National Security Technologies, LLC

Report from the Department of Energy
Voluntary Protection Program
Onsite Review
February 17-26, 2015

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

Foreword

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

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

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

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

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

This report summarizes the results from the evaluation of National Security Technologies, LLC (NSTec), during the period of February 17-26, 2015, and provides the Associate Under Secretary for Environment, Health, Safety and Security with the necessary information to make the final decision regarding NSTec's continued participation in DOE-VPP.

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ABBREVIATIONS AND ACRONYMS

AFB	Air Force Base
AHIC	Activity/Hazard Inventory Checklist
AU	Office of Environment, Health, Safety and Security
BEEF	Big Explosives Experiment Facility
BLS	Bureau of Labor Statistics
CD	Company Directive
CFR	Code of Federal Regulations
CMP	Consolidated Maintenance Program
CSC	Culinary Safety Committee
CSI	Continuous Safety Improvement
DAF	Device Assembly Facility
DART	Days Away, Restricted or Transferred
DOE	Department of Energy
DSC	Downtown Safety Committee
EAT	Emergency Action Team
EPIP	Emergency Plan Implementing Procedure
ERB	Executive Review Board
FEMA	Federal Emergency Management Agency
FWIP	Formal Workplace Inspection Program
GET	General Employee Training
HAZCOM	Hazard Communication
HHE	Health Hazard Evaluation
IH	Industrial Hygiene
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
JASPER	Joint Actinide Shock Physics Experimental Research
JHA	Job Hazard Analysis
LASC	Labor Alliance Safety Committee
MRT	Mine Rescue Team
MSHA	Mine Safety and Health Administration
MSR	Medical Service Request
NAICS	North American Industry Classification System
NIMS	National Incident Management System
NNSA	National Nuclear Security Administration
NNSS	Nevada National Security Site
NFO	Nevada Field Office
NPTEC	Non-Proliferation Test and Evaluation Complex
NSTec	National Security Technologies, LLC
OMP	Occupational Medicine Program
OS&H	Occupational Safety & Health
OSHA	Occupational Safety and Health Administration
PISA	Potential Inadequacy of the Safety Analysis
PL	Priority Level
PM	Preventive Maintenance
PPE	Personal Protective Equipment

PSC	President's Safety Council
PTHR	Pre-task Hazard Review
REOP	Real Estate Operations Permit
RPP	Radiation Protection Program
RSL	Remote Sensing Laboratory
SME	Subject Matter Expert
STL	Special Technologies Laboratory
Team	Office of Environment, Health, Safety and Security DOE-VPP Team
TRC	Total Recordable Case
UFS&HPD	Underground Facility Safety and Health Program Description
U.S.	United States
VERB	Visual Examination and Repackaging Building
VPP	Voluntary Protection Program
VTC	Video Teleconference
WIPP	Waste Isolation Pilot Plant

EXECUTIVE SUMMARY

National Security Technologies, LLC (NSTec), formed in 2005, is 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, including operations in Livermore and Santa Barbara, California; Nellis Air Force Base (AFB), Nevada; Andrews AFB, Maryland; and Los Alamos, New Mexico. The Department of Energy (DOE) admitted NSTec to DOE Voluntary Protection Program (VPP) in March 2009, and this assessment marks its second required triennial recertification.

The NSTec and subcontractor injury rates are very low and are only small fractions of its comparison industry, but there is an increasing trend in the Days Away, Restricted or Transferred (DART) case rates for NSTec, which have tripled from a low in 2012. The Office of Environment, Health, Safety and Security VPP Team (Team) did not find any disincentives to reporting injuries. NSTec is pursuing efforts to reverse the upward trend in DART case rates.

NSTec managers remain dedicated to safety as a prerequisite for all work, and understand safety as a mission enabler. Undesirable events in 2014 brought to managers' attention how "compliant" systems may not be fully "effective" and ensure NSTec achieves mission goals safely. As a result, NSTec is increasing its focus on managers' visibility, accessibility, and credibility. Actions are in progress to improve management systems' effectiveness and ensure those improvements are sustainable.

NSTec employees continue to fulfill 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 and are communicating their activities to workers through their Web sites. The President's Safety Council represents an excellent tool for open communications with employees.

NSTec has mature programs for characterizing hazards in the workplace and uses this knowledge effectively to plan and execute its mission safely. Documenting the analysis of activity level hazards effectively will help NSTec reduce inefficiency and could prevent worker errors. The current effort to improve the overall work planning and control process will require time to mature, and NSTec should ensure that it continues to seek worker involvement as it proceeds.

NSTec follows the hierarchy of controls to eliminate, substitute, engineer, and administratively control hazards. As a last resort, NSTec uses personal protective equipment to protect workers from hazards. As NSTec changes its maintenance program to consolidate, integrate, and better manage the available resources, it should involve the workforce in the decisionmaking process to ensure it considers all consequences. NSTec is improving its radiation protection and emergency management programs to effectively use available resources. The occupational medicine program is very customer-oriented and is trying to engage more workers.

NSTec continues to have a comprehensive and systematic approach to training that ensures personnel are appropriately trained and qualified prior to performing work. NSTec should use the lessons learned from the Waste Isolation Pilot Plant fire event in Carlsbad, New Mexico, to

identify improvements to the underground training. NSTec should evaluate its document revision process to ensure it effectively identifies workers affected by changes. NSTec continues to employ programs to train, mentor, and foster good working relationships among promising new candidates for management positions to help them understand and acclimate them to NSTec management expectations.

NSTec maintains a large, complex safety program that supports the NNSS mission. It continues to face significant challenges associated with long distances between facilities and security requirements that can hinder effective communication to workers, and discourage senior managers from travelling to work areas. These challenges became particularly evident when a series of accidents occurred in June 2014. Since that time, NSTec has implemented extensive changes to processes and procedures designed to empower workers, enable managers to be more visible and accessible, and better align program priorities and budgets. The extent of its efforts reflects NSTec's commitment to excellence and intent to "exceed expectations" rather than settle for compliance. As such, the Team recommends that NSTec continue to participate in DOE-VPP at the Star level.

TABLE 1

OPPORTUNITIES FOR IMPROVEMENT

Opportunity for Improvement	Page
NSTec should find additional ways to openly communicate the actions taken to address workers' concerns, publish a status (e.g., through newsletters), and ensure workers agree that completed actions were effective before closing the actions in caWeb.	5
NSTec should consider replacing or supplementing its current expectations for management observations with a challenging expectation for *time in the field*.	7
NSTec should ensure it follows through on its commitment to establish a Miners' Safety Committee and maintain MRT's capability to respond to underground fires despite the assumed extremely low probability of such a fire.	7
NSTec should revise its annual safety awards to require participation in safety improvement activities to be eligible for the awards and eliminate the tie to TRC and DART case rates.	8
NSTec should use its communications capabilities to share managers' stories and experiences with workers on a regular basis.	9
NSTec should revise its inspection schedule of administrative areas to meet the DOE-VPP guidelines.	17
NSTec should evaluate and replace incorrect or misleading signs.	20
NSTec should ensure it includes crafts, planners, and other knowledgeable workers in the decisionmaking process to support the new CMP.	21
NSTec should consider ways to allow more employees to attend health fairs or set aside time for employees to attend.	23
NSTec should analyze the underground training using the NSTec training group; OS&H division; and selected representatives from MRT, in consultation with the WIPP safety group, to ensure underground workers' training prepares them to respond to unlikely, but severe, accidents.	26
NSTec should ensure the document revision process effectively identifies workers affected by document changes and ensure it trains those workers on the changes as part of the change implementation.	27

I. INTRODUCTION

National Security Technologies, LLC (NSTec), formed in 2005, is 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, including operations in Livermore and Santa Barbara, California; Nellis Air Force Base (AFB), Nevada; Andrews AFB, Maryland; and 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. DOE admitted NSTec to DOE-VPP in March 2009, and this assessment marks its second 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, the 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 provides many support activities. 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, 3 airstrips, 10 heliports, 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, and DOE's 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 Non-Proliferation Test and Evaluation Complex (NPTEC), 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 five 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 Environment, Health, Safety and Security (AU) 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 include 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
2012	4,545,908	20	0.88	3	0.13
2013	4,248,472	29	1.37	9	0.42
2014	4,191,835	24	1.15	10	0.48
3-Year Total	12,986,215	73	1.12	22	0.34
Bureau of Labor Statistics (BLS-2013) average for NAICS** Code # 5612 (Facilities Support Services)			3.9		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
2012	124,385	0	0	0	0
2013	133,604	1	1.5	0	0
2014	155,343	1	1.29	1	1.29
3-Year Total	413,332	2	0.97	1	0.48
Bureau of Labor Statistics (BLS-2013) average for NAICS** Code # 5612 (Facilities Support Services)			3.9		1.9

