



# Bechtel National Incorporated Waste Treatment Plant Construction Project

**Report from the Department of Energy  
Voluntary Protection Program  
Onsite Review  
June 14-18, 2010**



U.S. Department of Energy  
Office of Health, Safety and Security  
Office of Health and Safety  
Office of Worker Safety and Health Assistance  
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## Foreword

The Department of Energy (DOE) recognizes that true excellence can be encouraged and guided but not standardized. For this reason, on January 26, 1994, the Department initiated the DOE Voluntary Protection Program (VPP) to encourage and recognize excellence in occupational safety and health protection. This program closely parallels the Occupational Safety and Health Administration (OSHA) VPP. Since its creation by OSHA in 1982 and DOE in 1994, VPP has demonstrated that cooperative action among Government, industry, and labor can achieve excellence in worker safety and health. The Office of Health, Safety and Security (HSS) assumed responsibility for DOE-VPP in October 2006. Assessments are now more performance based and are enhancing the viability of the program. Furthermore, HSS is expanding complex-wide contractor participation and coordinating DOE-VPP efforts with other Department functions and initiatives, such as Enforcement, Independent Oversight, and the Integrated Safety Management System.

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

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

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

By approving an applicant for participation in DOE-VPP, DOE recognizes that the applicant exceeds the basic elements of ongoing, systematic protection of employees at the site. The symbols of this recognition provided by DOE are certificates of approval and the privilege to display flags showing the program in which the site is participating. The participant may also choose to use the DOE-VPP logo on letterhead or on award items for employee incentive programs.

This report summarizes the results from the evaluation of Bechtel National Incorporated, Waste Treatment Plant construction project during the period of June 14-18, 2010, and provides the Chief Health, Safety and Security Officer with the necessary information to make the final decision regarding its application for participation in DOE-VPP as a Star site.

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## **ABBREVIATIONS AND ACRONYMS**

AJHA	Automated Job Hazard Analysis
BLS	Bureau of Labor Statistics
BNI	Bechtel National Incorporated
CSR	Craft Safety Representative
CSC	Construction Safety Council
DART	Days Away, Restricted or Transferred
DOE	Department of Energy
ECP	Employee Concerns Program
EJTA	Employee Job Task Analysis
HS-64	Office of Environment, Safety & Health Evaluations
HSS	Office of Health, Safety and Security
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
JHA	Job Hazard Analysis
NAICS	North American Industry Classification System
ORP	Office of River Protection
ORPS	Occurrence Reporting and Processing System
PPE	Personal Protective Equipment
SETO	Safety Education Through Observation
SIP	Safety Impact Plan
SME	Subject Matter Expert
SRL	Self-Retracting Lanyards
STARRT	Safety Task Analysis Risk Reduction Talk
STS	Safety Trained Supervisor
Team	Office of Health, Safety and Security DOE-VPP Team
TRC	Total Recordable Cases
VPP	Voluntary Protection Program
WGI	Washington Group International
WTP	Waste Treatment Plant

## EXECUTIVE SUMMARY

The Hanford Tank Waste Treatment and Immobilization Plant (WTP) is the largest construction project being conducted for the U.S. Department of Energy (DOE). Bechtel National Incorporated (BNI) is engaged in designing, building, and commissioning the vast plant complex, which will cover 65 acres. Washington Group International (WGI) is a partner with BNI. Together, these two companies comprise the WTP construction project. Workers at the site are represented collectively by the Central Washington Building and Construction Trades Council (Building Trades Council). Incorporating technology successfully employed in France and England, the West Valley Demonstration Project in New York, and the Savannah River Site in South Carolina, WTP construction project will consist of three main facilities: Pretreatment, Low-Activity Waste Vitrification, and High-Level Waste Vitrification, as well as a large Analytical Laboratory, and 20 support facilities. These facilities will treat more than 53 million gallons of radioactive and chemical wastes stored in 177 underground tanks and vitrify the waste for safe and secure disposal, thereby reducing the risks and exposure to the adjacent Columbia Valley region and the Columbia River. Started in 2001, WTP is expected to be operational in 2019. The organization for WTP construction project located on the Hanford Reservation is comprised of BNI and WGI personnel, including managers, administrative support, and engineering personnel (collectively known as “nonmanual” employees at the project), as well as manual workers, foremen, supervisors, and subcontractors. The work performed by this construction organization is typical of any large-scale construction project within the construction industry. These work activities include developing construction strategies, identifying apparent hazards within all work activities, performing constructability reviews, developing construction schedules, managing material receipt, installing and maintaining permanent plant equipment, and executing complex civil, electrical, and mechanical construction activities.

