Mission Support Alliance, LLC Volpentest Hazardous Materials Management and Emergency Response (HAMMER) Federal Training Center

Report from the Department of Energy
Voluntary Protection Program
Onsite Review
September 8-11, 2014

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

FOREWORD

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

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

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

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

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

This report summarizes the results of DOE-VPP evaluation of Mission Support Alliance, LLC, Volpentest Hazardous Materials Management and Emergency Response (HAMMER) Federal Training Center conducted during September 8-11, 2014, and provides the Associate Under Secretary for Environment, Health, Safety and Security with the necessary information to make the final decision regarding HAMMER's continued participation in DOE-VPP.

Table of Contents

ABBREVIATIONS AND ACRONYMS

AJHA	Automated Job Hazard Analysis
AU	Office of Environment, Health, Safety and Security
AU-12	Office of Worker Safety and Health Assistance
BLS	Bureau of Labor Statistics
CSHA	Craft-Specific Hazard Analysis
DART	Days Away, Restricted or Transferred
DOE	Department of Energy
EP	Emergency Preparedness
EZAC	Employee Zero Accident Council
FERO	Facility Emergency Response Organization
GHA	General Hazard Analysis
HAMMER	Volpentest Hazardous Materials Management and Emergency Response Federal Training Center
HAMTC	Hanford Atomic Metal Trades Council
HAZWOPER	Hazardous Waste Operations and Emergency Response
HGET	Hanford General Employee Training
HPMC	HPM Corporation
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
JHA	Job Hazard Analysis
MSA	Mission Support Alliance, LLC
MSC	Mission Support Contract
NAICS	North American Industry Classification System
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment
SIP	Safety Improvement Plan
Team	Office of Environment, Health, Safety and Security DOE-VPP Team
TRC	Total Recordable Case
VPP	Voluntary Protection Program

EXECUTIVE SUMMARY

The Hanford Site Volpentest Hazardous Materials Management and Emergency Response (HAMMER) Federal Training Center was initially certified as a Department of Energy (DOE) Voluntary Protection Program (VPP) Star site in 2002. In 2005, it was recertified as a DOE-VPP Star site. Fluor Hanford operated HAMMER until August 2009 when the HAMMER workscope was placed in the Mission Support Contract and awarded to Mission Support Alliance, LLC. Following the completion of the DOE-VPP transitional process, it was again recertified as a Star site in 2011. This triennial assessment of HAMMER provides a review of its safety programs for its continued participation in DOE-VPP.

Injury rates for the HAMMER workforce for the past 3 years are over 70 percent below the rates for the comparative industry of educational services. Injury rates for subcontractors typically are statistically higher than average for the same industry, but during the past 3 years there have been no injuries to subcontractors at the HAMMER facility.

Managers at HAMMER fully support continued safety improvements and provide workers with the necessary resources to accomplish that goal. Managers ensure the HAMMER mission of providing safe, quality training *as real as it gets,* is accomplished. Managers support each training division with technical assistance, acquisition of training aids, and encourage innovative training scenarios to provide a realistic training environment. Management support for the Employee Zero Accident Council and worker involvement is clearly visible.

Employee Involvement at the HAMMER facility continues to be excellent. Clear and open communications between managers and employees were evident during this review. Programs are in place to ensure workers have ample opportunity to provide input to improve safe work practices across the facility. Logbooks are available for workers to document hazards and safety issues. Managers and workers perform facility walkdowns to inspect worksites for new hazards or degrading conditions.

HAMMER has identified, analyzed, and documented the hazards at the facility via the hazard baseline document and updates the document annually. Workers at the site have a very good working knowledge of the hazards and typically correct issues before they become a problem. HAMMER uses the MSA hazard analysis processes and, since the last review, has improved its documentation.

HAMMER has effective processes and programs that adequately control hazards. The use of the hierarchy of controls (i.e., substitution, engineered controls, administrative controls, and then the use of personal protective equipment) continues to be a strength at the HAMMER facility. Initial and ongoing training for workers, supervisors, and managers continues to provide a full understanding of the hazards and controls within their work areas.

HAMMER managers and staff are fully committed to the tenets of DOE-VPP. They provide safe quality training to students across the DOE complex and other customers through continued vigilance and innovative approaches to ensure training is safely accomplished. The Office of Environment, Health, Safety and Security DOE-VPP Team recommends HAMMER continue to participate in DOE-VPP at the Star level.