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

TRC Rate, including subcontractors: 1.12
DART case rate, including subcontractors: 0.34

Conclusion

The NSTec and subcontractor injury rates are very low and are only a small fraction of its comparison industry. In 2011, NSTec performed an assessment of its injury/illness recordkeeping process. NSTec did not have any findings, but identified several improvements. The Team reviewed several first-aid case records from 2012, 2013, and 2014, and found no errors. The Team also did not find any disincentives to reporting injuries. There is an increasing trend in the DART rates for NSTec from a low in 2012. Some of the DART cases are soft tissue injuries, which prompted NSTec to hire an ergonomist in 2012. The ergonomist is providing education on proper body positioning techniques to help workers understand the onset of strains and sprains and their avoidance. The NSTec injury incidence rates continue to meet the expectations for continued participation in DOE-VPP.

III. MANAGEMENT LEADERSHIP

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

In 2012, the Team concluded that NSTec managers demonstrated 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 had improved since 2009, and that increased visibility was improving trust and communication with the workforce.

During this assessment, managers expressed a sincere commitment to safety and health as a means to accomplish missions. They are trying to increase their presence and visibility, and opening better lines of communication with workers. Most of these current efforts began in the wake of several events in mid-June 2014, culminating on June 13 when an open top drum exploded at NPTEC as a worker started to move it. These events brought to managers' attention a need to improve systems to help combat complacency, prevent workers' acceptance of potentially unsafe conditions, and identify and eliminate undesired work habits. NSTec declared an *operational pause*, developed a multitude of actions, conducted briefings for workers, and requested extensive feedback from workers.

During the operational pause, NSTec directed managers and supervisors to conduct discussions with workers at work locations, and provided extensive guidance for those discussions. The guidance included specific topics to be covered, identified requirements and management expectations about those topics, and most important, provided questions for managers and supervisors to ask workers to foster group discussions. NSTec collected over 1,100 specific statements during those discussions, which it analyzed to identify key areas of concern. NSTec then used those areas of concern to develop future actions. Significantly, the NSTec president identified the following specific expectations that workers could have for managers:

- We will foster an environment where people can get work done safely, compliantly, productively and in an environmentally protective manner;
- We will actively seek ways to remove barriers and question "why";
- We will be visible in the field or workplace with the employees;

- We will communicate with you regarding our path, our issues, and our status;
- We will use the guiding principles of Integrated Safety Management (ISM), Security Management and VPP to lead our team;
- We will demonstrate good stewardship of the government's money, assuring only appropriate expenditures of authorized funding;
- We will hold ourselves and you accountable to expectations and objectives;
- We will support the right of any member of the workforce to raise any concern and to have that concern addressed in a timely, effective, and respectful manner without fear of retaliation;
- We will be available to resolve any issue or concern; and
- We will "set the example" every day by our words and actions.

NSTec also identified a number of corrective actions resulting from workers' concerns and entered those concerns into caWeb, the NSTec corrective action tracking system. NSTec routinely updates the status of corrective action as those actions progress, and anyone with access to the computer system can see those reports. Although available, most workers are unaware of the actions or the status because the information is difficult to locate. NSTec should find additional ways to openly communicate the actions taken to address workers' concerns, publish a status (e.g., through newsletters), and ensure workers agree that completed actions were effective before closing the actions in caWeb.

Opportunity for Improvement: NSTec should find additional ways to openly communicate the actions taken to address workers' concerns, publish a status (e.g., through newsletters), and ensure workers agree that completed actions were effective before closing the actions in caWeb.

Several months after establishing the expectations and implementing many corrective actions, the NSTec president initiated a *cascading conversation* beginning with senior managers. This process will communicate the company's expectations down throughout the organization and give senior managers an opportunity to speak with and listen to workers. The message focuses on NSTec's desire to achieve effective performance by pursuing excellence while maintaining safety performance. Further, the meetings will help individuals and work groups to better understand their contribution to mission success.

The recurring theme throughout these actions, and during manager interviews, was that managers needed to increase their presence and visibility in work areas. In 2009, the Team identified increased visibility of middle managers as an opportunity for improvement. In 2012, the Team observed that NSTec had implemented a *Boots on the Ground* initiative to establish clearer expectations for all levels of management for field presence and observations. Because of that initiative, managers had 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, which was consistent with Team observations and interviews where nearly all employees spoke favorably regarding their supervisors and managers. In the wake of the 2012 assessment as demonstrated by the feedback from the *operational pause* and other employee culture surveys, managers apparently did not continue to focus on increased field presence. This degradation may have contributed significantly to the events of June 2014.

Over the past several years, NSTec has primarily used lagging indicators as performance metrics for measuring outcomes. These outcomes are important, but NSTec has not yet developed an effective set of leading indicators that it can use to monitor key process elements that may affect future outcomes. Having recognized the value of manager presence in the work areas, NSTec is establishing some expectations that it can monitor. For example, NSTec currently expects managers to perform two management observations per month. The Management Observation Program provides checklists that managers can use and requires the manager to document the results of the observation, including any corrective actions required.

Although well intended, this approach may not effectively achieve the results NSTec desires. Experience at other DOE-VPP sites has shown with a high degree of reliability that the presence of managers and supervisors in the work areas helps managers build relationships with the workforce and better understand workers' concerns and issues, and helps workers understand managers' expectations for safety, quality, and excellence. When managers rely on checklists and are required to document observations and corrective actions, workers perceive the manager's presence as *trying to catch them*. A Gallup Engagement Survey in 2014 further highlighted workers' perceptions that managers were not engaged. In November 2014, the Downtown Safety Committee (DSC) chairperson wrote an open letter to managers in *Safety Cents,* the DSC newsletter. That letter invited managers to become more attentive to how manager behaviors in the work environment can affect workers' morale, and as a result, safety culture. Workers asked managers to better understand workers' opinions and decisions, and then identify acceptable solutions, rather than simply reporting an identified problem, deficiency, or noncompliance. The letter offered excellent advice to managers and highlighted how managers' presence contributes to, or detracts from, workers' trust.

Rather than driving managers' presence through required management observations, NSTec might achieve better results by establishing expectations for the amount of time managers should spend in work areas based on the manager's area of responsibility and position. For example, NSTec might expect senior managers to spend up to 25 percent of their time with workers, middle managers 50 percent, and supervisors 75 percent or more. Managers can then use this metric as an effective leading indicator, consistent with the NSTec president's expectations and commitments to the workforce, which would help NSTec identify any barriers managers encounter that prevent them spending more time with the workforce. The increased managers' presence will help managers understand process inefficiencies, give them a firmer understanding of workers' issues and concerns, and help them achieve the desired outcomes of mission excellence. NSTec should consider replacing or supplementing its current expectations for management observations with a challenging expectation for *time in the field.*

Opportunity for Improvement: NSTec should consider replacing or supplementing its current expectations for management observations with a challenging expectation for *time in the field.*

NSTec has multiple processes for senior managers to evaluate and mitigate risks at the corporate level. The NSTec vice-president for operations chairs an executive review board (ERB). The ERB includes all the NSTec directors and routinely meets to review issues and corrective action status and to make recommendations. In July 2013, NSTec chartered an Enterprise Risk Management process and instituted that process in October 2014. That process uses four mission-level risk management review meetings and a senior management meeting chaired by the NSTec president. The process evaluates risks based on key risk parameters, identifies strategies to deal with the risks, and establishes monitoring processes on an Enterprise Risk Register. The Enterprise Risk Register then serves as a comprehensive presentation on corporate risks and the current status of those risks.

