National Security Technologies, LLC

Report from the Department of Energy
Voluntary Protection Program
Onsite Review
February 13-22, 2012

U.S. Department of Energy
Office of Health, Safety and Security
Office of Health and Safety
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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 implementation by 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. 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 available 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 the National Security Technologies, LLC, during the period of February 13-22, 2012, and provides the Chief Health, Safety and Security Officer with the necessary information to make the final decision regarding its continued participation in DOE-VPP.

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ABBREVIATIONS AND ACRONYMS

AFB	Air Force Base
AHIC	Automated Hazard Identification Checklist
BEEF	Big Explosives Experiment Facility
BLS	Bureau of Labor Statistics
CCD	Core Company Directive
CCHEST	Council on Certification of Health, Environmental and Safety Technologists
CD	Company Directive
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CSI	Continuous Safety Improvement
CSP	Certified Safety Professional
DAF	Device Assembly Facility
DART	Days Away, Restricted or Transferred
dB	Decibels
DNFSB	Defense Nuclear Facilities Safety Board
DOE	Department of Energy
DSA	Documented Safety Analysis
DSC	Downtown Safety Committee
EAT	Emergency Action Team
ES&H	Environment, Safety and Health
ESH&Q	Environment, Safety, Health, and Quality
FEP	Facility Execution Plan
FWIP	Formal Workplace Inspection Program
GET	General Employee Training
HHE	Health Hazard Evaluation
HSS	Office of Health, Safety and Security
ISMS	Integrated Safety Management System
ISO	International Organization for Standardization
JASPER	Joint Actinide Shock Physics Experimental Research
JHA	Job Hazard Analysis
LASC	Labor Alliance Safety Committee
MSR	Medical Service Request
NAICS	North American Industry Classification System
NNSA	National Nuclear Security Administration
NNSS	Nevada National Security Site
NSO	Nevada Site Office
NSTec	National Security Technologies, LLC
OSA	Operational Safety Analysis
OSHA	Occupational Safety and Health Administration
OSH	Occupational Safety and Health
PM	Preventive Maintenance
PPE	Personal Protective Equipment
PTHR	Pre-task Hazard Review

RNCTEC	Radiological/Nuclear Countermeasures Test and Evaluation Complex
RSL	Remote Sensing Laboratory
RWMS	Radioactive Waste Management Site
SEP	Support Execution Plan
SME	Subject Matter Expert
STL	Special Technologies Laboratory
STS	Safety Trained Supervisor
Team	Office of Health, Safety and Security DOE-VPP Team
TPM	Tool Pouch Maintenance
TRC	Total Recordable Case
USFA	United States Fire Administration
VERB	Visual Examination and Repackaging Building
VPP	Voluntary Protection Program

EXECUTIVE SUMMARY

National Security Technologies, LLC (NSTec), was formed in 2005 as a joint venture between Northrop Grumman Corporation (managing partner), AECOM, CH2M HILL, and Nuclear Fuel Services. Headquartered in Las Vegas, Nevada, NSTec manages operations at the Nevada National Security Site (NNSS) and has satellite operations across the country, which include operations in Livermore and Santa Barbara, California; Nellis Air Force Base (AFB), Nevada; Andrews AFB, Maryland; and in Los Alamos, New Mexico. NSTec was admitted to the Department of Energy (DOE) Voluntary Protection Program (VPP) in March 2009, and this assessment marks its first required triennial recertification.

NSTec managers continue to demonstrate an unwavering commitment to safety of the workforce while effectively performing the sites' vital missions. Managers recognize the value of doing more than complying with requirements. They value efforts to improve safety as a worthwhile investment. Visibility of middle managers has improved since 2009. This increased visibility is improving trust and communication with the workforce.

NSTec employees continue to understand their responsibilities to watch for their own and their coworkers' safety. They are fully aware of their rights and responsibilities to pause or stop work if they believe that a safety problem exists. The NSTec safety committees continue to function effectively. NSTec has opportunities to further enhance employee participation in accident and incident investigations and to ensure that employees are fully aware of the purpose of, and interrelationships between, old and new programs before they are implemented. These new efforts reflect NSTec's continued pursuit of safety improvement through employee involvement.

The NSTec work control program introduced in 2009 is an effective process for the identification and evaluation of hazards and the development of controls. Since 2009, NSTec has effectively incorporated controls from hazard analysis into facility procedures. Further improvements can be made by incorporating the hazards and controls into routine work packages.

NSTec continues to appropriately ensure that hazards are controlled via the hierarchy of controls with personal protective equipment (PPE) used only when engineered or administrative controls cannot be practically applied. NSTec maintains a cadre of experienced and certified safety professionals to provide continuous proactive services and programs. However, issues identified in 2009 regarding clarity of safety postings and the expectations for the use of PPE were again noted during this review. NSTec is adopting new technology in its medical program to more effectively evaluate injuries and take a more proactive role in diagnosing cardiac health for firefighters or other personnel that may be at risk.

NSTec continues to have a comprehensive and systematic approach to training that ensures personnel are appropriately trained and qualified prior to performing work within NSTec-managed facilities. The NSTec corporate office in Las Vegas effectively manages the training for all NSTec personnel across the country. Employees continue to receive safety training, which prepares them well to perform their job safely.

Overall, NSTec has a strong worker safety and health program that involves managers, supervisors, and workers in a partnership to safely accomplish its mission. Work performed at

NNSS is often work that cannot be safely performed anywhere else, involves unique hazardous operations, and often includes the potential to expose workers to conditions or materials not normally found in other industries. All personnel interviewed recognized this possibility and were appropriately aware and actively involved. NSTec has addressed all the opportunities for improvement identified in the 2009 DOE-VPP assessment; although in some cases, additional work can be done to further improve performance. NSTec has been actively participating in outreach efforts to the community, attending regional and national conferences, and sharing ideas and lessons learned with other VPP participants. Review of accident and injury logs and cases did not identify any concerns with underreporting of injury cases by NSTec. Rates have been relatively steady over the past 3 years, but remain better than 50 percent below the comparison industry averages, and severity of injuries that occur has been reduced over the past 3 years. NSTec is seeking new and alternative approaches to address these injuries and further improve its performance. The Office of Health, Safety and Security DOE-VPP team recommends that NSTec continue to participate in DOE-VPP at the Star level.

TABLE 1
OPPORTUNITIES FOR IMPROVEMENT

Opportunity for Improvement	Page
NSTec managers should help the CSI team develop more specific, measurable goals related to activities and actions that would lead to reduced rates. These goals should focus on leading indicators for safety.	6
NSTec should benchmark itself against the leading contractors in the DOE complex to determine what might be different at those sites that result in lower injury rates and identify new or revised processes to make the next significant improvement in safety performance.	7
NSTec should evaluate why different groups of employees are treated differently, consider modifications to the existing disciplinary processes to promote a "just culture," and implement a fair and humane approach that takes into account all contributing factors and cultural influences.	8
NSTec should find more effective ways to accommodate work restrictions when possible rather than sending workers home.	8
NSTec should work with the various safety committees to provide greater employee awareness of committee activities, ensure committee efforts are well coordinated, develop meeting agendas, and ensure accurate meeting minutes are maintained and shared.	12
NSTec should encourage the safety committees to revise their charters to clearly specify the terms for members and chairs of the safety committees to foster greater employee participation using more frequent member rotation.	12
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NSTec should consider posting the applicable HHE in a central location within each facility to allow for periodic review and reference by workers in the area.	16
RNCTEC should develop a formal procedure that outlines the process for evaluating, planning, and executing newly proposed testing activities performed for others; captures the expertise currently in place at RNCTEC; and provides guidance for effective and documented tailoring of requirements and controls.	18

STL should maintain complete, control copies of the FEP and SEP where the documents can properly present the information required by the process to demonstrate that mitigating procedures adequately address the hazards presented by specific activities.	18
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NSTec should ensure that JHA and PTHR analyses supporting the selected controls are clearly documented in the analysis documents to include assumptions, sampling results, exposure assessments, work methods, or other applicable information.	20
NSTec should revise FWIP to ensure consistent expectations are established for housekeeping, SME involvement in tailoring checklists and performing inspections, and that all applicable items identified in the program documents are included in the checklists.	20
NSTec should consider evaluating the types of hazards controls in the planning process and reclassify Type 3 packages that may benefit from the application of hierarchical controls.	23
NSTec should ensure that requirements identified in HHEs are appropriately translated into hazard controls, such as equipment labeling and PPE requirements postings.	24
NSTec should ensure controls from JHAs are consistently captured and included in the work instructions for work packages.	24
NSTec should evaluate and determine the expectations for appropriate PPE use and institute a detailed posting system that ensures those expectations are met.	25
NSTec should develop a systematic estimate of costs to repair the exterior lighting at DAF, and then a project plan to conduct those repairs, and use those estimates and plan to repair the system to its original design and reduce risk to workers.	25
NSTec should consider implementing an annual GET refresher or supplementary training to ensure changes to the worker safety and health program are disseminated and areas of particular focus can be emphasized.	29

I. INTRODUCTION

National Security Technologies, LLC (NSTec), was formed in 2005 as a joint venture between Northrop Grumman Corporation (managing partner), AECOM, CH2M HILL, and Nuclear Fuel Services. Headquartered in Las Vegas, Nevada, NSTec manages operations at the Nevada National Security Site (NNSS) and has satellite operations across the country, which includes operations in Livermore and Santa Barbara, California; Nellis Air Force Base (AFB), Nevada; Andrews AFB, Maryland; and in Los Alamos, New Mexico. The Livermore and Los Alamos operations are separate participants in the Department of Energy (DOE) Voluntary Protection Program (VPP). This report addresses the balance of the NSTec facilities in Nevada, California, and Maryland. NSTec was admitted to DOE-VPP in March 2009, and this assessment marks its first required triennial recertification.