WTP construction project submitted its application to the DOE Voluntary Protection Program (VPP) in late 2007. Approval for an applicant’s participation in DOE-VPP requires an onsite review by the DOE Office of Health, Safety and Security (HSS) DOE-VPP team (Team). An onsite review of WTP construction project was performed simultaneously with HSS’ Office of Environment, Safety & Health Evaluations (HS-64) assessment of environment, safety, and health from October 20-31, 2008. As a result of that assessment, WTP construction project was admitted to DOE-VPP at the Merit level. As a Merit participant, progress reviews are conducted annually by the Team to assess progress toward Star level. This assessment was performed June 14-18, 2010, and documents the results of that assessment. Since the initial onsite assessment in 2008, WTP construction project has made significant improvements in the four tenets that had not met the DOE-VPP Star criteria originally. Findings from the HS-64 assessment, as well as the opportunities for improvement identified by the VPP assessment, have been effectively addressed. Managers are communicating more effectively with workers, and worker participation in safety programs has increased significantly. Workers are willing to report all injuries, including minor injuries, and no longer report feeling pressured to allow injuries to remain unreported. Improvements in the Integrated Safety Management System program made by the project are, in some cases, best practices, particularly related to hazard analysis processes. The Team did observe some complacency regarding hazard controls, particularly related to control of overhead loads on cranes, but the project managers immediately addressed those issues. In light of these improvements, as well as a continued downward trend in worker accidents and injury statistics, the Team is recommending that WTP construction project be elevated to Star status in DOE-VPP.

**TABLE 1**  
**OPPORTUNITIES FOR IMPROVEMENT**

<b>Opportunity for Improvement</b>	<b>Page</b>
WTP construction project should ensure that both the Construction Safety Alliance and the Zero Accident Council are involved in preparation and communication of the annual Safety Impact Plan.	4
WTP construction project should coach and mentor foremen, general foremen, and superintendents in effective techniques for leading daily meetings.	5
WTP construction project should establish more specific proactive safety and health targets for managers that focus on training and coaching for foremen, general foremen, and superintendents; and participation, support, or sponsorship of safety and health improvement initiatives.	6
WTP construction project should review current procurement practices and ensure safety equipment purchases can be expedited while maintaining the integrity of the procurement process.	6
WTP construction project must continue to monitor worker and supervisor attention to flying loads and ensure the corrective actions remain effective for the long term.	7
WTP construction project should ensure that all the crafts are proportionally represented in the SETO program.	10
WTP construction project should consider coaching and mentoring CSRs in communicating craft safety concerns to managers and communicating solutions back to workers.	11
WTP construction project should consider encouraging and supporting supervisors and managers to pursue certification as an STS.	12
WTP construction project should assure that work packages are readily available in designated areas in the field for workers' and managers' review and that a comprehensive change control system is formally included in the site work packages.	14
WTP construction project should consider strengthening the Work Site Analysis process by better documentation of the analysis, especially for those controls that are not driven by procedures or other regulatory drivers, and through clear description of controls rather than generic descriptors.	14
WTP construction project should consider adding a question to the STARRT card addressing hazards present at the worksite due to other jobs as a means of reminding workers to discuss those hazards before starting work.	15
WTP construction project, in conjunction with MedCor, Inc., should consider developing an informational package, such as a trifold pamphlet, that is provided to each employee when they are notified of a scheduled medical examination.	18

## **I. INTRODUCTION**

The initial Department of Energy (DOE) Voluntary Protection Program (VPP) onsite review of Waste Treatment Plant (WTP) construction project was conducted from October 21-31, 2008. That review resulted in WTP construction project entering DOE-VPP at the Merit level. As a Merit participant, the Office of Health, Safety and Security (HSS) performs an annual progress assessment to evaluate WTP construction project progress toward Star status. This report documents the results of that annual progress assessment, conducted June 14-18, 2010. The DOE Office of River Protection (ORP) provides direction to and oversight of Bechtel National, Incorporated (BNI) in this construction project, the largest in the DOE complex.