In February 2014, the Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico, experienced an underground fire. NSTec recognized that lessons learned from the WIPP fire might be applicable to underground operations at NNSS, particularly in the U1A complex. NSTec performed an extensive gap analysis against the WIPP fire accident report and identified many actions that NSTec could take to further mitigate the risk of an underground fire. Actions included better housekeeping to remove combustible materials, better maintenance and inspection of mining vehicles and equipment, and written approval of exemptions and compensatory measures. Although NSTec managers are confident in NSTec's ability to establish a safe environment in the underground and minimize the risk of a fire, the miners expressed concern about the NSTec policy relying on underground refuges and personnel evacuation to protect personnel from fires beyond the incipient stage. Miners and their supervisors are not confident of their ability to rescue personnel trapped in the mine as a result of a fire. NSTec maintains a fully qualified and experienced Mine Rescue Team (MRT), but NSTec has not maintained the MRT's training and certification to fight underground fires since 2001. Members of the MRT are concerned that without that training, they may be unable to rescue personnel trapped in the underground who could not reach the refuge. The current practice of treating U1A using Occupational Safety and Health Administration (OSHA) standards and exempting it from other fire safety requirements could leave workers vulnerable to a fire that goes beyond incipient stages. Further, exempting underground personnel from the 40-hour training required by the Mine Safety and Health Administration (MSHA) reduces the confidence that underground personnel, other than miners, will be able to react appropriately to the low visibility and extremely stressful conditions that exist during an underground fire. During the review, NSTec managers committed to establishing a Miners' Safety Committee and examining options to enhance the MRT's response to underground fires. NSTec should ensure it follows through on that commitment and maintains MRT's capability to respond to underground fires despite the assumed extremely low probability of such a fire.

Opportunity for Improvement: NSTec should ensure it follows through on its commitment to establish a Miners' Safety Committee and maintain MRT's capability to respond to underground fires despite the assumed extremely low probability of such a fire.

NSTec has a balanced approach that both recognizes and rewards employees and provides for a graduated discipline process. Most rewards are cash awards in the form of gift cards. On occasion, some directors are basing participation on TRC and DART case rates and do not allow personnel to receive an award if they have had a recordable injury. Although these awards are of minimal value, generally consisting of a bag of safety-related items, the practice of eliminating a worker from eligibility could have the unintended consequence of suppressing injury reporting. In this case, the Team did not identify any workers who were concerned about reporting an injury, primarily because most NSTec workers do not care about the award. NSTec should revise its annual safety awards to emphasize participation in safety improvement activities and eliminate the tie to TRC and DART case rates.

Opportunity for Improvement: NSTec should revise its annual safety awards to require participation in safety improvement activities to be eligible for the awards and eliminate the tie to TRC and DART case rates.

Like all DOE and National Nuclear Security Administration (NNSA) facilities, NSTec faces shrinking budgets and increasing expectations. NSTec is managing these resource challenges through rolling furloughs and improving processes to increase efficiency, reduce rework, and achieve cost and schedule goals. In that light, managers identified that NSTec has not effectively integrated work planning and control processes across organizational lines and has not effectively provided workers with concise, coherent instructions or procedures. NSTec appointed a senior manager to develop a single, work planning process. That initiative is just beginning and will need time to develop, mature, and demonstrate effectiveness.

NSTec is also working to better prioritize and balance indirect and direct funding and ensure it appropriately evaluates, prioritizes, and corrects legacy issues. In some cases, these conditions contribute to workers' perceptions that mission takes priority over safety. For example, workers see the A-1 Machine Shop Pull Test Pit on a daily basis. That pit contains legacy equipment that has not been used for 20 years or more. NNSA considers the equipment part of the ability to resume underground testing if the need arises. The pit contains beryllium and lead contamination. Labels at the entry require a toxic work permit to enter, yet the pit is open to the rest of the shop. NSTec has not identified or prioritized funding to either clean the area or close off the pit to prevent migration of hazardous materials from the pit. Similarly, temporary ventilation to a quality laboratory inside the A-1 Machine shop has been in place for several months. That temporary ventilation obstructs walking paths for workers in the machine shop, and workers perceive that managers tolerate the condition instead of fixing it.

Several senior managers were very demonstrative of their commitment to safety and had many experiences they shared with the Team. Unfortunately, managers have not shared these experiences with many workers. NSTec has an excellent communication capability that includes audio and visual production facilities and equipment, a professional communication staff, and state-of-the-art printing capabilities. As a means of building managers' credibility and improving worker perceptions, NSTec should use its communications capabilities to share managers' stories and experiences with workers on a regular basis.

Opportunity for Improvement: NSTec should use its communications capabilities to share managers' stories and experiences with workers on a regular basis.

Conclusion

NSTec managers remain dedicated to safety as a prerequisite for all work and understand safety as a mission enabler. Events in 2014 brought to managers' attention how *compliant* systems may not be *effective* and ensure NSTec achieves mission goals safely. NSTec is increasing its focus on managers' visibility, accessibility, and credibility. Actions are in progress to improve management system effectiveness and ensure those improvements are sustainable. This determination to improve demonstrates the expectations for Management Leadership and continued participation in DOE-VPP.

IV. EMPLOYEE INVOLVEMENT

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

In 2012, the Team concluded that NSTec employees continued to understand their responsibilities to watch for their own and their coworkers' safety. The Team determined that employees were fully aware of their rights and responsibilities to pause or stop work if they believed that a safety problem existed. The NSTec safety committees continued to function effectively. NSTec maintained opportunities to further enhance employee participation in accident and incident investigations and to ensure that employees were fully aware of the purpose of, and interrelationships between, old and new programs before those changes were implemented.

As noted in previous reviews, NSTec employees continue to have multiple opportunities to participate in safety and health programs. Employees are encouraged to attend and participate in monthly safety meetings. Employees can also volunteer to serve on various safety committees, such as the Continuous Safety Improvement (CSI) Team, Labor Alliance Safety Committee (LASC), DSC, or the Emergency Action Team (EAT). Employees continue to understand their right to pause or stop work in the event of a safety concern or issue. Employees understood how to report safety issues and concerns and expressed their comfort in doing so.

Several safety committees meet regularly to discuss safety issues, concerns, and promote safety awareness. The LASC represents the bargaining unit employees at NNSS. The bargaining unit is composed of approximately 450 employees representing 21 unions. The DSC represents the North Las Vegas facility personnel. Based on a 2009 recommendation, the DSC now represents bargaining and nonbargaining unit employees at the North Las Vegas facilities. The objective of the CSI Team is to sustain and improve VPP program elements. CSI members support this initiative by assisting with the evaluation and implementation of continuous improvement activities, participation in the performance of the NSTec VPP annual evaluations, and engage in VPP outreach activities as mission permits. The CSI Team is composed of NSTec representatives from each of the NSTec directorates/organizations and representatives from LASC and DSC.

These committees continue to support existing initiatives and seek new ways to promote employee safety. NSTec continues to sponsor the Annual Safety Calendar Artwork Contest to promote safety at work and at employees' homes. The employees' children submit their artwork depicting various safety topics. NSTec was considering halting the calendar fearing the promotion may be getting stale, but workers roundly rejected the suggestion. As a result, the calendar contest continues with excellent participation. The LASC and DSC continue to produce

newsletters that are widely distributed, containing safety topics and employee-related information. In addition, NSTec posts safety committee meeting minutes on the safety committee Web sites for all employees to review. The LASC Web site recorded over 750,000 hits in the past 24 months. In response to a 2012 opportunity for improvement, the DSC has adopted a more organized approach, creating an agenda for each meeting to help provide more structure to the meetings. NSTec recently revised all of the safety committee charters to help align the committees' expectations and offer a more standardized approach across all the committees.

In 2015, NSTec management implemented the President's Safety Council (PSC) to champion the long-term integration of safety throughout NSTec. The PSC serves as a forum to optimize implementation of safety initiatives and to provide an open venue for participation by NSTec personnel, including representatives of the CSI committee, DSC, and the LASC. The PSC is intended to provide a mechanism for NSTec personnel to routinely engage with NSTec senior management to discuss safety initiatives/successes, process improvements, and concerns. The PSC consists of the president (chair), vice president of operations (vice chair), vice president for program integration (vice chair), directors, general counsel, communication and government affairs, and two representatives each from the CSI, DSC, LASC.

