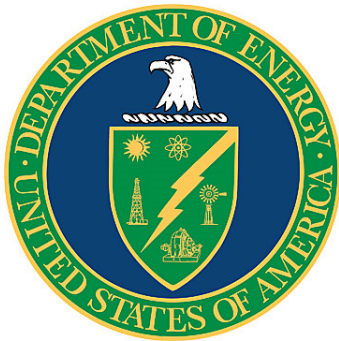# Savannah River Nuclear Solutions, LLC Savannah River Site

**Report from the Department of Energy
Voluntary Protection Program
Onsite Review
October 7-16, 2014**

U.S. Department of Energy
Office of Environment, Health, Safety and Security
Office of Health and Safety
Office of Worker Safety and Health Assistance
Washington, DC 20585

Foreword

The Department of Energy (DOE) recognizes that true excellence can be encouraged and guided but not standardized. For this reason, on January 26, 1994, the Department initiated the DOE Voluntary Protection Program (VPP) to encourage and recognize excellence in occupational safety and health protection. This program closely parallels the Occupational Safety and Health Administration (OSHA) VPP. Since its creation by OSHA in 1982 and DOE in 1994, VPP has demonstrated that cooperative action among Government, industry, and labor can achieve excellence in worker safety and health. The Office of Environment, Health, Safety and Security (AU) is responsible for managing DOE-VPP. AU intends to expand contractor participation complex-wide and coordinate DOE-VPP efforts with other Department functions and initiatives, especially Integrated Safety Management (ISM).

DOE-VPP focuses on areas where DOE contractors and subcontractors, using ISM, can surpass compliance with DOE orders and OSHA standards. The program encourages a *stretch for excellence* through systematic approaches, which emphasize creative solutions through cooperative efforts by managers, employees, and DOE.

Requirements for DOE-VPP participation are based on comprehensive management systems with employees actively involved in assessing, preventing, and controlling the potential health and safety hazards at their sites. DOE-VPP is designed to apply to all contractors in the DOE complex, including production facilities, laboratories, subcontractors, and support organizations.

DOE contractors are not required to participate in DOE-VPP. In keeping with OSHA and DOE-VPP philosophy, *participation is strictly voluntary*. Additionally, participants may withdraw from the program at any time. DOE-VPP consists of three programs with designations and functions similar to those in OSHA's VPP: Star, Merit, and Demonstration. The Star program is the core of DOE-VPP. This program is aimed at truly outstanding protectors of employee safety and health. The Merit program is a steppingstone for participants that have good safety and health programs, but need time and DOE guidance to achieve true Star status. The Demonstration program, used rarely by the Department, allows DOE to obtain additional information to recognize achievements in unusual situations about which DOE needs to learn more before determining approval requirements for the Merit or Star program.

By approving an applicant to participate in DOE-VPP, DOE recognizes that the applicant exceeds the basic requirements for systematic protection of employees at the site. As the symbols of such recognition, DOE provides certificates of approval and the right to use DOE-VPP flags for the program in which the site is participating. The participants may also choose to use the DOE-VPP logo on its letterheads and/or on award items for employee incentive programs.

This report summarizes the results from the evaluation of Savannah River Nuclear Solutions, LLC (SRNS), at the Savannah River Site in South Carolina, during the period of October 7-16, 2014, and provides the Associate Under Secretary for AU with the necessary information to make the final decision regarding SRNS' continued participation in DOE-VPP.

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ABBREVIATIONS AND ACRONYMS

ACGIH	American Conference of Governmental Industrial Hygienists
AHA	Automated Hazard Analysis
AMP	Aspiring Mid-Career Professionals
AQM	Automated Qualification Matrix
ARRA	American Recovery and Reinvestment Act
AU	Office of Environment, Health, Safety and Security
BBS	Behavior-Based Safety
BLS	Bureau of Labor Statistics
CAIRS	Computerized Accident/Incident Reporting System
CAT	Consolidated Annual Training
CFR	Code of Federal Regulations
CIP	Continuous Improvement Program
CONOPS	Conduct of Operations
DART	Days Away, Restricted or Transferred
DOE	Department of Energy
DSA	Documented Safety Analysis
E&CPT	Environmental and Chemical Processing Technology
EHAP	Electronic Hazard Analysis Process
EISM-EA	Enterprise Integrated Safety Management-Exposure Assessment
EJTA	Employee Job Task Analysis
EPHA	Emergency Planning and Hazard Analysis
FLM	First-Line Manager
FY	Fiscal Year
GET	General Employee Training
HPI	Human Performance Improvement
HRP	Human Reliability Program
IDEAS	Individuals Developing Effective Alternative Solutions
IEB	Independent Evaluation Board
IH	Industrial Hygiene
IHA	Individual Hazard Analysis
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
i-TROTS	Integrated The Rest of the Story
JHA	Job Hazard Analysis
LEAP	Leaders Emerging as Professionals
LSIT	Local Safety Improvement Team
MFO	Management Field Observation
MOX	Mixed Oxide
MSDS	Material Safety Data Sheet
NAICS	North American Industry Classification System
ORPS	Occurrence Reporting and Processing System
OSHA	Occupational Safety and Health Administration
PA	Public Address
PDSA	Preliminary Documented Safety Analysis
PEC-MC	Portable Equipment Commodity-Management Center
PI	Principal Investigator

PM	Preventive Maintenance
PPE	Personal Protective Equipment
RCM	Reliability-Centered Maintenance
SP	Safety Plan
SME	Subject Matter Expert
SRNL	Savannah River National Laboratory
SRNS	Savannah River Nuclear Solutions, LLC
SR	Savannah River Operations Office
SRR	Savannah River Remediation LLC
SRS	Savannah River Site
STAR	Site Tracking and Reporting
STR	Subcontractor Technical Representative
STS	Safety-Trained Supervisor
Team	Office of Environment, Health, Safety and Security DOE-VPP Team
TEE	Training Education and Evaluation
TMC	Training Manager's Committee
TPD	Training Program Description
TRAIN	Training Record Automated Information Network
TRC	Total Recordable Case
USF	University of South Florida
VPP	Voluntary Protection Program
WSI	Wackenhut Security Inc.

EXECUTIVE SUMMARY

Savannah River Nuclear Solutions, LLC (SRNS), took over the management and operation of the Savannah River Site (SRS) in August 2008 and completed its transition of the Department of Energy (DOE) Voluntary Protection Program (VPP) Star status from the previous contractor in May 2010. It employs approximately 5,200 people, 360 of which are represented by the Augusta Georgia Building and Construction Trades Council. This report documents the results of the required triennial reassessment by the Office of Environment, Health, Safety and Security (AU) DOE-VPP Team (Team) conducted from October 7-16, 2014.

Since the 2010 assessment, the SRNS operations and construction injury and days away, restricted or transferred rates continue to drop. Subcontractor injury rates also trend downward, but remain higher than the SRNS rates. SRNS injury rates are nearly 95 percent lower than the industry comparison rates published by the Bureau of Labor and Statistics.

Since 2010, SRNS has effectively managed numerous challenges and maintained its commitment to safety as a prerequisite to mission performance. It continues to use available resources to provide workers with the necessary tools, training, and support to prevent accidents, promote excellence, and build trust. Several management changes, including new managers or manager reassignment, have improved workers' perceptions of managers' commitment. Many managers are routinely visible to workers, although some managers continue to struggle to find time to visit and observe work activities.

Employees at all levels at SRNS are involved in the structure and operation of the safety program and in the decisions that affect employee safety and health. Managers have empowered employees to administer the safety and health program by collaborating with employees and implementing initiatives that maintain open lines of communication and promote safety and health responsibilities.

SRNS has appropriate hazard analysis tools and processes tailored to the level of complexity of the work and the experience and skill of the worker. These processes generally provide the correct control set to prevent or minimize workers' exposure to hazards during work. In some cases, SRNS should continue to ensure work control documents include the appropriate details and ensure workers maintain their vigilance by challenging their own assumptions prior to performing work.

SRNS effectively uses engineered, administrative and personal protective equipment (PPE) controls, which have led to a substantially lower number of injuries and illnesses. Additionally, SRS recognized the need to use outside expertise to revamp and improve the heat stress program and the need to develop an approved PPE list to standardize PPE across the site. In another important area, emergency management is working to improve issues raised during the last exercise evaluation.

SRNS has a well-established training and qualification program that trains employees to recognize hazards and protect themselves and coworkers. SRNS training programs equip managers, supervisors, and employees with the knowledge to understand the established safety and health policies, rules, and procedures in order to promote safe work practices and minimize exposure to hazards.

Since completing the transition process in 2010, SRNS has maintained a strong commitment to safety. Managers and workers alike, share a common belief that safety is integral to the enduring viability of SRS as a vital component of the Nation's security. Protection and preservation of unique facilities, the surrounding communities and environment, and the workers remain the foremost concern. Managers are dedicated to ensuring that mission priorities do not compromise safety. The SRNS workforce is fully engaged in processes and programs that improve safety, and SRNS commits resources to encourage and reward that engagement. SRNS is effectively managing the effects of budget reductions and changing priorities although challenges remain in balancing resources for capital projects to replace aging infrastructure. SRNS training programs include many components to attract and retain the right people with the right skills. The Team recommends that SRNS continue to participate in DOE-VPP at the Star level.