TABLE 1
OPPORTUNITIES FOR IMPROVEMENT

Opportunity for Improvement	Page
HAMMER should find a way to attract and retain qualified safety professionals.	4
HAMMER managers should ask EZAC for recommendations to address identified safety issues and encourage EZAC to initiate and take ownership of activities that actively support continued safety improvements.	4
HAMMER should develop challenging, achievable safety goals that focus on improving its safety culture.	5
HAMMER should consider breaking housekeeping down into different housekeeping issues so that it can better identify and trend potential hazards before they lead to injuries.	7
HAMMER should update the EZAC charter and use the opportunity to strengthen the roles and responsibilities within the charter.	8

I. INTRODUCTION

The Hanford Site Volpentest Hazardous Materials Management and Emergency Response (HAMMER) Federal Training Center began in 1986 as a community-based initiative to improve training for hazardous materials workers, emergency responders, and firefighters in the Tri-Cities area of Washington (Richland, Kennewick, and Pasco) adjacent to the Department of Energy (DOE) Hanford Site. Tri-County Fire Commissioners, the Benton-Franklin Regional Council, and local labor councils developed the concept. The Tri-Cities Development Council Executive Vice President, Sam Volpentest, convinced Congress and DOE that Hanford Site workers and emergency responders needed hands-on training to protect the safety and lives of workers and the surrounding communities. In 1994, Congress appropriated funds to begin operations in a temporary facility and initiate the construction of HAMMER. Upon completion of construction in September 1997, HAMMER was officially dedicated. Mission Support Alliance, LLC (MSA) operates HAMMER under contract to DOE.

Located in Richland, Washington, HAMMER is integral in preparing workers and emergency responders for high-risk tasks and the use of new technologies at the DOE Hanford Site and customers from other local, State, and Federal Agencies. HAMMER includes an 88-acre core campus, which provides training that includes the hands-on use of realistic props, and settings intended to save lives, reduce injuries, and increase worker productivity in their normal duties. HAMMER helps users identify training needs and develop courses and training methods, provides professional instructors and classroom space, and operates and maintains the training props. Workers/trainers from other site contractors lead and instruct many specialized classes. Staffed by approximately 100 people, including professional trainers, administrative support, technicians, and skilled crafts, HAMMER provides the initial and recurring training for all Hanford Site personnel on standard site programs, which include Hanford General Employee Training (HGET), Radiological Worker I and II, Radiological Controls Technician, Hazardous Waste Operations and Emergency Response (HAZWOPER), Lockout/Tagout, Beryllium Awareness, and Respiratory Protection. HAMMER provides a large variety of additional training topics required by regulations, such as fall protection, confined-space entry, electrical safety, load securement, and hoisting and rigging. Finally, HAMMER makes its facilities available for a wide range of firefighting, law enforcement, national security, and defense organizations. The Hanford Atomic Metal Trades Council (HAMTC) represents craft workers at HAMMER.

HAMMER's initial certification as a DOE Voluntary Protection Program (VPP) Star site occurred in 2002, and it was recertified 3 years later in 2005. Fluor Hanford operated HAMMER until August 2009 when HAMMER's workscope moved under the Mission Support Contract (MSC). In 2011, DOE's former Office of Health, Safety and Security recertified HAMMER as a VPP Star participant.

The Office of Environment, Health, Safety and Security (AU) DOE-VPP Team (Team) conducted the triennial recertification assessment from September 8-11, 2014. The assessment included observation of training classes, interviews with managers and staff, a review of procedures, and inspection of facilities.

II. INJURY INCIDENCE/LOST WORKDAYS CASE RATE

The Team conducted a review of the Occupational Safety and Health Administration (OSHA) 300 logs. Tables 2.1 and 2.2 below summarize the OSHA reportable data for HAMMER employees and subcontractors supporting HAMMER, respectively.

Table 2.1 Injury Incidence/Lost Workdays Case Rate (HAMMER)

Calendar Year	Hours Worked	Total Recordable Cases (TRC)	TRC Rate	Days Away, Restricted or Transferred (DART) Cases	DART Case Rate
2011	234,104	1	0.85	1	0.85
2012	198,166	0	0	0	0
2013	184,903	1	1.08	0	0
3-Year Total	617,173	2	0.65	1	0.32
Bureau of Labor Statistics (BLS-2011) average for NAICS* # 611 Educational Services			2.1		0.9

Table 2.2 Injury Incidence / Lost Workdays Case Rate (Subcontractor)

Calendar Year	Hours Worked	TRC	TRC Incidence Rate	DART Cases	DART Case Rate
2009	23,463	0	0	0	0
2010	19,936	0	0	0	0
2011	20,205	0	0	0	0
3-Year Average	63,604	0	0	0	0
Bureau of Labor Statistics (BLS-2011) average for NAICS* #611 Educational Services			2.1		0.9

* North American Industry Classification System

TRC Incidence Rate, including subcontractors: 0.65
DART Rate, including subcontractors: 0.32

Conclusion

Injury rates for HAMMER staff for the past 3 years are almost 70 percent below the rates for the comparison industry of educational services utilizing the small-site computation methodology. HAMMER subcontractors added 63,604 hours to the 3-year total without an injury or lost workday. In 2014, HAMMER has incurred one recordable injury as of the date of this review. HAMMER meets the expectations for a DOE-VPP Star participant.