The construction organization for WTP construction project located on the Hanford Reservation is comprised of BNI and Washington Group International (WGI). Personnel at the project include administrative, engineering, and management personnel (referred to as “nonmanual” employees), Building Trades Council members, and subcontractors. Currently, WTP construction project employs approximately 1,500 individuals, including over 800 union workers from 14 local unions collectively represented by the Central Washington Building and Construction Trades Council. Trades employed at the construction project include asbestos workers, boilermakers, carpenters, cement finishers, electricians, ironworkers, laborers, millwrights, operating engineers, painters, pipefitters, sheet metal workers, sprinkler fitters, and teamsters.

The work performed by this construction organization is typical of any large-scale construction project within the construction industry. These work activities include developing construction strategies; identifying hazards of all work activities; performing constructability reviews; developing construction schedules; managing material receipt; installing and maintaining permanent plant equipment; and executing complex civil, electrical, and mechanical construction activities.

As a progress review, the HSS DOE-VPP Team (Team) did not assess all five tenets of the VPP program. In the 2008 assessment, WTP construction project had met the criteria for Star in the Safety Training tenet, but had not yet met the criteria for the other four tenets. The objective of this assessment was to determine whether WTP construction project had made sufficient progress in those four tenets to either continue as a Merit participant or be elevated to Star status. To accomplish this objective, the Team evaluated actions taken by WTP construction project to address opportunities for improvement identified in 2008, as well as the corrective actions taken in response to the Office of Independent Oversight evaluation performed in 2008. Effectiveness of those actions was assessed by observing work and conducting interviews with workers, supervisors, and managers. The Team also conducted walkdowns of all project areas.

The standard for DOE-VPP is not perfection, but continuous improvement. As such, this report identifies additional opportunities for improvement. WTP construction project should evaluate these opportunities and address them as it deems appropriate through its safety improvement processes and include them in its annual self-assessment.

**II. INJURY INCIDENCE CASE RATE**

<b>Injury Incidence Case Rate (WTP construction project)</b>					
Calendar Year	Hours Worked	Total Recordable Cases (TRC)	TRC Incidence Rate	DART* Cases	DART* Case Rate
2007	1,750,000	32	3.66	16	1.83
2008	2,723,000	34	2.50	14	1.03
2009	2,479,000	23	1.86	10	0.81
Three Years	6,952,000	89	2.56	40	1.15
Bureau of Labor Statistics (BLS-2008) average for NAICS** Code #2362 Nonresidential Construction			4.4		2.2
<b>Injury Incidence Case Rate (WTP construction project subcontractors)</b>					
Calendar Year	Hours Worked	TRC	TRC Incidence Rate	DART* Cases	DART* Case Rate
2007	409,000	9	4.40	2	0.98
2008	573,000	6	2.09	1	0.35
2009	534,000	5	1.87	2	0.75
3-Year Total	1,516,000	20	2.64	5	0.66
Bureau of Labor Statistics (BLS-2008) average for NAICS** Code #2362 Nonresidential Construction			4.4		2.2

\* Days Away, Restricted or Transferred

\*\* North American Industry Classification System

***TRC Incidence Rate, including subcontractors: 2.57******DART Case Rate, including subcontractors: 1.06***

Efforts to improve the safety culture at WTP construction project are paying significant dividends as evidenced by the downward trend in TRC and DART case rates. Since 2007, the TRC rate has been reduced almost 50 percent, and the DART rate has been reduced by 55 percent. Both TRC and DART case rates in 2009 were approximately 60 percent lower than the comparison industry average. Rates are continuing to trend downward in 2010, and the severity of accidents and injuries is decreasing. For 2010, the primary cause of recordable injuries has been blowing particles in workers' eyes, and WTP construction project is taking aggressive action to address these types of injuries. WTP construction project clearly meets the statistical performance criteria for participation in DOE-VPP at the Star level.