TABLE 1

OPPORTUNITIES FOR IMPROVEMENT

Opportunity for Improvement	Page
SRNS should consider expanding the role of the LSITs (i.e., SP development, walkdowns, and prejob participation).	6
SRNS should consider a means to integrate leading indicators into individual performance evaluations for managers.	6
SRNS should consider including its corporate safety improvement goals for the coming year into its annual VPP evaluation.	8
SRNS should consider giving the LSITs a more prominent role in developing solutions for difficult issues and provide visible management support to implement those solutions.	10
SRNS should evaluate the need to reset the use of the IHA process to AHA if injuries or accidents occur for work conducted under an IHA.	15
SRNS should ensure that it trains and actively encourages workers to challenge themselves continually, particularly when using an IHA.	16
SRNS should ensure that analysis during the work planning stages includes potential upset conditions to determine if those conditions require additional controls.	17
SRNS should ensure its operating experience and lessons learned program does not wait for a lessons learned to be issued based on published ORPS significant events to determine applicability and the need for an extent of condition review to determine vulnerability and identify subsequent follow-up actions.	18
SRNS should ensure BBS observations or MFOs compare identified versus implemented controls.	20
SRNS should ensure it updates all applicable databases when it reclassifies an injury case.	22
SRNS should ensure PA broadcasts are audible in all occupied areas, particularly in temporary buildings.	23
SRNS should evaluate employee training that has expired to ensure competent and trained workers are qualified to perform their duties.	27

I. INTRODUCTION

The Savannah River Site (SRS) covers approximately 310 square miles in South Carolina adjacent to the Savannah River. Initially constructed between 1950 and 1955, the site was one of the key production sites for the United States Atomic Energy program. Originally supporting several production reactors, two separation facilities, and a host of support facilities, the site has slowly transformed over the past 25 years into a site focused on environmental cleanup and stewardship, waste management, disposition of nuclear materials, and ongoing support for the current stockpile stewardship efforts.

Initially constructed by E.I. Du Pont de Nemours, the site has undergone several transitions in the primary management and operating contractors. In 2008, the Department of Energy (DOE) awarded the operating contract for the site functions to Savannah River Nuclear Solutions, LLC (SRNS). SRNS is a partnership between Fluor-Daniels Corporation, Northrop Grumman Corporation, and Honeywell International, Inc. In September 2000, SRS, then managed by the Westinghouse Savannah River Company, was certified as a DOE Voluntary Protection Program (VPP) Star site and subsequently recertified in November 2003 and June 2006. In 2008, SRNS assumed an integrating role across SRS. Those responsibilities included basic site management and operation responsibilities, including operation of the canyons, tritium facilities, and Savannah River National Laboratory (SRNL). The SRNS contract is in the option phase that started on August 2013 and will end on October 2016, exercising slightly over 3 years of the potential 5-year extension. Each option year is valued at one billion dollars for each of the 3 years. Per DOE-VPP requirements, in 2010 SRNS completed the transition process and continued as a DOE-VPP Star participant. This assessment marks the first triennial reassessment for SRNS.

A single contractor managed the entire site when the site entered DOE-VPP, so when the contract was split, both new contractors agreed to maintain a high degree of cooperation between their efforts to continue as Star sites. To that end, SRNS and Savannah River Remediation LLC (SRR), the liquid waste management contractor, maintain a joint VPP committee. The committee has cochairs from each contractor that work together on many of their safety promotional efforts.

SRNS activities involve various potential hazards that need to be controlled. These hazards include exposure to external radiation, radiological contamination, nuclear criticality, hazardous chemicals, and various physical hazards associated with facility operations (e.g., machine operations, high-voltage electrical equipment, pressurized systems, and noise). Significant quantities of radiological and chemical hazardous materials are stored and utilized in various forms at SRS.

SRNS employment diminished in fiscal year (FY) 2012 and early FY 2013 with completion of work under the American Recovery and Reinvestment Act (ARRA) funds in December 2012. The hiring has increased in FY 2014 with the addition of 400 employees, which brings the current employment level to 5,200. The Augusta, Georgia Building and Construction Trades Council represents a small portion of the workforce (approximately 350 people), and fully supports SRNS' continued pursuit of safety excellence through DOE-VPP.

SRNS is increasing its site workscope to support converting surplus plutonium into a plutonium-oxide feedstock, the form required for disposition as a mixed oxide fuel or for disposition by immobilization. The production of plutonium-oxide at the H-Canyon and

HB-Line Facility will provide the feedstock needed for the Mixed Oxide Fuel Fabrication Facility.

The Office of Enforcement and Oversight (Independent Oversight) within the DOE's former Office of Health, Safety and Security has conducted multiple activities at SRNS over the past 3 years. Those activities include an evaluation of line self-assessments of safety conscious work environments, a review of the tritium facilities in November 2013, an emergency management review in 2012, and an examination of the Waste Solidification Building Project in 2011. These reviews identified programmatic strengths, findings, and some opportunities for improvement.

In order to ensure that SRNS continues to meet DOE-VPP expectations to maintain its status as a Star site, the Office of Environment, Health, Safety and Security (AU) conducted an onsite review. Personnel from the Office of Worker Safety and Health Assistance (AU-12) and subject matter experts (SME) from the DOE complex conducted work observations and interviews from October 7-16, 2014. This report documents the results of that assessment and provides the AU DOE-VPP Team's (Team) recommendation to the Associate Under Secretary for Environment, Health, Safety and Security.

II.   INJURY INCIDENCE/LOST WORKDAYS CASE RATE

Injury Incidence/Lost Workdays Case Rate (SRNS Operations)					
Calendar Year	Hours Worked	Total Recordable Cases (TRC)	TRC Incidence Rate	DART* Cases	DART* Case Rate
2011	11,138,795	15	0.27	5	0.09
2012	9,050,072	13	0.29	2	0.04
2013	7,925,393	8	0.20	0	0.00
3-Year Total	28,114,260	36	0.26	7	0.05
Bureau of Labor Statistics (BLS-2010) average for NAICS** #562 Waste management and remediation services			4.5		3.0
Injury Incidence/Lost Workdays Case Rate (SRNS Construction)					
Calendar Year	Hours Worked	TRC	TRC Incidence Rate	DART* Cases	DART* Case Rate
2011	1,157,438	3	0.52	1	0.17
2012	897,880	1	0.22	0	0.00
2013	663,985	2	0.60	0	0.00
3-Year Total	2,719,303	6	0.44	1	0.07
Bureau of Labor Statistics (BLS-2010) average for NAICS** ** #236 Construction of buildings			3.5		1.7
Injury Incidence/Lost Workdays Case Rate (SRNS Subcontractors)					
Calendar Year	Hours Worked	TRC	TRC Incidence Rate	DART* Cases	DART* Case Rate
2011	1,177,891	15	2.55	8	1.36
2012	914,515	5	1.09	3	0.66
2013	837,685	9	2.15	2	0.48
3-Year Total	2,930,091	29	1.98	13	0.89
Bureau of Labor Statistics (BLS-2010) average for NAICS** Code #236 Construction of buildings			3.5		1.7

* Days Away, Restricted or Transferred
** North American Industry Classification System

TRC Incidence Rate, including operations, construction, and subcontractors: 0.42
DART Case Rate, including operations, construction, and subcontractors: 0.12

SRNS operations and construction TRC and DART case rates are significantly lower than 2010. After a significant accident involving a worker falling off a scaffold in 2011, SRNS developed a Call-to-Action campaign to emphasize the principles of Integrated Safety Management (ISM) to site personnel. Managers also emphasize the importance of this safety message through workplace visits. The result is the reduction of injuries and an overall drop in the injury rates since the previous VPP assessment. SRNS combines both subcontract construction and subcontractor operations data into one chart, with construction making up two-thirds of the hours worked. The NAICS code for construction is more restrictive than for operations, so combining the subcontractor totals does not dilute injury rates. Subcontractor injury rates continue to trend downward along with DART case rates, but remain higher than the SRNS rates. SRNS is using subcontractor technical representatives (STR) to emphasize safety principles to subcontractors to drive this positive trend. In all three categories, SRNS is well below the industry standard. SRNS fully meets the expectations for continued participation in DOE-VPP.

III.   MANAGEMENT LEADERSHIP

Management leadership is a key element of obtaining and sustaining an effective safety culture, and implementing the guiding principles of Integrated Safety Management System (ISMS). The contractor must demonstrate senior-level management commitment to ISMS and occupational safety and health, in general, and to meeting the expectations of DOE-VPP. Management systems for comprehensive planning must address health and safety requirements and initiatives. As with any other management system, authority and responsibility for employee health and safety must be integrated with the management system of the organization and must involve employees at all levels of the organization. Elements of that management system must include: (1) clearly communicated policies and goals; (2) clear definition and appropriate assignment of responsibility and authority; (3) adequate resources; (4) accountability for both managers and workers; and (5) managers must be visible, accessible, and credible to employees.

In 2010, the Team determined that SRNS had a dedicated, *hands-on* team of senior managers. From the company president's office down, there was a clear expectation that all managers were responsible for being visible to the workforce and supporting the workforce in accomplishing the company mission. SRNS managers had done an excellent job managing the transition of the safety culture from the previous contractor. They effectively helped workers identify needed improvements and have maintained or improved those aspects of VPP that workers strongly supported.

Since 2010, SRNS has experienced several changes in senior managers. Most recently, a new company president arrived approximately 4 months prior to this assessment. Most workers and managers interviewed by the Team were confident that SRNS was performing work safely, but they believed the most recent changes, particularly the company president, significantly improved manager visibility and presence at worksites. The new company president established four areas that all managers should focus on that include operational excellence, human and physical infrastructure, and employee engagement. In keeping with those priorities, SRNS expects all managers to perform at least one management field observation (MFO) each month (previously voluntary), meet with their direct reports face-to-face at least on a monthly basis, communicate common messages published to senior managers through a leadership message board, and be responsive to employee suggestions and concerns.

MFOs are intentional activities by managers to observe work in the field and document their observations. The MFO can simply be a general observation, observing a specific activity, or focus on specific topics. Feedback from workers to the Team indicated managers did not intimidate workers during MFOs, and the interactions were positive and constructive. Most managers expressed a desire to spend more time in the field, but have not established specific efforts or means to fulfill that desire. The company president is trying to encourage managers in that effort by asking them to perform MFOs outside their direct area. She believes doing so will help managers better understand their role in supporting the mission, provide a fresh look in all areas of the site, and provide managers with opportunities to expand their capabilities and expertise.