III. MANAGEMENT LEADERSHIP

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

The 2011 Team concluded that HAMMER managers had a strong commitment to continuously improving safety and providing workers with the necessary tools, knowledge, and experience. They also demonstrated support by providing workers with the necessary resources to ensure the effectiveness of the HAMMER mission of providing safe and quality training under realistic scenarios. The 2011 Team noted that HAMMER managers needed to be cautious about relying too heavily on individual expertise and ensuring that effective management systems to fully support an integrated, systematic approach to safe training was in place (see discussion in the Worksite Analysis tenet).

In 2011, discussions with division managers indicated that they were clearly open to employee concerns, ideas, and suggestions. This continues to be the case in 2014. During this review, the Team observed that managers at HAMMER were visible and readily accessible to the workforce. The small size of the organization with approximately 100 individuals creates an environment where frequent interaction is the norm. The Team observed division managers interacting with workers in hallways, at meetings, in workers' work areas, and in the cafeteria. These interactions demonstrate that personnel have more of a peer-to-peer relationship with their managers based on mutual respect. In discussions with the Director, the Team asked how often she visited the workspaces of her employees. She frankly admitted that she did not get out as often as she would like. The Team suggested that even though she delegated significant work to her staff, the visibility, accessibility, and support of the Director are valuable keys to continuing the safety culture improvements exhibited by the HAMMER facility.

Managers support each training division with technical assistance, acquisition of training aids, and encourage innovative training scenarios to provide a realistic training environment. During this review, the Team observed managers actively supporting innovative ideas to develop and construct props to enhance the training environment. Managers are actively involved in solving issues so training can become *as real as it gets*.

HAMMER, like other Hanford Site contractors, is experiencing issues with retaining qualified and trained safety professionals. Managers stated that as soon as HAMMER hires and qualifies a new safety professional, they recognize they can earn more with another contractor and they leave HAMMER. The Director stated that this is one of her concerns and that she is working diligently for solutions to ensure that trained and qualified safety support is available at the

HAMMER facility. HAMMER should find a way to attract and retain qualified safety professionals.

> **Opportunity for Improvement:** HAMMER should find a way to attract and retain qualified safety professionals.

There is one safety professional, matrixed from the worker protection program, who provides part-time support to HAMMER. In addition, there is a HAMTC safety representative assigned to HAMMER. Personnel interviewed by the Team indicated that so far, the availability of safety support has not posed a problem because work planning and employee involvement processes are effectively identifying, analyzing, and controlling hazards (discussed later in Employee Involvement tenet).

The current Employee Zero Accident Council (EZAC) charter states that the EZAC "…shall work to provide employee leadership, ensure employee involvement, and strive to achieve maximum accident prevention and injury reduction both on and off the job." This approach to employee involvement is continuing to be successful at the HAMMER facility. Discussions with workers and managers indicate that employees are identifying potential hazards and are correcting them before they become an issue or injury. Several workers expressed the belief that workers address the problem immediately and take responsibility to fix the problem or notify managers and seek support to address the issue.

The EZAC has a management sponsor assigned to support EZAC by providing technical support, acquiring aids or administrative support, and providing senior-level communication links to the Director and other division managers. The management sponsor indicated that they are there to assist and remove barriers that hinder the EZAC activities. The Team's review of the EZAC meeting minutes did not identify any significant issues or safety initiatives *owned* by the EZAC. The EZAC chair and EZAC attendees indicated that the committee had limited planned activities to promote or improve safety. Attendees indicated that other than communicating with other employees in MSA, there was limited value for them to attend the HAMMER EZAC meetings. HAMMER is not effectively using EZAC to its full potential. HAMMER managers should ask EZAC for ideas to address identified safety issues and encourage the committee to initiate and take ownership of activities that actively support continued safety improvements.

> **Opportunity for Improvement:** HAMMER managers should ask EZAC for recommendations to address identified safety issues and encourage EZAC to initiate and take ownership of activities that actively support continued safety improvements.

