Savannah River Nuclear Solutions, LLC
Savannah River Site

Report from the Department of Energy
Voluntary Protection Program
Onsite Review
May 17-27, 2010

U.S. Department of Energy
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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 Health, Safety and Security (HSS) assumed responsibility for DOE-VPP in October 2006. Assessments are now more performance based and are enhancing the viability of the program. Furthermore, HSS is expanding complex-wide contractor participation and coordinating DOE-VPP efforts with other Department functions and initiatives, such as Enforcement, Oversight, and the Integrated Safety Management System.

DOE-VPP outlines areas where DOE contractors and subcontractors 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 and encompasses production facilities, laboratories, and various subcontractors and support organizations.

DOE contractors are not required to apply for participation in DOE-VPP. In keeping with OSHA and DOE-VPP philosophy, *participation is strictly voluntary*. Additionally, any participant may withdraw from the program at any time. DOE-VPP consists of three programs with names 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, expected to be used rarely, allows DOE 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 for participation in DOE-VPP, DOE recognizes that the applicant exceeds the basic elements of ongoing, systematic protection of employees at the site. The symbols of this recognition provided by DOE are certificates of approval and the right to use flags showing the program in which the site is participating. The participant may also choose to use the DOE-VPP logo on letterhead 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 May 17-27, 2010, and provides the Chief Health, Safety and Security Officer 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
AED	Automated Electronic Defibrillator
AHA	Assisted Hazard Analysis
ALARA	As Low as Reasonably Achievable
AQM	Automated Qualification Matrix
ARRA	American Reinvestment and Recovery Act
BBS	Behavior-Based Safety
BLS	Bureau of Labor Statistics
CAT	Consolidated Annual Training
CFR	Code of Federal Regulations
CIA	Continuous Improvement Agent
CIE	Continuous Improvement Expert
D&D	Decontamination and Demolition
DART	Days Away, Restricted or Transferred
DOE	Department of Energy
DSA	Documented Safety Analysis
EHAP	Electronic Hazard Analysis Program
FLM	First-Line Manager
GET	General Employee Training
HPI	Human Performance Improvement
HS-64	Office of Environment, Safety and Health Evaluations
HSS	Office of Health, Safety and Security
IDEAS	Individuals Developing Effective Alternative Solutions
IH	Industrial Hygiene
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
i-TROTS	Integrated The Rest of the Story
JHA	Job Hazard Analysis
LOTO	Lockout/Tagout
LSIT	Local Safety Improvement Team
M&O	Management and Operating
MFO	Management Field Observations
MTAP	Motor Test Acceptance Port
NAICS	North American Industry Classification System
OJT	On-the-Job Training
OSHA	Occupational Safety and Health Administration
PDSA	Preliminary Documented Safety Analysis
PI	Principal Investigator
PM	Preventive Maintenance
PPE	Personal Protective Equipment
RWP	Radiological Work Permit
SAFE-T	Self-Awareness For Employees Team
SICAM	Safety Improvement Compensatory Actions and Measures
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, Analysis, and Reporting database
STR	Subcontractor Technical Representative
STS	Safety-Trained Supervisors
Team	Office of Health, Safety and Security DOE-VPP Team
TPD	Training Program Description
TRAIN	Training Record Automated Information Network
TRC	Total Recordable Case
TROTS	The Rest of the Story
VPP	Voluntary Protection Program

EXECUTIVE SUMMARY

Savannah River Nuclear Solutions, LLC (SRNS) took over the management and operation of the Savannah River Site in August 2008. SRNS committed to continuing participation in the Department of Energy (DOE) Voluntary Protection Program (VPP) and has been in a transitional status since that time. Retention of DOE-VPP Star status required that SRNS submit a modified application, and then undergo an onsite assessment to verify that the safety culture established under DOE-VPP has been maintained. That assessment was performed May 17-27, 2010, and this report documents the results and the Office of Health, Safety and Security (HSS) DOE-VPP team's (Team) recommendation.

SRNS has a dedicated, "hands-on" team of senior managers. From the Company president's office down, there is a clear expectation that all managers are responsible for being visible to the workforce and supporting the workforce in accomplishing the company mission. SRNS managers have 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.

Employee ownership of safety is strongly embedded within the SRNS organizations. Managers have empowered employees to proactively administer the safety and health program by partnering with employees and implementing initiatives that maintain open lines of communication and promote safety and health responsibilities.

SRNS has adequate processes in place to perform worksite analysis. As noted in other assessments performed by HSS, these processes have significantly improved over the past 4 years. Additional opportunities exist to continue those improvements. Implementation of these processes will require continued effort by the contractor to successfully achieve consistent and positive results. The tracking and trending program at SRNS is effective and provides an effective tool that SRNS can use to monitor and track performance improvements across the site.

SRNS has established appropriate controls and with a few exceptions, those controls are well implemented and practiced to ensure a safe workplace. In its older facilities, SRNS needs to focus on reducing its dependency on the use of Personal Protective Equipment as its primary form of hazard control and explore elimination and mitigation methods to control hazards more effectively. Overall, hazards are well communicated and understood by the workers.

SRNS has a well-established, mature training and qualification program that ensures employees are appropriately trained to recognize hazards and to protect themselves and their coworkers. SRNS training programs provide managers, supervisors, and employees with the knowledge to understand the established safety and health requirements to promote safe work practices and minimize exposure to hazards.

Accident and injury statistics for SRNS continue to be among the lowest in DOE. Its rates are a small fraction of the comparison industry averages. In addition, SRNS has a very aggressive process to ensure all injuries are reported, investigated, managed, and appropriately categorized.

In summary, SRNS has successfully transitioned its workforce into the new contract without degrading the established strong safety culture. The Team is recommending that SRNS be removed from a transitional status and continue participation in the DOE-VPP at the Star level.

TABLE 1
OPPORTUNITIES FOR IMPROVEMENT

Opportunity for Improvement	Page
SRNS should consider expanding visibility of performance indicators by providing monitors at facility access points or by printing posters with the information on a monthly basis for posting in facilities.	**7**
SRNS should consider LSIT and VPP committee members as potential CIAs or CIEs and give them the training and tools necessary to help identify further process improvements.	**7**
SRNS should provide clear guidance to managers on safety performance expectations so they are consistently and fairly applied to all workers and ensure workers clearly understand the organizational expectations for annual performance ratings.	**10**
SRNS should consider monitoring BBS contact rate, establishing a baseline based on current participation, and then establishing goals to increase that rate, and use that data to determine an optimum based on all available indicators.	**10**
SRNS should consider establishing additional job placement services or counseling for ARRA workers.	**11**
SRNS should consider expanding the role of workers in the construction workforce SAFE-T process to include not only the union stewards but also all construction workers.	**11**
SRNS should evaluate involving workers in the EHAP process more consistently across Laboratory facilities.	**11**
SRNS should embed within the improved AHA process a method to capture the rationale for control selection based upon the hazard and clarify the procedure to ensure all hazards are analyzed.	**15**
SRNS should consider enhancing its processes by adding hazard analysis criteria to the Measurement Control Program Lines of Inquiry.	**15**
SRNS should ensure that machine operators and maintenance personnel are included on JHA reviews.	**16**
SRNS should review and incorporate the methods contained in the OSHA *Job Hazard Analysis* pamphlet 3071 2002 (Revised) for detailed worksite JHAs.	**18**
SRNS should consider expanding use of STAR to track and trend assessments conducted by LSITs or other worksite inspections currently tracked in other local databases.	**19**

SRNS should work with facility managers to address the scheduling and accountability issues in STAR for actions requiring response from multiple organizations.	**19**
SRNS should ensure that when PPE is selected, due consideration is included for work methods involved, location of the work, and integration of other controls.	**21**
SRNS should ensure selection of control methods begins with an analysis of the ability to eliminate the hazard or find engineered controls before PPE is selected.	**21**
SRNS should consider integrating more physiological monitoring for activities that are at higher risk of producing heat stress.	**22**
SRNS should clarify guidance on when and how to use the SRS Heat-Stress Index Card and ensure workers and supervisors receive annual retraining on that guidance in late winter or early spring.	**22**
SRNS should consider encouraging supervisors and managers to pursue STS certification.	**27**
SRNS should consider changing its policy to require the point of entry briefing and video for all visitors, including those with the HSPD-12 badges.	**29**
SRNS should consider providing the supplemental training given to ARRA-funded workers to all new employees.	**29**

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 home to several production reactors, two separation facilities, and a host of support facilities, the site has slowly transformed over the past 20 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. Most recently, in 2008 the operating contract for the site functions was awarded to Savannah River Nuclear Solutions, Inc. (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 Department of Energy (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 include basic site management and operation responsibilities, including operation of the canyons, tritium facilities, and Savannah River National Laboratory (SRNL). Per DOE-VPP requirements, the 3-year recertification review was due in 2009. As a result of the contract change, SRNS remained in DOE-VPP in a transitional status and submitted a modified application in February 2010 through the Savannah River Operations Office (SR) for recertification as a Star site.