The Team observed a DSC meeting. The topics of discussion included recent issues and the attendance of its leaders at the first PSC meeting. Individuals who attended the PSC meeting were supportive of the meeting and thought the meeting provided an excellent opportunity to improve communication between DSC members and the senior managers.

During the meeting, the DSC discussed a concern initiated by workers, involving administrative and white-collar employees not respecting maintenance workers' posted safety boundaries in the North Las Vegas area. Several examples were given that described those workers ignoring and stepping around safety boundaries, removing caution tape, and even bumping ladders workers were using as they passed through work areas with no regard for workers or the boundaries. As a result, the DSC plans to develop an informational video for broadcast site-wide that addresses these concerns and reminds all employees of the company's expectation that they respect safety boundaries. The NSTec Occupational Safety & Health (OS&H) division volunteered to provide financial and technical support for producing the video.

The Team attended and observed an LASC meeting. The chairperson of the committee described a solid relationship with the NSTec leaders supporting the committee. The chairperson described several examples where the managers effectively responded to issues raised by the committee. The committee believes that most supervisors are encouraging workers to raise issues and all efforts are being made to address significant issues. Interviews within the culinary and fleet maintenance subcommittees identified significant interest and investment by managers to solicit and respond to employee-presented concerns.

The Team attended the Culinary Safety Committee (CSC) meeting. The CSC represents one of many subcommittees that makeup the LASC community. The Team observed a group of workers willing to raise and discuss issues affecting their work environment. The Team observed many examples of employees demonstrating excellent group communication and discussing issues without any reservations. Members reviewed the equipment wish list with the supervisor. Interviews with workers described how the organization is working to identify

equipment in need of upgrades, tracking those issues, and sharing information with the group as it upgrades equipment. The culinary manager demonstrated strong support for VPP. The manager described how his facility has passed two health department inspections with 100 percent ratings. As a result, the company recognized the culinary staff with a plaque and cash award for its success.

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. The program allows managers and supervisors to immediately recognize employees with a cash award for recognizing and identifying potentially unsafe work or a safety noncompliance in the workplace. The *Great Catch Program* has distributed 518 cash awards since its inception.

NSTec uses newsletter communications to inform employees, and employees view these newsletters positively. All employees have access to the *Front Page, Labor Alliance Safety, and Safety Cents* publications through the NSTec homepage.

The *Bright Ideas* employee suggestion program implemented in 2012 continues to encourage and reward employee suggestions. The program encourages ideas that improve safety and efficiency. It facilitates employee input and then tracks employee-identified safety issues until NSTec resolves those issues. NSTec provides employees who submit the best ideas with monthly ($50) and quarterly ($500) awards. The NSTec president selects a $5,000 annual award winner. Since the start of the program, employees have submitted more than 500 bright ideas.

NSTec recently initiated the *Ask me about VPP* button program designed to enhance NSTec employee's awareness of VPP. The OS&H division leads the program on a voluntary basis. The program's focus is to expand employees' knowledge of the VPP process. The program provides the employees with campaign buttons to wear on their lanyards after they satisfactorily demonstrate that basic knowledge.

In addition, NSTec created the *I AM* campaign designed to enhance awareness of the NSTec collective expectations for safety excellence and continuous improvement, including being their brother's and sister's keeper. Employees are encouraged to sign the *I AM* pledge and discuss how they will implement that approach with their line manager. Workers have readily accepted this voluntary program.

The Team reviewed the NSTec 2014 VPP safety survey and the corresponding results. The CSI team conducted the survey with the intent of obtaining employee feedback on the effectiveness of the current NSTec VPP. The CSI team developed the survey questions that were easy to understand and reflected the five VPP tenets. The CSI team deployed the survey electronically to all nonbargaining employees and manually (hardcopy) to bargaining employees. The CSI team held a drawing to recognize the employees who participated in the survey process and awarded four Apple IPAD Air® tablets to the drawing winners. The CSI team awarded special prizes to 24 additional runner up participants. The survey overall respondent rate was 52 percent of the site employees (1,160 out of 2,250).

The VPP CSI team evaluated the survey results and made recommendations to senior managers based on those results. According to the CSI team's analysis, the VPP safety survey indicated that nonbargaining and bargaining participants had positive perceptions regarding managers

recognizing and correcting unsafe worksite conditions, individual knowledge of hazard identification, hazard analysis and mitigation processes, availability of personal protective equipment (PPE), and safety and health training being up to date. The CSI team is still evaluating the identified areas for improvement and developing additional 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 and have improved communication of their activities with members through their Web sites. The PSC represents an excellent tool to open improved communication with employees. NSTec meets the expectations of the Employee Involvement tenet for continued participation in DOE-VPP.

V. WORKSITE ANALYSIS

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

In 2012, the Team found the NSTec work control program, introduced in 2009, was an effective process for the identification and evaluation of hazards and the development of controls. NSTec had effectively incorporated analyzed hazards from the job hazard analyses (JHA) into facility procedures. NSTec had expanded and improved the work control process to more efficiently perform simple routine tasks without excluding them from appropriate hazard analysis. The Team did identify potential improvements that would incorporate the hazards and controls into routine work packages and several other improvements to help strengthen and refine the hazard analysis processes.

Integrated Safety Management System Description, PD-0001.001, describes the safety management system for the various activities across the site. The complexity of work at the site ranges from maintenance, construction, mining, and technical procedures to carrying out unique experiments at the NSTec facilities. As the prime Management and Operations contractor for NNSS, NSTec supports an array of users while executing contract requirements for NNSA/Nevada Field Office (NFO).

For nuclear facilities at NNSS, NSTec maintains the safety basis documents mandated by title 10, Code of Federal Regulations, part 830, Appendix B (10 CFR 830.202*), Nuclear Safety Management.* NSTec manages three Category-2 nuclear facilities: the DAF, the Radioactive Waste Management Facility, and the Non-Equivalent Transfer of Special Nuclear Material (SNM) at the NNSS. It also manages two Category-3 nuclear facilities/activities: the Subcritical Experiments activities (in U1A), and the JASPER facility. On August 6, 2014, NSTec self-identified a potential inadequacy of the safety analysis (PISA) at the U1A Complex. New information indicated that the method used to categorize the facility may require NSTec to categorize the facility as a Category-2 nuclear facility. That PISA had not been resolved as of this assessment.

At the facility level, DOE NNSA/NFO, *Real Estate Operations Permit*, Order NSO O 412.X-1F, provides the requirements for conducting activities at NNSS. NSTec implements requirements specified in NSO O 412.X-1F through CD (company directive)-G610.017, *Work Authorization (Real Estate Operations Permit, Facility Execution Plan, and Support Execution Plan).* The Real Estate Operations Permit (REOP) process uses a graded approach for work authorization and management of facilities and activities at NNSS. REOPs authorize programmatic work;

assign safety responsibility at the activity level; and document the roles, responsibilities, accountabilities, and authorities between REOP holders.

NSTec uses a systematic approach to activity level work control. Several key procedures implement work control for maintenance, construction work, and developing technical procedures. The NSTec *Integrated Work Control Process*, CCD-QA05.001; the *Work Package Process*, CCD-QA05.001-005; and the *Activity Level Hazard Analysis Process*, CCD-QA04.001-003, systematically identify and analyze hazards during the planning of work and in subsequent work execution. Based on the hazards and complexity of the work, NSTec prepares and approves work packages using an integrated process that seeks input from a multi-discipline team that includes safety and health professionals, craft, staff, subject matter experts (SME), and supervisors. The work package defines the scope and work hazards, plans the work, manages the associated risks, applies the mitigation/controls for the hazards, and incorporates lessons learned and feedback to improve the safety of future work. For technical procedures, *Technical Procedure Process and Use*, CCD-QA05.001-006, drives the requirements for developing procedures, such as emergency operating or maintenance procedures. Technical procedure development uses work control procedures as applicable.

When planning an activity, the planner initially identifies SMEs and lists activities on the Activity/Hazard Inventory Checklist (AHIC) to identify hazards for the work, along with CDs to do the work safely. For example, if ladders are used, the AHIC will list CD *Ladder Safety,* CD-P280.039, which defines the proper use of ladders, ladder maintenance, and training on ladder use. The planner bins the activities and applies a graded approach that determines the work package type and supporting documentation. The Type I work package is for high-complexity work; the Type II work package is for moderate-complexity work; the Type III work is for low-complexity work; and the Type IV is for minor work evolutions. Type IV work packages may employ the Tool Pouch Maintenance (TPM) sheet for simple work. Each work package, Type I-IV, requires some form of hazard analysis.