In 2011, the Team recommended that HAMMER should use its annual self-assessments to critically evaluate its safety programs and develop Safety Improvement Plans (SIP) based on the assessments' results. HAMMER now uses a VPP gap analysis approach to evaluate opportunities for improvement. The VPP Team reviewed the 2014 SIP and noted that improvements identified in the plan were very generic, such as provide visible leadership, empower and encourage employees, enhance employee involvement, and enhance safety awareness. Other examples of less-than-specific actions included actively nominating workers for awards and expand core of those who are involved for leadership, evaluate/propose additional ways to involve part-time contractors, provide facility orientation to staff, and ongoing vigilance

toward safety. The Team recommends that HAMMER use SIP to identify challenging and achievable goals that focus on improving safety culture at HAMMER.

Opportunity for Improvement: HAMMER should develop challenging, achievable safety goals that focus on improving its safety culture.

As was the case in 2011 VPP assessment, HAMMER still relies on worker interviews, VPP gap analysis surveys, and trimester surveys supplemented with work observations by managers or subject matter experts to provide input into improvement plans. This process has provided a means for HAMMER to take credit for those program aspects that workers believe are working effectively, but the Team's observation was that this process has not effectively identified specific and challenging opportunities for continuous improvement. Most opportunities for improvement identified and included in the SIP are less than challenging or specific. In 2011, the Team suggested in the text of the report that one way of improving the self-assessment processes might be to increase managers' emphasis on safety-leading indicators. The 2014 Team did not identify safety-leading indicators as an attribute at HAMMER. HAMMER managers continue to rely on accident and injury rates as their primary safety indicator.

Conclusion

Managers at HAMMER fully support continued safety improvements and provide workers with the resources to accomplish that goal. Managers ensure the HAMMER mission of providing safe, quality training *as real as it gets* is accomplished. Managers support training divisions with technical assistance, acquisition of training aids, and encourage innovative training scenarios to provide a realistic training environment. Management support for EZAC and worker involvement is clearly visible. HAMMER continues to meet the expectation for a DOE-VPP Star participant in the Management Leadership tenet.

IV. EMPLOYEE INVOLVEMENT

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

In 2011, the Team observed that employee involvement at the HAMMER facility was excellent. Clear and open communication between managers and employees was evident during the review. The Team found that programs were in place to ensure workers had many opportunities to provide input to improve safe work practices across the facility.

The 2014 Team observed employees being involved in safety processes and operational planning at HAMMER. Interviewed employees indicated they participate in safety processes and are included in the decisions related to their own safety. The Team observed a planning meeting to build a new prop for a training evolution. The engineer, planner, and workers were discussing the hazards, the location for construction, and the construction material. The meeting clearly demonstrated the involvement, ownership, and pride HAMMER employees at all levels have for their facility. All HAMMER employees stated that they report safety concerns directly to their managers. According to workers, concerns are addressed *on-the-spot*. Communication between workers and their frontline managers is frequent and often. Frontline managers are in the field on a daily basis.

Employees at HAMMER are working on what they proudly call Covenants. These Covenants are core values that employees feel embody the attributes of HAMMER. The Covenants are Innovation, Pride, Family, and Teamwork. HAMMER employees working with managers chose these Covenants and are in the process of developing these core values. With both employees and managers working together to achieve these Covenants, they have common ownership. This ownership was evident when the employees talked to the Team with a great deal of pride and enthusiasm about their progress.

Every Monday or at the start of the workweek, HAMMER has a back-to-work safety meeting. Not all HAMMER employees can attend all the time; however, interviews verified that most employees are able to attend at least two each month. Teaching schedules preclude all employees from attending all the time. One of the agenda items, listed as Safety 24/7, is open for any employee in attendance to share something that would be helpful to others away from work. Employees seemed to be comfortable sharing their experiences. The Team attended a Monday morning back-to-work safety meeting and observed employees and managers participating. This meeting is a valuable tool in maintaining good communication and interaction between managers and employees. The closing safety video depicting family seatbelt use in cars was very impressive and definitely drove the message home. The meeting is a

positive tool in the communications of important information for all HAMMER employees and serves to refocus employees on their work environment.

The EZAC continues to be the primary method of employee involvement. The EZAC meetings occur monthly with a variety of employees from all levels in attendance that includes managers, bargaining unit employees, exempt and nonexempt employees, and subcontractors. EZAC provides representation and participation in the safety and health program at HAMMER and is an element of the safety program that provides an opportunity for worker involvement. EZAC is chaired or co-chaired by a volunteer staff member (currently a nonexempt) and may be a member of the bargaining unit. Current EZAC responsibilities include sharing lessons learned, discussing health and safety goals, addressing and tracking of resolution to safety issues and recognizing safety accomplishments. Each workgroup is encouraged to send representatives to attend EZAC.