The Team learned that SRNS uses TRC and TRC rates as factors in determining SRNS senior executive/managers bonuses. Although there are several other factors in determining individual bonuses, the new company president recognizes that including TRC and TRC rate in the calculation may send the wrong message to managers. The company president is working with

the senior managers to identify better, appropriate goals, including use of existing leading indicators, to determine those bonuses.

In the past 3 years, SRNS has had a number of safety improvement plans and initiatives. For example, in 2011, based on some incidents of concern over the preceding 2 years, SRNS began the *Safety Call to Action*. The senior vice president for Environment, Security, Safety, and Health (ESSH) initiated that plan to renew and redouble efforts to prevent incidents and injuries, drive cultural transformation, and reemphasize ISM. Ten teams led by SRNS vice presidents, with 20 level 1, 2, and 3 managers on each team, developed the plan. The teams canvassed employees and sought input and suggestions on ways to improve safety culture. SRNS managers then used the resulting input to establish a set of priorities, including schedules for actions. SRNS personnel, from the company president to individual Local Safety Improvement Team (LSIT) members understood the call to action. SRNS attributes much of its current success to this effort.

Lower-level organizations within SRNS also establish their own annual Safety Plans (SP). Each organization establishes its own process to develop its SP. In general, LSITs within the organization provide input, along with a variety of other people, but the LSIT does not develop the SP. The LSIT charter focuses LSIT responsibilities on collecting, analyzing, and responding to data from Behavior-Based Safety (BBS) observations. SRNS might be able to foster greater employee involvement in developing SPs by integrating the LSITs into developing SPs, or even expanding the LSIT charter to include developing annual SPs for each LSIT.

> **Opportunity for Improvement:** SRNS should consider expanding the role of the LSITs (i.e., SP development, walkdowns, and prejob participation).

The scorecard system that was under development in 2010 has matured significantly and SRNS continues to lead the DOE complex in collecting, integrating, analyzing, and tracking leading indicators. Organizationally tailored scorecards display these indicators on demand, and SRNS factors these indicators into corporate performance evaluations. The use of weighted statistics to compile performance indices for safety, radiological controls, environmental management, and other areas represent a good practice that helps managers identify trends before issues develop, and avoid overreacting to single events that do not represent a trend. Although indicative of organizational performance, SRNS has not yet integrated these leading indicators into individual performance evaluations for managers.

> **Opportunity for Improvement:** SRNS should consider a means to integrate leading indicators into individual performance evaluations for managers.

All managers expressed their conviction that work needed to be done safely or not done at all. Most workers encountered by the Team understand that conviction, but several challenges, including budget reductions changing program priorities, have made it difficult for managers to demonstrate that conviction over the past 3 years. Reductions in infrastructure maintenance and facility deterioration are occurring and, at times, affect mission priorities and schedules. SRNS is committed to ensuring short-term mission priorities do not endanger long-term facility viability for future work. SRNS recognizes that in some cases the backlog of maintenance at facilities is growing and is working diligently to prioritize that backlog, reduce unnecessary

efforts, and ensure maintenance efforts focus on protecting the facility safety envelope, the workforce, the environment, and the surrounding communities.

Similar to other sites in the DOE complex, SRNS recognizes that its very experienced workforce is close to retirement and is working to reduce the potential effect of a future knowledge and experience gap. SRNS has several programs as part of its *Talent Management* efforts to train new personnel, including workers and managers. Programs include a variety of development and mentoring forums, permanent and rotational assignments, and specific training courses. In addition, SRNS has two specific programs targeted at developing leaders. The Leaders Emerging as Professionals (LEAP) program targets early-career professionals. The program teams young leaders with senior manager mentors and gives them the opportunity to develop their skills. Another similar program, the Aspiring Mid-Career Professionals (AMP), focuses on professional development and business awareness specific to SRNS, and targets more senior personnel.

Managers are trying to invest in new technology, such as use of wireless notepad computers, electronic log keeping, and centralized control rooms, to improve efficiency and reduce errors. In some cases, these technologies may present other security challenges that SRNS must address before it can move forward. Additional investments in the short-term investments should lead to achieving long-term improvements, but resources to make those investments are scarce. SRNS and DOE Savannah River Operations Office (SR) are working together to identify appropriate funding priorities and resolve other potential concerns.

SRNS has a very active communication program, targeted both internally and externally. Internal communications include videos, newsletters, regular safety meetings, and online forums. These professionally produced tools highlight specific targeted messages to employees, as well as general news and information. Messages include highlights of continuous improvement efforts, information about upcoming activities, safety campaigns, people, and potential topics of concern to employees. These tools help SRNS effectively communicate issues to employees, limit the spread of rumors, help employees understand the bigger picture, and raise employee and community awareness.

SRNS has specifically identified campaigns to refocus workers on safety when they return to work from extended holiday shutdowns. Working with LSITs, SRNS identified that these periods presented an increased risk for injuries related to distractions, such as slips, trips, falls, or other errors. Using these campaigns, SRNS has significantly reduced the incidence of injuries and errors on return-to-work.

SRNS has a mature, self-assessment process and contractor assurance system. A dedicated group of experienced personnel conduct assessments throughout the year. These assessments include topic-based assessments, comprehensive facility assessments by an Independent Evaluation Board (IEB), corrective action review boards, and readiness assessments. SRNS integrates the results of these assessments, as well as a compilation of other accomplishments and outreach efforts, into its annual DOE-VPP report. SRNS screens these assessment results and captures corrective actions in the Site Tracking and Reporting (STAR) system. Managers receive notifications through the scorecards as actions approach due dates.

The annual VPP assessment is primarily a compilation of accomplishments in the previous year. Although SRNS conducts many assessments, it is not effectively integrating issues, goals, and objectives for the coming year into its annual VPP report. Since VPP focuses on continuous

improvement, it is important that the annual assessment demonstrates value for SRNS. One means of achieving that objective would be including a discussion of corporate challenges, along with associated goals and objectives for the coming year. SRNS should consider including its corporate safety improvement goals for the coming year into its annual VPP evaluation.

> **Opportunity for Improvement:** SRNS should consider including its corporate safety improvement goals for the coming year into its annual VPP evaluation.

SRNS continues to support the pursuit of excellence in safety and operations through commitment of resources. Funds for reward, recognition, and promotion of excellence come from both DOE and SRNS award fee. SRNS applies award fee to those efforts that DOE cannot fund, such as food or promotional items, to encourage workers and promote improvement. The Individuals Developing Effective Alternative Solutions (IDEAS) program continues to flourish and provides additional cost savings by promoting employee suggestions. Other campaigns by LSITs, the VPP Core Team, and other organizations continue to promote safety awareness.

Conclusion

Since 2010, SRNS has effectively managed numerous challenges and maintained its commitment to safety as a prerequisite to mission performance. It continues to use available resources to provide workers with the necessary tools, training, and support to prevent accidents, promote excellence, and build trust. Several management changes have improved workers' perceptions of managers' commitment. Many managers are routinely visible to workers, although some managers continue to struggle to find time to visit worksites. SRNS continues to demonstrate the Management Leadership commitment expected of a DOE-VPP Star participant.

IV.   EMPLOYEE INVOLVEMENT

Employees at all levels must continue to be involved in the structure and operation of the safety and health program and in decisions that affect employee health and safety. Employee involvement is a major pillar of a strong safety culture. Employee participation is in addition to the individual right to notify appropriate managers of hazardous conditions and practices. Managers and employees must work together to establish an environment of trust where employees understand that their participation adds value, is crucial, and welcome. Managers must be proactive in recognizing, encouraging, facilitating, and rewarding workers for their participation and contributions. Both employees and managers must communicate effectively and collaboratively participate in open forums to discuss continuing improvements, recognize and resolve issues, and learn from their experiences.

There is a variety of ways for employees to become involved at SRNS. Employee involvement can be through the performance of BBS observations, participating on LSITs, submitting suggestions through the IDEAS program, or participating on one of numerous established committees. Employee involvement is also an essential element in the work planning and control process.

SRNS encourages employee involvement through the BBS process. The objective is to provide positive reinforcement for safe behaviors and correct observed at-risk behaviors. BBS has proven to be an effective tool in helping reduce injuries. Approximately 73 percent of SRNS employees participated in BBS this year by either performing observations or being observed while performing work. In FY 2014, employees performed over 33,000 BBS observations. SRNS has several years of data that clearly demonstrates the direct correlation between BBS observations and improved TRC and DART rates. SRNS fully endorses BBS and credits this program as the cornerstone of its safety improvement efforts.

SRNS utilizes safety and health committees as a major form of employee involvement. There are 25 LSITs within SRNS representing each of the functional areas. Each LSIT is comprised of an LSIT Chair, cochair, exempt and nonexempt employees, and a management sponsor. Previously, each LSIT had its own charter, leading to significant differences among individual LSIT charters across SRNS. To clarify expectations and create more consistency, SRNS created and issued a single charter in February 2011. The *SRNS Local Safety Improvement Team Charter*, Revision 0, describes and provides LSIT guidelines for all SRNS LSITs. The Charter establishes a core value stating: *We value the contributions of each individual and strive to achieve a zero-injury workplace to ensure the health and safety of each member of our workforce.* The Charter clearly describes the responsibilities and accountability of senior managers to support employee involvement. Each vice president reviewed and acknowledged his/her commitment and support by signing the charter. Workers interviewed by the Team believed this renewed commitment to the workers by the SRNS management team is increasing worker participation in LSIT activities. In addition to the documented commitment, LSIT chairs, cochairs, and management sponsors meet quarterly with the vice president of operations in the LSIT forum to share organizational experiences and opportunities for improvement.