During this assessment, the Team observed work activities and reviewed several work packages. For example, the Team observed the construction of a containment barrier in a tunnel at U1A. The supervisor conducted a prejob briefing by reviewing the Pre-task Hazard Review (PTHR) work activities, PPE, safety equipment, and other items on the form. The supervisor ensured PPE and safety equipment were available. The work leader explained the activities of the work and clearly stated he was in control of the work. An industrial hygienist measured the noise levels from the overhead ventilation and monitored the impact noise during construction. The Team did not identify any unanalyzed or unanticipated hazards during the work.

Some job hazard analyses (JHA) and PTHRs reviewed by the Team contained ambiguous or nonspecific hazard identification statements. These processes use a checklist approach that directs the person performing the analysis to identify the controls. JHAs and PTHRs do not require specific identification of hazards, such as noise levels, height of work, specific chemical compound, chemical quantity, chemical form, or exposure pathways. The result is a generic control statement that leaves the final control selection to the worker, which increases the probability of worker error and selection of the wrong or inadequate controls. For example, the JHA in one work package lists “scraping” and “metal shavings” as the hazard and identifies generic “work gloves” as the control. The worker is left to select which work glove to use for

the job (leather work gloves, cut-resistant gloves, etc.). Another JHA listed "noise" as the hazard, but did not identify any sound level measurements that would lead to specific hearing protection. The controls did require "use of double hearing protection if greater than 100 dB (decibels)," but did not identify the means to measure that level. NSTec should consider revising the PTHR and JHA to include and document a specific analysis that leads to specific selection of controls based on the analysis.

NSTec called an operational pause in the summer of 2014 after several severe safety incidents. During the pause, managers and supervisors had conversations with their workers to solicit their feedback and concerns. The most cited concern was the need to improve the work planning and communication during the work package development. Worker feedback on work planning indicated workers are not involved in the input development process early enough. Workers also commented about their lack of participation in pre-job reviews, inadequate walkdowns by planners, and excessive documentation in the work package. Some comments indicated workers believed the REOP was good for hazard identification, but was less than adequate for deriving hazard controls. Other comments indicated workers' belief that the REOP and Facility Execution Plan were less than adequate for implementing ISM at the facility level.

NSTec took several actions to address these concerns. It published *Pre-Job Briefings and Post-Job Debriefings*, CCD-QA05.001-009, to improve the communication between the job supervisor/foreman and workers regarding the scope, hazards, and controls of the activity before the start of, and after the completion of an activity. At the time of this assessment, NSTec had formed a new team to improve the entire work planning and control process, including concerns raised by workers during the operational pause feedback discussions. NSTec is tracking the progress of all corrective actions to address longstanding and systemic corporate-wide difficulties in work planning and controls.

NSTec completes and documents baseline exposure evaluations for facility hazards through the health hazard evaluation (HHE) process. HHEs that the Team reviewed were comprehensive and informative. Baseline hazard surveys include the evaluation of hazards, such as asbestos, beryllium, noise, chemicals, radiation, and confined spaces. The HHE contains valuable information for work packages, toxic hazard work permits, JHAs, and the Hazard Substance Inventory System. NSTec completes approximately 150 HHEs annually. The analysis includes a list of deficiencies, recommendations, and corrective actions. In 2012, the Team recommended placing the HHE in central locations in the facilities for workers to review. NSTec implemented that recommendation, and workers were aware of the HHE and its contents.

The Team observed improvements in the HHE program since the last assessment. To improve the HHE and provide consistent information, the industrial hygiene (IH) section developed a checklist that helps the industrial hygienist prepare the HHE during all phases (pre, during, post) of the process. In addition, a peer review ensures each completed HHE is a quality product. *Industrial Hygiene Health Hazard Evaluation, Assessments, and Reports*, OP-P450.018, now uses a graded approach for the frequency of HHE review. For facilities categorized as *high* workplace hazards, NSTec conducts annual HHE reviews. NSTec reviews *medium* category workplaces every 3 years and reviews *low* category workplaces every 5years. This process helps keep the IH staff engaged with higher hazard facilities.

NSTec conducts inspections of facilities as prescribed in *Formal Workplace Inspection Program (FWIP)*, CD-P280.006. The purpose of the inspections is for employees to inspect work locations for hazardous conditions and to document hazards for mitigation. NSTec posts the FWIP inspection forms in the work areas. NSTec uses a graded approach to prioritize issues found during an inspection. *Issues Management*, CCD-QA03.001, defines risk based using probability and consequence to define priority levels (PL). The PLs range from 1 (high risk) to 4 (low risk). NSTec collects all issues in caWeb. Many of the FWIP forms contain *find and fix* issues, defined as PL 4, which NSTec collectively tracks and analyzes for other trends.

NSTec conducts facility inspections according to the facility type or activity. It inspects most facilities quarterly, but it only inspects administrative areas semi-annually, per Table 1 of CD-P280.006, *Formal Workplace Inspection Program (FWIP).* DOE-VPP guidance establishes an expectation for continuous activities to complete hazard verifications, or facility inspections, no less frequently than monthly and to cover the entire worksite at least quarterly. NSTec should revise its inspection schedule of administrative areas to meet the DOE-VPP guidelines.

Opportunity for Improvement: NSTec should revise its inspection schedule of administrative areas to meet the DOE-VPP guidelines.

NSTec uses a company-wide dashboard to display company performance. The data are trended and compared to established performance indicators. NSTec trends data, such as first-aid cases, injuries, near-misses, TRC rates, and DART rates, as indicators of the safety and health program performance. The Mission Assurance and Safety Directorate establishes safety and health goals using other indicators, such as lessons learned, facility walkdowns, and self-assessments. The senior staff evaluates the dashboard trends during senior staff meetings. NSTec relies primarily on lagging indicators rather than using leading indicators (see Management Leadership).

NSTec uses *Accident/Incident Notifying, Investigating, and Reporting*, CD-P280.007, to conduct investigations and report accidents, incidents, and near-misses. Based on interviews, workers understood the need to report all injuries, illnesses, or events to their supervisor. The supervisor is the responsible person to document the circumstances, complete the injury illness/incident report (FRM-0018), and determine the corrective actions needed. The supervisor solicits input from workers, shop stewards, safety professionals, occupational medicine, and the Mission Assurance and Safety representative during the investigation of incidents. The occupational safety department receives the completed illness/injury reports. This effective process yielded a comprehensive investigative report for the drum explosion at NPTEC during the summer of 2014.

Conclusion

NSTec has mature programs that characterize hazards in the workplace. It uses this knowledge to plan and execute its mission safely. More effective documentation of the analysis of activity-level hazards will help NSTec reduce inefficiency and help prevent worker errors. The current effort to improve the overall work planning and control process will require time to mature, and NSTec should ensure it continues to seek worker involvement as it proceeds. NSTec continues to meet the expectations for Worksite Analysis and continued participation in DOE-VPP.

VI. HAZARD PREVENTION AND CONTROL

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

In 2012, NSTec appropriately controlled hazards via the hierarchy of controls, with PPE used only when engineered or administrative controls could not be practically applied. However, the Team observed that unclear expectations for the use of PPE represented a potential vulnerability. Occupational medicine staff was investigating new technologies to more reliably and proactively identify health and wellness issues before they became an injury or illness. The 2012 Team noted that the wellness program had some success; however, NSTec needed to continue the program's momentum and identify methods to improve employee participation. NSTec maintained a cadre of experienced and certified safety professionals to provide continuous proactive services and programs.

The Team found many examples where NSTec eliminated hazards. Due in large part to the drum explosion event at NPTEC in 2014, NSTec is making a concerted effort to eliminate chemical hazards in the workspaces across the company. At NPTEC, NSTec has been removing legacy chemicals from past experiments and removing unused equipment. At NPTEC alone, NSTec disposed of 475 chemicals and is identifying and properly disposing of legacy chemicals at the Hazardous Waste Storage Area. NSTec is completely revising its chemical management program to implement better cradle-to-grave tracking, reduce long-term storage of chemicals, and eliminate unnecessary chemical hazards. NSTec is also eliminating hazards by replacing legacy equipment with less hazardous, more efficient, equipment, such as the large 3-D printer at STL. NSTec has also eliminated many photo-processing chemicals at RSL Nellis by using large format, high-resolution color printers. Finally, NSTec is excessing legacy equipment to remove it from storage locations and eliminate the need to monitor that equipment for contamination, and to improve access in storage areas.