HAMMER conducts monthly safety inspections that involve workers, managers, HAMTC safety representatives, and safety professionals. The expectation at HAMMER is that all workers will participate in the safety inspections on a periodic basis. The monthly inspection reports use detailed safety inspection sheets that categorize areas for review and provides checklists of potential weaknesses. While the Team did not observe a safety inspection, a review of previous inspections indicates a documented process is in place to identify issues so corrective actions can occur. HAMMER continues to use this process to encourage a mentoring relationship between the safety and health professionals and other workers. In the review of the EZAC meeting minutes from January 27, 2014, March 17, 2014, and May 19, 2014, each stated that issues identified during the walkthroughs were normal housekeeping issues. The EZAC minutes and walkthrough reports did not provide sufficient detail on housekeeping issues to identify if there were trends that are more significant. HAMMER should consider breaking housekeeping down to different housekeeping issues so that it can identify and trend potential hazards before they lead to injuries.

Opportunity for Improvement: HAMMER should consider breaking housekeeping down into different housekeeping issues so that it can better identify and trend potential hazards before they lead to injuries.

The Team and the EZAC chairperson reviewed the current charter and discussed several opportunities for improvement. The current charter is out of date and does not reflect current roles and responsibilities. Although the EZAC continues to be an asset to the employee involvement element at HAMMER, there is an opportunity for the EZAC to become even more valuable to the safety program at HAMMER. In the review of the EZAC meeting minutes, additional information would be useful and should be included in the evidence files with the minutes. Examples include, but are not limited to, presentations and more details on what the employees accomplished to receive an On-the-Spot award. Additionally, representatives from the various groups in EZAC could improve better dissemination of useful information by taking a set of minutes with presentations back to their workgroups. HAMMER should update the EZAC charter and use that opportunity to enhance the roles and responsibilities within the charter.

Opportunity for Improvement: HAMMER should update the EZAC charter and use the opportunity to strengthen the roles and responsibilities within the charter.

In 2011, the Team noted that HAMMER implemented several safety recognition programs based on worker input through EZAC. Recognition of HAMMER employees with the on-the-spot awards occurs when a coworker turns in an employee for a variety of different actions, such as helping out a coworker, going above and beyond, and various other positive actions. The On-the-Spot Award is an agenda item at the EZAC meeting and the resulting award enables the employee to redeem that award at the Safety Award Store. The Safety Award Store is not located on the HAMMER facility and as a result did not have significant visibility to the employees. Awards are available for viewing online. The Team observed that pictures of awards are on the door of the Safety Award Store, but several of the items appear to be crossed out, indicating they are not available or in stock. Employees indicated they were aware of the program but did not elaborate on its effectiveness.

Conclusion

Employee Involvement at the HAMMER facility is excellent. Clear and open communications between managers and employees was evident during the review. HAMMER provides programs that give employees the opportunity to improve safe work practices across the facility. HAMMER maintains a reward program to recognize employees for their involvement in promoting a safe work environment. HAMMER continues to meet the expectation for a DOE-VPP Star participant in the Employee Involvement tenet.

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 identify 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 2011, the Team concluded that HAMMER had analyzed the major hazards at the facility and continued to inspect worksites for new hazards or degrading conditions. Workers at the site had a very good working knowledge of the hazards. HAMMER's 2011 hazard analysis processes sometimes required redundant efforts to analyze hazards. Documentation of readily retrievable analysis did not occur. Safety professionals assigned were working to improve the content and usefulness of existing hazard analyses, improving the hazard analysis processes and documentation would help prevent the decay of the existing knowledge base and lead to process efficiency.

The hazards at HAMMER as observed by the 2011 review remain very stable and are understood by the workforce. Although the purpose of HAMMER is realistic training for hazardous situations, HAMMER uses simulations and props to minimize introducing hazardous training situations. HAMMER has several processes to analyze hazards in conjunction with training and operations. HAMMER conducts regularly scheduled (monthly) walkdowns of the site, such that the entire site receives a review quarterly. The Team reviewed documentation of observations from these walkdowns, which are effective at both identifying new hazards and as a means of training and educating workers and stimulating employee involvement (see Employee Involvement tenet). Workers and managers alike continue to have a very good working knowledge of the hazards.

MSC-PRO-26025, *Developing Training Programs*, defines the process for developing training courses. A revision to link MSC-PRO-079, *Job Hazard Analysis,* and Form HM-FP-01-3.3, *Training Hazard Screening Form*, occurred in response to the 2011 opportunity for improvement. HAMMER continues to use MSC-PRO-079, *Job Hazard Analysis,* to evaluate hazards at its site. As identified in 2011, this procedure integrates the MSC general hazard analysis (GHA), the craft-specific hazard analysis (CSHA), and the automated job hazard analysis (AJHA) processes. There is an associated guide for this procedure, MSC-GD-17132, *Job Hazard Analysis Process Guide,* which provides information and instruction to support consistent and effective implementation of job hazard analysis (JHA). MSA applies this process to all activities, including those at HAMMER and other MSA sites.