NSTec's primary mission is managing operations at NNSS and related facilities and laboratories. In connection with that mission, NSTec also works on projects for other Federal Agencies, such as the Defense Threat Reduction Agency, National Aeronautics and Space Administration, Nuclear Regulatory Commission, Department of Homeland Security, United States (U.S.) Air Force, U.S. Army, and U.S. Navy.

NNSS is a massive outdoor laboratory and national experimental center. Larger than the State of Rhode Island and approximately 1,375 square miles in area, NNSS is one of the largest, restricted access areas in the United States. The remote site is surrounded by thousands of additional acres of land withdrawn from the public domain for use as a protected wildlife range and for a military gunnery range, creating an unpopulated land area comprising some 5,470 square miles.

Initially established by President Truman as the Nevada Proving Grounds, and later known as the Nevada Test Site, the site was the Atomic Energy Commission's on-continent proving ground. NNSS has seen more than four decades of nuclear weapons testing. Since the nuclear weapons testing moratorium in 1992 and under the direction of DOE, site use has diversified into many other programs, such as hazardous chemical spill testing, emergency response training, conventional weapons testing, and waste management and environmental technology studies. With the increasing emphasis on work related to national security, the site name was changed to NNSS in 2011.

Located within the boundaries of NNSS, the base camp of Mercury has many of the amenities found in a typical small town. Housing, medical services, fire protection, law enforcement and security, and a cafeteria are all onsite. There are more than 1,100 buildings valued at more than $700 million. There is housing for more than 1,200 people, offices, laboratories, warehouses, training facilities, a hospital, a post office, a fire station, a sheriff's substation, and a large motor pool complete with repair facilities. There are 400 miles of paved roads and 300 miles of unpaved roads, three airstrips, and 10 heliports, as well as several active water wells and an electric power transmission system. Programs are in place to ensure environmental protection and the safety and health of the workforce.

NNSS is also home to several facilities with missions important to the Nuclear Stockpile Stewardship program, Homeland Security, military training and tests, or DOE Environmental Restoration. Facilities include the Device Assembly Facility (DAF), the Joint Actinide Shock

Physics Experimental Research (JASPER) facility, the U1A Sub-Criticality Experiments complex, the Nonproliferation Test and Evaluation Complex, the Big Explosives Experiment Facility (BEEF), the Critical Experiments Facility, the Visual Examination and Repackaging Building (VERB), and several others. In addition to the facilities at NNSS, NSTec also manages operations at the Remote Sensing Laboratories (RSL) at Nellis AFB and Andrews AFB, and the Special Technologies Laboratory (STL) in Santa Barbara, California. These facilities develop and deploy special sensing technology often used in conjunction with the Departments of Defense and Homeland Security.

Since its first certification, NSTec has received two consecutive Superior Star awards for outstanding mentoring, community outreach, and maintaining accident and injury rates approaching or exceeding 50 percent better than the comparison industry. The Southern Nevada Building and Construction Trades Council, the American Federation of Labor and Congress of Industrial Organizations (AFL/CIO) (and its signatory unions), and the Southern Nevada Labor Alliance represent the 28 separate bargaining units that comprise the NSTec labor force. These collective unions continue to support and endorse NSTec and its participation in DOE-VPP.

The Office of Health, Safety and Security (HSS) DOE-VPP team (Team) had contact with many employees, managers, and supervisors either formally (during scheduled interviews) or during observation of work activities. Hazards at the NSTec facilities run the entire gamut, including residual radioactive contamination from historical operations, hazardous chemicals, high-voltage electricity, hazards associated with mining and underground activities, aviation, weather extremes, heavy equipment, shop machining and welding, and the range of biological hazards associated with the desert southwest.

II. INJURY INCIDENCE/LOST WORKDAYS CASE RATE

Table 2.1 Injury Incidence/Lost Workdays Case Rate (NSTec)					
Calendar Year	Hours Worked	Total Recordable Cases (TRC)	TRC Rate	DART* Cases	DART Case Rate
2009	4,590,612	34	1.48	10	0.44
2010	4,601,728	34	1.48	13	0.57
2011	4,632,817	30	1.30	7	0.30
Last 3 Years	13,825,157	98	1.42	30	0.43
Bureau of Labor Statistics (BLS-2010) average for NAICS** Code #5612 Facility Support Services			3.6		1.9

Table 2.2 Injury Incidence/Lost Workdays Case Rate (Subcontractor)					
Calendar Year	Hours Worked	TRC	TRC Incidence Rate	DART Cases	DART Case Rate
2009	276,663	3	2.17	2	1.45
2010	263,889	6	4.55	3	2.27
2011	176,367	2	2.27	1	1.13
Last 3 Years	716,919	11	3.07	6	1.67
Bureau of Labor Statistics (BLS-2010) average for NAICS Code #5612 Facility Support Services			3.6		1.9

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

TRC Rate, including subcontractors: 1.50
DART case rate, including subcontractors: .50

Conclusion

Review of accident and injury logs and cases did not identify any concerns with underreporting of injury cases by NSTec. In recent months, the Medical Director has begun tracking injury severity using his own scale, and that is showing reduction in the overall severity of injuries that occur, with most injuries occurring due to slips, trips, and falls outside of planned work activities. Injury rates have been relatively steady over the past 3 years. Subcontractor rates spiked during 2010 over the comparison industry average, but were reduced again in 2011 through more proactive management by NSTec of its subcontractors. TRC and DART case rates are better than 50 percent below the comparison industry averages and fully meet the expectations for continued participation in DOE-VPP at the Star level.

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.

In 2009, the Team found that NSTec managers had effectively demonstrated their commitment and leadership toward safety excellence. They were actively involved in monitoring key performance indicators and had developed a trusting relationship with the workforce, provided necessary resources and expertise, and clearly established expectations that NSTec will accomplish its mission safely. They had successfully overcome cultural issues that stood between the national laboratories and previous site contractors and were successfully marketing NNSS to other Government users. The combination of commitment to safety and the importance of the NNSS mission to national security were having a positive effect on the entire workforce.

NSTec continues to maintain a comprehensive documented system for worker safety and health that includes all contractual and regulatory requirements. In accordance with National Nuclear Security Administration (NNSA) expectations, NSTec is effectively implementing applicable industry standards. In many cases, NSTec is pursuing recognition and has received several certifications that reflect excellent performance. Those certifications include: International Organization for Standardization (ISO) 14001, Environmental Management Systems and ISO 9001, Quality Management Systems certifications; DOE Laboratory Accreditation Program for Personal Dosimetry and Radiobioassay Analysis ISO/International Electrotechnical Commission 17025 General Requirements for the Competence of Calibration and Testing Laboratories; DOE Earned Value Management System; and Line Oversight Contractor Assurance System Certification affirmed by NNSA Nevada Site Office (NSO). In addition, NSTec is pursuing International Standard, Business Aircraft Operations Certification.

All managers interviewed by the Team clearly expressed their belief that safety was not only an expectation, but reflected a significant business advantage to NSTec. They understand that the work they support for national security often poses significant hazards and risks; and the ability to eliminate, mitigate, and control those risks while obtaining vital data is an essential element of their mission. Systems and policies in place reflect the corporate ethic and are used as a means to ensure costs associated with safety are an effective investment.

The effectiveness of these management systems is periodically reviewed by multiple organizations, both internal and external. External reviews include the Parent Organization Oversight Committee, NSO, the Defense Nuclear Facilities Safety Board (DNFSB), and the HSS Office of Enforcement and Oversight. NSTec consistently treats these external reviews as an opportunity to learn and improve its processes. For example, in 2009, technical staff members

from DNSFB issued a technical report on work planning and control based on observations at the DAF and the underground experimental facility, U1A. NSTec used these observations to make further improvements to its work planning and control process, simplify the process for low hazard activities, and improve the planning for activities that might affect the nuclear safety envelope. Internal reviews include a multitude of Executive Leadership Councils and internal assessments. The Executive Leadership Councils continue to meet regularly and review detailed performance statistics through the dashboard system.

NSTec continues to provide sufficient resources for safety and health. Since 2009, the Environment, Safety, and Health (ES&H) directorate has been reorganized to better reflect the mission, provide a separation between compliance and quality evaluations, and become more responsive to customer needs. As was the case in the 2009 review, the Environment, Safety, Health, and Quality (ESH&Q) division is staffed to ensure processes and programs are in place to protect the workers, the public, and the environment. Resources include, but are not limited to, fire protection engineers and mine rescue personnel who are called upon by the ESH&Q staff as necessary for technical reviews and regulatory interpretations. The Occupational Safety and Health (OSH) department has 13 Certified Safety Professionals (CSP) and Certified Industrial Hygienists (CIH) (several with advanced degrees and multiple degrees) and two PhDs. The medical staff has three licensed physicians and four clinical nurses. Various individuals performing the analysis on the hazards are CSPs, CIHs, environmental specialists, radiological engineers, radiological technicians, degreed mining experts, and certified fire protection engineers. No personnel contacted by the Team indicated any difficulty obtaining necessary support for safety and industrial hygiene when requested, including personnel stationed at forward areas of the site.

In 2009, the Team identified increased visibility of middle managers as an opportunity for improvement. In response to that opportunity, NSTec implemented a “Boots on the Ground” initiative to establish clearer expectations for all levels of management for field presence and observations. As a result of that initiative, managers have become more visible and accessible to workers. The 2011 VPP Employee Safety Opinion survey had a 91 percent favorable rating in a grouping of questions related to Management Leadership and Commitment. This was consistent with Team observations and interviews where nearly all employees spoke favorably regarding their supervisors and managers. In a very small minority of cases, employees were not sure they could identify their upper-level managers.