In 2014, NSTec identified beryllium contamination in the U1A underground. The contamination resulted from wear on doors that used a beryllium copper finger (e.g., finger stock) that provided electrical grounding. For many years, a worker had been cleaning those doors on a regular basis. When that worker retired, the new person was not aware of the need to wipe the doorframes and closure mechanisms, and therefore beryllium began to build up. NSTec is now eliminating beryllium finger stock for doorway seals in several locations and replacing it with seals made of nonhazardous material. NSTec actively identifies older products; e.g., cleaning agents like ammonia, bleach, and alcohol that may have less hazardous substitutes, using hazard communication (HAZCOM) and HHE reviews.

NSTec uses a variety of engineering controls to minimize exposures to employees in the workspaces. For example, it uses local exhaust ventilation for welding fumes, dust control, and ventilation for vehicle maintenance. It uses gloveboxes for cleaning beryllium-containing material, interlocks for laser operation, and an eyewash station for the U1A battery charging station. In addition, at RSL, NSTec workers use platforms with handrails for working on aircraft so workers do not require fall protection. Although not required by OSHA regulations, NSTec installed an eyewash station near a work area where workers use a two-component epoxy for gluing shipping containers at STL. As a good practice, RSL identified that liquid nitrogen stored in Dewars in laboratories presented a potential oxygen displacement hazard if a Dewar leaked. In those locations, RSL installed oxygen monitors with an alarm in the hallway outside the laboratory to warn workers of a potentially hazardous situation before entering the room.

In the heavy equipment shops, employees requested equipment for lifting heavy tires to help them remove and replace wheels on vehicles. The employees researched available equipment and options and recommended a tire machine to managers, who purchased the equipment. This portable equipment loosens lug nuts and removes the tires from heavy equipment, reducing the potential for injury while changing tires. This equipment prevents repetitive motion and ergonomic injuries, such as back strain and shoulder injuries, because the tool applies the force rather than the person.

NSTec purchased a machine that transfers oil in and out of heavy vehicles. It electronically monitors and tracks the oil and transfers the waste oil into a used oil tank. This reduces worker exposure to hazards associated with used oils by reducing skin contact and the potential for oil splashing onto the worker's face and eyes. NSTec also acquired an automatic part cleaner to handle the residual solvents and chemicals, further reducing potential for personnel exposure.

Administrative controls are evident throughout NSTec. NSTec posts warning signs and information signs in prominent locations across the site. Administrative controls in procedures and work documents are evident. NSTec documents warnings in caution boxes prior to the applicable step(s) in the procedure and work packages and annotates technical safety requirement controls prior to the step(s) that identify the control requirements. NSTec implemented other administrative controls through procedures. Some examples include dust suppression requirements in the procedure for applying shotcrete in U1A, inventory controls for cryogenic storage areas, and added HAZCOM reviews to process reviews and storage decisions.

The Team observed NSTec workers appropriately using PPE in their work areas. Examples included safety glasses, hardhats, and work gloves. NSTec provides custom-molded earplugs for workers in addition to the typical commercial foam earplugs. The custom-molded earplugs provide better hearing protection and greater comfort for workers. Ear muffs are also available for workers to use. In the sheet metal shop, a worker, through personal choice, used approved safety glasses with removable foam covering the frame-sealing surface instead of a faceshield, because he felt it provided more protection against airborne particulates for his eyes. This brand of safety glasses is a new product approved for use at NSTec. The PPE required by the work package identified a faceshield. Although the worker believed he made a better choice for eye protection for this task, he did not pause and engage the safety representative or SME to evaluate the work package, validate his assumptions, and change the work package.

The Team observed use of the PTHR in U1A for a Type 3 work package involving electrical work. In a discussion with the electrician, the Team asked about the use of work gloves. Work gloves are clearly required according to the PTHR form. The generic term *work glove* leaves the correct choice of hand protection up to the worker. The worker could select from a variety of different work gloves depending on the hazard. For example, for electrical work the workglove is often a combination rubber and leather glove for arc-flash protection. If a worker selects a simple leather glove rather than the combination glove, they would be a risk. NSTec is developing a new work control process and has not yet determined if it will continue the use of the PTHR form (see Worksite Analysis)

Most shop areas visited by the Team were clean, neat, and orderly. It was clear that workers took pride in the workspaces and kept working hazards to a minimum. In some shop areas, the Team observed signs requiring hearing protection and safety glasses posted at the entrance. The entrance leads to a hallway with lockers where workers store their PPE. Consequently, workers must enter the area posted as requiring PPE before they can retrieve and don that PPE. The PPE is not actually required until the workers enter the shop area past the lockers. Ambiguously worded or incorrect signs lead workers to accept noncompliance with the posted requirement, and lead to inconsistencies and misinterpretation by employees. As in previous assessments, the Team observed signs that no longer applied.

Opportunity for Improvement: NSTec should evaluate and replace incorrect or misleading signs.

As noted in the 2012 review, NSTec has preventive maintenance (PM) programs intended to maximize the life of a piece of equipment and ensure that it functions in the required manner. The PM system uses the equipment manufacturers' recommended service intervals and scope for most equipment. NSTec corporate policies require maintenance in excess of manufacturers' recommendations for select safety and security equipment. A computer system is used to track and trend maintenance work. NSTec's current maintenance backlog is 9.5 weeks and increasing. In February 2015, NSTec averaged 80 work orders overdue for 120 days or more. General services and balance-of-plant work orders make up the bulk of these overdue orders. NSTec is maintaining a 100 percent completion rate for mission critical facilities' PM. Maintenance crafts are currently incurring rolling furloughs as a cost-saving measure, which may also contribute to the increasing backlog for general services and balance-of-plant maintenance.

Continuing budget uncertainties are causing NSTec to reevaluate its maintenance priorities. Based upon budget projections, NSTec is implementing a Consolidated Maintenance Program (CMP) to ensure important work it supports for the Defense Experimentation and Stockpile Stewardship Directorate and other facilities receive the support needed to continue. The implementation plan, RTBF-PLN-005, *Consolidated Maintenance Program (CMP) Implementation Plan,* outlines changes to the current maintenance planning and execution system. Essentially, the approach will consolidate the maintenance function, establish clear priorities, defer maintenance for facilities that are not used, reduce low value PM, establish effective PM for high value assets, and ensure that upcoming experimental activities include sufficient funding to cover maintenance costs. CMP will establish criteria for assuming more risk for equipment that is run to failure, eliminate maintenance stovepipes for planning and

execution, establish a maintenance forum for planning and execution, and evaluate balance-of-plant and general services maintenance activities for cost savings. NSTec began a phased implementation of CMP in October 2014 and it expects to complete implementation in 2015.

Some employees expressed a concern that some deferred maintenance might lead to an unsafe condition. Those employees believed managers might be making deferment decisions without adequately understanding the hazards the deferred maintenance creates for workers. To maximize the operating experience knowledge and make informed decisions about future maintenance, NSTec should ensure it includes crafts, planners, and other knowledgeable workers in the decisionmaking process to support the new CMP.

Opportunity for Improvement: NSTec should ensure it includes crafts, planners, and other knowledgeable workers in the decisionmaking process to support the new CMP.

The NSTec Emergency Preparedness Program follows the requirements in DOE Order 151.1C, *Comprehensive Emergency Management System*. Further guidance is found in DOE Guide 151.1-1A, *Emergency Management Fundamentals and the Operational Base Program,* which expands and explains the intent of the Order. NSTec aligned its program to support the Federal Emergency Management Agency's (FEMA) National Incident Management System (NIMS) concept by implementing one Emergency Operations Center to coordinate onsite and offsite response to incidents. A component of FEMA, NIMS is a systematic, proactive approach to guide Departments and Agencies at all levels of Government, nongovernmental organizations, and the private sector to work together seamlessly and manage incidents involving all threats and hazards, regardless of cause, size, location, or complexity, in order to reduce loss of life, property and harm to the environment. NSTec performs drills and tabletop exercises replicating potential scenarios that may involve site employees. NSTec implemented a new site-wide notification system that transmits mass notifications to employee desktops. Conversations with first responders in the fire department and explanations of equipment capabilities indicate that NSTec has significant resources to address upset conditions onsite. These capabilities include the Incident Command Vehicle, all-terrain vehicles, support vehicles to transport water, large pumper trucks, and lighter weight pump trucks for off-road fires. Lightning-induced fires in areas with minimal or limited access pose special challenges. The fire department uses a system tied into real-time meteorological data to predict where lightning strikes may occur and to prepare responders onsite to quickly subdue a fire before it becomes a major threat.