Since the entire site was managed by a single contractor when the site entered DOE-VPP, 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 a co-chair from each contractor, and they 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 employs approximately 6,500 workers, including subcontractors. In 2009, SRNS received roughly $1.3 billion in additional funding through the American Recovery and Reinvestment Act (ARRA) of 2009. Those funds have been directed to accelerating the cleanup mission. SRNS has hired over 1,400 temporary workers, who, along with approximately 800 full-time workers, have been active in environmental restoration, decommissioning and demolition, legacy transuranic waste characterization and remediation, and assorted other mission and support roles to accelerate cleanup.

In order to maintain its status as a DOE-VPP Star site, the Office of Health, Safety and Security (HSS) must conduct an onsite review of the new contractor to ensure the expectations of DOE-VPP continue to be met. Personnel from the Office of Worker Safety and Health Assistance (HS-12), within HSS, and subject matter experts (SME) from the DOE complex conducted work observations and interviews from May 17-27, 2010. This report documents the results of that assessment and provides the HSS DOE-VPP Team's (Team) recommendation to the Chief Health, Safety and Security Officer.

Prior to this assessment, SRNS was reviewed by the Office of Environment, Safety and Health Evaluations (HS-64) during August and September 2009. That review addressed implementation of Integrated Safety Management (ISM), emergency management, and nuclear safety. In addition, SRNS was required to complete ISM verification by SR. The results of those inspections were reviewed and considered in this assessment.

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
2007	11,734,488	26	0.44	10	0.17
2008	12,054,682	25	0.41	10	0.17
2009	12,310,166	35	0.57	11	0.18
3-Year Total	36,099,336	86	0.48	31	0.17
Bureau of Labor Statistics (BLS-2008) average for NAICS** #562211 Hazardous waste treatment and disposal			2.9		1.9
Injury Incidence/Lost Workdays Case Rate (SRNS Operations Subcontractors and Vendors)					
Calendar Year	Hours Worked	TRC	TRC Incidence Rate	DART* Cases	DART* Case Rate
2007	5,089,586	7	0.28	2	0.08
2008	2,453,881	5	0.41	1	0.08
2009	407,189	3	1.47	0	0.00
3-Year Total	7,950,656	15	0.38	3	0.08
Bureau of Labor Statistics (BLS-2008) average for NAICS** ** #562211 Hazardous waste treatment and disposal			2.9		1.9
Total SRNS Operations and Subcontractors (3 Years)			0.46		0.15

Injury Incidence/Lost Workdays Case Rate (SRNS Construction)					
Calendar Year	Hours Worked	Total Recordable Cases (TRC)	TRC Incidence Rate	DART* Cases	DART* Case Rate
2007	1,037,583	2	0.39	1	0.19
2008	966,231	3	0.62	0	0.00
2009	1,215,071	6	0.99	2	0.33
3-Year Total	3,218,885	11	0.68	3	0.19
Bureau of Labor Statistics (BLS-2008) average for NAICS** Code #2362 Nonresidential Construction			4.4		2.2
Injury Incidence/Lost Workdays Case Rate (SRNS Construction Subcontractors and Vendors)					
Calendar Year	Hours Worked	TRC	TRC Incidence Rate	DART* Cases	DART* Case Rate
2007	681,877	3	0.88	0	0.00
2008	339,689	3	1.77	1	0.59
2009	167,039	3	3.59	0	0.00
3-Year Total	1,188,605	9	1.51	1	0.17
Bureau of Labor Statistics (BLS-2008) average for NAICS** Code #2362 Nonresidential Construction			4.4		2.2
Total SRNS Construction and Subcontractors (3 Years)			0.91		0.18

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

TRC Incidence Rate, including construction and subcontractors: 0.5
DART Case Rate, including construction and subcontractors: 0.16

The diverse nature of work performed by SRNS makes comparison to industry average difficult. SRNS has chosen to separately track operations and construction performance. For both hazardous waste treatment and disposal and construction industries, SRNS is performing significantly better by comparison. Review of the accident and injury files, as well as employee and manager interviews, raised no concerns regarding accuracy of reporting. When viewed as an annual statistic, these statistics do show an increase in TRC and DART rates in 2009. SRNS managers recognized an upward trend in late 2009 and have since taken action to reverse it (discussed in the Management Leadership section). Since that time, SRNS statistical performance has improved significantly. Statistically, 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. The contractor must demonstrate senior-level management commitment to occupational safety and health, in general, and to meeting the requirements 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.

SRNS managers have inherited a strong and very positive safety culture that has developed over many years at SRS. As a site that has undergone very few transitions, it is a credit to SRNS managers that they recognize and appreciate the value of the workforce that they now manage. Many workers at the site are long-term employees who have witnessed the site's transition from a single contract to the existing Management & Operating (M&O) and Liquid Waste contracts. Interviews with workers revealed that the workers appreciate the support that SRNS managers have offered during the transition and believe that the new management team is approachable and responsive to the needs of the workforce. Workers' sentiment was very positive in this area.

As the M&O contractor, SRNS is responsible for establishing processes and procedures used by all site contractors. Rather than making wholesale changes to a system that had been in place for many years, SRNS managers decided to retain the existing manuals and procedures. In addition, SRNS managers have made a concerted effort to seek out employees' recommendations and preferences in making operating procedures more usable. SRNS managers also readily involve other contractors and facilitate their inputs regarding changes to the system. Although the resulting change has come slowly, it has been accomplished with support and involvement of the workforce, and as a result should be more sustainable and enduring. Most importantly, this process has allowed the workforce to more effectively transition into the new company and become a part of the change rather than having to simply accept the changes at face value.

Management Field Observations (MFO) are a formalized approach for managers to spend time in the field, perform observations of work, and identify improvements. The process for performing MFOs is well outlined and executed within the organizations that were observed. Actions resulting from MFOs are tracked to conclusion.

Several months after completing transition, SRNS managers identified increasing trends in their TRC and DART rates, as well as some leading indicators. In conjunction with this increase in TRC and DART rates was a reduction in MFOs. As a result of these trends, SRNS managers implemented a Safety Improvement Compensatory Actions and Measures (SICAM) program in October 2009. SICAM was targeted at not just safety behaviors but effectiveness of systems and processes to implement safety. Actions encompassed the core functions of ISM. SICAM process and activities are tracked by the Environment, Safety, Health, and Quality Assurance organization. Implementation of SICAM process included rolling timeouts across SRNS organizations. Senior managers interviewed by the Team almost universally credited SICAM

process with restoring managers' focus on safety and reversing the trends in TRC and DART rates.

As part of the SICAM process, managers have increased their field presence as documented by the increase in MFOs since October 2009. Senior managers established expectations for all managers to perform MFOs more frequently, depending on their level in the organization. Vice Presidents are expected to document at least one MFO per month, and that frequency goes up to one per week for first-line managers. Recently, SRNS has raised its expectations for the quality of those MFOs by expecting that each MFO should identify at least one improvement. Initially, SRNS mangers set a goal that 40 percent of all MFOs will identify at least one improvement, and the plan is to raise that goal each year to continue to realize the benefit from MFOs. A performance indicator has been established to track this improvement.

First-line managers and supervisors are expected to spend the majority of their time in the field supervising work, and senior managers spend a large amount of time in the field observing work. Employees interviewed by the Team were complimentary about managers' presence and availability to respond to workers' concerns and suggestions.

As a best practice, SRNS is working to establish an effective system to monitor its performance in several key areas. The system is set up to automatically query many existing databases and provide the results of those queries in a dashboard. The dashboard indicators may range beginning with red, then yellow, green, blue, and finally purple. These colors are chosen to quickly draw managers to those areas that warrant closer or immediate attention. Control bands are established that determine the color. Each box on the dashboard then links to a graphical display of the last 12 months of data for that indicator to easily identify data trends. The scorecard for each organization rolls up to the responsible Vice President, and finally to an SRNS scorecard that the President uses frequently. Goals for each indicator are established with the responsible Vice President, and then used as an input to managers' performance reviews. Indicators include business performance (cost, schedule) and safety performance (TRC, DART, MFOs, Behavior-Based Safety (BBS) participation); and a number of leading indicators are being used on a trial basis. For example, SRNS has developed "Severity Indices" for conduct of operations, radiological controls, and electrical safety; and these indices are presented on the dashboard. The dashboard is available to all SRNS workers so they can see their organization's performance. A scorecard has also been developed, and access provided to SR, for the contract performance incentives. The scorecard system, although still under development, is proving to be a very effective method to integrate all the varied sources of data generated through assessments, observations, occurrence reporting, noncompliance tracking, personnel actions, BBS, MFOs, and business systems. It is updated on a realtime basis, and is being used by managers to quickly identify adverse trends, focus managers on important issues, and enable them to take appropriate, timely action to improve performance.