In 2009, the Team also identified as an opportunity for improvement that NSTec managers should ensure the Employee Safety Committee was treated on par with the Labor Alliance Safety Committee (LASC) and the Downtown Safety Committee (DSC). In response to that opportunity, the Employee Safety Committee was combined with the DSC. Newsletters and other publications from both committees indicate they are actively supported by NSTec managers. After admission to DOE-VPP, NSTec revised its safety committee structure and changed the VPP Implementing Committee to the Continuous Safety Improvement (CSI) Team. The team consists of representatives from each of the directorates, representatives from the LASC and DSC, Occupational Medicine, and each of the outlying locations. The CSI team takes primary responsibility for the annual VPP self-evaluation and establishment of annual improvement goals. The CSI team has taken ownership of this responsibility, but needs additional management support and encouragement to effectively establish more measurable and

challenging goals. For example, a goal for both 2010 and 2011 was to "Improve safety and health performance indicators with downward or stable trends for TRC rates and DART case rates." That goal was evaluated as "met" in 2010 despite the fact that the overall TRC rate increased from 1.52 in 2009, to 1.60 in 2010. Rather than establishing nonspecific goals related to TRC and DART case rates, NSTec managers should help the CSI team develop more specific, measurable goals related to activities and actions that would lead to reduced rates. These goals should focus on leading indicators for safety. Some examples that NSTec might consider include: hours spent by managers and supervisors observing work activities; number of personnel participating in job hazard analysis, worksite safety inspections, peer safety observations, or work planning walkdowns; number of exposure assessments; preventive versus corrective maintenance ratios; and attendance at safety committee meetings. Using these measurements to establish initial baselines and then monitoring for increases or decreases can be effective long-lead indicators of overall safety performance, and can be used to establish annual performance improvement goals.

Opportunity for Improvement: NSTec managers should help the CSI team develop more specific, measurable goals related to activities and actions that would lead to reduced rates. These goals should focus on leading indicators for safety.

The most significant opportunity for improvement identified by the Team for NSTec managers is related to establishing a company-wide model for safety culture, using that model to identify a more strategic approach to safety improvement, and basing safety improvement goals and objectives on that approach. NSTec has identified goals for each of the past few years within its annual assessments. However, most of the goals identified are generic in nature without clear objectives to meet those goals. For example, one goal that appears consistently is to reduce TRC and DART case rates. However, apart from added training and other antecedents there are no mechanisms or tools to make those reductions in Occupational Safety and Health Administration (OSHA) rates. With NSTec rates averaging about 1.5 for TRC and 0.5 for DART, they perform markedly better than the comparison industry. However, when compared with the rest of the DOE complex, they do not fare as well. The leaders in the DOE complex rates average around 0.5 for TRC and 0.11 for DART. Efforts to improve safety over the past 3 years have only demonstrated limited effectiveness. There have been improvements in some areas, such as TRC and DART case rates for craft personnel, but overall company rates have been relatively steady between 2009 and 2011, and subcontractor TRC and DART case rates are much higher than the company rates. NSTec should benchmark itself against DOE leaders to determine what might be different at those sites that results in lower injury rates. Most of the leaders in the DOE complex have provided "tools" for workers to help in this area, tools which are centered on improving safety culture and improving individual, team, and organizational interactions. Those tools include Behavior-Based Safety, Human Performance Improvement, Safety Conscious Work Environment, and Highly Reliable Organizations. There are many resources available to NSTec at little or no cost. NSTec should explore those available resources to determine if it can benefit from these processes.

Opportunity for Improvement: NSTec should benchmark itself against the leading contractors in the DOE complex to determine what might be different at those sites that result in lower injury rates and identify new or revised processes to make the next significant improvement in safety performance.

Two observations from the 2011 safety survey appeared significant to the Team. The first observation was that approximately 30 percent of managers and supervisors responded on the annual survey report that they do not participate in regular assessments or inspections. This condition should be reviewed further to determine why these managers do not participate, find avenues to encourage them to participate where appropriate, and link participation to annual performance measures and goals.

A second observation was that 12 percent of survey respondents indicated that they had a fear of reprisal. This number was not consistent with interviews and observations during this VPP assessment. It may have been partly attributable to the survey structure. For all answers before and after that question a "yes" response was a positive indicator, but for this question a "yes" was a negative indicator. None of the personnel interviewed by the Team indicated any fear of reprisal for raising safety concerns or identifying safety issues.

Another contributor to this response might be the NSTec policy in which employees are given one day off without pay if they are involved in an "at-fault" accident involving a government vehicle. While the Team has no evidence to support this, some workers believed this policy would not apply to the senior managers at the site. This issue is the root of some discontent by employees. Managers could improve their trust factor by reinforcing the fact that this policy does apply to managers and employees alike, including top level managers. A better solution would be to modify the policy to ensure consideration of other factors contributing to "at-fault" accidents related to human performance considerations and addressing those factors rather than enforcing a universal 1-day suspension.

Another issue raised by workers related to the disciplinary process was a perceived disparity in response to a positive drug test result. This disparity can be a barrier to trust between employees and managers. Fair and consistent use of appropriate discipline is a key element of a "just culture" and essential to establishing and maintaining a strong safety culture. Per the bargaining unit contracts, bargaining unit employees have the option to have the test redone at an independent laboratory and are given a "second chance" after receiving counseling. They are terminated if they refuse counseling. The nonbargaining unit employees are terminated if their initial test is positive without the independent test or counseling options. The rationale for this disparate treatment of union and nonunion employees was not clear to the workers and was perceived as unjust by some nonbargaining unit employees. NSTec should evaluate why different groups of employees are treated differently and consider modifications to the existing disciplinary processes to promote a "just culture" and implement a fair and humane approach that takes into account all contributing factors and cultural influences.

Opportunity for Improvement: NSTec should evaluate why different groups of employees are treated differently, consider modifications to the existing disciplinary processes to promote a "just culture," and implement a fair and humane approach that takes into account all contributing factors and cultural influences.

One final condition that should be addressed by NSTec relates to how work restrictions are treated in the event of an injury. When reviewing the accident and injury statistics for 2011, the Team observed that there were two cases of work restrictions, but 5 lost workday cases. Normally there are more restricted cases than lost workday cases. Further review showed that many supervisors and managers are not receptive to accommodating work restrictions. Managers and supervisors are faced with several competing issues in accommodating work restrictions that include bargaining unit jurisdiction and concerns about personnel not performing beneficial work to the company while restrictions are in effect. Consequently, workers are sent home when they might have been able to remain on the job in a restricted condition. When workers are sent home, they are allowed to charge their time to "injury time" and receive full pay for the remaining day of the injury and can remain in pay status for up to 3 additional days. After that time, insurance covers the worker's pay up to 66 2/3 percent while NSTec covers part of the difference up to 75 percent of pay. The final 25 percent must be taken as paid time off by the worker if they have the vacation time available. The net result is that a worker must either use personal time or take a cut in pay for an injury that would not result in a lost workday if work restrictions were possible. Although not reported by any workers, this condition could potentially prevent workers from reporting an injury if they believe it might result in them being sent home rather than accommodated. NSTec should find more effective ways to accommodate work restrictions when possible rather than sending workers home. Work assignments could include reviews of existing work procedures, job hazard analyses (JHA), and performance of safety observations at worksites in addition to the more traditional approaches, such as accelerated training.

Opportunity for Improvement: NSTec should find more effective ways to accommodate work restrictions when possible rather than sending workers home.

NSTec continues to effectively implement safety and health requirements through subcontracts. ES&H requirements for subcontractors are implemented via Exhibit E of the contract document. The exhibit "E" provides clear roles and responsibilities with regard to safety management in addition to subcontractor commitments, expectations, and Integrated Safety Management components. The exhibit "E" requires the approval of a subcontractor safety and health plan, along with completion of the Subcontractor Hazard Identification checklist. In addition to an assigned Subcontract Technical Representative, NSTec also assigns a resident safety professional. The NSTec resident safety professional reviews and approves the subcontractor's safety and health plan. Industrial Hygiene is contacted as required. Responsibilities of the resident safety professional include periodically monitoring the performance of the subcontractor. In response to a rise in subcontractor injuries in 2010, NSTec implemented a series of corrective actions to ensure subcontractors were aware of safety and health requirements and expectations while performing work at NNSS. These actions include modifying the exhibit "E," additional briefings prior to performing work, and training for

Subcontract Technical Representatives. NSTec saw a significant reduction in subcontractor injury rates in 2011.

Conclusion

NSTec managers continue to demonstrate an unwavering commitment to safety of the workforce while effectively performing the site's vital missions. Managers recognized the value of doing more than complying with requirements. They recognized efforts to improve safety as a worthwhile investment. Visibility of middle managers has improved since 2009. This increased visibility is improving trust and communication with the workforce. NSTec should consider modifying some aspects of the disciplinary policy and accommodation of work restrictions in order to preempt worker perceptions of unfair treatment and ensure workers are not dissuaded from reporting injuries. NSTec continues to meet the expectations of Management Leadership and Commitment for participation in DOE-VPP at the Star level.

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 right of an individual 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 is crucial and welcome. Managers must be proactive in recognizing, encouraging, facilitating, and rewarding workers for their participation and contribution. Both employees and managers must communicate effectively and participate collaboratively in open forums to discuss continuing improvements to recognize and resolve issues and to learn from their experiences.

As noted in the 2009 assessment, NSTec employees continue to have multiple opportunities to participate in safety and health programs. Employees are encouraged to participate in monthly safety meetings by presenting a safety topic that they feel is pertinent or they may select a topic from the NSTec's corporate safety topics, which are posted on NSTec's home page. Employees can also volunteer to serve on various safety committees, such as the CSI Team, LASC, DSC, or the Emergency Action Team (EAT). As noted by the 2009 Team, employees understand their right to pause or stop work in the event of a safety concern or issue. They also understand how to report safety issues and concerns and expressed their comfort in doing so.