### III. MANAGEMENT LEADERSHIP

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

In the initial DOE-VPP assessment, it was determined that even though WTP construction project managers were clearly committed to achievement of DOE-VPP Star status, the workforce did not share that commitment. Many workers believed the project was safe enough and did not see the need to improve. Others were waiting to see the value of DOE-VPP before they would get involved. Ineffective communication, labor-management disputes, and the lack of an effective mentoring relationship with an existing DOE-VPP Star site were all hindering WTP construction project progress toward DOE-VPP Star status.

Since that report, WTP construction project has made significant progress in improving the labor-management relationship. Workers interviewed by the Team were significantly more supportive of DOE-VPP efforts, and visibility of VPP was vastly improved. Also, in May 2010, the President of the Central Washington Building and Construction Trades Council sent a letter to BNI complimenting WTP construction project for its safety improvements.

After the 2008 report, WTP construction project contacted the Voluntary Protection Program Participants Association for assistance in establishing a formal mentoring relationship. In April 2009, WTP construction project entered into a formal mentoring relationship with Parsons Inc, Pasco, Washington. Over the following few months, the mentors worked with WTP construction project to implement several new ideas leading to visible improvements. Even though this effort was beneficial, WTP construction project was far more successful when it began working closely with the Hanford Site VPP Council. In collaboration with the Council, WTP construction project used personnel from other Hanford site contractors in performing its 2009 self-assessment. As a result of this collaboration, several WTP construction project personnel were invited by other Hanford Site contractors to assist them with their self-assessments. Through those assessments, WTP construction project personnel gained a much greater understanding of DOE-VPP expectations in each of the five tenets, and returned to WTP construction project with a much clearer understanding of how an effective DOE-VPP program performs. WTP construction project completed its self-assessment in April 2010. The Team reviewed that self-assessment and determined that it very closely mirrors conditions and observations made by this DOE-VPP assessment.

In the 2010 self-assessment, WTP construction project identified that there is a system in place to develop an annual Safety Impact Plan (SIP). According to that assessment, SIP is prepared by the Environment, Safety and Health department with input from subject matter experts (SME). Unfortunately, that same assessment found that many employees were unaware of SIP. Also, there was no indication during this review that either the Construction Safety Alliance or the

Zero Accident Council were involved in the development of SIP. WTP should ensure that both the Construction Safety Alliance and the Zero Accident Council are involved in preparation and communication of SIP.

**Opportunity for Improvement:** WTP construction project should ensure that both the Construction Safety Alliance and the Zero Accident Council are involved in preparation and communication of the annual SIP.

WTP construction project also recognized that much of the past labor distrust of managers was a result of frequent fluctuations in the workforce size. Since that time, WTP construction project has worked with DOE to stabilize the workforce to better reflect the longer term, strategic construction objectives. This has minimized short-term, frequent workforce resizing and significantly improved worker trust.

In 2008, workers were also distrustful of the system in place to rank workers' performance. Since then, the Project Construction Manager has implemented a process to review all workers' performance rankings to ensure that workers are not unfairly downgraded. Workers are graded 1-5 in three areas – Safety, Initiative, and Craft Knowledge, with a 2.5 considered to be “meeting expectations.” Personnel volunteering for service on safety committees are guaranteed at least a 3 in the safety ranking to prevent any appearance of downgrading them for “not working.” Any changes in worker performance rankings of 0.5 points from the previous ranking are reviewed by the Construction Site Manager. Significant changes (1 point or greater) are reviewed with the workers' foreman and general foreman to ensure the changes are justified.