As SRNS continues development of the scorecard system, there are opportunities to expand its visibility to workers without regular access to the site intranet. In some facilities, the scorecard is continuously displayed on high-definition monitors in locations where workers can readily see it. SRNS should consider expanding this visibility by providing similar monitors at facility access points, or even by printing posters with the information on a monthly basis for posting in facilities.

Opportunity for Improvement: SRNS should consider expanding visibility of performance indicators by providing monitors at facility access points, or by printing posters with the information on a monthly basis for posting in facilities.

SRNS has also implemented a Continuous Improvement Program that is managed by a direct report to the President. That program is based on elements of the Six-Sigma and Lean Manufacturing techniques used by Honeywell, one of SRNS partner companies, in developing the Honeywell Operating System. In this process, SRNS is identifying and training Continuous Improvement Experts (CIE) and Continuous Improvement Agents (CIA). SRNS managers anticipate having one CIE for each 300 employees in an organization and approximately 3 CIAs for each CIE. These agents and experts will work within the organizations to identify and implement business, process, and safety improvements based on the continuous improvement model.

As part of the initial VPP implementation, the previous SRS contractor established a VPP committee and Local Safety Improvement Teams (LSIT). Since the new contract was established, SRNS and SRR have maintained an integrated VPP committee and continue to share improvement efforts. LSITs were primarily chartered to implement BBS. Under the new contract, managers are working to expand the role of LSITs beyond BBS implementation. In some cases, LSIT members participate in facility and department level managers' meetings. Managers have provided resources to both the VPP committee and LSITs as needed to promote and sustain the safety cultures, but those resources have not been separately tracked. Managers are concerned that specifically identifying and tracking those resources might make them targets in future budget cuts. As a potential improvement, SRNS should consider specifically identifying and tracking those investments as a means of further building the business case for safety excellence. Understanding the costs and determining return on investment should help not just SRNS but other VPP participants justify and maintain their efforts.

Another opportunity for improvement is in the integration of the continuous improvement program with the VPP committee and LSITs. Currently, these are all maintained separately. SRNS should consider LSIT and VPP committee members as potential CIAs or CIEs and give them the training and tools necessary to help identify further process improvements. Since these people are already committed to making continuous improvements in safety, SRNS would undoubtedly find additional value in improving their skills and knowledge related to the continuous improvement process.

Opportunity for Improvement: SRNS should consider LSIT and VPP committee members as potential CIAs or CIEs and give them the training and tools necessary to help identify further process improvements.

SRNS has established a robust set of awards and incentive programs for workers to participate in safety initiatives. The Individuals Developing Effective Alternative Solutions (IDEAS) program, Spot awards, Prize Closets, Safety Luncheons, and others form a sound foundation of formal and informal awards (see Employee Involvement section for further program discussion). Due to contract arrangements, some personnel working as "staff augmentation" are not eligible to receive awards. For example, subcontractor and staff augmentation workers are not included in

the IDEAS and Spot awards; only SRNS and SRR workers are eligible. SRNS should consider including criteria for staff augmentation and subcontractor workers to participate in these programs. SRNS understands it is vital that all personnel comply with all policies, procedures, and especially safety program requirements. Constructive and corrective actions are both used to strengthen weaknesses in performance and to address unsatisfactory performance. Specific program requirements are addressed in Manual 5B, *Human Resources Manual*.

Subcontractors perform a variety of functions for SRNS, including onsite vendors, construction, and, primarily, decontamination and demolition (D&D) activities. Subcontracts contain necessary provisions to implement the worker safety and health program under title10, Code of Federal Regulations (C.F.R.), part 851 (10 CFR 851). Subcontractor Technical Representatives (STR) monitor subcontractor performance. STR oversight of subcontractor activities varies with the experience level of the subcontractor. In some cases, particularly in D&D activities, STRs provide full-time coverage. This added oversight has been very effective in reducing injuries and occurrences.

Conclusion

SRNS has a dedicated, “hands-on” team of senior managers. From the company President’s office down, there is a clear expectation that all managers are responsible for being visible to the workforce and supporting the workforce in accomplishing the company mission. SRNS managers have 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.

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 methods available for the 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 in safety and wellness promotions. Fundamentally, employee involvement is also an essential element in the work planning and control process, including participation on Assisted Hazard Analysis (AHA) teams.

SRNS primarily encourages employee involvement through the BBS process. Previous contractors adopted BBS at SRS to reduce injuries by providing positive feedback for safe work behaviors and by challenging workers to change at-risk behaviors to safe behaviors. From its introduction in 1998, BBS has proven to be an effective tool in helping to reduce injuries. SRNS has several years of data that clearly demonstrate the direct correlation between BBS observations and improved TRC and DART rates. SRNS has fully supported continuing BBS as a cornerstone of its safety improvement efforts.

All employees have received introductory BBS training. Many employees have completed an additional 4 hours of training. Once the training is complete, if an employee wants to become a BBS observer, he/she must be mentored by a qualified BBS observer. Currently, SRNS has over 2,900 trained BBS observers. BBS implementation is the responsibility of LSITs. BBS observers enter their observations into the BBS Observation Database. LSITs meet monthly to review BBS observations and trends, then compile the data and report the results on a monthly basis to their managers. The results are shared at the respective LSIT's monthly safety meeting.

There are 34 LSITs at SRS, 26 of which are within SRNS at each of the major operational areas, such as SRNL, H-Canyon, and H-B Line. The remaining LSITs cover the other major contractor at the site, SRR. Each team has a charter modeled after a generic charter provided in the LSIT Guide. The teams are composed of an LSIT chair, a co-chair, exempt and nonexempt employee members, and a management sponsor. LSIT chairs, co-chairs, and management sponsors meet quarterly in the LSIT Forum to share organizational experiences. Additionally, the BBS Steering Committee, which is a joint committee between SRNS and SRR, provides strategic direction of the BBS process.

Though acceptance of the BBS process is excellent at SRNS, some opportunities for improvement were noted. Some employees believe there is inconsistency in the implementation of the BBS process. For example, some managers thought BBS participation was voluntary, whereas, others thought participation was mandatory. A number of managers consider being an

active BBS observer as a factor for achieving an "exceeding expectations" for safety in the annual performance evaluations. SRNS does not require employees to be BBS observers. Being a BBS observer is not required for a "meets the standard" rating on annual reviews. Some workers interpret using BBS observer status for an "exceeds the standard" rating as requiring them to perform BBS observations. SRNS should clarify guidance to managers on safety performance expectations so they are consistently and fairly applied to all workers, and ensure workers clearly understand the difference between meeting and exceeding the expectations.

Opportunity for Improvement: SRNS should provide clear guidance to managers on safety performance expectations so they are consistently and fairly applied to all workers and ensure workers clearly understand the organizational expectations for annual performance ratings.

LSITs are tracking the number of active BBS observers as a percentage of qualified BBS observers. An active BBS observer is defined as a qualified observer that performs at least one BBS observation during the month. Many years ago, SRS managers established 50 percent as a monthly goal for participation, and that goal has not changed. LSITs are not measuring the contact rate for workers. Contact rate is the fraction of the total workforce that either observes or is observed through the month. Contact rate, in combination with active observer participation percentage, can provide additional performance data to demonstrate the extent of BBS observations. SRNS might see additional involvement in BBS-related activities by monitoring contact rate, establishing a baseline for current participation, and finally establishing meaningful goals to improve the contact rate, as well as determining an optimum based on all available indicators.

Opportunity for Improvement: SRNS should consider monitoring BBS contact rate, establishing a baseline based on current participation, and then establishing goals to increase that rate, and use that data to determine an optimum based on all available indicators.

The Team observed LSIT meetings, interviewed LSIT members, and received feedback from workers regarding their LSITs. Overall, LSITs are well organized, are actively engaged with their workforce, and are communicating effectively with both their workers and managers. In addition to their basic function of analyzing and promoting BBS observations, many LSITs are developing their own safety communications, Web pages, presentations to employees, and tracking and maintaining an active presence in management meetings and forums. Many LSITs are providing incentives, such as reserved parking spaces for "Observer of the Month" to recognize observers' contributions since monetary awards for such recognition are not yet available.

Based on employee interviews, it was clear that employees understood their rights under 10 CFR 851 to take timeout or stop work in the event of a safety concern. They also understood this authority was a responsibility and stated that they would not hesitate to exercise it without fear of reprisal. For example, a timeout was initiated by a worker at the Tritium Facility during a rope inspection when a concern was raised regarding hardhat inspection requirements and expiration dates. The workers paused, retrieved the site procedure, discussed it with the site SME, and returned to work with no fear of retribution or negative implications for their actions. As mentioned in the Introduction, in 2009, SRNS received almost $1.3 billion through ARRA. That funding is for work to be completed before October 1, 2012. As a result, SRNS has hired

approximately 3,000 temporary workers to perform specific accelerated work projects. As ARRA work nears completion, the completion of work could act as a serious distraction for many workers. SRNS is fully aware of the potential distractions and are taking steps where possible to ease the workers transition back into the private sector. These efforts include 30-60-90-day forecasting of staffing levels and communicating with employees regularly regarding project status and completion dates. Further, SRNS makes it abundantly clear to workers hired for ARRA projects that the positions are temporary. SRNS may find benefit in establishing additional job placement services or counseling for ARRA workers.