Managers' open-door policies allow employees to raise safety issues without fear of reprisals. Managers' commitment to employee safety is demonstrated through safety shares at the beginning of all meetings, participation on safety committees, Stop Work, Safety Pause, and the "Great Catch" program. During the Team interviews, the employees stated that managers share information regularly on safety topics, medical information, pertinent safety issues, and safety briefings.

EAT provides one of the broadest opportunities for employees to participate in the safety program. As observed in 2009, EAT members serve as wing or floor wardens during emergencies and assist in ensuring all workers are accounted for and out of the building in the event of an evacuation. EAT members are visibly identified by a yellow triangle-shaped sign located outside their office cubicles. Since 2009, members have taken part in active shooter, fire evacuation, and shelter-in-place drills.

Since 2009, the Medical Department has continued to encourage increased employee participation in the Wellness Program. Employees reported to the Team that they enjoy participating in these events. Relevant health topics, such as weight loss and exercise programs, are presented to employees in creative ways to encourage maximum employee participation. Popular examples mentioned by employees were the stair walk and wheelchair races and the distribution of toothbrushes during dental month. A calendar of events is published regularly to inform employees of planned activities. Special promotions, such as Valentine's Day massages and facials for stress relief, are offered to employees for a minimal charge. "Lunch and Learn" presentations are frequent, and health fairs with outside vendors are organized periodically.

These activities are designed, in part, based on employee feedback and are viewed positively by employees.

Several safety committees meet regularly to discuss safety issues, concerns, and promote safety awareness. The LASC was organized many years ago to represent bargaining unit employees at the site and continues to be an effective venue. In 2009, the Team identified that NSTec needed to ensure that the Employee Safety Committee, which represented nonbargaining unit workers at the North Las Vegas site, was treated on par with DSC that represented bargaining unit employees at the North Las Vegas site. To address this observation, bargaining unit employees agreed to combine the two committees into a single DSC. Finally, the VPP Implementation Team and the Employee Involvement Team were combined and reorganized to form CSI. These realignments helped increase worker participation and focused NSTec on the long-term improvements expected of a DOE-VPP Star participant.

These committees continue to be dedicated to promoting employee safety. For example, NSTec sponsors the Annual Safety Calendar Artwork Contest to promote safety at work and at employees' homes. In this contest, the employees' children submit their artwork depicting various safety topics. Thirteen winners are selected by the CSI Team each year, and the winners' artwork is displayed in the next year's calendar. Winners are awarded a $50 U.S. Savings Bond. They also receive 12 copies of the calendar to give to their families and friends. All NSTec employees are also given a copy of the calendar. The LASC also produces a high-quality monthly newsletter that is widely distributed.

Even though the committees are active and effective in providing a voice for employees in the safety program, NSTec should work with the committees to further improve operation of the committees. The Team noted that the formality of conducting meetings varies widely among the safety committees. The LASC meetings are conducted following a written agenda. Previously identified safety items and their resolution are discussed, and minutes of the meeting are prepared and archived. The DSC meetings on the other hand are informal without written agenda or meeting minutes. However, the interviewed employees reported they receive safety information from the safety committees during safety meetings conducted by their supervisors.

Safety committee members interviewed by the Team believed that they add value to NSTec, but were not confident they knew about other safety committees' activities. NSTec should provide more information to employees regarding the safety committee activities. In order to ensure that meetings are efficiently run and that meeting discussions are fully captured, NSTec should work with all the safety committees to establish a common understanding and expectation for agendas to be prepared and minutes kept for all safety committee meetings. Where necessary, NSTec should ensure appropriately skilled administrative personnel participate in these meetings to assist with those functions. To improve awareness by safety committee members of other safety committees' activities, improve coordination between committees, and reduce redundant or conflicting efforts, the agendas and minutes should be shared and distributed among the safety committees or posted on a Web site for access by all employees.

Opportunity for Improvement: NSTec should work with the various safety committees to provide greater employee awareness of committee activities, ensure committee efforts are well coordinated, develop meeting agendas, and ensure accurate meeting minutes are maintained and shared.

At the NSTec satellite sites (RSL at Nellis AFB, STL at Santa Barbara, and RSL at Andrews AFB), safety committee leadership is the responsibility of the facilities' safety and health professionals. Due to the satellite sites' limited number of employees and significant travel duties, employee membership in the safety committees has been a challenge. Responsibility for, participation with, and dissemination of, NSTec safety committee information falls to the safety and health personnel. Observations of the three satellite sites demonstrated effective communication and implementation of NSTec safety topics and programs. However, employee participation in the safety committee leadership at those satellite sites would provide more valuable input when tailoring the NSTec safety topics to the individual needs of the satellite facilities.

The Team noted that the safety committee charters do not specify the length of time that the members and chairs can serve. The Team was told that vacancies typically occur due to retirement or reassignment. Replacement members may be suggested by managers, but are approved by the remaining committee members. Although not a widespread problem, in some cases this practice may create a workforce perception that managers' favorites are selected for these positions. NSTec should encourage the safety committees to revise their charters to clearly specify the terms for members and chairs of the safety committees to foster greater employee participation using more frequent member rotation.

Opportunity for Improvement: NSTec should encourage the safety committees to revise their charters to clearly specify the terms for members and chairs of the safety committees to foster greater employee participation using more frequent member rotation.

The NSTec Occupational Safety Manager is highly regarded by all employees interviewed by the Team. Generally regarded by most employees as "Mr. VPP," he has been a key element of the NSTec effort to achieve and maintain DOE-VPP Star status. He has also served on several DOE-VPP assessment teams. He is now working to encourage a younger nonmanager employee to take over that role of VPP leadership. These efforts should be encouraged as a means of continuing to foster greater employee ownership of VPP. NSTec should also encourage other employees to participate on DOE-VPP assessments of other DOE-VPP sites as a means of broadening their experience with the program.

The Great Catch Program noted in 2009 continues to be recognized by all of the employees interviewed and was seen by those employees as a positive effort. Most employees could explain the process; i.e., how to submit safety hazards, concerns, and suggestions. Numerous employees interviewed stated that they had received the $25 Great Catch awards. For example, one employee, a member of the EAT team, requested to accompany a safety engineer on a walkthrough of her building. The safety engineer submitted her name for a Great Catch award for her proactive safety attitude and participation. Another employee received a Great Catch

award for calling a "Time Out." Yet another employee received a Great Catch for suggesting use of hand sanitizer to prevent the spread of germs while handling a work package.

Other cash awards include Star awards; safety employee of the month; and monthly, quarterly, and annual awards that are used to recognize and foster safety improvements. In addition to those merit awards, NSTec holds special drawings throughout the year (quarterly/annually) where employee participation in different safety activities makes them eligible for merchandise, such as laptops, mountain bikes, and even iPhones.® NSTec has avoided the appearance of discouraging reporting of safety issues, injuries, or accidents by ensuring personnel involved in events, injuries, or accidents are not disqualified from participating in these award programs, even when the awards are highly valued.

Newsletter communications are viewed positively and used by the employees. All employees have access to three publications through the NSTec home page: Front Page, Labor Alliance Safety, and Safety Cents. A fourth publication, "Spotlight," is available on the homepage and is also mailed to each employee's home to encourage off-the-job (home) safety. An example of the success of this approach is that one employee's son now insists on using PPE, such as safety glasses, when performing tasks at home when eye hazards are present, such as working with power tools.

Although most employees were aware of NSTec's Safety Suggestion Program, which has been in place since 2004, many employees do not use the system to document their suggestions. NSTec has been using Potential Hazard Cards as a means for employees to report safety problems. Based on a session presented at a Voluntary Protection Programs Participants' Association National conference, NSTec decided to supplement these cards with safety logbooks located in cafeterias, lunchrooms, and many other locations both in town and at NNSS. Currently, employees can use either the safety logbook or the potential hazard card to report a safety issue. Suggestions can also be submitted through the NSTec homepage. The safety logbooks were implemented very quickly without training or briefing employees on the purpose or use of the safety logbooks. Employees interviewed by the Team exhibited some confusion about which program they should use to submit suggestions or issues. NSTec should provide guidance and briefings to workers on each of these programs to ensure that the employees clearly understand the purposes and how the programs are used.

A new employee suggestion program, Bright Ideas, is scheduled to roll out later this year. The program is designed to encourage and reward employee suggestions. Employees will be able to submit all types of suggestions for improvement, such as efficiencies, savings, and productivity, as well as safety suggestions through a Sharepoint® site. This program will allow employees to view suggestions in the system at any time and check progress of their own suggestions. When this program is initiated, there could be additional confusion and conflict with the Great Catch program. Managers are aware of this concern, but have not yet developed a plan to address it. Extensive effort to market and advertise this program is planned prior to its implementation. While the current Safety Suggestion Program provides monthly ($100), quarterly ($500), and annual ($5,000) awards, the monetary amount for Bright Ideas awards has not yet been established.

Opportunity for Improvement: NSTec should provide guidance and briefings to workers on the Safety Suggestion Program, Potential Hazard Cards, safety logbooks, and the new Bright Ideas program to ensure workers clearly understand the criteria and uses of the programs and minimize employee confusion among the programs prior to initiating the new program.

When accidents or incidents occur, meaningful employee involvement is essential to ensure the worker's perspective is understood and identified corrective actions are meaningful to workers. Employee participation on accident or incident investigations, beyond witness or participant statements, is extremely valuable to ensuring the investigation team results are effective. At NSTec, employee participation on accident or incident investigation teams is generally limited to witness or participant statements during the investigation. For example, two recent accident forms were reviewed by the Team. Only the effected employees and the safety and management representatives were included in the incident investigation. The forms included corrective actions recommended by the affected employee to prevent a similar event from occurring in the future. The employees' recommendations had not been implemented in either case, and the employees had not received feedback on those recommendations. Discussions with the safety and management representatives indicated that there were valid reasons why those recommendations had not been accepted.