In 2011, the VPP Team identified that there can be some confusion to the individual planning activity in the application of the criteria in MSC-PRO-079, *Job Hazard Analysis,* in that *Appendix B* does not clearly state that ALL criteria must be met in order to not perform a hazard analysis. Since 2011, MSA revised *Appendix B,* to MSC-PRO-079, *Job Hazard Analysis,* such

that in order to *not* perform a JHA, ALL criteria must be met. Since a hazard analysis maybe a GHA, CSHA, AJHA, or standing JHA, the result ensures that analysis occurs for all hazards. This approach remains a good example of an effective graded approach to work planning based on hazard analysis.

The 2011 Team observed that the primary tool for implementing MSC-PRO-079, *Job Hazard Analysis,* was the Web-based AJHA tool. HAMMER continues to follow this process. It provides a systematic approach for personnel planning an activity to define the major steps of the activity, identify the hazards associated with the activity, document the analysis of those hazards, and justify the subsequent controls. This process, when correctly applied, leads to a documented, retrievable hazard analysis and used for future reference when planning similar work, as well as captures lessons-learned regarding hazards and controls for the activity.

The 2014 review identified several instances where there is a lack of documented process information. For example, the Team discussed the process to bring in a non-HAMMER craftsman to perform work at HAMMER as part of work planning. HAMMER employees check to see if the worker has previously performed work at HAMMER and if their training is current. If the answer is no, they evaluate the individual's training and decide if the individual can perform the work with supervision or additional training. Sometimes, HAMMER requests a different worker due to constraints on training. The Team asked if HAMMER documents this process; currently, it is not part of the documented review for outside workers to perform work at HAMMER. As identified in the 2011 review, HAMMER should continue the effort to document its processes and ensure adequate record retention.

HAMMER managers have established multiple policies and procedures to develop and safely conduct potentially hazardous training. HAMMER trainers systematically develop courses using MSC-PRO-26025, *Developing Training Programs*. In 2011, the Team identified that the procedure requires evaluation of hazards associated with training, but the process for integration of the evaluation into the training development procedure did not occur. HAMMER revised the scope of HM-FP-01, *HAMMER/Hanford Training Hazard Analysis and Control Process,* specifically HM-FP-01-3.3, *Training Hazard Screening Form,* to link MSC-PRO-26025, *Developing Training Programs,* and MSC-PRO-079, *Job Hazard Analysis*.

Conclusion

HAMMER has analyzed the major hazards at the facility, and employees actively inspect worksites for new hazards or degrading conditions. Workers at the site have a very good working knowledge of the hazards. The improved hazard analysis processes and documentation will help prevent decay of the existing knowledge base and lead to process efficiency. HAMMER continues to meet the Worksite Analysis DOE-VPP expectations for a Star participant.

VI. HAZARD PREVENTION AND CONTROL

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

The 2011 Team noted that HAMMER had effective processes to ensure hazards are adequately controlled. The use of substitution, engineered controls, then administrative controls, or PPE was noteworthy across the facility.

HAMMER continues to search for ways to eliminate, substitute, use administrative control, or lastly, use PPE to control hazards. HAMMER eliminated the use of the powder-filled fire extinguishers for training and now uses a water-filled extinguisher with a propane-fueled outdoor prop and a low-level laser indoor system. The new system uses water and compressed air to extinguish the propane fire. The old system used actual fire extinguishers charged with a powder (training agent) at a vendor's location offsite. The extinguishers were packaged, delivered to the vendor, filled, and returned. The indoor unit eliminates the need to go outside during inclement weather, providing a safer environment for the students and instructors.

In 2011, the Team noted that HAMMER used training foam in lieu of the industrial grade foam to reduce the potential chemical exposures. This change also resulted in a less toxic environmental impact. In addition, HAMMER uses theatrical smoke (vegetable, oil-based) for security training events to eliminate the need for respiratory protection during exercises.

HAMMER uses engineered controls, such as the safety barrier they installed to protect the gauges on the propane header that supplies fuel to the 6092 Al Alm building. A student raised a concern that the gauges could be knocked off, which would expose personnel to propane gas so HAMMER workers designed a rail barrier to mitigate this hazard. The second example of engineered controls is the installation of tube steel risers beneath the breathing-air, bottle-fill stations to reduce the ergonomic stress on the firefighter who fills the bottles. The firefighter asked about the potential to raise the fill stations to minimize the bending motion. An industrial hygienist assisted with the evaluation, along with the design authority and maintenance engineer. It was determined that raising the stations 4 inches off the floor relieves the stress on the back. This work was completed and initial feedback from the user is very positive.