Opportunity for Improvement: SRNS should consider establishing additional job placement services or counseling for ARRA workers.

Many years ago, the Augusta Building and Construction and Trades Council (ABCTC), the bargaining unit representing construction craft workers at SRS, decided not to participate in the BBS programs; instead, it chose to use the Self-Awareness for Employees Team (SAFE-T) approach at SRS. In this process, the union stewards act as peer observers of workforce activities. Based on their observations, they provide positive or negative feedback, as well as a forum for workers to provide comments for safety program improvements. As of this assessment, SRNS construction forces had worked over 23 million hours without a lost worktime accident. On the other hand, TRC for the construction workforces are among the highest at SRNS, indicating that although there have not been any lost workdays, injuries are occurring. Encouraging construction workers to actively participate in work observations may enhance their own awareness of at-risk behaviors and lead to significant reductions in injury rates.

Opportunity for Improvement: SRNS should consider expanding the role of workers in the construction workforce SAFE-T process to include not only the union stewards but all construction workers.

Active employee involvement was noted both in the AHA process and prejob briefings. For example, a prejob briefing was conducted at L-Area, prior to moving a cask. Not only did all 24 participating employees attend the meeting but they were also very involved in walking down each step of the process. In another example, the team observed a manager at the water treatment facility developing a work package. He encouraged the workers to complete a work order that included hazard identification, precautions, and limitations. Based upon the participation of employees and their input, the completed work package satisfied all safety concerns associated with the performance of work.

While many workers are involved in job hazard analysis (JHA) and job hazard identification in most facilities, some inconsistency was seen. For example, differences were noticed in SRNL where only the Principal Investigator (PI) was involved with the Electronic Hazard Analysis Program (EHAP) unless a JHA is performed. While the PI may be the SME in the field of research being conducted, some value may be gained by including the workers in the process.

Opportunity for Improvement: SRNS should evaluate involving workers in the EHAP process more consistently across Laboratory facilities.

Another important safety process that SRS has implemented is a site-wide effort to bring the fundamentals of the Human Performance Improvement (HPI) to daily operations. Error-reduction tools, such as self-checking, peer-checking, 3-way communication, procedure use, timeouts, stop work, combined with error-precursor-recognition and a questioning attitude are key elements to a successful HPI program. Many workers at SRNS have been trained in HPI fundamentals and are encouraged to use those skills.

There are several recognition programs used to reward employees for positive performance related to environment, safety, and health. The first is the IDEAS program. IDEAS is the employee suggestion program that offers employees an opportunity to receive merchandise, cash, and other awards for their contributions. The suggestions may improve safety, business, performance, or productivity. The employees submit their suggestions online in the IDEAS database. The suggestions are then reviewed by the Employee Suggestion Program Administrator for eligibility and either accepted or declined. If the suggestion is declined, the employee who suggested it is notified with reason. If the suggestion is accepted, both the employee and supervisor are notified. The suggestion is forwarded for implementation review. If approved for implementation, the winners receive an award. The employee's manager may also award them a Spot Award, which may be substantially larger. The IDEAS program manager estimated a cost savings of $26.5 million in FY 2009, translating to a saving of $264 for every dollar spent. Thirty-six percent of all suggestions received by the IDEAS program is safety-related.

An example of an improvement suggested through the IDEAS program is the installation of Motor Test Acceptance Port (MTAP) in the H-Area ventilation system for dynamic testing of fans. MTAP is a plug-in device similar to a computer outlet. It provides for testing without outside support, allowing the job to be done in 15 minutes instead of the original 4 hours. Since this activity is performed 24 times per year, use of MTAP results in estimated saving of manpower and costs of over $400,000 annually.

The Spot Award Program provides monetary rewards to employees for positive performance, including safety performance. Two employees in H-Area were rewarded with checks for their suggestions, one employee received a $1,000 check, and another received a $500 check. In addition, in December 2009, SRNS chose to recognize the entire workforce with $100 Visa gift cards to each employee to recognize their positive performance.

As a part of community outreach activities, SRS held a 2-day Safety and Health Expo in September 2009 with 1,200 people attending. The attendees included SRS employees and the public. The Expo featured information, equipment, supplies, and success stories that promote safety both at work and at home. There were over 100 exhibits. The vendors demonstrated their health and safety-related products and equipment. Additionally, the Expo included a family night that focused on keeping children safe by promoting safety education for families. A 2-day Health, Safety, and Environmental Blitz was held again onsite in April 2010 with over 1,400 employees attending.

Conclusion

Interviews with managers, supervisors, employees, and LSIT members indicated that employee ownership is strongly embedded within SRNS' organizations. Managers have empowered employees to proactively administer the safety and health program by partnering 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.

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. There must be a systematic approach to identifying and analyzing all hazards encountered during the course of work, and 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.

SRNS has documented baseline surveys that were performed to identify existing or potential hazards to ensure a safe and healthful work environment. Industrial hygiene, 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 as required by regulations and DOE Orders. Comprehensive surveys include inventories of agents and situations, such as chemicals, asbestos, lasers, lead, ionizing radiation, noise, and other industrial hazards.

For nuclear facilities, SRNS utilizes many tools to accomplish preuse/prestartup analysis. A Preliminary Hazard Review, Consolidated Hazards Analysis Process, and Fire Hazards Analysis are documented to support development of the Preliminary Documented Safety Analysis (PDSA) and the Documented Safety Analysis (DSA). PDSA is required for new nuclear facilities and may be required by DOE for major modifications to existing facilities. PDSA evaluates the design to assure accidents and upset conditions are evaluated and mitigated by engineered controls. DSA evaluates the facility to address potential release of hazardous materials to the onsite worker, the public, and environment. DSA provides the basis for Technical Safety Requirements that provides those high-level controls that assure safe operation. 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,* Procedure 122, *Hazards Analysis,* provides the framework for performing activity-level hazard analysis. Attachment A to that procedure, *AHA Process Map*, provides the flow for determining when hazard analysis should be performed. That process flow indicates that some form of hazard analysis is required for all work performed at the site. This process is intended to involve the worker in identifying the work hazards and develop controls to eliminate or mitigate those identified hazards.

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. This process has been used for several years at SRS, and has undergone significant improvements. SRNS is continuing to make the process more user-friendly and technically sound and was noted as being significantly improved by HS-64 despite some remaining weaknesses. SRNS has chartered a working group to continue improvements in the AHA process by removing redundancies and streamlining the process. SRNS is also applying the AHA process to procedures and working off a backlog of older procedures that did not originally have an AHA performed as part of the procedure development process.

A potential area to improve AHA was noted. The current process does not consistently document the rationale linking identified hazards to the selected control. There currently is no mechanism within the AHA process that mandates the logic for control selection to be documented. Additionally, within the procedure there is a conflict between the process flow map and the instructions in section 2.A.2. That section provides an exception to the AHA process where "activities that are well understood and involving personnel with the necessary skills and competencies are not required to be assessed through the computerized AHA database." This statement implies AHA may not need to be used. The procedure flowchart in appendix A does not show an equivalent exit point, and instead requires hazard analysis for all activities.

Opportunity for Improvement: SRNS should embed within the improved AHA process a method to capture the rationale for control selection based upon the hazard and clarify the procedure to ensure all hazards are analyzed.

SRNL uses the EHAP tool for research and development activities. Use of this process is directed by Manual L1 Procedure 7.02, *Conduct of Research and Development-Hazards Analysis*. The tool, which is based on the site AHA process, has been designed and created by scientists for scientists. This customization has resulted in a system that has been well accepted by the research organization. The PIs interviewed were very familiar with, and satisfied with, the use of the system to perform hazard analysis. The PIs were able to skillfully walk through the process from start to completion, and it was evident that they were regular users of the system. This practice is noteworthy and possibly a model for other Laboratories because past VPP reviews across the complex have shown reluctance by researchers to embrace a formal process such as EHAP. SRNS should consider sharing the success of this program with other DOE Laboratories across the complex. As discussed in Employee Involvement, there are opportunities to expand involvement by other workers in EHAP.