LSIT members expressed significant pride and ownership of the LSITs. To promote teamwork and camaraderie among the LSIT membership, each LSITcreated its own name and logo. The LSITs are an effective forum to communicate information from managers to workers, and vice versa. Several LSITs created their own safety newsletters and posters to inform employees of

LSIT activities, communicate safety topics, and document meeting minutes and attendance. Overall, the Team observed well-organized and actively engaged LSITs that SRNS empowers to make decisions.

LSITs have been instrumental in implementing corrective actions that affect the entire site. LSITs use BBS observations, trending data, and employee concerns to identify issues. LSITs use these inputs to develop corrective actions and improvements with support of their individual management sponsors. Examples of improvements include restriping and relamping parking lots, installation of pedestrian crosswalks, and new signs posted throughout the site. In an effort to raise awareness of the consequences of impaired driving during the approaching holiday season and to prevent accidents both on and off the site, the Rat Pack (Riggers LSIT) are positioning two wrecked vehicles at the site entrances.

The construction/trades Project Management and Construction Services LSIT is well organized and employees are actively engaged during meetings. The chair for this committee is very enthusiastic and well respected. This LSIT recently completed 3 consecutive months with 100 percent participation in BBS observations. Many of the trade groups have gone years without an injury. The construction/craft organizations use a worker feedback/timeout tracker in the form of a small 3x3 index card provided to employees to document positive observations, timeouts, or improvements on a job. This provides an excellent mechanism to encourage employee feedback.

The F-Area LSIT meeting was very energetic with significant membership participation. Manager presence was obvious as was managers' continuing support for workers. The LSIT discussed metrics and BBS observations with recognition for the top three employees with the most observations. The safety focus concerned home fires and having an emergency escape plan should a fire occur. Two videos on home fire protection supported the discussions.

During interviews with employees at SRNL, the Team focused on a recent injury. A worker was cutting metal and received a laceration to the thumb. SRNL has one of the best safety records for DOE laboratories in the country and injuries are infrequent. The management team decided that rather than have a corrective action driven from the management perspective, they would empower the workers in the shop where the injury occurred to develop the causal factors and corrective actions. Further discussions revealed that this approach to solving issues worked extremely well and that the workers were appreciative of the confidence that managers placed in their abilities to arrive at a solution. This approach, as demonstrated by the laboratory, may help solve some of the more difficult issues at SRNS. For example, in the past several months SRNS identified potential issues in conduct of operations and procedure compliance that needed to be resolved. The organization is also working to improve the overall safety culture. LSITs were not fundamentally involved in developing the *Safety Call to Action* (see Management Leadership) for supporting the resolution of other issues. As discussed earlier, the new company president considers improving employee engagement as one of the top priorities for SRNS. SRNS should consider giving LSITs a more prominent role in developing solutions for difficult issues and provide visible management support to implement those solutions.

> **Opportunity for Improvement:** SRNS should consider giving the LSITs a more prominent role in developing solutions for difficult issues and provide visible management support to implement those solutions.

Based on employee interviews, it is clear that employees understand their rights under title 10, Code of Federal Regulations, part 851, *Worker Safety and Health Program* (10 CFR 851) and are comfortable exercising those rights without fear of reprisal. Many of the interviewees said they have exercised their ability to pause work for clarification or correcting a procedural deficiency. They indicated that the pauses were very beneficial to completing tasks correctly the first time. Employees demonstrated a strong sense of ownership for safety and often referred to each other as their *brother's keeper*.

SRNS provides many workers training in human performance improvement (HPI) fundamentals and workers use these skills. Error reduction tools, such as self-checking, peer-checking, three-way communication, procedure use, timeouts, and stop work, if used in combination with error precursor recognition and a questioning attitude, are key elements to a successful HPI program. SRNS incorporates all of these elements in its HPI program and is continuously working to improve and integrate HPI into all activities. During the past 3 years, SRNS has vigorously worked to improve its *just culture* concept. For example, if a worker makes a serious mistake leading to an event, the factfinding and evaluation processes determine if the process caused the worker to err. SRNS asks the question: *If another worker performs this task, will this worker make the same error?* For example, a facility manager described how a worker made two lock and tag errors over one weekend. Since the worker had no previous history of lock and tag errors, they determined that medical issues at home distracted the worker. Rather than discipline the worker for mistakes, the facility manager and work team met to help the affected worker through this period of distraction by peer-checking and questioning to ensure his safety and procedural compliance.

Employees are involved in the work planning and control process. Employees participate in walkdowns with the planning teams and are involved in reviewing and approving work documents. Hazard analysis is applicable to all work activities. The depth of hazard analysis is dependent upon the complexity of the task (see Worksite Analysis). Workers are responsible for continuously analyzing their work. The two most commonly used tools for analyzing hazards are the individual hazard analysis (IHA) and the assisted hazard analysis (AHA). The workers use IHA to continuously analyze their work environment for changing conditions whereas the AHA provides a complete set of controls to protect workers through a team effort. Most workers were capable of describing to the Team how they used IHAs, and participated in AHA work planning.

Inspection records and employee interviews demonstrated regular employee participation in facility inspections. Workplace inspection teams consist of a cross-section of exempt and nonexempt personnel. This approach allows workers to learn from SMEs and carry that information back to their workspaces.

SRNS uses several recognition programs to reward employees for positive performance. The Champions Award and the President's Award are formal awards. There are Employee of the Week and Month awards, Good Catch awards and Spot awards. Spot awards are cash rewards. There are nine categories associated with Spot awards, one of which is environmental health and safety performance. In FY 2014, SRNS presented 1,436 Spot awards, 247 of which related to environment, safety and health. The total amount presented for safety recognition was $169,450. Employees stated that they appreciate the reward and recognition system and believe it effectively encourages workers to look for improvements.

SRNS encourages employees to participate in the incentive-based employee suggestion program called IDEAS. IDEAS is the employee suggestion program that offers employees an opportunity to receive rewards for recommending unique safety and/or cost-saving contributions. The program captures innovative thinking and promotes continuous improvement. Suggestions may improve safety, business performance, or productivity. The suggestions are screened for eligibility and either declined or accepted. A new campaign to encourage participation occurs every month. By challenging participants through campaigns, the program provides an innovative approach to seek out new ways to perform work safely and efficiently. The program leader travels throughout the site promoting the program with campaign games and rewards for participating. Since the inception of the program in 1998, the IDEAS program has accumulated savings and cost avoidances totaling more than $225 million. The IDEAS program leader indicated that 32 percent of the IDEAS submitted are safety-related. Recently, the SRNS IDEAS program received recognition at the 72nd Annual Ideas America Training Summit in Denver, Colorado, where three employees won first place awards for different facets of the program.

Since 2010, SRNS has integrated the IDEAS program with its Continuous Improvement Program (CIP). The CIP allows workers to submit ideas that improve efficiency and reduce costs and provides workers with cash awards proportional to the realized cost savings. Previously, workers were often confused about which program to use for their ideas and suggestions. Although the awards remain separate, workers now have a single point of submission. SRNS screens the suggestions for both IDEAS and CIP and determines the appropriate program and award level. The result has been an increase in submissions by workers.

SRNS primarily bases awards from the IDEAS program on quarterly drawings. Although workers are submitting suggestions to the program, SRNS might realize even greater participation if it tied IDEAS awards to specific award levels rather than relying on drawings. For example, SRNS might consider awarding suggestions with a varying number of points depending on the perceived value of a suggestion. Workers could collect those points over time to purchase award items. Other DOE-VPP participants have used similar processes with excellent results to promote worker suggestions.

SRNS has a strong employee development program. This program provides organizations and activities to enhance personal growth and career achievement. The LEAP and AMP are two excellent examples. LEAP applies to employees who have been at the facility for less than 5 years. LEAP is a unique tool in career development, offering professional networking, enhanced business awareness, and community involvement. By investing in young professionals, they can have a positive impact on the future of the company. AMP is for employees with 5-20 years of experience. AMP provides an avenue for SRNS to invest in employees with hopes of increasing engagement and positively impacting talent acquisition and retention. AMP events include quarterly seminars, networking socials, and community opportunities. Another development tool available to employees is Skill Soft. This is a computer-based library of over 6,000 training courses. Courses focus on management and leadership skills. Continuing Education Units are available for those employees needing credits to maintain certifications.

As part of its community outreach commitment, SRNS conducted a Safety Expo in September 2014. The Center for Applied Research provided the space to conduct the Expo that provided 40 interactive booths and demonstrations focusing on safety. Many of the booths

provided information pertaining to home safety for employees to share with their families. All 25 SRNS LSITs participated. The Aiken County Sherriff drug dogs, local news crews, and local health care providers also attended. During the event, over 1,300 people received flu shots. Other SRNS outreach activities include Toys for Tots, donations to the children's burn unit, United Way's Day of Caring, blood drives, the American Heart Association, and contributions to the local food bank.

Conclusion

Employees at all levels at SRNS are involved in the structure and operation of the safety programs and in decisions that concern employee safety and health. Managers have empowered employees to participate in, and at times administer, the safety and health programs by collaborating with employees and implementing initiatives that maintain open lines of communication and promote safety and health responsibilities. SRNS continues to meet the expectations of the Employee Involvement tenet of DOE-VPP as a Star participant.

V.   WORKSITE ANALYSIS

Management of health and safety programs must begin with a thorough understanding of all hazards that might be encountered during the course of work and the ability to recognize and correct new hazards. Implementation of the first two core functions of ISMS, defining the scope of work, and identifying and analyzing hazards, form the basis for a systematic approach to identifying and analyzing all hazards encountered during the course of work. The results of the analysis must be used in subsequent work planning efforts. Effective safety programs also integrate feedback from workers regarding additional hazards that are encountered and include a system to ensure that new or newly recognized hazards are properly addressed. Successful worksite analysis also involves implementing preventive and/or mitigating measures during work planning to anticipate and minimize the impact of such hazards.