Communications between managers and workers have also improved significantly. Regular safety messages are provided and managers are present at the worksite and visibly participating with safety committees. All these efforts are providing workers with effective means to exchange information with managers regarding safety concerns and improvements. Communication to the working level still presents some challenges. In a few cases, managers and supervisors are relying heavily on effective verbal communication between workers and supervisors in daily plan-of-the-day meetings. However, the locations and structure of some of these meetings is not conducive to effective verbal communication. Lunchrooms used for these meetings tend to be noisy, workers are spread out, and supervisors are not always aware whether workers are paying close attention. Some supervisors are very effective in these meeting venues, but others are not. Recognizing the challenges presented in expecting supervisors to effectively communicate information in these meetings, WTP construction project should consider some changes to the structure of the meetings. For example, rather than providing supervisors with several paragraphs of written information to be read to the workers in the large meetings, this information should be distributed to work teams in advance of the meeting and be reviewed in a smaller setting. Supervisors should be coached and mentored in techniques to lead the discussion with their workgroups, such as asking questions about the material, using personal experience to reinforce the message, moving around the group to get workers to change their focus during the meeting, changing the order of the meeting periodically, and asking individual workers to participate in presenting the material.

**Opportunity for Improvement:** WTP construction project should coach and mentor foremen, general foremen, and superintendents in effective techniques for leading daily meetings.

In 2008, HSS observed that WTP construction project was not effectively recognizing and rewarding workers for their individual contributions to safety improvements or effectively celebrating their corporate successes. In particular, WTP construction project was having difficulty ensuring that worker suggestions led to real improvements, particularly in selection and use of personal protective equipment (PPE). Multiple safety committees existed that were not well coordinated and sometimes were in competition for limited resources. Communication between projects was hindered and lessons-learned between projects were not effectively shared.

In January 2010, WTP construction project consolidated a number of committees into a single Construction Safety Alliance. In addition, WTP construction project formed a Zero Accident Council. The Zero Accident Council now serves a coordinating function between the Construction Safety Alliance, the Craft Safety Representatives, the Craft Safety Stewards, the Safety Education Through Observation (SETO) committee, the Electrical Safety Committee, and the Safety Assurance Organization. The result has been a significant improvement in how each of those committees functions. Improvement efforts are more effectively communicated, and the committees are better at identifying cooperative improvement efforts. Efforts to identify and implement more effective PPE are coordinated and discussed at the Zero Accident Council to ensure that WTP construction project will recognize real improvements. For example, WTP construction project has recently experienced several injuries resulting from dust and metal particles in workers' eyes despite wearing approved safety glasses. Although goggles are available for workers to use, they are uncomfortable and, in the warm weather, workers experience fogging of the goggles. The Construction Safety Alliance identified improved eyewear, and provided 200 pairs of goggles to workers across the project. Those workers were then surveyed to determine if the new eyewear would meet their needs. Results were positive, and shared with the Zero Accident Council. Based on the results, the Site Construction Manager made the decision in the Zero Accident Council meeting to make the improved eyewear available through the supply system.

In 2008, the Team noted that workers did not always receive timely feedback on issues. Although some workers are still experiencing frustration, in most cases it is because they have not sought feedback. WTP construction project has established "communication stations" in each of the lunchrooms and the Construction Office (Building-T1). These stations have pamphlets and posters, but also have a safety logbook where workers can enter safety concerns. Feedback is provided through these logbooks as issues are addressed. WTP construction project needs to ensure that logbooks are regularly updated as actions are revised or completed, but workers must also be willing to continue asking for updates.

A particularly effective communication tool adopted by WTP construction project is the weekly All-Hands Safety Meeting every Tuesday morning at 6:30 a.m. All workers at the project are expected to attend these meetings. They are conducted by each project area in the lunchrooms and last for approximately 45 minutes. These meetings provide managers with an opportunity to share a consistent message with the workers, recognize individual workers, and help workers focus on managers' priorities. Status of the project, lessons-learned, and new initiatives are

shared with workers. Although these meetings represent a significant investment in labor costs, WTP construction project is realizing benefit from more efficient operations, reduced accidents and injuries, and reduced rework.

