



## Department of Energy

Washington, DC 20585

April 10, 2014

Mr. Kenneth Rueter  
President and Project Manager  
Savannah River Remediation, LLC  
Savannah River Site  
Building 766-H  
Aiken, South Carolina 29808

WEL-2014-01

Dear Mr. Rueter:

The Office of Health, Safety and Security's Office of Enforcement and Oversight evaluated a shoulder injury to an employee of Savannah River Remediation, LLC (SRR) at the Savannah River Site's Defense Waste Processing Facility (DWPF). The injury occurred on March 25, 2013, during replacement of an 81-pound check valve. SRR operates the DWPF under a contract administered by the Department of Energy (DOE) and is subject to the requirements of 10 C.F.R. Part 851, *Worker Safety and Health Program*. The Office of Enforcement and Oversight evaluated the following reports that SRR submitted into DOE's Noncompliance Tracking System (NTS) and Occurrence Reporting and Processing System:

- NTS-SRSO--SRR-WVIT-2013-0002, *Mechanic Shoulder Injury Requiring Surgical Repair*
- EM-SR--SRR-WVIT-2013-0003, *Mechanic Shoulder Injury Requiring Surgical Repair*

The event was significant in that it resulted in a full thickness tear of the worker's left shoulder rotator cuff that required surgical repair and resulted in a total of 75 days away from work or on restricted work activity. Furthermore, the event revealed that due to several deficiencies in implementing the SRR ergonomic program, SRR did not adequately identify and abate the hazards of lifting the check valve during planning, approval, and performance of the work, including considering whether the American Conference of Governmental Industrial Hygienists (ACGIH) weight limits were applicable. DOE's evaluation of the circumstances associated with this event disclosed potential violations of 10 C.F.R. Part 851 and its invoked standards in the areas of ergonomics hazard assessment and identification and implementation of hazard controls. The potential violations apply to the injury event as described below:

- SRR did not adequately identify or abate the ergonomic hazards prior to the start of the check valve replacement. The SRR work planning process only invokes verification by industrial hygiene (IH) subject matter experts (SME) of compliance with the ACGIH Threshold Limit Values (TLV) and ergonomic guidelines for lifting for work activities involving lifts of greater than 50 pounds per person where mechanical assistance cannot be utilized. Although the actual weight of the check valve was not determined during the work planning process, it was generally assumed to be approximately 40 pounds. This was later determined to be



approximately half of the actual weight. An IH SME was not involved in evaluating this work because mechanical assistance was thought to be available and could be used at the discretion of the workers. In the absence of valid information regarding the weight of the check valve, SRR defeated the purpose of its check on lifting hazards by not requiring the use of mechanical assistance as part of the work planning process, thereby leaving the assessment of the lifting hazard to the workers and their supervisor, who were also unaware of the actual valve weight.

- The SRR work planning process in place at the time of the event did not facilitate effective identification of all of the potential hazards associated with manual lifts:
  - In almost all circumstances, the 50-pound threshold contained in the SRR hazard prescreening checklist is well in excess of the allowable limits contained in the ACGIH Lifting TLVs for repetitive lifts (i.e., “monolifts”). As a result, if mechanical lifting assistance is not available, the SRR planning process does not adequately invoke IH involvement in evaluating lifting hazards, even when required to evaluate the applicability of the repetitive lifting limits.
  - SRR did not formally incorporate the ACGIH Lifting TLVs into its ergonomics program implementation procedure (Employee Safety Manual, 8Q, Procedure 29, *Ergonomics Program*). SRR’s Activity Hazard Analysis Hazard Tree contains a reference to IH verification of compliance with the “ACGIH TLVs and Ergonomic Guidelines,” but there is no clear link between this document and the ergonomics program implementation procedure.
- The lift sequence contained other factors that aggravated the ergonomic hazards associated with this work activity, including:
  - The check valve replacement task required at least eight lifts to complete, including removing the old valve and replacing it with the new unit.
  - At least one of the check valve lifts was from floor level to a transport cart surface 26 inches high. Lifts from floor level are considered the most strenuous for workers.
  - At least one of the check valve lifts required carrying the check valve a horizontal travel distance of approximately 20 feet. This aspect added an additional stressor to the task that exacerbated the lifting demands on the workers.
  - At least one of the lifts required one of the two workers to support the entire weight of the check valve (81 pounds) while the other worker inserted mounting bolts.

The work planner, the workers, and the workers’ first-line supervisor were either unaware of these specific aspects of the job and the additional lifting hazards posed by these conditions or inappropriately determined that no additional consideration by IH staff was warranted.

- For this work activity, SRR did not ensure that work would be stopped if unanticipated conditions were encountered. After the workers recognized that the check valve weighed more than expected, the work was not stopped and the potential ergonomic hazards were not reassessed to ensure that the appropriate measures were taken to protect the workers from the additional hazard presented by the unexpectedly heavy check valve.

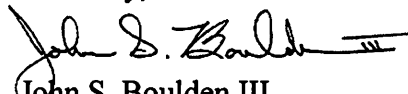
SRR examined this shoulder injury event through its internal process called Integrated "The Rest Of The Story" (iTROTS). However, SRR did not address all of the factors contributing to or revealed by the event, including: (1) providing worker training and retraining to adequately recognize hazards; and (2) re-evaluating the lifting prescreen weight threshold to ensure appropriate IH consideration of repetitive lifting hazards and limits.

The SRR iTROTS identified three recommendations: (1) find/purchase a jack applicable to the load and workspace; (2) construct a support for a chain hoist; and (3) research weights during the planning process and indicate same in work documents. SRR elected to implement only one of the three corrective actions – to indicate weights in work documents – and did not address engineering solutions (in the form of the recommended lifting jack and chain hoist support) as required by the hierarchy of controls in 10 C.F.R. Part 851. Furthermore, SRR did not conduct an extent-of-condition review that was sufficiently thorough to identify and abate deficiencies in other work areas similar to those associated with the subject event. SRR reported that it evaluated only the existing “work schedule” and not other job locations or job descriptions for which SRR is responsible. SRR should re-evaluate its corrective actions and consider broader application of the lessons learned to prevent recurrence of a similar lifting injury event.

The Office of Enforcement and Oversight is issuing this letter to convey concerns regarding the appropriate application of ACGIH lifting requirements, effective implementation of provisions in the SRR ergonomic program, adequacy of the follow-up actions after the injury, and the potential for recurrence of ergonomic injuries in other SRR work activities. The Office of Enforcement and Oversight has elected to exercise enforcement discretion and not pursue further enforcement activity at this time. SRR, in coordination with the Savannah River Operations Office, should consider the information contained in this letter as a means to improve worker safety and health program performance and reduce the potential for worker injuries.

No reply to the Office of Enforcement and Oversight is required as a result of this letter. If you have any questions, please contact me at (301) 903-2178, or your staff may contact Mr. Kevin Dressman, Director, Office of Worker Safety and Health Enforcement, at (301) 903-0100.

Sincerely,



John S. Boulden III

Director

Office of Enforcement and Oversight

Office of Health, Safety and Security

cc: Michael Matheny, SRR Enforcement Coordinator  
David Moody, SR  
Richard Reback, DNFSB