As identified in 2011, the Burn building utilizes significant safety features and monitoring equipment to ensure safety levels during live-fire exercises. For example, if the temperatures exceed the predetermined temperatures in the Burn building for any reason during an exercise, the monitoring equipment safety interlocks will shut down the burn exercise.

The use of labels and postings, in conjunction with physical barriers, was evident throughout this review. Prejob briefings also inform workers where particular hazards exist that may affect their workscope or training evolutions.

HAMMER uses PPE as a last resort to protect personnel from hazards. It supplies the craft workers with safety glasses, high-visibility vests, hardhats if needed for some work evolutions, and hand protection.

The 2011 Team identified a potential weakness in the lack of effective delineation for foot traffic and automobile traffic in the central parking area (the lot housing the fire tower and the Burn building). Vehicle traffic through the area could be present as staff or students used the parking areas around the perimeter. The 2014 Team noted that HAMMER has marked the walkways to delineate foot traffic from vehicular traffic.

The 2011 Team noted that HAMMER operated its own maintenance program consisting of a work control group supported by full-time pipefitters, electricians, and laborers. If additional craft were required, the work control group tasked additional crafts through the MSA central maintenance pool. Because of the relatively young age of the facility, the maintenance backlog for HAMMER was low and continues to be so as of this review. The HAMMER work control group uses the MAXIMO® work package system for preparation of work packages and the tracking and scheduling of all routine preventive maintenance. The 2014 Team found the same conditions.

HPM Corporation (HPMC) provides occupational health services to the Hanford site through a prime contract with DOE Richland Operations Office. These services include health maintenance examinations, medical surveillance examinations, staffing of field first-aid stations, medical consultation, and assistance in injury case management. HPMC is responsible for establishing a compliant and comprehensive occupational medicine program for workers employed at HAMMER that work on the Hanford Site for more than 30 days in a 12-month period or are enrolled for any length of time in a required medical or exposure-monitoring program. The process HAMMER uses to notify the occupational medicine provider is the Employee Job Task Analysis process.

As identified in 2011, HAMMER falls under the MSA Emergency Preparedness (EP) program in accordance with MSC-PRO-7647, *Emergency Preparedness Program Requirements*, which describes the Facility Emergency Response Organization (FERO) roles and responsibilities, training requirements, and the conduct of operations. Each project is responsible for developing and maintaining EP hazards assessments, building emergency plans, facility response plans, and emergency response procedures as applicable. Drills are an integral part of the EP program and are used to train employees and test the effectiveness of emergency response capabilities. All FERO personnel participate in a minimum of one EP drill annually or enough to maintain proficiency in accordance with MSC-PRO-7647, *Emergency Preparedness Program Requirements*. No emergency drills occurred at HAMMER during this review.

HAMMER continues to ensure that employees have a safe, productive, and desirable working environment. In 2011, the VPP Team noted that HAMMER had established acceptable work behaviors, standards, and practices. In the event that violations occur, HAMMER has established a disciplinary process that will ensure a thorough evaluation of the facts and a

consistent application of the principles of progressive discipline if warranted. MSC-POL-11385, *Standards of Conduct,* is the procedure that contains disciplinary action information. Compliance with these work behaviors, standards, and practices is a HAMMER expectation.

There is no radioactive material at the HAMMER facility except sources used to conduct radiological training for health physics technicians. The MSA radiation protection program and title 10, Code of Federal Regulations, part 835, *Occupational Radiation Protection,* govern accountability for these sources.

Conclusion

HAMMER has effective processes to ensure hazards are adequately controlled. The use of substitution, engineered controls, then administrative controls or PPE was noteworthy across the facility. HAMMER continues to meet the expectations of a DOE-VPP Star participant in the Hazard Prevention and Control tenet.

VII. SAFETY AND HEALTH TRAINING

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

MSA training and qualification programs are well established to ensure that all MSA and subcontractor employees receive appropriate training to recognize hazards of work environment to protect themselves and coworkers. The training process is systematic and provides requisite knowledge, skills, and abilities to perform tasks competently and safely. It applies to all employees and all aspects of MSA operations, design, procurement, construction, and support activities.

The 2011 VPP review found initial and ongoing training for workers, supervisors, and managers continued to ensure they fully understood the hazards and controls within their work areas. As the premier professional training site within the DOE complex, HAMMER staff is among the most knowledgeable personnel at the Hanford Site.

HAMMER provides initial and recurring training for HAMMER employees, and all other workers at the Hanford Site. These include HGET, Radiological Worker I and II, Radiological Control Technician, HAZWOPER, Lockout/Tagout, Beryllium Awareness, and Respiratory Protection. HAMMER provides a large variety of additional training topics required by regulations, such as fall protection, confined-space entry, electrical safety, load securement, and hoisting and rigging. Finally, HAMMER makes available facilities for a wide range of firefighting, law enforcement, National security, and defense organizations. HAMMER consistently and repeatedly receives praise from other site contractors, the local unions, and other organizations for the quality and effectiveness of the services they provide.