Individual facilities also engage in drills to practice responses to potential upset conditions. For example, NSTec simulates fire conditions using a nontoxic smoke simulator in the underground facilities. Other facilities use spill scenarios or *Active Shooter* scenarios to assess worker response and improve their program.

10 CFR 835, *Occupational Radiation Protection,* establishes requirements for the NSTec radiation program to protect individuals from ionizing radiation resulting from DOE activities. DOE/NV/25946, 144 Rev 2, *Nevada National Security Site Radiation Protection Program (RPP),* implements the program. The RPP addresses many aspects of radiological controls, including control of residual radioactive contamination; establishment; and maintenance of radiologically controlled areas and radioactive waste storage, characterization, and disposal.

The Team observed the receipt of radioactive waste during this assessment. Technicians identified several methods they use to reduce exposures when receiving remote-handled waste. For example, NSTec identifies shielded areas for workers when receiving high-activity waste. In addition to qualifying technicians at NNSS, the NSTec RPP qualifies personnel at remote sites, such as STL, to perform specific radiation protection tasks. STL controls radioactive sources it uses to test equipment response. Those controls include secure storage locations, and periodic inventories and leak checks. Personnel interviewed were thoroughly familiar with their responsibilities under the RPP.

NSTec trains some radiation protection technicians at NNSS to perform IH monitoring. These radiation technicians may perform activities, such as sampling for chemicals, oxygen monitoring, and air sampling, in radiologically contaminated areas.

The NSTec Occupational Medicine Program (OMP) is continuing to perform at a high level. It continues to provide workplace surveillances, medical testing, triage, and fitness-for-duty examinations. As found in 2012, OMP staff perform medical evaluations 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. The program engages the work supervisor in the process to identify the scope of work and describe the demands that workers may encounter. A physician then evaluates the employee against the demands to ensure the employee can safely accomplish the tasks. The employee cannot work until OMP completes the evaluation.

The OMP is implementing a new medical records system. The Electronic Medical Business Operation System (EMBOS) allows employees to enter information into a computer in the occupational medical facility. Using the computer, employees respond to questions pertaining to their health, illness, health question, injury, or treatment. NSTec transfers this information to a database that the attending medical provider uses to review an employee's medical history during an office visit.

NSTec still uses the medical service request (MSR) as a tool for workers' entrance into medical surveillance programs. Supervisors complete the MSR at least annually for workers with an annual medical surveillance program requirement, such as hearing or lead testing. Additionally, NSTec completes a new MSR for workers each time a change occurs, such as rehiring, job rotation, or evaluating fitness for duty. IH reviews and approves the MSR prior to the worker's medical appointment.

The NSTec wellness program continues to provide excellent support for NSTec employees. NSTec is constantly searching for new and innovative ways to improve employee health both on the job and at home. Last year it held two health fairs to promote healthy life styles with outside vendors promoting their health screenings, products, and programs. Some of the health fair vendors' focus areas included diabetes, heart health, exercise and weight reduction, and aging. Employees submitted healthy recipes that NSTec compiled into a cookbook for employees at the health fair. Informational pamphlets, such as *100 reasons to exercise, 13 carb-controlled snacks, Wellness Council of America's special report on 10 things you can do right now, and 30 days of fun fitness by Reebok®,* were just a few of the pamphlets available. The wellness program promotes challenges with rewards, such as iPads®, e-readers, backpacks, and other items, to encourage participation. The wellness program provides contacts, programs, and counseling for employees who wish to participate. Typically, staff will travel to the site to support a group's

request for information or evaluations. NSTec uses vendors to support its wellness efforts and activities where possible. One of the wellness program's challenges is being able to ensure a minimum number of employees required for a vendor to invest the time and money to support the NSTec wellness program. The OMP staff is trying to find effective means to engage more employees in the wellness program events, thereby increasing the audience for vendor participation. One major hurdle to broader participation is that NSTec has not committed to allowing all employees an opportunity to participate during normal working hours. Making such a corporate commitment might allow NSTec to attract more vendors and significantly increase the number of workers participating in wellness initiatives. NSTec should consider ways to allow more employees to attend health fairs or set aside time for employees to attend.

Opportunity for Improvement: NSTec should consider ways to allow more employees to attend health fairs or set aside time for employees to attend.

As observed in 2012, employees follow the safety and health rules. Interviews with employees indicated they know and understand the disciplinary process if they violate safety and health rules. Most people interviewed felt this process was both fair and consistent and gave examples of positive reinforcement received from supervisors and managers for good work practices.

Conclusion

NSTec follows the hierarchy of controls to eliminate, substitute, engineer, and administratively control hazards. As a last resort, it requires PPE to protect workers from hazards. As NSTec changes its maintenance program to consolidate, integrate, and better manage the available resources, it should involve the workforce in those decisions to ensure all outcomes and consequences are considered. NSTec is improving its radiation protection and emergency management programs to make the best use of available resources. The OMP is very customer oriented and is trying to engage more workers. NSTec meets the expectations in the Hazard Prevention and Control tenet for continued participation in DOE-VPP.

VII. SAFETY AND HEALTH TRAINING

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

The 2012 VPP report concluded that NSTec continued to have a comprehensive and systematic approach to training that ensured personnel were appropriately trained and qualified prior to performing work within NSTec-managed facilities. The employees continued to receive safety training, which prepared them to perform their job safely. The Team recommended that NSTec consider supplementing the Supervisor Safety Training (SST) program to permit supervisors to complete the Council on Certification of Health, Environmental and Safety Technologists (CCHEST) certification as a means of professional growth and preparing supervisors for other opportunities. NSTec maintained 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 operate and maintain a safety and health training program that adequately addresses employee training and qualifications. NSTec manages this training program through a centralized training organization with qualified trainers and approved lesson plans. The training organization is responsible for providing training programs that enable employees to perform quality work in support of NSTec objectives. 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. The NSTec training group continues to use OS&H SMEs to assist in developing and approving training as well.

NSTec is working to improve the quality of its training by providing better access to instructor-led classes. The training group has approximately 75 Web-based courses. Computer-based training represents 33 percent of training offered. The training group continues to use additional staff to enable them to develop Web-based courses in-house rather than rely on vendor-provided courses. The training group intends to utilize the in-house development capability to tailor future training to NSTec-specific hazards and processes. NSTec is in the process of implementing a video teleconference (VTC) training room to deliver instructor-based courses to remote locations. NSTec hopes that VTC will result in training/travel costs savings while providing quality instructor-based training to remote locations.

A review of training curricula and interviews with personnel indicated that the safety and health training program at NSTec continues to run effectively. Specifically, the Team reviewed the course manuals and lesson plans prepared for training for scaffolding, aerial lifts, basic math for machinists, asbestos awareness, entry-level driver basics awareness, and underground safety for nonminers. The training modules are well written in a user-friendly style that was conducive to effective learning.

The Team's review of the underground safety for nonminers training did identify some potential vulnerabilities based on the lessons learned from the 2014 underground fire at WIPP.

Specifically, NSTec defines nonminers as "personnel at an underground facility who will perform work other than mining-related activities." The NNSS *Underground Facility Safety and Health Program Description*, (UFS&HPD)(PD-P200.002; October 15, 2013), Section 2.2, *Safety Training and Education,* requires that personnel who are classified as miners and/or are involved in the mining operations complete 40 hours of training in accordance with 30 CFR 48.5, *Training of new miners; minimum courses of instruction; hours of instruction;* 30 CFR 48.6, *Experienced Miner Training;* and 30 CFR 48.8, *Annual refresher training of miners; minimum courses of instruction; hours of instruction*. This training also includes the requirements of 29 CFR 1926.800(d), *Underground Construction*. Other personnel needing access to the underground facility receive only 4 hours of training in accordance with 29 CFR 1926.800(d). Personnel who are exposed to underground hazards or assigned additional duties (i.e., escort, EAT, Local Emergency Director) require additional training. The Team's concern with the UFS&HPD definition and the corresponding training recommendation is that, as learned during the WIPP fire in February 2014, personnel working underground who receive only the 4-hour training may not react reliably in accordance with their training, putting themselves and others at risk in the event of a severe accident.