Greater participation by employees in the investigation process would help employees provide more meaningful recommendations, improve feedback to affected employees regarding recommendations, and ensure managers and safety personnel clearly understand the employees' perspective. NSTec should look for mechanisms to broaden employee participation on investigation teams. These efforts might include training safety committee members in accident and incident investigation and allowing them to participate as investigation team members.

Opportunity for Improvement: NSTec should look for means to broaden meaningful employee participation on accident or incident investigation teams and should ensure feedback to employees' corrective action recommendations.

Conclusion

NSTec employees continue to understand their responsibilities to watch for their own and their coworkers' safety. They are fully aware of their rights and responsibilities to pause or stop work if they believe that a safety problem exists. The NSTec safety committees continue to function effectively. NSTec has opportunities to further enhance employee participation in accident and incident investigations and to ensure that employees are fully aware of the purpose of, and interrelationships between, old and new programs before they are implemented. These new efforts reflect NSTec's continued pursuit of safety improvement through employee involvement. NSTec continues to meet the expectations of the Employee Involvement tenet of DOE-VPP at the Star level.

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.

During the 2009 VPP review, NSTec was in the process of rolling out two significantly new processes. The first was an entirely new work control process for which the NSTec planners were still being trained in preparation for implementation. The second initiative was the Formal Workplace Inspection Program (FWIP), which was designed to provide a detailed framework to ensure consistency in workplace inspections across the site. The Team's recommendations for improvements at that time were to ensure that scheduling of training for the work control process was coordinated properly and that individual facility legacy issues be incorporated in FWIP and for any findings identified in the FWIP process to be captured in caWeb, the NSTec corporate corrective action tracking system.

During this review, the Team revisited these processes to evaluate the effectiveness of their implementation. Overall, the new work control process implementation was determined to be effective. In addition to the newly incorporated work control program, NSTec has introduced a new designation to address simple low hazard work called tool pouch maintenance (TPM), which allows for lesser controls for preanalyzed low hazard work. The Team evaluated this new process and did not find any evidence this new categorization would negatively affect safety. In fact, review of accident injury cases demonstrated that incidents were less likely to occur in those activities preapproved for TPM.

NSTec has developed baseline health and safety surveys and analyses that are required to be conducted by qualified medical personnel, industrial hygienists, and safety specialists to identify hazards, determine risks, ensure awareness, and control of those risks. Baseline Exposure Evaluations have been performed and are documented for facility hazards at NSTec through the Health Hazard Evaluation (HHE) process. The HHE provides documentation for:

- Facility health hazards and hazards associated with ongoing work processes;
- Effectiveness of controls implemented;
- Ensuring industrial hygiene program requirements are being met;
- Preparing a health hazard inventory; and
- Preparing the HHE and updating the facility folder.

Several HHEs were reviewed and found to be comprehensive and thorough. The HHEs included General Occupational Health, Noise Control, Respiratory Protection, Hazardous Materials, Confined Spaces, Laser Safety, Nonionizing Radiation, Hanta Virus Prevention, Asbestos, Lead Control, and Laboratory Chemical Hygiene. In addition, per the HHE, all affected employees

are required to be briefed on the results of HHE. The content of the analysis includes a list of deficiencies, recommendations, and corrective actions. The Team interviewed industrial hygienists and reviewed several baseline documents and determined that overall the process is effective at capturing the details with respect to baseline hazard exposure analysis. Interviews with safety and health professionals indicated that occupational health professionals (doctors and nurses) are included in periodic safety walkdowns to identify hazards and recommend appropriate controls. HHEs are reviewed on a periodic schedule depending on the building classifications for which they are developed. Three teams comprised from the Industrial Hygiene Group are assigned quarterly evaluations of HHEs. Periodic building reclassification meetings are held when reviewed HHEs reveal changes in their respective building locations. Building reclassification decisions are made collectively through these discussions. Changes are captured in caWeb, and in the revised HHE.

As in 2009, hazards associated with project and/or process activities continue to be identified in the Support Execution and Facility Execution plans. Hazards associated with the facility are identified during the initial occupancy inspection and also during followup routine inspections. Process hazards are identified in work packages, procedures, and other work authorization documents. Hazard analysis documents include safety and health plans, industrial hygiene surveys, fire hazards analyses, human performance surveys, documented safety analyses (DSA), execution plans, and criticality assessments. NSTec continues to perform analysis of all planned, new, or newly acquired equipment, materials, and processes before use to identify hazards, assess risks, and plan for prevention and control in accordance with the Core Company Directive (CCD) CCD-QA05.001-003, *Activity Level Hazard Analysis Process.* The hazard analysis that is performed within the NSTec process requires input from affected workers, users, managers, and the customer. This approach starts with work packages specific to work areas, such as maintenance, laboratories, machine shops, or contractor work. Within some work areas, such as the Radioactive Waste Management Site (RWMS), specific work activities are controlled by procedures that are developed along with the associated JHA.

While HHEs are performed and were observed to be comprehensive, knowledge of the HHE content by facility occupants and supervisors needs improvement. For example, in Building B7 (maintenance shop), the content of the HHE was not readily available to occupants and when employees were interviewed, their knowledge regarding content was low. Specifically, facility occupants and supervisors were familiar with the hazards directly associated with their work, but not necessarily with hazards associated with adjacent work that was addressed in the HHE. NSTec should consider posting the applicable HHE in a central location within each facility to allow for periodic review and reference by workers in the area. The content could also be subject matter for safety meetings.

Opportunity for Improvement: NSTec should consider posting the applicable HHE in a central location within each facility to allow for periodic review and reference by workers in the area.

NSTec has established processes to identify potential hazards associated with proposed work activities, assess the potential worker injury/illness risk, and evaluate facility conditions. These processes include design reviews, task-level hazard analyses, readiness reviews, and monthly

facility walkthroughs, inspections, and operations evaluations. Other processes used to support identification and assessment activities include:

- Comprehensive Health Hazard Evaluations;
- Facility Execution Plans;
- Formal Workplace Inspection Program;
- Radiological Surveys;
- Electrical Inspections;
- Facility equipment inspections; and
- Management Assessments.

The performance frequency of these processes is determined by a series of factors, including operational risk and governing regulatory criteria, and provides the basis for ensuring worksite areas of NSTec and satellite locations are evaluated at least quarterly.

The Radiological/Nuclear Countermeasures Test and Evaluation Complex (RNCTEC) provides a unique capability for customers to evaluate real life scenarios for nuclear and radiological sensing/monitoring operations providing both a suitable location and the necessary radiological sources for the tests. The Department of Homeland Security is the primary customer at RNCTEC, but work is also performed for other customers. The customer provides a test plan request, and then RNCTEC develops the procedure and safety plan for the activity that is intended to meet DOE and NSTec requirements. RNCTEC operates to the Operational Safety Analysis (OSA), which provides for the safety envelope for the facility. RNCTEC was originally intended to be a Hazard Category 2 nuclear facility. Subsequently, its categorization was reduced to a radiological facility. As a Hazard Category 2 nuclear facility, a DSA that would have required DOE/NNSA approval was being prepared. When the decision was made to reduce the hazard categorization, NSTec adopted that safety analysis for the work at RNCTEC, and implemented it as the OSA. It is currently being reviewed and revised.

The RNCTEC facility manager uses a broad, time-phased, and comprehensive checklist to evaluate and approve a customer's test for safe operation. However, that checklist is not a formal requirement or procedure, and there is no reference to NSTec or DOE requirements and policies for environment, safety, and health or to OSA. This process was developed out of a desire by RNCTEC personnel to maintain maximum flexibility of the evaluation process to support customer needs. As a result, the RNCTEC approach for analyzing and approving test plan requests has not been properly evaluated or authorized per the NSTec Integrated Safety Management System (ISMS) requirements for analyzing work. In addition, the use of the informal checklist relies heavily on the expertise of current personnel to ensure it is used properly. Therefore, the effectiveness of this process is highly dependent on individual expertise rather than a systematic approach.

RNCTEC has not documented this approach in a formal technical procedure. RNCTEC could more clearly document the scope of work (test) to be performed, then capture the analysis requirements for each test evaluation and directly link it to the limits of any assumptions by using a formal technical procedure. In addition, a formal procedure could transform the current expert-based process to one providing more systematic use of the checklist. The procedure should allow for flexibility and effective tailoring of controls, but it should also include

appropriate reviews and approvals. RNCTEC should develop a formal procedure that outlines the process for evaluating, planning, and executing newly proposed testing activities performed for others; captures the expertise currently in place at RNCTEC; and provides guidance for effective and documented tailoring of requirements and controls.

Opportunity for Improvement: RNCTEC should develop a formal procedure that outlines the process for evaluating, planning, and executing newly proposed testing activities performed for others; captures the expertise currently in place at RNCTEC; and provides guidance for effective and documented tailoring of requirements and controls.

Interviews at STL in the Santa Barbara facility identified a deficiency in the Facility Execution Plan (FEP) and the associated Support Execution Plan (SEP). The Santa Barbara facility uses the NSTec Web site to provide the FEP and SEP to personnel working under those plans. During an independent review of its security process, STL was advised to limit the information presented in the FEP and SEP due to the operational security aspects of the information provided in those documents. As a result of that review's findings, STL eliminated the sections of those plans that discussed the application of the various processes that its work involved. Since one of the purposes of the FEP and SEP is to describe those activities and provide the mitigating processes being performed to properly address the potential hazards associated, elimination of that information impedes the effectiveness of the FEP or SEP. As a result, the documents were inadequate in satisfying the NSTec expectations. Recognizing the necessity to adhere to the operational security requirements, STL should maintain complete control copies of the FEP and SEP where the documents can properly present the information required by the process to demonstrate that mitigating procedures adequately address the hazards presented by specific activities.

Opportunity for Improvement: STL should maintain complete, control copies of the FEP and SEP where the documents can properly present the information required by the process to demonstrate that mitigating procedures adequately address the hazards presented by specific activities.