As discussed in the 2010 review, SRNS documents baseline surveys that identify existing or potential hazards to ensure a safe and healthful work environment. Industrial hygiene (IH), radiological control, and safety personnel follow site-wide and facility-specific procedures to evaluate facilities, processes, projects, and experiments to identify hazards, determine employee risk, prioritize sampling, and make recommendations to mitigate hazards. Comprehensive surveys include inventories of agents and situations, such as chemicals, asbestos, lasers, lead, ionizing radiation, noise, and other industrial hazards. Exposure data is included in the work planning and controls AHA process.

IH uses the comprehensive Enterprise Integrated Safety Management-Exposure Assessment module (EISM-EA) to store baseline exposure assessment data. EISM-EA has been in use since 2011 by both SRNS and SRR. A project to transfer several years of data from an old Lotus Notes database is underway. The Lotus Notes database remains available for legacy information. The IH team developed guidance documents to help users understand the EISM-EA data inputs to ensure consistent interpretation of data field definitions. The IH team also developed 23 reports that the site and safety health teams commonly use. The IH program manager stated that EISM-EA is on an old Oracle® platform that is no longer supported with software upgrades and patches. Both SRNS and SRR are investigating how to modernize this application with another version of Oracle®.

For nuclear facilities, SRNS continues to use similar tools as in 2010 to accomplish preuse/prestartup analysis. A preliminary hazard review, consolidated hazards analysis process, and fire hazards analysis support development of the preliminary documented safety analysis (PDSA) and the documented safety analysis (DSA). A PDSA is required for new nuclear facilities, and DOE may require one for major modifications to existing facilities. A PDSA evaluates the design to assure engineered controls mitigate accidents and upset conditions. A DSA evaluates the facility to address potential release of hazardous materials to the onsite worker, the public, and the environment during facility operation. The DSA provides the basis for technical safety requirements that provide high-level controls to assure safe operation. Configuration management processes for the DSA, including the unreviewed safety question process, assure that proposed changes do not compromise the safety basis and evaluate newly discovered issues. These processes provide a robust suite of tools to perform worksite analysis for nuclear facility operation.

Within the facility at the activity level, the SRNS 8Q Manual, *Employee Safety Manual,* and Procedure 8Q-122, *Task Level Hazards Analysis,* provide the framework for performing

activity-level hazard analysis. Attachment A to procedure 8Q-122, *Automated Hazards Analysis (AHA) Process Map,* provides the flow for determining when work planners should perform hazard analysis. This process flow indicates that some form of hazard analysis is required for all work performed at the site. This process involves the worker in identifying the work hazards and developing controls to eliminate or mitigate those identified hazards.

The AHA is a menu-driven, computer-based program that walks the user through questions about hazards and controls and is the primary tool for performing activity-level hazard analysis. SRNS applies the AHA process for both maintenance work planning and operating procedures. SRNS has used this process for several years, and the process has undergone significant improvements. SRNS has implemented the new *Planning Actions/Considerations Report Tool* addition to the enhanced AHA. This added feature in the AHA process captures additional information that explains identified controls. SRNS is continuing efforts to ensure the process is user-friendly and technically sound. A review of several work packages and observation of activity-level work indicated both a linkage of identified hazards to proper controls and the performance of work within the controls.

IHA is a process of continual self-analysis of workscope, hazards, and controls by which trained site workers identify, analyze, and control routinely encountered, well-understood hazards. IHA controls include adhering to the general employee Basic Hazard Controls (BHC) handbook, safety postings, site safety procedures, and using formal training. SRNS uses the AHA process 25 percent of the time for activity-level work and the IHA process for approximately 75 percent of work conducted. The facility/project AHA champion checks that the AHA is current and monitors the adequacy of hazard analysis efforts. A prescreening process determines if an AHA or IHA is the appropriate hazard analysis method. The person performing the screening can only select the IHA process if there is a low probability of injury. Procedure 8Q-122, *Task Level Hazard Analysis,* does not include requirements or guidance to reevaluate the IHA selection if a worker is injured performing work using the IHA process alone. SRNS should evaluate the need to reset the use of the IHA process to AHA if injuries or accidents occur for work conducted under an IHA.

> **Opportunity for Improvement:** SRNS should evaluate the need to reset the use of the IHA process to AHA if injuries or accidents occur for work conducted under an IHA.

Because SRNS relies so heavily on the IHA process, there is significant opportunity for workers to accept previous practices or assumptions when evaluating hazards associated with their work. While conducting a significant number of behavioral observations throughout the year, the observation data does not indicate that workers are consistently challenging themselves and their coworkers regarding assumptions about work methods. This may lead to workers selecting the wrong controls. Although not extensive, SRNS can drive further improvement by encouraging workers to ask themselves hard questions frequently about work methods or potential exposures. Questions, such as: "*Why am I doing this?*" or "*How can I prove what I am doing is safe?*" can help workers recognize potentially invalid assumptions or identify previously unrecognized hazards. The IHA process embeds the expectation for continual self-analysis, but encouraging workers to meet this expectation is an ongoing challenge. SRNS should ensure that it trains and actively encourages workers to challenge themselves continually, particularly when using an IHA.

> **Opportunity for Improvement:** SRNS should ensure that it trains and actively encourages workers to challenge themselves continually, particularly when using an IHA.

As in 2010, SRNL continues to use the electronic hazard analysis process (EHAP) tool for research and development activities. Manual L1 Procedure 7.02, *Conduct of Research and Development-Hazards Analysis,* defines the process. Principal Investigators (PI) designed and created the tool based on the site AHA process to meet their specific needs. The PIs interviewed were very familiar with the use of the system to perform hazard analysis. The PIs were able to walk through the process from start to completion, and it was evident that they were regular users of the system. One PI interviewed was able to verbalize both chemical and laser hazard analysis and provided details for the set of selected control measures for each. SRNL uses EHAP, which is similar to the AHA process, for 75 percent of laboratory work, and Training Education and Evaluation (TEE), which is similar to the IHA process for the other 25 percent of the work. For work at the laboratory, laboratory PIs (scientist, researchers), in most cases, lead the effort as planners in development of task descriptions, hazard analysis, and identified controls using hazard analysis packages, which include safe work procedures, job hazard analyses (JHA) or TEE. Use of TEE is by a documented waiver process, and two levels of supervisors must approve it. Hazard analysis for SRNL work conducted in non-SRNL facilities incorporates the AHA process into the EHAP. A review of a readiness assessment (2010-SA-004416) for the Federal Bureau of Investigation laboratory confirms that worker involvement was adequate and appropriate for the EHAP process.

As in 2010, SRNL continues to use JHA to supplement EHAPs or to analyze the hazards in shop areas or work performed on programmatic equipment. SRNL uses a JHA in lieu of an AHA for this type work. Since the last review, SRNS has included machine operators and maintenance personnel on JHA review teams and included their suggestions in *Shop Hazard Analysis Training* (TRWHGA26).

SRNS uses a risk-ranking process developed as a result of previous self-assessment findings to determine future self-assessments in areas needing attention. On average, contractor assurance metrics indicate SRNS conducts 175 self-assessments each month. SRNS enters opportunities for improvement and findings into STAR and responsible managers assign priority codes to determine the level of causal analysis needed to develop corrective actions to prevent the likelihood of recurrence. Significant issues are binned and rolled into a watch list for the senior management scoreboard (See Management Leadership).

SRNS continues to use integrated The Rest of the Story (iTROTS) effectively for events leading to injury, including medical treatment cases and first-aid cases, that have potential for more serious consequences. LSIT personnel reconstruct and analyze events in a BBS framework. SRNS uses this peer assessment process from the BBS Document Online Collection System to support injury investigations to identify critical safety behaviors, HPI contributors, error precursors, personal protective equipment (PPE), and administrative or engineered defenses. In addition, this HPI assessment tool determines if failure to use self-checking, timeouts and/or questioning attitude contributed to the injury. The iTROTS team provides its recommendations to managers for consideration.

SRNS conducts effective accident/injury investigations. For example, an SRNL Environmental and Chemical Processing Technology (E&CPT) laboratory worker experienced a laceration to the finger while cutting a 30-gallon plastic drum using a heavy duty, electric reciprocating saw.

The employee was finishing a cut through the bottom of the drum when the saw jumped out of the cutting path and the blade struck the employee on the top of the right middle finger. EHAP SRNL-L3100-2009-00022-4 covered the work, which included use of hand and portable power tools. During the factfinding meeting, workers and managers identified that the hazard analysis was not thorough. The hazard analysis did not analyze the hazard associated with an unstable drum during saw-cutting and the resultant loss of control of the power tool. Because of this injury, the E&CPT managers evaluated active EHAPs and workscope using a peer review checklist. These reviews led to the development of new or additional JHAs that involved workers. Other improvement items included alternative ways to set up an experiment, better teaming across the organization, and ensuring that work remains within the analyzed scope. The peer review process has continued for other work in the same manner.

Another example includes an SRNL worker in the Aiken County Technology Laboratory that experienced a splash of a solution of potassium permanganate (KMnO4) to the face and eyes when transferring the chemical from a beaker to a 55-gallon drum. During the transfer of solution, the pump clogged, so the operator reversed the pump to clear the clog per the procedure. In the process of clearing the clog, the metal suction tube parted from the suction hose and sprayed solution directly into the face and eyes of the worker. Solids drawn up with the liquid permanganate material from the mixing beaker caused a clog in the metal suction tube. In the attempt to clear the clogged metal suction tube, the reversal of the pump motor pressurized the suction feed hose causing the suction tube to separate from the pump. The spray from the hose struck the worker in the face. The team that prepared the procedure did not consider hazards of overpressure situations, so it did not identify the need for engineered controls, secondary containment around each joint of the system, or proper face and eye protection in the event of a failure. The analysis should have identified the need for engineered controls and selective PPE to control the chemical splashing during tasks associated with feed preparation or feedline tasks. SRNL implemented effective corrective actions in both cases. SRNS should ensure that analysis during the work planning stages includes potential upset conditions to determine if those conditions require additional controls.