SRNS has implemented a Measurement Control Program that establishes detailed review criteria for any measurement process to provide accurate and reliable analytical services at SRS Laboratories. As part of that program, the lead scientist at the F-Area Laboratory has implemented a detailed review process whereby the lead for an analytical process is notified 1-2 months in advance that their process will be reviewed. At the appointed time, the lead scientist convenes a review board that conducts an oral review with the analytical process lead that covers approximately 100 individual criteria. This process is primarily a quality control process, but SRNS might gain additional benefit from adding a few criteria that would include the hazard analysis associated with the process. This is an opportunity to ensure that the methods have been appropriately reviewed for hazard controls, as well as ensuring no additional hazards have been introduced over time if analytical methods or locations change.

Opportunity for Improvement: SRNS should consider enhancing its processes by adding hazard analysis criteria to the Measurement Control Program Lines of Inquiry.

Laboratories at SRNS use JHAs to supplement EHAPs or to analyze the hazards in "shop" areas or work performed on programmatic equipment. JHA is used in lieu of AHA for this type work. Many of the JHAs reviewed did not cover all of the hazards associated with the work. For example, when a machinist was asked to identify the hazards associated with the fixed machine he was operating, he identified several hazards and additional controls not listed on the JHA

(e.g., rotating parts, no jewelry allowed while operating the machine). Additionally, some of the JHAs were not readily available for review when requested by the Team.

Opportunity for Improvement: SRNS should ensure that machine operators and maintenance personnel are included on JHA reviews.

SRNS performs BBS observations, MFOs, safety and housekeeping walkdowns, and uses HPI techniques to actively improve safe performance of job tasks. These tools help reinforce the analysis and management of hazards by involving the managers and the workforce in actively looking for unsafe conditions or work practices.

A noteworthy practice described to the Team being used by SRNS is known as "The Rest of the Story" (TROTS). In this process, events leading to injury, including first-aid cases, are reconstructed and analyzed in a BBS framework. At-risk behaviors and error precursors are identified in an effort to understand and prevent similar events. TROTS may also be performed on near-misses, company/government-owned vehicle incidents, and upon management request. An improved process, Integrated TROTS (i-TROTS) incorporated the fundamentals of HPI in TROTS when HPI rolled out in 2008. The introduction of i-TROTS has added a new dimension to the process by not only conducting behavioral analysis but also including HPI in the process. The "marriage" of HPI and BBS in the post-event analysis has allowed SRNS to perform a more effective assessment of contributing factors and to determine the most appropriate set of corrective actions to prevent the likelihood of a recurrence.

The 2010, HS-64 report of SRNS identified several strengths, which included the improvements in the hazard analysis process since the 2006 review. It also noted that there are improvements that can be made in implementation of those tools utilized for hazard analysis. The Team observed several instances during this assessment that indicated conditions observed by HS-64 still exist.

For example, during an acid line break in H-Canyon, an employee experienced discomfort due to acid getting into the personal protective equipment (PPE) and exited the area. This event is discussed more indepth in the Hazard Prevention and Control section. During the factfinding meeting, it became apparent that a thorough hazard analysis had not been performed. The hazard analysis did not analyze the possibility of flushing and neutralizing the acid or evaluate the steps required, including physical exertion of reaching and bending, for the employee to accomplish the work. Hazards associated with acid line work have been problematic for SRNS, but SRNS has not yet used effective hazard analysis to help it prevent these exposures.

In another example, Team members attended the prejob briefing, observed the work, and reviewed the work package for the new Hot Crane and 5-ton Maintenance Hoist-Wire Rope Inspection at H-Canyon. The maintenance was to be performed on the 5-ton crane in the H-Canyon crane maintenance room. A review of the work package and observation of the work revealed two particular hazards that were not adequately analyzed during the work planning process.

The first hazard not adequately analyzed was a fall hazard. The hot crane maintenance area is elevated well above the canyon floor and presents a significant fall hazard when the shield door is open. The prejob brief described that the work would be performed with the shield door

closed to minimize radiological exposure and to mitigate the fall hazard present from the crane maintenance deck to the canyon floor. Review of the work package indicated the Safe Work Permit had fall protection related to ladder use, but no mention of the shield door fall hazard. During performance of the task, workers left the shield door open because the crane operates off transmitters located throughout the canyon and the crane room. The crane maintenance room transmitter had a faulty cable, which would not allow the crane to work properly if the shield door was closed. Workers decided to leave the shield door open to access the transmitters located in the canyon. This change and the associated fall hazard were not addressed in AHA.

A second hazard not adequately addressed was the risk to workers while inspecting the crane from a scissor lift. Access to the bridge to check for wear from the shears on the wire rope is now a requirement due to a Lesson Learned event. This new requirement has the maintenance workers use either a ladder or a scissor lift to access the crane. While accessing the crane, workers request the crane operator to remove a key to prevent crane movement. No lockout or tagout (LOTO) is used to deenergize the crane to prevent movement. This appears to be in conflict with both the SRNS LOTO procedure and the Occupational Safety and Health Administration (OSHA) LOTO standard. SRNS LOTO procedure does contain provisions that would permit a worker's supervisor to sign onto LOTO for the worker so workers would not have to exit the crane maintenance area to perform LOTO. As observed in this case, workers appeared to be trying to control the hazardous energy as a single point control or undocumented LOTO. Per OSHA standard and SRNS procedures, the use of a single-point control or undocumented LOTO would require that the worker exit the crane maintenance area to perform LOTO, then dress out again to reenter. SRNS procedure specifically requires the worker to perform the lockout for an undocumented LOTO.

In another event related to the Team during an employee interview, a prejob briefing occurred where employees were questioning the use of air-fed plastic suits (bubble suits) in a contamination area for welding activities. While the Radiological Work Permit (RWP) required the use of plastic suits, employees recognized that slag from the welding activity would melt through the suit and present an additional, unmitigated hazard to the worker. The job was started and as predicted, the slag from welding burned through the plastic. The affected personnel exited the area without injury. Only after this occurred were changes made to RWP and work package for more effective PPE. The hazard analysis did not include an evaluation of other welding processes or methods that might have been used to prevent worker exposure. This event is also discussed in the PPE section of Hazard Prevention and Control.

Another event that resulted in a first-aid case occurred just prior to this assessment. In that case, a worker reported to work the following day with small blisters on his arms after using a torch to cut through a metal plate on a D&D project. The blisters required no medical treatment, but indicated the worker was not wearing the proper PPE. Again, the hazard analysis for that job, as reported by the responsible managers, did not evaluate alternative work methods that would eliminate the hazard to the worker or provide more effective engineered controls.

In the construction arena, it was noted that paint stripper being applied at the powerhouse in D-Area contained hazardous constituents (caustic). Workers were covered with the material. Many instances involved application on elevated platforms while lying on their backs, which necessitated wearing PPE to protect the face and body. No eyewash station was present in any areas where the stripper was being used, although OSHA standards would normally require such a station when workers are using caustic materials. AHAs for the activity did not adequately

analyze the chemical hazard from the paint stripper and, subsequently, did not identify the appropriate additional controls. SRNS revised AHA to include more detail about the hazards and required PPE and brought in a temporary eyewash station in response to the Team's observations.

Similarly, in a machine shop in H-Area, there are flammable cabinets that contain aerosols used for deicing, spray paints, solvents, and other flammable containers. SRNS procedure for eyewash stations does require eyewash stations in hazardous areas where "injurious materials are processed, stored, or used, and where potential exposure to the injurious material is likely or credible." There were no eyewash stations available in the machine shop or nearby, and AHAs did not address the hazards presented.

When addressing chemical use, SRNS should perform a hazard analysis of the chemical used in the facility and determine if workers are at risk for eye and/or other skin contact that could reasonably be expected to injure the worker. For areas such as shop areas, the answer is almost always "YES." Consequently, eyewash stations (at a minimum) should be provided when the chemicals are in use. This could be in the form of a portable unit; however, the American National Standards Institute does advise that when plumbing is available in a facility, plumbed units should be installed in lieu of portable units.

Additionally, precautions and controls that result from a good hazard analysis should be clearly and succinctly communicated to the worker. The Team identified a few instances where the hazard analysis detail could have included greater detail to ensure the worker fully understood the appropriate PPE selection. One example was observed during a pump repair in the water treatment plant. The work direction required chemical gloves; however, it did not specify the glove material or breakthrough values to ensure the gloves chosen by the worker would be sufficient for the chemical in use.

These events indicate a need for more detailed hazard evaluation during work planning processes. Concurrently, with the evaluation of work steps, the walkdowns need to challenge acceptable practices; and all personnel involved, including workers, supervisors, managers, and SME, need to ensure they maintain a questioning attitude throughout the planning process.

Opportunity for Improvement: SRNS should review and incorporate the methods contained in the OSHA *Job Hazard Analysis* pamphlet 3071 2002 (Revised) for detailed worksite JHA.

The Team observed activities in the Solid Waste Management Area. The area is divided into work zones. Every week, a team of individuals walks down one of the zones to inspect for potential safety issues. Each zone is visited on a rotating basis. A tracking database is set up to record findings and track resolutions. The tracking system does not identify what resolution is performed and how the action items are closed. The tracking system is not analyzed for potential trends or repeat occurrences.