The work package process, CCD-QA05.001.005, *Work Package Process*, continues to be used for contact work (any work activity that involves contact with hazardous material or conditions). Since 2009, NSTec supplemented the original three types of work packages with a Type 4 work package. Type 1 work involves work on safety class and safety-significant structures and systems; Type 2 packages are for work not classified as Types 1 or 3 (all subcontractor work); and Type 3 represents routine, low hazard work that is listed as a Skill-of-Craft activity by the performing organization. Type 4 includes routine work (and the newly added TPM). As in 2009, the work package type determines the rigor of hazard analysis, depth of planning, detail of packaging, and approval authorities required. A JHA is required for Types 1, 2, and 4 work packages. A Pre-task Hazard Review (PTHR) is used for Type 3 work packages. Work conducted in restricted areas (Radiological Controlled Areas, Confined Space, etc.) require additional reviews and approvals. JHAs define the basic sequential steps of a proposed activity, the risks associated in performing a step, and the step-specific mitigating controls. This information is used to develop detailed work package instruction steps beyond skill of the craft capability. Work package instructions may be as simple as systematic instructions or as formal

as a detailed contact work procedure. The process for developing contact work procedures is prescribed in Company Directive (CD), CCD-QA05.001.005, *Work Package Process*. PTHRs define the hazards and controls for routine, low-hazard work activities. The PTHR is used to communicate hazards of the work. The process for developing a JHA or a PTHR is prescribed in CCD-QA05.001.003, *Activity Level Hazard Analysis Process.*

Recognizing the need for a tailored approach, some facility managers have recognized the need to ensure an activity-level JHA is performed for all work in their areas. For example, within RWMS, the Facility Manager has taken the extra step to require a JHA for all Type 3 work packages (Type 3 packages only require the PTHR to facilitate hazard analysis). By requiring the inclusion of the JHA, the facility manager has ensured that activity level hazard analysis is performed for covered work within the facility.

Work packages and procedures were reviewed in each of the operating facilities visited by the Team. The vast majority of those work packages (approximately 90 percent) are Types 3 and 4 packages. These documents were found to be comprehensive in most cases. During the Team's initial visit in 2009, the Team was concerned that the (then proposed) Type 4 work package would lead to increased injuries and errors since it would require only a "standing" JHA that could be reviewed annually or even one time for shop type equipment. However, a review of the recordable injuries and first-aid cases during this assessment revealed no such trend. In fact, the major contributor to NSTec injuries can be found in "Non-Activity Level" work (that is, work not required to be controlled by a work package document). However, TPM seeks to further reduce the documentation development for scope, hazard identification and control, and feedback for Type 4 work. TPM requires that a JHA be developed to cover an inclusive list that has been expanded from the original Type 4 scope with the aid of workers and experiences over the past 3 years. The idea is that a half page, two-sided document will be produced that will provide requisite information for workers to complete a predefined, preanalyzed task. A common JHA is developed that includes all tasks and is reviewed once per year.

The TPM approach does not currently require any form of prejob briefing prior to performing work. Although the hazards associated with TPM are by definition very low, NSTec should consider some form of prejob review of hazards by workers performing the task. This would be beneficial to the workers as a final preparation to perform the work (e.g., how might I be injured doing this task, have I done this task before, what is the worst thing that could happen, do I know the hazards, and am I prepared to implement the specified controls?). It would also be an excellent check to ensure the hazards/controls identified are appropriate (i.e., feedback in the comments section of the new form). This process could be a streamlined version of the current PTHR or other simplified prejob brief that would continue to meet the purpose of TPM (simple, low hazard tasks performed quickly and safely).

Opportunity for Improvement: NSTec should reconsider including some form of prejob review of hazards for workers performing TPM tasks.

A review of JHAs and PTHRs demonstrated that specific analysis supporting the particular hazard control selection is not always captured and documented. The Automated Hazard Identification Checklist (AHIC) includes "hot links" to applicable reference documents, but the

preparer's assumptions or analysis is not captured. Team reviews showed that the analysis was better documented on laboratory work packages, but this practice was not consistently observed in maintenance or construction activity work packages. As a result, the connection between the identified hazards and the selected controls was not always clear. By documenting the analysis, NSTec will provide workers, supervisors, managers, and safety professionals with a more informed basis for evaluating any changes that occur for the work or recommended improvements. NSTec should ensure that analyses supporting the selected controls are clearly documented in the analysis documents to include assumptions, sampling results, exposure assessments, work methods, or other applicable information.

Opportunity for Improvement: NSTec should ensure that JHA and PTHR analyses supporting the selected controls are clearly documented in the analysis documents to include assumptions, sampling results, exposure assessments, work methods, or other applicable information.

FWIPs are performed in accordance with the established procedure. However, a review of several facilities identified some opportunities for improvement in the program. For example, NSTec has not incorporated facility legacy issues, tailored its FWIP checklists to the individual facilities, or ensured FWIP issues are consistently captured, tracked, and trended in the caWeb program as suggested in 2009. While the document provides excellent guidance for scope and detail, a review of facility checklists revealed that components identified in the program document were not always included in the facility checklist. For example, the program document specifically identifies fire extinguishers and eyewash stations, but the checklist for the building B7 maintenance shop did not include these items.

Observations also found that some inspections performed were less than critically objective. For example, the level of housekeeping varied greatly between the shops in Area 6. While the carpenters shop was clean and orderly; the iron workers shop was found to have fire extinguishers and eyewash stations blocked, many tripping hazards in the walkway, and first-aid kits not controlled or inspected. The sheet metal shop also was in need of cleanup and contained similar compliance items related to housekeeping that were immediately fixed. Per the NSTec procedure, inspections are not required weekly for construction areas (unless they are underground). The DOE-VPP Manual establishes an expectation for construction sites to be inspected weekly, such that the entire site is inspected monthly. NSTec should revise FWIP to ensure consistent expectations are established for housekeeping, subject matter expert (SME) involvement in tailoring checklists and performing inspections, and that all applicable items identified in the program documents are included in the checklists.

Opportunity for Improvement: NSTec should revise FWIP to ensure consistent expectations are established for housekeeping, SME involvement in tailoring checklists and performing inspections, and that all applicable items identified in the program documents are included in the checklists.

NSTec has a system in place that evaluates upsets and identifies abnormal conditions, investigates to determine root causes, and applies corrective actions. The NSTec accident/incident investigation system includes written guidance, written reports of findings, and

hazard correction tracking, identification of causes, and provisions for preventive or corrective actions. The system also provides for a narrative report suitable for dissemination to all employees containing root causes, analysis, and lessons learned. Under CD-P280.007, *Accident Investigation, Reporting, and Recordkeeping*, employees are required to report all injuries/illnesses and near-misses to their supervisor immediately. The supervisor is responsible for filling out a Preliminary Accident Investigation Report within 24 hours and turning it into the OSH department. After receipt of the Preliminary Accident Investigation form, the OSH department reviews this to determine if the injury/illness or near-miss requires a formal accident investigation. Injuries and illnesses that are considered OSHA-recordable require an Accident Investigation Team Final Report. A team is assigned by the responsible manager of the injured employee and can include a safety and health professional, witnesses, the injured employee, etc., to conduct a formal investigation. As discussed in Employee Involvement, this process can be improved by expanding team membership to other workers.

A comprehensive trend analysis system for issues relating to the health and safety program (including injury and illness experience, inspections, and employee reports of hazards) is in place at NSTec. A review of documentation and employee interviews confirms that this process is effective. Trend analysis occurs for TRC and DART case rates statistics and is identified in the site application. Additionally, tracking and trending is conducted regarding issues identified in safety inspections. Trending data reports include lost workday case rate, recordable injury case rate, progress on improvement initiatives, vehicle accident rates, inspection results, and radiation dose trends. NSTec has developed an injury severity metric to further aid the trending of injuries. In addition, a "Dash Board" has been created that provides current data in various functional areas. The Dash Board loads on the homepage of each employee's computer screen and provides current statistical information across a broad range of functional areas. The information is captured in graphical form with links to back up information. The tool is very useful and functional. There are 11 safety metrics included in the Dash Board, although all 11 metrics are effectively lagging indicators in that an issue or problem has already arisen. NSTec should expand its Dash Board system to incorporate more leading indicators (see Management Leadership).

Conclusion

The NSTec work control program introduced in 2009 is an effective process for the identification and evaluation of hazards and the development of controls. Since 2009, NSTec has effectively incorporated analyzed hazards from the JHAs into facility procedures. NSTec has expanded and improved the work control process to more efficiently perform simple routine tasks without excluding them from appropriate hazard analysis. However, improvements can be made by incorporating the hazards and controls into routine work packages. Several other improvements identified will help strengthen and refine the hazard analysis processes and support NSTec's efforts for continuous improvement. Notwithstanding these improvements, NSTec continues to meet the elements of a Star participant in 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 Personal Protective Equipment (PPE)). Equipment maintenance processes to ensure compliance with requirements and emergency preparedness must also be implemented where necessary. Safety rules and work procedures must be developed, communicated, and understood by supervisors and employees. These rules and procedures must also be followed by everyone in the workplace to prevent, control the frequency of, and reduce the severity of, mishaps.

Similar to 2009, the Team observed many examples of hazard controls that had been implemented throughout the NSTec spaces. The preferred approach was to eliminate hazards through substitution where possible. However, when substitution was not possible, the Team observed (in most cases) the use of engineered controls, administrative controls, and finally PPE as a last line of defense. The following are examples.

- NSTec has taken action to install engineered controls at the RWMS truck unloading station after a swinging door caused an incident during high winds. The activity was also evaluated to determine at what level wind speeds would require stop work, and employees were given access to an anemometer. Administrative controls were developed and incorporated into the controlling procedure.

- The JASPER facility and STL utilize multiple interlocks to ensure operation of hazardous equipment, such as lasers and x-ray generators cannot be operated with workers in the area.