HAMMER provides an Employee Handbook to newly assigned employees at HAMMER. The information contained within the handbook is an excellent resource providing a good introduction to the HAMMER facility. It also is a good resource for employees to review requirements or to use as a knowledge refresher.

Each Monday, HAMMER holds *Safety Start* meetings based on a preselected topic. These meetings provide the HAMMER workforce with relevant safety information and heighten their individual awareness of changed conditions or upcoming activities. Employees receive a 1-2 page handout supplemented with group discussion and personal observations and experience. The handout includes supervisor briefing points and recommended questions to stimulate discussion and is an effective means of helping people focus on performing their work safely.

The majority of Hanford employee safety training occurs at HAMMER. The fundamental concept of HAMMER is *Workers Training Workers*. HAMMER has established a partnership between the Training Center and the labor unions that allows the bargaining unit employees with subject-specific expertise to train other employees in a hands-on environment at the HAMMER facility. The *Workers Training Workers* technique has proven very effective in sharing current trade experience and incorporating that into the hands-on training. MSA and other site contractors, including CH2M HILL Plateau Remediation Company; Washington Closure

Hanford, LLC; Washington River Protection Solutions, LLC; and the Pacific Northwest National Laboratory, all support the *Workers Training Workers* technique at HAMMER in Lockout and Tagout Training, Hazardous Waste Training, Respiratory Protection Training, and Radiological Training. The *Workers Training Workers* program is an excellent method for outreach, mentoring, and expanding employee participation in other parts of MSA.

The 2011 VPP Team observed effective interfaces between instructors and students. The instructors' teaching techniques were excellent. In all the hands-on training activities observed, the instructors patiently allowed students to work through their mistakes to arrive at the correct solution. This technique ensured the students thought about and understood the controls they were using rather than instructors just telling them. Interviews by the 2014 Team confirm that this approach is still used. All employees interviewed stated that they received the training that they need to understand the hazards and mitigations present in the work area.

Conclusion

Initial and ongoing training for workers, supervisors, and managers continues to ensure they fully understand the hazards and controls within their work areas. As the premier professional training site within the DOE complex, HAMMER staff is among the most knowledgeable and best-trained personnel at the Hanford site. HAMMER continues to meet the expectations of the Safety and Health Training tenet.

VIII. CONCLUSIONS

The management team and employees at HAMMER demonstrate the kind of safety culture that supports the goal of quality training *as real as it gets*. Managers fully support continued improvement and encourage innovative ideas to accomplish training safety. Managers working together with employees, over the past 3 years, have reduced the injury rates at HAMMER to approximately 70 percent below the comparison industry average. In addition, subcontractors have not had any injuries over that same period. There is visible management commitment to the EZAC via a dedicated management champion that attends all EZAC meetings. Employee involvement remains a strength at the HAMMER facility. The small workforce creates a family atmosphere that actively seeks to correct issues on the spot or use safety logbooks to identify issues that are beyond its ability to correct. HAMMER should expand this approach to other processes (e.g., documenting the process to approve outside workers at HAMMER) so that it retains and captures process knowledge. HAMMER has effective processes and programs to control hazards using the hierarchy of controls (i.e., substitution, engineered controls, administrative controls, and then the use of PPE). HAMMER continues to use this approach in its training programs and operations. HAMMER managers and the workforce are fully committed to the tenets of DOE-VPP. They provide safe, quality training to students across DOE and other customers through continued vigilance and innovative approaches to ensure training is safely accomplished. The Team recommends HAMMER continue to participate in DOE-VPP at the Star level.

Appendix A

Onsite VPP Audit Team Roster

Management

Matthew B. Moury
Associate Under Secretary for
Environment, Health, Safety and Security

Stephen A. Kirchhoff
Deputy Associate Under Secretary for
Environment, Health, Safety and Security

Patricia R. Worthington, PhD
Director
Office of Health and Safety
Office of Environment, Health, Safety and Security

Bradley K. Davy
Director
Office of Worker Safety and Health Assistance
Office of Health and Safety

Review Team

Name	Affiliation/Phone	Project/Review Element
John A. Locklair	DOE/AU-12 (301) 903-7660	Team Lead Management Leadership, Worksite Analysis, Hazard Prevention and Control
Bonnie L. Anderson	CH2M•WG Idaho, LLC/ Idaho Cleanup Project/ Idaho National Laboratory	Employee Involvement, Safety and Health Training