The Site Tracking, Analysis, and Reporting (STAR) database is 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 management field observations). SRNS is using STAR as the

primary tool to manage issues from various sources. Use of this tool as a single repository increases the effectiveness of tracking and trending efforts.

Opportunity for Improvement: SRNS should consider expanding use of STAR to track and trend assessments conducted by LSITs or other worksite inspections currently tracked in other local databases.

Team interviews with facility managers identified a potential concern with one aspect of the STAR program. Specifically, the STAR program may not effectively address corrective actions that require responses from multiple organizations. In those cases where multiple organizations are responsible for corrective actions, only one organization is identified as the responsible organization, and that organization's performance indicators may be incorrectly affected when other organizations delay corrective actions.

Opportunity for Improvement: SRNS should work with facility managers to address the scheduling and accountability issues in STAR for actions requiring response from multiple organizations.

Conclusion

SRNS has processes in place to perform worksite analysis and thoroughly understands the hazards present at the site. As noted in other assessments, these processes have significantly improved over the past 4 years. Comprehensive surveys are conducted as needed and supplement an effective baseline hazards assessment. Thorough worksite inspections are conducted on a frequent basis using appropriate expertise. Additional opportunities exist to continue those improvements. The current procedures need clarification of expectations and integration of onsite methods, as well as additional attention to detail by personnel performing hazard analysis. Implementation of these processes to fully recognize the value is a continuing challenge that will require a concerted effort by the contractor to successfully achieve consistent, positive results. The tracking and trending program at SRNS provides a great resource that SRNS can use to improve its performance across the site. SRNS continues to meet the expectations for participation in DOE-VPP for Worksite Analysis.

VI. HAZARD PREVENTION AND CONTROL

Once hazards have been identified and analyzed, they must be 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/procedures must also be followed by everyone in the workplace to prevent mishaps or control their frequency/severity.

SRNS policy for controlling workplace hazards is to first eliminate the hazard through substitution of a less hazardous material or removal of the hazardous material, provide engineering controls that eliminate the hazard at the point of generation, or add administrative controls that limit the employee's exposure to a level as low as reasonably achievable (ALARA). Only when hazards cannot be eliminated or for operations that are conducted while engineering controls are being instituted are employees allowed to work in a potentially hazardous environment with PPE as the first line of defense. In newer facilities at SRNS, the Team observed many examples of hazard elimination and engineered controls. For example, B-Area Laboratories have excellent engineering controls implemented in their ventilated hood processes. Exhaust is monitored and maintained based on sash opening while monitoring room differential pressure and the use of hydrogen and oxygen monitors connected to automatic shutoff valves for the process gases.

Despite this policy, the Team observed a heavier reliance on PPE as the first line of defense in older facilities. Recognizing that the older facilities face reduced future mission resulting in less funding committed to making expensive safety upgrades, SRNS reliance on PPE needs to be balanced with better hazard analysis that addresses ways to effectively mitigate or reduce the potential hazard exposure to the worker before selecting PPE. One example, which occurred during the Team's review, involved an acid line valve change-out that resulted in a worker being exposed to 50 percent nitric acid. Prior to removing the valve, operators did drain the nitric acid line to eliminate as much nitric acid as possible. Operators and planners recognized residual acid remained in the line. To control that hazard, PPE was selected. PPE was selected without considering how workers would have to move or the location of the valve in relation to workers. RWP required three sets of gloves (cotton liners with two pair of latex gloves) in addition to a set of anti-contamination clothing. This PPE was established and never reconsidered after the PPE for the acid was addressed. As a result, safety SMEs determined that an acid suit and a set of acid-proof gloves would then be donned to protect from the acid. The physical movements required for the workers to perform the work included reaching up and then down to the floor for the valve removal. The RWP did not specify that the acid gloves should be taped with acid proof tape to the acid suit. As result, acid drained from the line onto the sleeves of the acid suit while reaching up, and then drained down the sleeve between the acid gloves and the acid suit sleeves when the worker reached downward. Once the acid reached the underlying latex and cotton anti-contamination clothing, it rapidly penetrated to the worker's skin. Safety failed to address the potential for intrusion points between the acid gloves and the acid suit. As he was concluding the work, the worker experienced a burning sensation on his right arm where residual acid had worked its way down the acid suit's sleeve and under his acid gloves. Discussions during the factfinding, which included the worker, immediate supervisors, safety and radiation protection, recognized that the linear approach to hazard analysis, essentially "stacking" the radiation protection on top of the safety requirements, was not the most efficient method for this

operation. Radiation and safety SMEs recognized they should have analyzed and integrated the necessary PPE from both perspectives, and radiation could have removed a layer of latex in lieu of an additional set of acid gloves to be worn and taped under the acid suit, as well as outside the acid suit. This configuration would have provided the site radiation protection levels, addressed the potential intrusion points for the acid, and allowed the worker the necessary dexterity required to perform the work.

Opportunity for Improvement: SRNS should ensure that when PPE is selected, due consideration is included for work methods involved, location of the work, and integration of other controls.

Weaknesses in the hazard analysis process discussed earlier resulted in failure to consider eliminating the hazard as an option by neutralizing the acid remaining in the line. Depending on operational concerns that should have been documented in an AHA, operators might have been able to install a "hot tap" in the line to inject a neutralizing agent rendering the remaining liquid less caustic. This or other mitigating actions prior to the reliance on PPE would have reduced the significance of the exposure if PPE was compromised. In most work activities observed by the Team, personnel were wearing the appropriate PPE, knew the specific hazard they were being protected from, and the appropriate way to inspect and wear PPE accordingly.

Opportunity for Improvement: SRNS should ensure selection of control methods begins with an analysis of the ability to eliminate the hazard or find engineered controls before PPE is selected.

The high temperatures and high humidity at SRS make heat stress a significant consideration. SRNS has a comprehensive heat stress program to minimize the risk of heat or cold stress-related disorders; recognize risk factors, signs, and symptoms; and describe guidelines for implementing prescribed controls. Several facilities have been exploring alternative solutions to bulky ice vests and coolers that workers tend to dislike. For example, newly developed "cool tech" clothing aids in sweat evaporation, thereby cooling the body quicker. Other techniques are also used, such as heat-stress index cards, prehydration, providing electrolytes, and work-rest regimens. The Heat-Stress Index Card is a tool found in the 4Q, *Industrial Hygiene Manual* that is used as a guide when implementing work-rest regimens. The SRS Heat-Stress Index Card communicates the American Conference of Governmental Industrial Hygienists (ACGIH) "moderate" workload schedule and screening limits to workers and management. It is, however, to be used as a guide, not as an absolute requirement or level as ACGIH intends it to be used as a first-order screening tool to prevent heat stress. This is because there are personal risk factors (age, obesity, use of medications, degree of hydration, and degree of acclimatization) that also impact worker health, which requires that management takes these variables and the Wet Bulb Globe Temperature screening criteria into consideration whenever making decisions to manage heat stress in the workplace. Interviews with the Team indicated there is some confusion by the workers and the supervisors as to when the guide should be used by establishing those recommended work-rest cycles. SRNS should consider the use of physiological monitoring and establishing better guidance for the use of the Heat-Stress Index Card.

Some DOE facilities have further reduced heat-stress exposure by establishing heart rate, temperature, and body weight baselines for their workers and then controlling exposure based on changes in those baselines during work activities providing a better leading indicator for heat-stress effects. Some facilities have begun using wireless thermometers that attach to the workers and provide realtime warnings when body temperatures rise to levels that warrant taking breaks. These also provide feedback to workers to help them better regulate their personal work pace.

Opportunity for Improvement: SRNS should consider integrating more physiological monitoring for activities that are at higher risk of producing heat stress.

Opportunity for Improvement: SRNS should clarify guidance on when and how to use the SRS Heat-Stress Index Card and ensure workers and supervisors receive annual retraining on that guidance in late winter or early spring.

SRNS has continued the practice of using mockups to ensure worker familiarity with the work to be performed and to limit potential exposures. Observations in the L-Reactor Area demonstrated a strong commitment to this practice. The L-Reactor's mission has been changed to the interim storage of spent fuel rods in its large disassembly basin. The fuel rod assemblies come from multiple sources, including foreign research reactor fuels, so the L-Area personnel are expected to handle multiple forms of fuel rods, assemblies, and shipping casks to ensure safe transfer and storage in the fuel pool. L-Area managers recognized the hazards associated with handling such a large variety of components while maintaining appropriate competency for working with the various systems. To minimize risks, L-Area managers have established refresher training requirements for any casks, fuel rods, or fuel rod assemblies that workers have not handled within 2 years. If an older cask is utilized for a particular run, all workers complete refresher training for the proper handling requirements for that cask, including an all-day mockup with hands-on training. During the assessment, L-Area workers were participating in a 3-day training session with mockups in order to prepare for acceptance of fuel in a 70-ton cask. L-Area had not received fuel in a 70-ton cask in approximately 7 years. Workers from all shifts are scheduled to complete this training to ensure competency across the shifts before the 70-ton casks will be received.