- The JASPER facility engineered, designed, and built a specialized cart that is pulled by a pneumatic mover that greatly reduces the potential for injury by the cart movers who previously had to wrestle the heavy cart through the facility by hand.

- In response to worker ergonomic concerns with microelectronic production activities, STL procured ergonomic microscopes to alleviate worker strains. Worker feedback was very supportive.

- Government vehicles are being equipped with backup sensors in an effort to reduce the number of backup accidents. The backup sensors have a voice command that alerts the driver to the exact distance between the vehicle and an object. This control should reduce backup collisions.

- Manual pallet jacks were replaced with more costly electric jacks to reduce the manual effort needed to relocate palletized materials.

For Type 3 work packages the use of PTHR instead of a JHA (see Worksite Analysis) does not lend itself to the preferred hierarchy of controls. The hazard analysis process involved with analyzing a Type 3 work package limits the ability to incorporate a proper hierarchy of controls in a timely fashion. While the planner may include hierarchy of controls in the development of the package, the activity level hazard analysis occurs at the prejob briefing when the supervisor

completes PTHR. At this point, the work is already staged and workers are ready to go to work so the likelihood that an engineered control or substitution would be implemented is highly unlikely. Lack of a JHA in this type of work package contributes to this potential. NSTec should consider evaluating the types of hazards controls in the planning process and reclassify Type 3 packages that may benefit from the application of hierarchical controls.

Opportunity for Improvement: NSTec should consider evaluating the types of hazards controls in the planning process and reclassify Type 3 packages that may benefit from the application of hierarchical controls.

Administrative controls are used to supplement substitution efforts and engineered controls. These include controlled access lists for space entry, hazard analyses, work packages, desktop instructions, required certifications, permits, signs, and postings. A suite of administrative controls was observed during the assessment. In one example, the manager at RWMS required the use of a JHA for all Type 3 work packages to ensure an added level of safety.

Due to its maritime threat response mission profile, the Andrews AFB RSL group is required to maintain the capability to respond to a potential radiological threat at sea, most likely a cargo ship with radiological material. RSL at Andrews AFB designed and built a training mockup consisting of a set of five sealand cargo boxes to train its scientists to safely perform their surveying duties in the event they were required to respond to this threat at sea. The mockup was assembled on a nearby government property and involved two sealand cargo boxes stacked and attached to a stack of three more sealand cargo boxes. A Jacobs's ladder is used to access the two-story stack with appropriate fall protection railings.

The trainees then accessed the third level of the sealand cargo box via a fixed ladder. The three-story sealand container has been equipped with a 360 degree davit with fall arrestor system and a fall protection guy wire to accommodate hook up to the davit. The purpose of the mockup is to familiarize the responding RSL at Andrews AFB scientists to the real life hazards associated with traversing cargo boxes on a container ship in a maritime response. Use of the Jacobs boarding ladder and the exposure to the heights the work is expected to be performed at are all effective methods for training the workers to a real life scenario in a controlled environment. The mockup is fully assembled and training on the system is due to begin this spring.

The RSL Andrews AFB group is a highly mobile group with projects requiring personnel frequently involved in extensive travel operating in a highly project-focused environment. This approach often leads to frequent and rapid changes in activities that could affect worker safety and health, that need to be communicated and shared by all project personnel. Failure to know and understand these changes could put project personnel at additional risk of injury. The RSL at Andrews AFB managers recognized this potential vulnerability and committed to addressing this issue with the implementation of the Microsoft® Project Server Web Application. The program enables RSL personnel at Andrews AFB to track all aspects of project management, including e-mails and discussion, throughout the life of the tasks. Change notifications and document modifications are tracked and recorded, and project staff is notified of any updates or new project-related assignments. The program is also used to track support services requirements, including preventive and corrective maintenance and vehicle service requirements.

The program was officially activated on January 17, 2012, and is currently being populated by the staff. NSTec should evaluate this program as a means to improve safety and communication at other project-oriented facilities, such as JASPER or RNCTEC.

Controls listed in HHE were not effectively implemented in some cases. For example, the B7 maintenance shop contains a long list of health hazards on the Health Hazard Inventory List that are associated with actual work activities that occur in the shop. One example is operating air tools and loud electric hand tools, which required (per HHE) that those tools be labeled to require hearing protection when they are used by workers. An inspection of the shop revealed those tools that potentially produce noise levels above 85 decibels (dB) at the worker's ear were not labeled as required by the HHE, leaving the use of the control to the operator's discretion. When questioned, the operators stated that they knew to wear hearing protection for some tools, and they would wear protection if the tools were louder than a general conversation. This method of control is less than adequate, especially when quantitative data can be made readily available to the worker. Tools such as electric impact wrenches, hammer drills, etc., should be labeled to require hearing protection when in use per HHE. Workers were not aware of the requirement to label the tools although they thought it was a good idea. Also, there is no documentation in HHE that specifies which tools exceed the 85 dB level at the operator's ear. Workers had no knowledge of that type of sound level survey being performed.

Opportunity for Improvement: NSTec should ensure that requirements identified in HHEs are appropriately translated into hazard controls, such as equipment labeling and PPE requirements postings.

The Team observed evidence that controls identified in JHAs were consistently being captured in the subsequent "Procedure" that was developed. However, as found in the review in 2009, improvement is still needed to ensure controls from JHAs are captured and included in the work instructions for work packages. While improved from the last review, this continued to be an issue in about 50 percent of the work packages reviewed during this assessment.

Opportunity for Improvement: NSTec should ensure controls from JHAs are consistently captured and included in the work instructions for work packages.

Overall, safety and health rules are followed by most employees. Interviews with employees indicated they know and understand the disciplinary process should these rules not be followed. Most of those interviewed felt this process was both fair and consistent and gave examples of positive reinforcement received from supervisors and managers for good work practices.

As identified in the 2009 VPP review, some employees were observed not complying with the postings at many shops and construction projects. The issue is caused by postings that are ambiguously worded in such a way as to be misinterpreted by workers and allow workers to enter into areas without meeting the PPE requirements. As in 2009, the Team noted during this assessment that safety postings were inconsistently applied and understood by NSTec employees. In some cases, safety postings in shops were not being observed by occupants. For example, Area 6 shops had signs requiring hardhats, safety glasses, and safety shoes. However, interviews with some workers demonstrated their beliefs that this is only true when work is in

progress. Several workers were observed without hardhats, safety glasses, etc. In another shop, some equipment was posted "hearing protection required," but did not include the criteria "when in operation" or "within X number of feet." NSTec should evaluate and determine the expectations for appropriate PPE use and institute a detailed posting system that ensures those expectations are met. For shop areas, safe travel lanes might be an effective possible solution, or NSTec should modify the postings to reflect their expectations.

Opportunity for Improvement: NSTec should evaluate and determine the expectations for appropriate PPE use and institute a detailed posting system that ensures those expectations are met.

As was the case in the 2009 review, NSTec implements a comprehensive Preventive Maintenance (PM) program for the entire organization. The program consists of individual departments performing equipment maintenance for both performance and safety reasons as required. Equipment is maintained pursuant to the equipment manufacturers' recommended service intervals and scope. In addition, select safety and/or security systems are maintained and tested at levels that exceed manufacturers' recommendations due to NSTec corporate policies and requirements. The MAXIMO system is used to track and trend maintenance work.

In at least one case, past PM may not have been adequate, and a condition has developed where workers may be put at additional risk to save money rather than fixing the problem. Exterior lighting at DAF is mounted on 130-foot masts. The lights are designed with internal lifting cables to allow the light assemblies to be lowered for maintenance and repair. Several of these mechanisms are no longer in service requiring workers to perform maintenance on the lights using a 150-foot manlift. Maintenance personnel believed the cost to repair the lights was in excess of $250,000, but did not have any formal repair estimates. NSTec should develop a systematic estimate of costs to repair the exterior lighting at DAF, then a project plan to conduct those repairs, and use those estimates and plan to repair the system to its original design and reduce risk to workers.

Opportunity for Improvement: NSTec should develop a systematic estimate of costs to repair the exterior lighting at DAF, and then a project plan to conduct those repairs, and use those estimates and plan to repair the system to its original design and reduce risk to workers.

Documents reviewed provided evidence that the occupational health professionals are performing surveillance of most areas throughout NSTec contractor-controlled spaces for hazards due to conditions or work practices. Occupational medical surveillances are being performed as per OP-3600.056, *Work Site Visits*, and then documented on a worksite visit log that is tracked on a shared drive and a backup copy is placed in a logbook located in the senior manager's office. Interviews of medical professionals and documents reviewed showed that this surveillance occurs quarterly.

Medical evaluations are performed for new hires to assess fitness for duty and to ensure that the workers are physically able to perform to the demands of the work. This is accomplished by engaging the work supervisor in the process to identify the scope of work and describe the

demands that may be encountered. A physician then evaluates the employee against the demands to ensure they can safely accomplish the tasks. Once the evaluation is complete the employee can be assigned.

The Medical Service Request (MSR) is the tool used for worker entrance into medical surveillance programs. The MSR is completed by the supervisor at least annually for workers with an annual medical surveillance program requirement (e.g., hearing protection or lead). Additionally, a new MSR is completed for workers each time a change has occurred; for example, being rehired, job rotation, or fitness for duty. Industrial Hygiene reviews and approves the MSR prior to the medical appointment being set for the worker.