The OSHA underground construction regulation provides specific requirements for training and protection of personnel, but NSTec has been exempted from some of those requirements. The training requirements established by OSHA for underground construction are based on all the safety standards being met. Consequently, the exemption from standards may expose underground personnel to additional hazards for which they are unprepared to respond. Any event in the underground (fire, smoke, power failure, and/or release of toxic gas) exposes those personnel to hazards from which they cannot rapidly escape. NSTec training identifies that nonminers require additional assistance. For example, the nonminer training specifically instructs personnel to seek out experienced mine personnel for direction in the event of an emergency. In another example, the training directs personnel to go to the nearest refuge chamber in the event the personnel are unable to exit the facility during an emergency. The training then states:

Although unlikely, in the event there are no assigned mining personnel in the refuge chamber, you will want to know how to complete the Emergency Plan Implementing Procedure (EPIP) for the refuge chamber you are in. These directions can be found in each refuge chamber. Each refuge chamber is unique and will have unique emergency procedures. These procedures typically will contain the following:

- *When is it safe to remove your rescuer;*
- *When and how doors/hatches are to be sealed and who performs the task;*
- *Means of measuring toxic gas and interval of measurements; and*
- *Equipment startup and communications.*

Expecting employees to learn and execute multiple EPIP procedures during an emergency is nonconservative and relies too heavily on the individual to respond appropriately. The U1A Complex Access Control document (OP-U1A.046), limits the number of personnel allowed in

the mine to 100 individuals. NSTec also maintains 15 experienced miners on station at U1A with 10 of those miners underground any time individuals are in the mine. However, based on discussions with WIPP personnel who were involved in the underground fire, training unescorted personnel to the higher standard provides greater assurance they will be able to react appropriately to protect themselves and others in an emergency event. During the WIPP fire event, several Massachusetts Institute of Technology students began their first day working underground on the day the fire occurred. The students were located in a research area of the WIPP underground so no experienced miners were present to assist. WIPP managers conservatively designated any personnel working underground for more than 10 days as mining personnel and required those personnel to complete the 40-hour MSHA training. Because of that decision, those students correctly donned their protective gear and safely evacuated the mine. NSTec should analyze the underground training using the NSTec training group; OS&H division; and selected representatives from MRT, in consultation with the WIPP safety group, to ensure underground workers' training prepares them to respond to unlikely, but severe, accidents.

Opportunity for Improvement: NSTec should analyze the underground training using the NSTec training group; OS&H division; and selected representatives from MRT, in consultation with the WIPP safety group, to ensure underground workers' training prepares them to respond to unlikely, but severe, accidents.

The NSTec training group recently developed a confined space training simulator program. NSTec used suggestions from previous confined space training students to develop the simulator. The confined space simulator utilizes a small sea-land type container with several access points to simulate multiple confined space conditions. The unit gives students a more realistic confined space entry experience without the hazards associated with confined space work. The simulator provides the opportunity for students to perform hands-on confined space rescues in a controlled environment. The training provides a more realistic training experience, which increases knowledge and skill transfer from the classroom to the actual work environment.

Training office 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, including remote sites, such as NSTec Livermore Operations, NSTec Los Alamos Operations, STL in Santa Barbara, California, RSL at Nellis AFB, and RSL at Andrews AFB.

As in 2012, the training office personnel, working with SMEs in the OS&H division, develop the training courses that explain the tasks, associated hazards, and the controls that mitigate hazards and protect workers. The training organization maintains a comprehensive catalog of available training courses. NSTec evaluates training course needs, and a schedule of training classes is prepared. The training group tracks course registration and course completion and modifies the availability of courses to ensure the training program meets the company's needs.

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 supervisors and managers to schedule refresher training before the employees' required training expires.

In 2012, the Team identified several workers who were unaware of some hazards related to their area and work. NSTec policy only required an employee to take the general employee training (GET) once at the beginning of employment and relied on other employee training to ensure adequate hazard control knowledge. At that time, the Team recommended that NSTec should consider incorporating a refresher GET training program to ensure workers were knowledgeable of new hazards identified over time and to reinforce the presence of known site and facility hazards. Because of the level of effort required to implement the program, NSTec decided the benefit would not be worth the resources required to implement site-wide refresher GET training.

However, NSTec still does not ensure workers are effectively aware of changing program or procedure requirements. When changes to safety programs or regulations occur, the Electronic Document Management System provides the changes to the training group and forwards the changes by e-mail to all managers and supervisors. The managers must then review and evaluate the documents and identify the workers under their supervision who need to be aware of those changes. Interviews with workers indicated that workers are not always aware of changes made to relevant procedures.

NSTec can improve its process for implementing changes to requirements documents to ensure affected workers are aware of the changes. For example, NSTec could identify all training courses that require revision because of that change and all current personnel who completed that training course per the Plateau database. The training group could then provide the changed documents (with a narrative describing the changes) to affected workers' (crafts) supervisors, along with a list of the affected workers. Using that information, supervisors could ensure they brief the workers regarding the changes. This procedure would efficiently and effectively provide relevant information to workers before policy changes are implemented. NSTec should ensure the document revision process effectively identifies workers affected by document change and ensure it trains those workers on the changes as part of the change implementation.

Opportunity for Improvement: NSTec should ensure the document revision process effectively identifies workers affected by document changes and ensure it trains those workers on the changes as part of the change implementation.

As described in the 2012 review, NSTec continues to use two programs for developing new managerial talent and encouraging professional growth. The first is the NSTec Mentoring Program. This program's purpose is to capitalize on the strengths and experience of the current workforce as a learning asset for employees engaged in professional and personal development. Under this program, nonbargaining unit personnel can ask to establish a formal, voluntary mentor-mentee relationship with a person who is at least two pay grades higher and not in the worker's managerial chain. The relationship is subject to approval by a program coordinator who reviews both the mentor and mentee qualifications and workloads. 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 senior managers consider this as an excellent tool to develop new talent.

The second program is a management development program called Network (formerly the Next Generation program). Network is a company-sponsored, employee-led professional

development and social networking group. The group has four committees that develop and promote membership, professional development, organize social and networking activities, and identify community service opportunities. Participation in the program is voluntary, involving an established selection process that includes formal postings for new positions. Candidates must apply for the postings. A selection committee, consisting of NSTec managers, evaluates the applicants and selects the final candidates. The selecting managers are directly involved in the leadership training provided by the program. NSTec managers believe this program is an excellent opportunity for younger employees to develop leadership skills.

Conclusion

NSTec continues to have appropriately trained and qualified workers based on a comprehensive and systematic approach to training. NSTec should use the lessons learned from the WIPP fire event to identify improvements to the underground training. NSTec should evaluate its document revision process to ensure NSTec effectively identifies workers affected by document changes for additional changes. NSTec continues to employ programs to train, mentor, and foster good working relationships among promising new candidates for management positions to help them understand and assimilate NSTec management expectations. NSTec continues to satisfy the expectations of the Safety and Health tenet for continued participation in DOE-VPP.

VIII. CONCLUSIONS

NSTec maintains a large, complex safety program necessary that supports the NNSS mission. It continues to face significant challenges associated with long distances between facilities and security requirements that can hinder effective communication to workers and discourage senior managers from travelling to work areas. These challenges became particularly evident when several accidents occurred in June 2014. Since that time, NSTec has implemented extensive changes to processes and procedures designed to empower workers, enable managers to be more visible and accessible, and better align program priorities and budgets. The extent of its efforts reflects NSTec's commitment to excellence and intent to *exceed expectations* rather than settle for compliance. As such, the Team recommends that NSTec continue to participate in DOE-VPP at the Star level.

APPENDIX A

Onsite VPP Assessment Team Roster

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