L-Area managers have also conducted "dry-run" mockups when unique fuels are being accepted so that workers can verify the procedure, recommend changes, or implement improvements prior to ever handling the fuel. In several instances, dry-run mockups and handling exercises have produced procedural changes that resulted in significantly lower radiological exposures than projected.

Job responsibilities are evaluated for each new employee coming onto the site. When the manager indicates on-the-job task evaluation form that the worker has the potential for exposure to any physical or environmental hazard on the job, that information is reviewed and evaluated by an industrial hygienist and/or a safety engineer. If PPE is indicated by the task requirements, recommendations for such equipment are made prior to the new employee being placed in that work environment. If the use of such PPE might cause a physical hazard to the employee, that employee is referred to the Occupational Medicine Department for physical evaluation prior to the work assignment or issuance of equipment.

SRNS provides medical support services to all onsite contractors. These services are provided at two onsite clinics. The clinics are staffed with three physicians and one physician's assistant. The program has had some difficulties though transitions due to some ambiguity in the new contracts that resulted in no specific budget for occupational medical services. Those ambiguities have been resolved between SRNS and SR, and there will be a specific budget for occupational medical services in FY 2011. One clinic operates during normal work hours, and the other clinic is staffed 24 hours per day. Injured workers are taken to the clinics for examination and treatment. In the event that responders determine a higher level of care is required, they can be transported to nearby area hospitals.

Medical professionals work with employees, supervisors, and SMEs to ensure workers injuries are properly understood, treated, and that subsequent decisions on injury categorization do not unduly influence patient care. Information on injuries and treatment is provided electronically to personnel that then determine how cases are recorded. Records of injuries are maintained and adequately document and justify those decisions.

Site medical services are also used to support worker wellness initiatives. There is a full-time staff registered nurse that supports workshops, health fairs, a walking campaign, and other preventive initiatives. These programs were recognized and used by workers across the site.

Due to the remote locations that exist at SRS, SRNS managers made the business decision 2 years ago to address the potential need for removing the barriers that were limiting the use of Automated Electronic Defibrillators (AED) onsite in accordance to State Government regulations. For many years, obstacles have existed that limited or restricted the availability and the use of AEDs by companies, in the State of South Carolina. SRNS managers initiated a pilot program for the use of AEDs at the Tritium facility. As a part of the pilot, SMEs were tasked with evaluating and selecting AED models, identifying locations and mapping proposals for the pilot program, and developing training recommendations for AED users. The review process selected a model AED with the feature of evaluating the patient's heart rhythm automatically and only delivering a shock if the heart rhythm indicated it was necessary. This, and several other safety features, made this product the choice for use at the SRNS site. In a short time, the Tritium pilot was declared a success and SRNS has continued to expand the program across the site, all based on the newly developed balance of procurement and installation plan.

SRNS conducts radiological operations in a manner assuring the health and safety of the public and all persons engaged in site radiological work. Radiation exposures to SRNS workers and the public and releases of radioactivity to the environment are maintained well below regulatory limits. Deliberate efforts are taken to further reduce exposures and releases ALARA.

SRNS workers are protected from radiological concerns by programs and work procedures that are designed to reduce workers' exposure. These procedures are documented in 5Q, *Radiological Control Manual*. These procedures provide a method for performing systematic reviews of work to ensure that radiation exposure and contamination controls are appropriately incorporated as part of the work planning process. Work is conducted in a manner to ensure radiological safety and maintain exposures ALARA. During routine operations, the combination of physical design features and administrative controls provide that the anticipated occupational dose to general employees shall not exceed the limits established in 10 CFR 835.

In 2007, DOE adopted the system of radiation dosimetry recommended in *International Commission on Radiological Protection* 60 and established a full compliance date of July 9, 2010. This publication significantly changed methods and weighting factors related to neutron dose calculation. During this assessment, the Team discussed SRNS' implementation of the new DOE requirements to meet the recommendations for neutron dosimetry and detection with health physics managers. SRNS decided to implement the new requirements in January 2010 in order to avoid future complications of calculating annual worker exposures by different methods in the same year. This ensured consistent application and avoided additional effort to calculate doses to different standards within the same calendar year.

The application of ALARA philosophy to the planning and execution of work has contributed significantly to the success in minimizing employee exposure. Employees are reminded during prejob briefings of the potential risks for spread of contamination during work. They are encouraged to take a timeout when conditions are not as anticipated. This allows employees to assess the activity and take steps to minimize the spread of contamination.

The SRNS preventive and predictive maintenance program is found in Manual 1Y, *Conduct of Maintenance Manual*, Procedures 5.02 and 5.05. Procedure 5.02 establishes the responsibilities and requirements for performing preventive maintenance (PM) on project equipment prior to turnover for operations. Procedure 5.05 specifically applies to structures, systems, and components, maintained by SRNS and establishes responsibilities and administrative controls for the development and implementation of the SRNS PM Program and predictive maintenance activities. These activities provide a high degree of confidence that facility systems function in a safe and reliable manner, that equipment degradation is minimized, and that equipment life is optimized utilizing a graded approach such that the PM program is cost effective.

PMs are scheduled and tracked through the Asset Suite system. Backlogs are also tracked to ensure that critical systems are maintained properly. Line managers address all backlogs on a monthly basis.

The January 2010 report issued by HS-64 determined that the Tritium program organization had established robust processes for requesting, prioritizing, scheduling, planning, preparing, assigning, implementing, reviewing, approving, and critiquing maintenance work activities. Several noteworthy practices were identified. The same report described the Tritium corrective maintenance program as comprehensive; and that the overall program was commendable and performing effectively.

The Office of Emergency Management Oversight issued an inspection report of SRNS in January 2010. That inspection determined SRS has implemented a mature, comprehensive, and well-documented emergency management program whose programmatic elements and site emergency response are well governed by the site emergency plan and complemented by a thorough set of implementing procedures. Although a few weaknesses warranted management attention, that assessment determined SRS emergency management program is consistent with DOE expectations and is capable of protecting scene responders, site workers, and the public from the range of analyzed events.

SRNS currently has many certified professionals on staff in the areas of industrial safety, industrial hygiene, environmental, radiation protection, fire protection, medical, and emergency response. Safety and health professionals provide expertise to SRNS employees and projects

through training, worksite analysis, and integration into field work activities. SRNS managers encourage safety and health professionals to pursue certifications and educational opportunities to enhance their skills and knowledge. Discussions with several work planners and field personnel indicate that there is a need to improve industrial hygiene (IH) support in the field and in the development of work packages. Additionally, the integration of radiological requirements and IH requirements needs to be supported by managers and operators to assure workers are adequately protected.

All new hire employees are introduced to the site safety and health rules in initial general employee training (GET). This course helps train each employee to perform assigned work in a manner that promotes safety of self, coworker safety, and protects plant property and the environment. Depending on the nature of guidance required, written instructions are provided in work plans.

Conclusion

SRNS has appropriate controls established and with few exceptions, those controls are well implemented and practiced to ensure a safe workplace. In its older facilities, SRNS needs to focus on reducing its dependency on the use of PPE as its primary form of hazard control and explore the use of elimination and mitigation methods to control hazards more effectively. Hazards are well communicated and understood by the workers interviewed and observed. SRNS has met the expectations for 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 management expectations and approved procedures.

Training and qualification programs are well established and not only ensure that employees are appropriately trained to recognize the hazards of the work environment but also to protect themselves and their coworkers. *Training and Qualification Program* Manual 4B describes the training process and ensures the SRNS workforce is appropriately trained to work effectively and safely. The process as defined and implemented is systematic and covers the needed knowledge, skills, and abilities to perform tasks competently and safely. It 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.

SRNS managers understand their safety and health responsibilities and know how to effectively carry them out. In addition to training given to all SRNS employees, the first-line managers (FLM) 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, fitness for duty, Employee Assistance Program, Employee Concerns Program, and an SRNS overview. The most useful information came from the 30-minute safety and health talk that clearly laid out the procedure and details for supervisors to properly deal with injuries and illnesses encountered by employees under their direction. The workshop also contains useful information, such as personnel policies and procedures, leadership, and mentoring. Front-line managers interviewed by the Team found this training very useful because it provided practical and useful information. SRNS is now considering expanding the required attendance of the "FLM Leadership Workshop" to include all managers.

All managers and employees must attend a monthly safety meeting where they view the site's Spectrum safety video. This video includes a monthly safety topic that is of current concern, such as heat stress and electrical safety. Managers must also take safety training courses required for their specific job, such as Asbestos Awareness for Managers, Hazard Analysis for Managers, and Integrated Safety Management System (ISMS) for managers.