> **Opportunity for Improvement:** SRNS should ensure that analysis during the work planning stages includes potential upset conditions to determine if those conditions require additional controls.

As in the 2010 review, the STAR database continues to be a comprehensive and effective management tool for tracking and trending of issues and corrective actions. SRNS has expanded the capabilities and use of the STAR database to track assessment schedules and document assessment reports (including MFOs). SRNS is using STAR as the primary tool to manage issues from various sources. Use of this tool as a single repository is increasing the effectiveness of tracking and trending efforts.

SRNS expanded the use of tracking and trending by using lagging and leading indicators and rollup indexes on conduct of operations (CONOPS), occupational safety and health, radiological controls, self-assessments and corrective action timeliness, BBS observations participation rates, MFOs, CONOPS error precursor, and flawed defense Chi Square analysis. An example of the occupational safety and health index includes both lagging and leading performance indicators; e.g., TRC and DART rates, percent TRCs with iTROTS, safety culture work environment, personnel surveys, safety ideas, BBS observations, employee safety and health concerns, and

safety meeting attendance. SRNS combines these individual metrics to yield a single safety and health index.

SRNS reviews both internal and external operating experience and lessons learned for applicability and necessary action across SRS. In one case reviewed by the Team, SRNS did not recognize the potential hazards and perform adequate reviews. In that case, an explosion occurred at the Nevada National Security Site when a drum containing isopropyl alcohol was stored for a long time. Organic peroxides formed in the alcohol that are unstable and caused the drum to explode. SRNS received an advanced copy of the Accident Investigation Board Report that contained contributing causes and judgments of need that could extend to SRNS. For example, the report recommended periodic review of material safety data sheets (MSDS) for chemicals to ensure the most recent MSDS is available and used to determine storage requirements and aging limits for bulk chemicals. SRNS personnel indicated they did not perform an extent of condition review because there had not yet been a lessons learned from the DOE system. SRNS should ensure its operating experience and lessons learned program does not wait for a lessons learned to be issued based on published Occurrence Reporting and Processing System (ORPS) significant events to determine applicability and the need for an extent of condition review to determine vulnerability and identify subsequent followup actions.

> **Opportunity for Improvement:** SRNS should ensure its operating experience and lessons learned program does not wait for a lessons learned to be issued based on published ORPS significant events to determine applicability and the need for an extent of condition review to determine vulnerability and identify subsequent followup actions.

Conclusion

SRNS has appropriate hazard analysis tools and processes tailored to the level of complexity of the work and the experience and skill of the worker. These processes generally provide the correct control set to prevent or minimize workers' exposure to hazards during work. In some cases, SRNS should continue to ensure work control documents include the appropriate details and ensure workers maintain their vigilance by challenging their own assumptions prior to performing work. SRNS meets the expectations in Worksite Analysis for a DOE-VPP Star participant.

VI.   HAZARD PREVENTION AND CONTROL

The second and third core functions of ISMS, identify and implement controls, and perform work in accordance with controls, ensure that once hazards have been identified and analyzed, they are eliminated (by substitution or changing work methods) or addressed by the implementation of effective controls (engineered controls, administrative controls, or PPE). Equipment maintenance processes to ensure compliance with requirements and emergency preparedness must also be implemented where necessary. Safety rules and work procedures must be developed, communicated, and understood by supervisors and employees. These rules and procedures must also be followed by everyone in the workplace to prevent, control the frequency of, and reduce the severity of mishaps.

The Team observed engineered controls at several locations. The Portable Equipment Commodity-Management Center (PEC-MC), located in N-area, maintains and provides portable equipment, such as cranes, forklifts, generators, lighting, etc., to support SRNL work. They have several shops where they can service the equipment, or they can travel to the location of the equipment to provide the service. The Team observed several local exhaust ventilation systems at PEC-MC for controlling welding fumes and vehicle exhaust. The exhaust systems have identification numbers, the survey date, the surveyor contact information, and the measured flowrate on the equipment, all of which informs the worker about the condition of the equipment. Equipment guards covered the two grinding wheel openings (while not in use) and the pipe-cutting bandsaw. At the Sheet Metal shop, the exhaust ventilation system for the downdraft table was also surveyed and identified by the IH department.

At the L-area, casks containing spent reactor fuel arrive by truck. To reach the top of the cask, workers originally tried to reuse a movable ladder on wheels (from another project) with a platform for workers to stand on and work. During mockup testing, workers discovered the bottom of the ladder could not fit into the narrow space under the flatbed trailer and needed another solution to access the cask top. The L-area project engineers designed a 2-piece platform and ladder assembly that allows workers to reach the cask top while on the truck configuration. Central shops constructed the ladder and they are available to build other in-house engineered controls.

The Team observed the use of signs at various locations. At the central shops, hearing protection was required during the use of equipment. Other signs indicated the need for safety glasses prior to entering the shop. At PEC-MC, a portable generator had a sign indicating hearing protection was required within 5 feet of the equipment while it was operating. In one case, the Team observed a sign that could confuse workers or visitors to the area. A confined space sign posted on the outside wall near an entrance to the PEC-MC administrative building refers to a nearby manhole. The manhole cover is large and requires a special tool to lift it off the opening, thus it does not need a confined space posting per procedure 8Q-33-20, *Confined Space Entry Program.* The manhole cover originally had a confined space (Material ID 21-3470.05) label affixed to it, but vehicle traffic over the manhole destroyed and eventually removed the label. As a precautionary measure to help identify the space to personnel, the procedure 8Q-33-20, *Confined Space Entry Program,* allows "the posting of signs to restrict unexpected or unknowing entry." Personnel in the area were not sure which confined space was associated with the sign, but they indicated they would not enter a confined space without knowing the requirements of the space. The sign was subsequently removed.

PPE is available for all SRNS workers; and SRNS promotes frequent inspection of and the changeout of damaged, worn, or suspect PPE. During a welding activity on a steam valve replacement at H-area, welders wore a welding mask with auto adjusting lens, Nomex® coveralls, and welder's heat-resistant gloves. A yellow welding curtain isolated the welding area to mitigate ultraviolet light exposure from the welding arc to nearby personnel. Outside of the welding area, a rope barrier with an entry control point monitor controlled the work zone. The Team observed PPE used by SRNS workers was in good, working condition.

The Team also observed a work evolution to changeout a motor on a monitoring well in a remote area. During the pre-brief, the supervisor reviewed the AHA and controls. The AHA did not identify the specific glove, but the package included the MSDS that identified the use of Butyl rubber gloves for room temperature vulcanization (RTV) glue. While in the field, the worker used a nitrile glove. Even though the worker's hand never contacted the glue, the worker selected the wrong glove before proceeding to the worksite. In this case, it was not clear that the worker understood the difference between the Butyl rubber glove specified in the MSDS and the nitrile rubber glove available in the shop. SRNS should ensure BBS observations or MFOs compare identified versus implemented controls.

> **Opportunity for Improvement:** SRNS should ensure BBS observations or MFOs compare identified versus implemented controls.

SRNS deploys the safety and health professionals to different projects from a central organization. Workers at the various projects know their safety and IH support staff. SRNS and SRR safety and health professionals also work closely with one another. SRNS and SRR hold periodic PPE meetings to develop an approved list of PPE for SRS. The goal is to produce a single list so all managers only buy approved equipment, thus standardizing the site's PPE. The safety and health professionals support their assigned missions and benefit from a teaming relationship between SRNS and SRR.

The 2010 assessment recommended an opportunity to expand the understanding by personnel of the heat stress index card and to consider the use of additional physiological monitoring, such as heart rate and body temperature, for higher risk, heat stress activities. This past summer, SRR health and safety contracted with a heat stress consultant from the University of South Florida (USF) and is sharing data with SRNS. The consultant helped the SRNS and SRR health and safety professionals understand the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLV) booklet on Heat Stress and Strain. USF also analyzed typical clothing used at SRS and developed a clothing adjustment factor to add more accuracy when calculating the potential for heat stress during SRS activities. A future contract with USF will incorporate monitoring and a comparison to calculated values. As more data becomes available from the USF work, it will be incorporated into the Thermal Stress Management procedure.

Each of the SRNS areas maintains a preventive maintenance (PM) schedule. At PEC-MC, the portable equipment inventory decreased from 1,600 to 1,300 items in the past few years. SRNS decided to replace similar groups of aging equipment based on lifetime maintenance costs and the cost of purchasing new equipment. The PM and corrective maintenance backlog for PEC-MC has decreased over the past 5 months. At other areas for SRNS, maintenance backlogs have increased, primarily due to budget shortfalls and changed mission priorities. For example, the total corrective maintenance backlog for SRNS increased from approximately

7-8 man-weeks to work off in September 2012 to over 15 man-weeks in June 2013. That backlog has been decreasing since June 2013, but remains over 10 man-weeks as of September 2014. For the tritium facilities, the backlog of corrective maintenance reached 19 man-weeks in May 2014, but has fallen to 14.5 man-weeks for September 2014. Similarly, H-Canyon has an increasing backlog of corrective maintenance over the previous 12 months. SRNS identified these trends and is identifying strategies to reduce these backlogs, including identifying necessary resources, prioritizing work requests, or identifying alternative maintenance strategies, such as reliability-centered maintenance (RCM) to make effective use of limited resources.