The NSTec wellness program is excellent. NSTec is using innovative and effective methods to minimize serious injury among the staff. For example, they use the Electro-Diagnostic Functional Assessment to pinpoint soft tissue strains and sprains. This is a new method and not yet widely used. The Site Medical Director tested the method on several employees and found high accuracy (18/18 gave accurate diagnoses) whereas other methods are highly inconclusive. A second method they have used is to provide free skin exams to all employees. That activity identified one melanoma and four basal cell cases. NSTec gave out free sunscreen for those who participated. Another example is that they have replaced the classical stress test for heart function with a much more effective test. Stress tests are only about 40 percent accurate whereas the new test (CT Angiogram) is 90 percent accurate. The fire chief at Mercury was pleased with the new test because, according to the United States Fire Administration (USFA), the leading cause of fatalities to firefighters in the United States is heart attacks, representing 44 percent of all firefighter fatalities. The USFA has conducted studies that evaluate the link between cardiac stress and the firefighter's physiological response to firefighting. One study related cardiac stress to rapid awakening (from a deep sleep) when responding to a fire alarm (sometimes referred to as the "startle response" or "fight or flight response"). Using the new test helps NSTec determine if firefighters may be at increased risk of heart attack, and plan intervention strategies to reduce that risk.

The wellness program has considerable momentum and efforts have been made to continuously improve it. However, several staff believe that they do not have time to participate in many of the wellness activities (wellness fairs, challenges, etc.). The goal of wellness is to help all willing staff to improve their health through these programs. Sometimes staff may need extra motivation to take these life-changing steps. The wellness group should further investigate why its programs are not more widely attended or why more do not participate to determine if attendance and participation could be improved.

Conclusion

While issues regarding unclear expectations for the use of PPE continue to represent a potential vulnerability, NSTec continues to appropriately ensure that hazards are controlled via the hierarchy of controls, with PPE used only when engineered or administrative controls cannot be practically applied. The occupational medicine group is investigating new technologies to more reliably and proactively identify health and wellness issues before they become an injury or illness. The wellness program has had some success; however, NSTec needs to continue the program's momentum and identify methods to improve employee participation. NSTec

maintains a cadre of experienced and certified safety professionals to provide continuous proactive services and programs. Therefore, NSTec continues to meet the tenets of a Star participant in Hazard Prevention and Control.

VII. SAFETY AND HEALTH TRAINING

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

NSTec continues to operate and maintain a safety and health training program that addresses initial and ongoing training and qualifications through an integrated training matrix system. This program is managed as a centralized controlled operation with qualified trainers and approved lesson plans. The training organization is a functional element within the Human Resources Department and is responsible for delivering training programs that enable employees to perform quality work in support of NSO and company objectives. Employees interviewed by the Team indicated that their safety and health training prepared them very well to recognize and deal with the hazards of their work. They also said that this training prepared them to practice safety in their home projects. NSTec continues to use managers, supervisors, workers, and SMEs in identifying training and qualification requirements for individual positions to prepare the training plans for each employee and to annually review and update these plans as needed for each employee.

Interviews and review of training manuals and records indicated that the safety and health training program at NSTec continues to run effectively. Employee annual training plans, training records, course curricula, training reports and interviews with workers and managers all confirmed safety training as an essential element of the NSTec safety and health program. Specifically, the Team reviewed the course manuals for the General Employee Training (GET), the General Employee Radiological Training, the Excavation and Penetration Safety Training, and the MAXIMO maintenance database training. All these training modules were well written in a user-friendly style that was conducive to effective learning. Training classes observed by the Team were taught by highly experienced instructors and attended by students who actively participated. The courses required passing of a written examination with a passing grade of 80 percent. The Team also reviewed the training manual for radiological control technicians to ensure equal and adequate training was received to meet the needs of NSTec. The Team concluded that adequate training is being provided to the radiological control technicians based on their work location and task assignments.

The training office at NSTec serves as the corporate training office. Corporate training functions include developing all training material, maintenance of course completion and training records in the corporate training database (Plateau®), and distribution of upcoming and delinquent training reports for all NSTec personnel across the country, such as NSTec Livermore Operations, NSTec Los Alamos Operations, STL in Santa Barbara California, RSL at Nellis AFB, and RSL at Andrews AFB. Each of these locations has read-only access to the training records, but relies on NSTec corporate for day-to-day management of training.

As in 2009, the training office personnel, working with SMEs in the ESH&Q Division, develop courses that explain the tasks, associated hazards, how workers are protected, and how the hazards are mitigated. The training organization maintains a comprehensive catalog of available training courses. Each year, course needs are evaluated and a schedule of training classes is

prepared. Course registration and completion are tracked, and the availability of courses is modified as necessary to ensure that the training needs of the entire company are met. Since the 2009 VPP assessment, the use of the Plateau® database has been expanded and implemented at all NSTec facilities. Prior to this improvement, remote sites were dependent on the NSTec training staff to provide them with training delinquency reports, often resulting in expired training at remote locations. Now remote users receive automated notices and can perform their own queries to track expiring training and to better plan for upcoming training. The training office also prepares reports that identify by employee name a list of training or qualifications that will expire in the next 30, 60, or 90 days. This practice allows the supervisors and managers to schedule refresher training before the employees' required training expires.

NSTec provides GET to all new employees. GET covers safety and health requirements for access to the employee work areas and includes: ISMS; VPP; title 10, Code of Federal Regulations, part 851 (10 CFR 851), *Worker Safety and Health Program;* safety and health policy; unexploded ordnance; general safety rules; fire safety; electrical safety; lockout/tagout; hantavirus prevention; radiological awareness; and hazard communication (including Material Safety Data Sheets). GET consists of both instructor-led classroom sessions and computer-based training. Craft employees supporting environmental restoration type activities receive Site-Specific Safety and Health Plan training, as well as qualification training addressing 29 CFR 1910, *Hazardous Waste Operations and Emergency Response,* criteria. Craft employees also participate in and receive hazard recognition and control briefings. Although all employees receive initial GET, NSTec does not require annual refresher training. NSTec should consider implementing an annual GET refresher or supplementary training to ensure changes to the worker safety and health program are disseminated and areas of particular focus can be emphasized.

Opportunity for Improvement: NSTec should consider implementing an annual GET refresher or supplementary training to ensure changes to the worker safety and health program are disseminated and areas of particular focus can be emphasized.

The Board of Certified Safety Professional's Council on Certification of Health, Environmental and Safety Technologists (CCHEST) offers a third-party certification program called Safety Trained Supervisor (STS) program. This program is well regarded in the construction industry. Many DOE-VPP participants are using CCHEST's STS certification as a means of improving supervisors' knowledge and awareness of safety requirements and practices. NSTec tasked two of its CSPs to evaluate the STS training for applicability to NSTec construction staff. Rather than opting for the STS course, which costs $300 per employee to take the biennial exam, NSTec developed its own Supervisor Safety Training with course content very similar to the STS course. While an effective training program, the NSTec training does not provide the supervisor with a recognized and exportable industry certification. NSTec should reevaluate its decision to not use the CCHEST STS certification in order to encourage professional development and better prepare supervisors for future opportunities or contractual contingencies.

NSTec has two formal programs for developing new managerial talent and encouraging professional growth. The first is the NSTec Mentoring Program. This program is designed to "capitalize on the strengths and experience of our current workforce as a learning asset for

employees engaged in professional and personal development." Under this program, nonbargaining unit personnel can request to establish a formal, voluntary mentor-mentee relationship with a person that is at least two pay grades higher, and not in the person's managerial chain. The relationship is subject to approval by a program coordinator that reviews both the mentor and mentee qualifications and workload. The program is dependent on the mentee to actively seek guidance and development opportunities. The program normally has 10-20 mentees at any given time and was seen by senior managers as an excellent tool to develop new talent.

The second management development program is the Next Generation-Southern Nevada. NSTec Next Generation is a company-sponsored, employee-led professional development and social networking group. Next Generation groups are currently active in Southern Nevada and Livermore, California. The Next Generation group in Southern Nevada primarily conducts events during nonworking hours to facilitate networking of its geographically dispersed membership. Membership is open to any interested employee who may benefit from or contribute to the group. The group is organized around four committees that develop and promote membership, professional development, organize social and networking activities, and identify community service opportunities. This group was also identified by managers as an excellent opportunity for younger employees to develop into effective leaders and managers.

Conclusion

NSTec continues to have a comprehensive and systematic approach to training that ensures personnel are appropriately trained and qualified prior to performing work within NSTec-managed facilities. The employees continue to receive safety training, which prepares them well to perform their job safely. NSTec should consider supplementing the Supervisor Safety Training program to permit supervisors to complete the CCHEST STS certification as a means of professional growth and preparing supervisors for other opportunities. NSTec has programs to train, mentor, and foster good working relationships among promising new candidates for management positions to help them understand and acclimate them to the NSTec management expectations. NSTec continues to satisfy the requirement of the Safety and Health tenet of DOE-VPP at the Star level.

VIII. CONCLUSIONS

NSTec has a strong worker safety and health program that involves managers, supervisors, and workers in a partnership to safely accomplish its mission. Work performed at NNSS is often work that cannot be safely performed anywhere else, involves unique hazardous operations, and often includes the potential to expose workers to conditions or materials not normally found in other industries. All personnel recognize this possibility and are appropriately aware and actively involved. NSTec has addressed the opportunities for improvement identified in the 2009 VPP assessment; although in some cases, additional work can be done to further improve performance. NSTec has been actively participating in outreach efforts to the community, attending regional and national conferences, and sharing ideas and lessons learned with other VPP participants. Employee participation has improved since the last assessment in 2009. Severity of injuries that occur has been reduced over the past 3 years, although overall injury rates have remained relatively constant. NSTec is seeking new and alternative approaches to address these injuries and further improve its performance. Improvements in the site medical program to implement new technology for screening injuries and cardiac health are noteworthy and demonstrate a more proactive approach to worker health. Opportunities exist to strengthen and ensure a just culture is maintained within the disciplinary process and ensure workers are not dissuaded from reporting injuries by more effective accommodation of work restrictions. Addressing these opportunities will help NSTec continue its commitment towards a strong health and safety program. The Team recommends that NSTec continue to participate in DOE-VPP at the Star level.

APPENDIX A

Onsite VPP Assessment Team Roster

Management

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