Interviews with managers and supervisors and a review of training documents and courses demonstrated that managers and supervisors at the site annually participate in some form of formal training and/or workshop discussions regarding their safety and health responsibilities. It was evident that managers and supervisors understood their safety and health program responsibilities and were able to adequately describe those responsibilities. SRNS program of training managers and supervisors in their safety and healthy responsibilities is effective.

A program gaining support in general industry is the Safety-Trained Supervisors (STS) Program. This program provides supervisors with a third-party certification by the Board of Certified Safety Professionals through the Council on Certification of Health, Environmental, and Safety Technologists. STS certification establishes a minimum competency in general safety practices. To achieve the certification, candidates must meet minimum safety training and work

experience, and demonstrate knowledge of safety fundamentals and standards by examination. Those holding the STS certification must renew it annually and meet recertification requirements every 5 years. The program has proven effective at other sites in helping supervisors recognize potential unsafe acts and conditions and make improvements in safety. SRNS has not encouraged supervisors to pursue this certification, but may want to consider it as a potential means of gaining additional safety improvement.

Opportunity for Improvement: SRNS should consider encouraging supervisors and managers to pursue STS certification.

In addition to training specific to managers and supervisors, SRNS also has a comprehensive training process for all employees. To begin with, new employees are required to take the 8-hour GET class, which provides the basic safety and health training. The final step of this class is a test, which must be passed with a minimum score of 80 percent. Employees are issued 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 and CAT and depending on their function, workers are provided additional safety and health training that focuses 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 & Hood Airline Respirator, and Negative Pressure Training have hands-on or demonstration of proficiency components.

SRNS has an effective process for determining these 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. 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 make arrangements for each employee's training. Once training is completed, AQM 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.

While assigning training properly is important, a site must also keep training records that are easily accessible. SRNS training records are maintained in the Training Record Automated Information Network (TRAIN) and all employees, their managers, and training coordinators have access to TRAIN. TRAIN is the main system through which employee training is managed. The Team checked training records of employees at SRNL, B-Laboratories, and construction projects and found that the training records were complete. Additionally, there were very few cases where training had expired. Furthermore, when asked about TRAIN, employees found the system easy to use and were satisfied with it. A review of a sample of training documentation and interviews with employees indicates that training is being carried out in a thorough and systematic manner.

Each major operation at SRNS, such as SRNL, H-Canyon, H-B Line, and Infrastructure Support, has training coordinators/specialists that monitor training records of the employees. Using TRAIN, training coordinators prepare a query of 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. The notification method seems to be effective because there were less than 5 percent of expired training cases in a random sampling of training records at SRNL and B-Laboratories. Further, most of these cases were for employees that did not need that specific training for their current assignment.

Although most training at SRNS is computer- or classroom-based, SRNS also provides a significant amount of on-the-job training (OJT). Its OJT process is well defined and effectively implemented. A qualified worker or OJT instructor/evaluator directly supervises the newly hired or reassigned employee until he has completed OJT. These instructors/evaluators must be SMEs in the activities that they will train and evaluate. They are also many times FLMs. OJT instructors must undergo a formal, 4-hour OJT instructor training before being designated as OJT instructors/evaluators. OJT instructors/evaluators use OJT lesson plans and performance check lists to train and test the trainees.

SRNS has a well-administered and comprehensive training program for construction workers. The program focuses training on work that can present possible risks or consequences to the craftsmen and facilities. Each employee's job training plan is specifically developed based upon the location of the worker and the type of task to be performed by the employee. Additional training may be needed to address any job-specific needs. Managers and supervisors receive additional training, such as safety, operations, and security courses. The majority of training is done annually and is administered using methods, such as classroom, computer-based, and OJT.

One proactive, safety training method used by the Infrastructure and Facilities Support is the staging of a mock event for its transportation employees. These mock events aim to demonstrate real life challenges. The Team observed a mock event that included a scenario where a driver attached a trailer to the wrong size ball on a vehicle based on nonlegible size markings on the ball. Not only did the event have great employee participation, but the employees also identified causes and corrective actions when the mock event process ended.

The Team also attended GET, Blood-Borne Pathogens/First Aid/ Cardio-Pulmonary Resuscitation, and Plastic Suit & Hood Airline Respirator classes. The technical content was appropriate, the instructors were knowledgeable, and the attendees participated actively in all of the classes. The Plastic Suit & Hood Airline Respirator Class required each attendee to demonstrate proficiency for completion of the course while the other two classes had written examinations that required a passing score of at least 80 percent.

Another key aspect of site safety that the Team reviewed was the point-of-entry briefing that is necessary for badging. The briefing included the viewing of a comprehensive safety training video. The video effectively covered the details of the site, thoroughly explaining the Safety, Security, and Radiological Controls specific to SRS. The topics include:

- Alarms;
- Emergency telephone numbers;
- ISM;
- 100 mrem limit for visitors;
- Timeout Policy;
- ALARA;
- Proper use of PPE;
- Reporting an injury;
- Who can operate tools;
- "Permission to Enter" requirements;
- Remote worker;
- Work attire; and
- Parking.

However, employees from other DOE sites with HSPD-12 badges were exempt from watching this video. Some badged visitors, such as Q-cleared visitors, are not always escorted while onsite. In addition, the site-specific information in the video is not known to visitors.

Opportunity for Improvement: SRNS should consider changing its policy to require the point of entry briefing and video for all visitors including those with the HSPD-12 badges.

In order to integrate ARRA-funded workers into the existing workforce, SRNS developed and implemented new effective programs to train these workers. During the initial hiring of ARRA employees, SRNS hired experienced instructors to support the additional training workload. Using these instructors, SRNS developed a new employee-mentoring program that helped not only familiarize ARRA-funded employees with SRNS facilities and work objectives, but also reinforced the importance of safety in daily work activities. Additionally, SRNS established training requirements for new ARRA-funded employees that emphasized the concept of the site's safety culture to demonstrate acceptable work practices. Lastly, through constructing and operating mockups of ARRA-funded activities, the training department was able to develop and implement realistic scenarios that helped in both the training and evaluation of new employees' work performance in a safe environment.

Senior SRNS managers provided a formal training class for ARRA-funded workers highlighting the safety programs and culture of the site. This training approach was very successful in bringing the ARRA-funded workers up to speed. Not only did it help them understand the safety culture at the site but also it effectively integrated them into the existing workforce. The Office of Independent Oversight Assessment Team also noted the success of this program earlier this year. The information and experience gained from this training would be beneficial to any new employee at SRNS and should not be limited to only ARRA-funded workers.

Opportunity for Improvement: SRNS should consider providing the supplemental training given to ARRA-funded workers to all new employees.

Conclusion

SRNS has a well-established training and qualification program that ensures employees are appropriately trained 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

When the Department established DOE-VPP, it was understood that contractors at sites would change, and guidance for permitting the workers at the site to retain their Star status was included. Contractor transitions can be a traumatic event for the workforce, and it often leads to degradation in safety performance. Managing contractor transition without damaging a strong safety culture is a significant challenge. SRNS has clearly risen to that challenge. Senior managers brought in as part of the contract transition team recognized the strength of the workforce ethic toward safety and were very careful to ensure that ethic was not compromised. Recognizing they had a mandate to make improvements, SRNS managers first determined what processes were working well and should not be drastically changed. They worked with employees to determine those processes that employees wanted to change and used those improvements to help employees complete the transition process.

Throughout the transition, workers were also dedicated to ensuring the safety culture was maintained. DOE-VPP Star status is a source of great pride for much of the workforce, and they have worked diligently to keep that status.

Worksite and hazard analysis processes are well defined and implemented. Significant improvements have been made over the past several years to improve clarity of the results, optimize the outputs to be useful to workers, and comply with DOE requirements. Remaining improvements identified by the Team focus on greater attention to detail during the hazard analysis process, ensuring broader participation, and some clarification of expectations.

Controls at SRNS ran the full gamut from hazard elimination to PPE. In some cases, because of the age and condition of facilities, PPE is often selected prior to other considerations. Improvements identified by the Team focused on trying to reduce dependence on PPE and ensuring PPE requirements are better integrated based on work methods and locations.

Training processes in place are mature and effective. SRNS is using some innovative and interesting training methods that should be expanded across the site. Training developed to quickly integrate new personnel under ARRA has been complemented by other assessments. Adopting this training for future new personnel should be considered.

SRNS safety statistics are excellent. For both Hazardous Waste Treatment and Disposal and Construction industries, both TRC and DART rates are well below industry averages. SRNS review and classification of injuries and illnesses is timely, rigorous, and well managed.

SRNS has done an excellent job managing the transition of the workforce to a new contractor and maintaining an excellent safety culture. Based on this assessment, the Team is very confident in recommending that SRNS be removed from transitional status and continue to participate in DOE-VPP at the Star level.

Appendix A: Onsite VPP Assessment Team Roster

Management

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