In 2008, workers were aware of WTP construction project goal to reduce accident and injury rates by 20 percent that would result in each employee receiving an award. This award was seen by many employees as an incentive to allow accidents or injuries to go unreported. Additionally, the On-the-Spot award program had been discontinued. Since that time, WTP construction project has shifted its recognition efforts. The performance incentive for individual workers based on accident or injury rates has been discontinued, and On-the-Spot awards have been reinstated. By recognizing and rewarding workers' actions that improve safety, quality, cost and schedule, WTP construction project is seeing significant reductions in accident and injury rates, and workers do not feel peer pressure to not report injuries. In fact, workers experiencing first-aid cases are actively encouraged to report to the project medical provider. WTP construction project may be able to recognize additional improvements by establishing more specific proactive safety and health targets for managers. These goals should focus on manager presence at the worksite; training and coaching for foremen, general foremen, and superintendents; and participation, support, or sponsorship of safety and health improvement initiatives.

**Opportunity for Improvement:** WTP construction project should establish more specific proactive safety and health targets for managers that focus on training and coaching for foremen, general foremen, and superintendents; and participation, support, or sponsorship of safety and health improvement initiatives.

During this assessment, some difficulty was reported by foremen and general foremen regarding procurement of safety equipment, particularly related to fall protection. The ironworkers installing rebar extensively use self-retracting lanyards (SRL) as a means of fall protection. In 2008, use of these lanyards was observed to be strong, with most workers using two lanyards to provide continuous protection while moving across a wall. Since then, many lanyards have been taken out of service as they wear out, but have not been replaced. Since 2008, ORP has implemented cost control measures to ensure improved integrity of the procurement process. The additional justifications required for any purchase in excess of \$5,000 are seen by supervisors as cumbersome and contributing to procurement delays. Whether these delays are real or perceived, WTP construction project should review current procurement practices and ensure safety equipment purchases can be expedited while maintaining the integrity of the procurement process. As discussed later in Hazard Prevention and Controls, the lack of SRLs was contributing to workers positioning themselves where the lanyards might not be fully effective.

**Opportunity for Improvement:** WTP construction project should review current procurement practices and ensure safety equipment purchases can be expedited while maintaining the integrity of the procurement process.

In 2008, WTP construction project was experiencing difficulties addressing deficiencies raised by ORP related to implementation of Integrated Safety Management System (ISMS). Since that time, WTP construction project has completely revamped its work control program, including

the hazard analysis process. Improvements made in some cases demonstrate more effective processes than observed elsewhere in DOE. For example, as discussed in Worksite Analysis, WTP construction project has implemented a work planning and hazard analysis process that is effectively graded based on when the work is needed and how frequently the work is performed, and not on an assumed level of hazard associated with the work.

In some cases, WTP construction project still needs to improve engagement by foremen and general foremen in the safety improvement process. As discussed in the Hazard Prevention and Control section, workers are not always complying with safety expectations, and their direct supervisors are ignoring, or possibly even encouraging, these noncompliances. In particular, the Team was concerned that managers had not intervened and corrected extensive, unsafe behaviors related to overhead loads. The Team presented this issue to the project managers, who immediately implemented corrective actions.

In response, WTP construction project managers established a three-step improvement process. The first step was a review of procedures for handling loads, including ensuring all personnel responsibilities were clearly delineated, and reviewing whether whistles continued to be effective or if a different sound was needed to refocus worker attention. The second step was to raise worker awareness and eliminate complacency. WTP construction project managers conducted a safety pause on June 21, 2010. During this safety pause, foremen were directed to talk with their crews about keeping focus when a load is in the air, reviewing expectations for handling and responding to loads in the air, and reviewing events at other sites where loads had been dropped. All craft personnel were briefed on proper lifting and handling procedures. This briefing focused on: (1) controlling the flight path; (2) alerting surrounding workers; (3) complacency; and (4) proper positioning of personnel (i.e., not directly beneath a suspended load). Each project area conducted the safety pause briefing at different times during the day. Finally, the third step was to monitor hoisting and rigging practices related to flying loads by making the review of flying loads an area of focus for Senior Supervisory Watches and developing a SETO topic on flying loads.

These corrective actions were monitored by ORP facility representatives during the weeks following this assessment. Prior to issuing the draft report, ORP provided assurance to the Team that the corrective actions were effective in preventing similar problems. WTP construction project must continue to monitor worker and supervisor attention to flying loads and ensure the corrective actions remain effective for the long term. In addition, encouraging project personnel to pursue the Safety-Trained Supervisor (STS) certification discussed later in Employee Involvement may help raise supervisors' awareness of complacent behaviors and provide them with the skills to take immediate corrective actions to address those behaviors.

