did not implement an electrical safety training program that included provisions for evaluating worker proficiency in using information on arc flash labels to select the appropriate level of PPE and other work practices required by Manual 18Q. Qualified electrical workers were not aware that arc flash PPE was required for all troubleshooting and repair tasks within the safe approach limits of the energized cubicle.
3. SRNS electrical safety training did not incorporate hands-on worker demonstration of required work practices and special knowledge and skills associated with high-voltage work. In addition, SRNS did not include documentation of demonstrated worker proficiency before granting certification.

Collectively, these deficiencies constitute a Severity Level II violation. As explained in Part 851, appendix B, section VI(b)(2), “[a] Severity Level II violation is an other-than-serious violation. An other-than-serious violation occurs where the most serious injury or illness that would potentially result from a hazardous condition cannot reasonably be predicted to cause

death or serious physical harm to employees but does have a direct relationship to their safety and health.”

## REPLY

Pursuant to the provisions of 10 C.F.R. § 851.42, SRNS is hereby obligated, within 30 calendar days of receipt of this PNOV, to submit a written reply. The reply should be clearly marked as a “Reply to the Preliminary Notice of Violation.”

If SRNS concurs with the violations set forth in this PNOV and the proposed remedy, the reply should state that SRNS waives the right to contest any aspect of the PNOV and the proposed remedy. In such cases, this PNOV will constitute a final order upon the filing of the reply.

If SRNS disagrees with any aspect of this PNOV or the proposed remedy, then in accordance with 10 C.F.R. § 851.42(c)(1), the reply must: “(i) [s]tate any facts, explanations and arguments that support a denial of the alleged violation; . . . [and] (iii) [d]iscuss the relevant authorities that support the position asserted, including rulings, regulations, interpretations, and previous decisions issued by DOE;” In addition, 10 C.F.R. § 851.42(c)(2) requires that “[c]opies of all relevant documents must be submitted with the reply.”

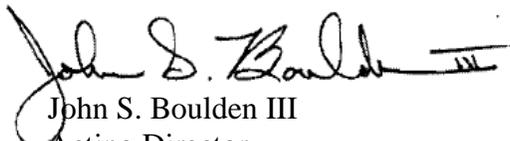
Corrective actions that have been or will be taken to avoid further violations should be delineated with target and completion dates in DOE’s Noncompliance Tracking System.

Please send the appropriate reply by overnight carrier to the following address:

Director, Office of Enforcement  
Attention: Office of the Docketing Clerk  
U.S. Department of Energy  
19901 Germantown Road, Germantown, MD 20874-1290

A copy of the reply should also be sent to the Assistant Secretary for Environmental Management in Washington, DC and the Manager of the Savannah River Operations Office.

Pursuant to 10 C.F.R. § 851.42(d), if SRNS does not submit a written reply within 30 calendar days of receipt of this PNOV, SRNS relinquishes any right to appeal any matter in this PNOV and this PNOV, including the proposed remedy, will constitute a final order.

  
John S. Boulden III  
Acting Director  
Office of Enforcement  
Office of Health, Safety and Security

Washington, DC  
this 7th day of October 2010