RCM, a process that evaluates systems and components for potential failures, identifies effective maintenance strategies to predict, prevent, or accept those failures based on consequences. RCM is available from the Site Services maintenance reliability group. Several projects within SRNS are taking advantage of RCM techniques. At K-area, the Site Services PM group is providing vibration monitoring and diagnostic services for critical equipment at the spent fuel project. The monitoring of specified equipment will detect minor defects prior to significant degradation or failure. Another project involves applying RCM strategies for 13.8kV transformers. Previously, PM on transformers required scheduled outage, lockout/tagout, removing the transformer, performing the PM, and returning to service every 5 years. However, the Site Services PM group is using infrared thermography, oil sampling analysis, and visual inspections every 3 years, which avoids an outage and removal of the transformer for every PM. Eventually, when the RCM inspection indicates a part or oil replacement, the transformer will undergo a scheduled outage. Other projects are using RCM strategies to improve the PM program. By using the RCM approach, SRNS expects to realize cost savings due to reduced PM activities and increased critical equipment life cycles.

SRNS continues to use the Measurement Control Program that establishes detailed review criteria for any measurement process to provide accurate and reliable analytical services at SRS laboratories. The program includes lines of inquiry in the review of hazard controls that ensure revisions to methods or changes in work location do not introduce additional hazards.

SRNS completes files on all SRNS injury, illness and first-aid cases. The case manager completes the injury classification and consults the injured worker's medical provider as needed for more information. The Team reviewed three injuries that were exempted from reporting requirements and compared them to the criteria defined in title 29, Code of Federal Regulations (CFR), *Labor,* Subtitle B-Regulations Relating to Labor*,* Chapter XVII, part 1910, *Occupational Safety and Health Administration,* part 1904.5(b)(2), *Recording and Reporting Occupational Injuries and Illness, Determination of Work-relatedness.* Each case used the correct exemption and identified the specific case (i.e., 1904.5(b) (2) (vii); the injury or illness is caused by a motor vehicle accident and occurs on a company parking lot or company access road while the employee is commuting to or from work), to link the file to the CFR exemption. This allows for quick examination of the file and the reason why the injury was not a reportable case. The Team also examined 13 first-aid cases, and the case manager provided documentation and solid reasoning not to elevate the case to a reportable injury. Subcontractor injuries and hours worked are obtained from the lead STR. The case manager stated that the STR updates the current list of subcontractors and ensures the subcontractors maintain injury-reporting requirements. The case management process is well defined, and the case manager's knowledge and years of experience applying the Occupational Safety and Health Administration (OSHA) criteria ensure accurate application of the CFR and classification of injuries.

In March 2013, DOE-SR completed a review of the occupational injury and illness recordkeeping and reporting program. DOE-SR recommended ensuring all occupational injury/illness work restriction forms contain routine duties (since several forms did not have that information), ensuring signatures are on the forms, and ensuring the recording of any assessments of the injury/illness program into STAR. The Team noted a discrepancy between the data in the 2013 SRNS VPP report and the data recorded in the Computerized Accident/Incident Reporting System (CAIRS) database. In 2013, a reportable injury became a first-aid case; and although the SRNS database reflected the CAIRS database, the VPP report did not. SRNS immediately corrected the inconsistency. SRNS should ensure it updates all applicable databases when it reclassifies an injury case.

> **Opportunity for Improvement:** SRNS should ensure it updates all applicable databases when it reclassifies an injury case.

The site medical clinic is located in N-area near the central shops. Medical support includes three full-time and one part-time medical doctors, a nurse practitioner of family medicine, five registered nurses, and one nurse with occupational medicine certification. The hospital provides services for SRR, SRNS, Wackenhut Security Inc. (WSI), and DOE Federal employees. The fire department responds to medical emergencies from one of its three station houses and has three ambulances always available for transport. A fourth ambulance is available when another is in for maintenance. Paramedics occasionally consult with the site occupational medicine director for medical advice, care, and hospital selection when injured workers are transported offsite. The medical clinic operates 12 hours per day, Monday through Thursday, and 10 hours on Friday.

The medical staff provides health care, injury disposition, and attends SRS meetings. Providers review the worker's employee job task analysis (EJTA) during the medical appointment. Supervisors of workers in the human reliability program (HRP) use a paper EJTA, and supervisors of non-HRP workers load the EJTA into a central database. The safety and health professional reviews the EJTA for additional hazards and exposures the worker may encounter, approves the form, and returns it to the supervisor. The supervisor sends it to the providers to determine medical monitoring requirements for potential exposures to asbestos, lead, beryllium, chrome, or other hazardous materials. The medical staff consults with case managers concerning injured workers and attends the central shops' safety meeting. Other registered nurses are disability case managers for workers from SRNS, SRR, and WSI.

The SRNS medical manager continues to modernize the services and equipment at the medical clinic. The medical manager garnered funds to purchase new audiometers, vision machines, and electrocardiogram (EKG) machines. Additionally, when patients arrive at the medical clinic, their blood is drawn and they submit a urine sample. During the appointment, the patient receives the test results. These improvements increase the positive experience from the medical clinic.

SRNS emergency management maintains 10 emergency planning and hazard analysis (EPHA) plans for facilities and areas under SRNS control. Based on the operations and hazards of the facility or area, the plans contain potential scenarios that may occur and provide the emergency action to implement if it occurs. Each plan has current documentation from DOE-SR indicating the EPHA is current or changes to the EPHA are accepted. Additionally, SRNS plans and evaluates yearly drills and exercises. Since several of the areas on the site have collocated

contractors, SRNS coordinates with other emergency management offices to obtain their participation in drills or exercises. In May 2014, SRS conducted a facility 235-F radiological release exercise and a "remain indoors drill" at mixed oxide (MOX) services. Evaluators included DOE-Headquarters, DOE-SR, National Nuclear Security Administration's Savannah River Field Office, SRNS, SRR, and WSI. The exercise after action report rated 14 objectives and found only two objectives received a "did not meet" rating, which were facilities and equipment, and exercise control and conduct. The report has multiple comments for each objective to improve future exercises. The Emergency Management Corrective Action Review Board will develop and assign corrective actions for the appropriate functional area manager. The STAR database tracks all the corrective actions until completed.

The May 2014 exercise report mentions in two separate sections that the public address (PA) system was not loud enough to hear. This occurred in the F-Tank farm and near the MOX area. During this assessment, the PA system in B-area broadcasted several weather messages and warnings, but several Team members could not hear the warnings. SRNS should ensure PA broadcasts are audible in all occupied areas, particularly in temporary buildings.

> **Opportunity for Improvement:** SRNS should ensure PA broadcasts are audible in all occupied areas, particularly in temporary buildings.

Conclusion

SRNS effectively uses engineered, administrative and PPE controls, which have led to a substantially lower number of injuries and illnesses. Additionally, SRS recognized the need to use outside expertise to revamp and improve the heat stress program and the need to develop an approved PPE list to standardize PPE across the site. In another important area, emergency management is working to improve issues raised during the last exercise evaluation. SRNS meets the expectations for continued participation in DOE-VPP in the Hazard Prevention and Control tenet.

VII.   SAFETY AND HEALTH TRAINING

Managers, supervisors, and employees must know and understand the policies, rules, and procedures established to prevent exposure to hazards. Training for health and safety must ensure that responsibilities are understood, personnel recognize hazards they may encounter, and they are capable of acting in accordance with managers' expectations and approved procedures.

The 2010 VPP report concluded that SRNS has a well-established training and qualification program that ensures employees recognize hazards and can protect themselves and coworkers. SRNS training programs equip managers, supervisors, and employees with knowledge to understand the established safety and health policies, rules, and procedures in order to promote safe work practices and minimize exposure to hazards.

The 2010 VPP report identified four Opportunities for Improvement in the Safety and Health Training tenet (i.e., heat stress training, Safety-Trained Supervisor (STS) certification, visitor training, and expansion of ARRA-funded worker training)). For a discussion of the heat stress training, see Hazard Prevention and Control. According to the STAR report 2011-CTS-003700, which identifies the Opportunities for Improvement associated with the 2010 VPP Report, SRNS declined two of the opportunities (i.e., pursing STS certification and visitor training). As an alternative to the STS certification, SRNS chose the Fluor Corporate Health Safety and Environment Honors Training; however, SRNS did not provide any examples of this training to the 2014 review team.

As observed in 2010, the training and qualification programs at SRNS are well established. These programs train employees to recognize the hazards at SRS and protect themselves and their coworkers. *Training and Qualification Program,* Manual 4B, establishes a systematic approach to training. The training and qualification program as defined and implemented continues to provide the knowledge, skills, and abilities to perform tasks competently and safely. Training consists of a mixture of self-paced (i.e., self-study, computer-based training), classroom, seminars or briefings, simulator, on-the-job training, or practical factors. Examinations are used to determine the effectiveness of training and can be written, computer-based, laboratory, simulator or job performance evaluations; oral examinations; and/or oral boards. Several facilities use simulators that evaluate trainees under normal, abnormal, and emergency conditions.

Facility walkthroughs and/or performance evaluations are tools to requalify employees also. The frequency of evaluation occurs more often if the job has greater risk, hazard potential, or complexity. The training department attempts to replicate actual conditions within the facility whenever possible. A discussion of all safety precautions occurs prior to commencing the training and the instructor, qualified watch stander, or evaluator monitors the trainee during training execution. The *Training and Qualification Program* applies to all employees and all aspects of the SRNS operations, including personnel involved in operations, research and development, design, procurement, construction, and support activities.

Training management conducts a comprehensive program evaluation every 3 years to identify program strengths and weakness per DOE Standard *Criteria for Evaluation of Nuclear Facility Training Programs,* DOE-STD-1070-94. Criteria include management and administration of training and qualification programs, development and qualification of training staff, trainee entry-level requirements, determination of training program content, design and development of training programs, conduct of training, trainee examinations and evaluations, and training

program evaluation. Recent reductions-in-force heavily affected the training department, so it conducted the assessment over a period of 3 years instead of one single year. The training manager did not identify any reduction in effectiveness of the evaluation using this approach.

One of the SRNS facilities identified issues during a review of exams associated with subjective test scoring and incorrect exam keys (STAR 2014-CTS-004623). Based on this information, SRNS did an extent of condition review of the Comprehensive Exams. The review in H-Canyon consisted of the Training Coordinator, Operations, and Engineering reviewing over 300 Comprehensive Exams and exam keys for Comprehensive Exams administered in the previous 2 years. Exam keys were revised, affected exams were regraded, and in some cases, exams were readministered to shift operations managers (SOM), first-line managers (FLM), and operators. As a result of this issue, SRNS developed the *Training Administrative Guide 2- Examinations.* The document provides guidance on examination control for oral, written, and practical examinations.

SRNS leads a Training Manager's Committee (TMC) that provides a forum for training personnel to integrate programmatic activities, problem identification and resolution, and policy development across the SRS. The Committee's charter states, "…the TMC provides a vehicle for communications among training personnel associated with all management and operations organizations. The TMC is a forum for consistent programmatic integration of activities, problem identification and resolution, and policy development…" The committee meets monthly and includes the multiple contractors at the site (SRR, MOX, Parsons Corporation, WSI, etc.) The committee reviews and approves all revisions to the Procedure Manual 4B in accordance with company-level procedures.

SRNS managers are keenly aware of their safety and health responsibilities. During interviews, managers consistently infused the theme of safety in all discussions. In addition to training given to all SRNS employees, FLMs must complete a 3-day, FLM Leadership Workshop. The speakers at the workshop are senior SRNS managers, and some of the topics they focus on include safety and health, injury and illness, fitness-for-duty, Employee Assistance Program, Employee Concerns Program, and an SRNS overview. On the final day of training, an employee with a personal safety message provides a powerful takeaway message for attendees. The workshop also contains useful information, such as personnel policies and procedures, leadership, and mentoring. The class size is small (approximately 25 students). SRNS recently initiated a class entitled, "Welcome to Leadership," which is a compressed version of the FLM Leadership Workshop and requires the leaders to take the full FLM Leadership Workshop within 18 months. SRNS provides periodic updates of the material offered during the courses to attendees through electronic mail updates.

SRNS talent management provides numerous opportunities for leadership development, including forums, training courses, surveys, and professional development opportunities. Over the past 3 years, talent management has provided an interactive Leadership Development 101 course, which is a 4-day course covering topics, such as building a strong safety culture, safety leadership, fitness-for-duty, effective communication, health and safety, BBS and HPI, and a safety discussion. SRNS schedules the course quarterly with approximately 25 to 30 employees, and it is normally full. SRNS recently developed and issued a new *SRNS Nuclear Facility Manager and Supervisor Training Program Description,* which formally documents the training

required for qualification. SRNS courses required for leadership development include: Leadership Development 101, security topics, hazard communication briefings, and several others.

All managers and employees must attend a monthly safety meeting during which an ISM topic and health and productivity management topic are presented. An SRNS video, "SRNS NOW," is shown at the monthly safety meeting, which includes an overview of activities at a spotlighted facility. Topics presented in the video included ethics, continuous improvement (with emphasis on safety), and a roving camera from the recent Safety Expo. Several times during the year, return-to-work packages developed by the Training Department are presented to aide managers in reminding employees to stay focused with impending holidays (i.e., New Year's Day, Master's Week, Memorial Day, 4th of July, Labor Day, and Thanksgiving). The Emergency Management Operations Annual Safety Plan provides a schedule and topics for the year. According to interviewed employees, these safety reminders are a good way to reinforce holiday safety themes.

In addition to training specific to managers and supervisors, SRNS has a comprehensive training process for all employees. New employees are required to attend General Employee Training (GET), which provides the basic safety and health training. One of four levels of GET training (i.e., Category 1, Category 2, Category 3/Full GET, and Category 3/Full GET Challenge Test Out) are assigned to trainees based on the type of access required and the length of work duty. The final step of this class is a test, which requires a minimum score of 80 percent. Employees receive site identification badges once they have provided proof of completion of GET to the Badge Office. All employees must also take the Consolidated Annual Training (CAT) to retain their badges. CAT is computer-based training and serves as a yearly GET refresher given in January of each year. The manuals for GET and CAT are comprehensive and contain a good discussion of VPP, ISMS, BBS, and HPI.

In addition to GET, new employees are required to attend Facility Entry Training (FET) that identifies the safety, health, and security awareness; chemical and radiological hazards; and emergency response specific to the facility. Initial training programs for new employees include the BBS program, CONOPS, and HPI fundamentals. Workers receive additional safety and health training that focus on hazards and controls specific to their job functions. Most of the training is computer-based although there are some classroom courses led by instructors. Some courses such as radiological worker practical, plastic suit and hood airline respirator, and negative pressure training have hands-on or demonstration of proficiency components.

SRNS has an effective process for determining the specific training requirements for each employee. There is a Training Program Description (TPD) for each job function. Supervisors and training coordinators use TPD for each position to determine the training needs of new or reassigned workers. The TPD also takes into account the potential hazards of the employee's job. These training needs are entered into the Automated Qualification Matrix (AQM), and training coordinators, who are assigned to each facility, arrange for each employee's training. Once training is completed, AQM builds a qualification card for each position and compiles a list of all employees who have completed the training for a specific job function and are qualified to work. Before assigning work, supervisors query AQM to ensure that the employee has completed the required training.

SRNS nuclear facilities post a watch bill generated from AQM. The watch bill identifies the technical safety requirements and facility watch bill staffing, which are minimum staffing requirements for the shift and facility operations, respectively. The watch bill also identifies additional facility watch bill positions, such as helpers or special watches (e.g., fire watch), and Emergency Response Organization Assignments. The shift manager develops, approves, and posts the watch bill for his/her shift at the start of shift activities. The shift manager signs the watch bill at the beginning and end of the shift signifying that the staffing requirements have been satisfied and verifying that any changes made mid-shift are annotated on the watch bill. The watch bill also documents watch stander proficiency hours to maintain qualifications earned by the individuals on the shift.

In order to more effectively balance resources (particularly with respect to training impacts), SRNS prepares project-training plans for short-term (less than 24 months) work campaigns (e.g., H-Canyon's spent nuclear fuel phase II). These plans identify the specific training and qualification requirements for each position impacted by the campaign work activities. The FLM, program owner, and Training Manager ensure the evaluation of training and performance needs is documented and approved. If the campaign becomes a long-term activity, the additional qualifications will be added to the facility's qualification plan and incorporated during the 24-month review of the qualification plan.

While assigning training properly is important, a site must also keep training records that are easily accessible. SRNS maintains training records in the Training Record Automated Information Network (TRAIN) and all employees, their managers, and training coordinators have access to TRAIN. Furthermore, when asked about TRAIN and AQM, employees and supervisors found the system easy to navigate. A review of a sample of training documentation and interviews with employees indicates that training is thorough and systematic.

Each major operation at SRNS, such as SRNL, H-Canyon, H-B Line, and Infrastructure Support, have been assigned training coordinators/specialists that monitor training records of the employees. Using TRAIN, training coordinators query the system for employees whose training will expire within 90 days, 60 days, and 30 days. The query will also include employees whose training has already expired. Additionally, TRAIN also notifies the employees and their managers 60 days in advance of any expiration via e-mail. The training coordinators send several reminders to the employees by e-mail in advance of the expiration of their training. A review of a recent 30/60/90 report from H-B Line indicated that approximately 65 percent of the employees on the report had at least one expired course. While the information may be indicative of new employees assignments, SRNS should consider investigating the issue further to ensure competent and trained workers are qualified to perform their duties.

> **Opportunity for Improvement:** SRNS should evaluate employee training that has expired to ensure competent and trained workers are qualified to perform their duties.

Training coordinators are actively involved in the training process. In several areas/facilities (e.g., Area E Solid Waste) training coordinators schedule a monthly training shift so that individuals assigned to the facility are provided dedicated, facility-specific training time. The coordinator uses questions from the comprehensive exam or oral board questions to develop scenarios for individuals assigned to the facility to reinforce training material on a monthly basis. Many training coordinators are integrated into facility activities and attend planning and shift turnover meetings, adjusting training needs to specific activities (e.g., new processes) or

environment conditions (e.g., heat stress). Many training coordinators have previously worked in the operational areas and have firsthand knowledge of the work.

The Team attended AHA User Triennial Refresher for SMEs with 13 other trainees. The course was 2 hours long and, following a 1-hour presentation of the material, course participants developed an AHA for a personally chosen task. The instructor was knowledgeable and helpful as he assisted students on their AHA development, and often reinforced the preferred methods when modifications to the process were necessary due to the training context (e.g., individual SME approval of the AHA as opposed to instructor approval). The students submit their AHAs electronically to the instructor for review following completion of the course. The instructor provides feedback to the students after review of the classroom-developed AHAs and may include revising the AHA before the trainee can receive course credit.

Conclusion

SRNS has a well-established training and qualification program that trains employees to recognize hazards and to protect themselves and coworkers. SRNS training programs equip managers, supervisors, and employees with knowledge to understand the established safety and health policies, rules, and procedures in order to promote safe work practices and minimize exposure to hazards. SRNS meets the requirements of the Safety and Health Training tenet of DOE-VPP.

VIII. CONCLUSIONS

Since completing the transition process in 2010, SRNS has maintained a strong commitment to safety. Managers and workers alike share a common belief that safety is integral to the enduring viability of SRS as a vital component of the Nation's security. Protection and preservation of unique facilities, the surrounding communities and environment, and the individual workers remain the foremost concern, and managers are dedicated to ensuring that mission priorities do not compromise safety. The SRNS workforce is fully engaged in processes and programs that improve safety, and SRNS commits resources to encourage and reward that engagement. SRNS is effectively managing the effects of budget reductions and changing priorities although challenges remain in balancing resources for capital projects to replace aging infrastructure. SRNS training programs include many components to attract and retain the right people with the right skills. The Team recommends that SRNS continue to participate in DOE-VPP at the Star level.

Appendix A: Onsite VPP Assessment Team Roster

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