**Opportunity for Improvement:** WTP construction project must continue to monitor worker and supervisor attention to flying loads and ensure the corrective actions remain effective for the long term.

## Conclusion

In 2008, although senior managers were committed to safety and had put in place initiatives to improve safety, those efforts had not become institutionalized and workers were skeptical of managers' motives. Since that time, WTP construction project managers have successfully

demonstrated to the workforce their commitment to safe, efficient work. Although still seen by much of the workforce as a corporate initiative, many workers are cooperating with managers to drive improvements. Managers continue to be supportive and are committing resources to make improvements. Participation by middle managers has improved although some foremen and general foremen are still resistant. WTP construction project is aware of these issues and is working actively to make improvements where necessary. Communications have improved in that workers now believe messages from managers are credible. Process improvements made by WTP construction project in some cases represent best practices, and WTP construction project now has a fully functional ISMS. Changes made since 2008 sufficiently address improvements needed in the Management Leadership tenet of DOE-VPP, and WTP construction project now meets the Management Leadership criteria for participation at the Star level.

#### IV. EMPLOYEE INVOLVEMENT

Employees at all levels must continue to be involved in the structure and operation of the safety and health program and in decisions that affect employee health and safety. Employee involvement is a major pillar of a strong safety culture. Employee participation is in addition to the 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 welcomed. 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 its 2008 review, the Team concluded that, while the employees were concerned about their own personal safety, most had not been convinced that DOE-VPP would benefit them or their coworkers. Most workers thought that the safety culture at WTP construction project was primarily attributable to the professionalism of the workers, who took great pride in their work. They also felt that VPP was primarily for the benefit of managers. During this review, the Team observed a significant improvement in this attitude. Employees indicated in the interviews that they now believe that participation in DOE-VPP will indeed enhance their safety, and most workers fully support these efforts.

One possible reason for the employee discontent observed during the 2008 review was a lack of programs to recognize workers' suggestions and improvement efforts. The 2008 review Team recommended that WTP construction project institute a viable recognition program that provided the workers with positive reinforcement. WTP construction project acted on this recommendation and has instituted several awards programs, such as the On-the-Spot Awards, Taking Pride Award, Cash Award, and Project Recognition Award. These award programs recognize individuals and teams for outstanding contributions and achievements. Recognition awards are presented in the weekly All-Hands Meetings in each of the project areas and then again at the project-wide monthly Supervisors Review Meetings. The Team attended All-Hands Meetings for several project areas, as well as the Monthly Supervisors Safety Review Meeting where individuals were recognized. The presentation of awards included a short statement of why the worker was being recognized. This process has proven to be effective and WTP construction project is encouraged to continue or even expand its efforts to recognize individuals and groups. WTP construction project should also continue to identify effective means of recognition through noncash awards in addition to its existing awards.

The Employee Concerns Program (ECP) was another area identified for improvement in 2008. During that review, several employees expressed a fear of reprisal for raising safety concerns. Interviews with workers that had used ECP to address their concerns expressed dissatisfaction with the outcome. Workers, in general, were not aware of their right to use DOE-ORP ECP even though the contact information for DOE-ORP ECP was provided to them with the results of their claim investigation.

Since 2008, WTP construction project has implemented several improvements to educate the workforce about ECP. Computer-based training is offered annually to all WTP construction project employees and new hires are informed of ECP in the New Employee Orientation. They

are informed of their right to use DOE-ORP ECP in addition to WTP construction project ECP. WTP construction project also conducts an annual self-assessment of ECP that includes an all-employee survey to solicit employee feedback to measure the effectiveness of ECP. The ECP office publishes statistical information, including the number and type of concerns received and resolutions on the ECP Web page. This information is updated monthly and is available to all WTP construction project employees. The employee interviews indicated that the workers are aware of ECP and do not fear retribution for using WTP construction project ECP or the DOE-ORP ECP.

The 2008 review also noted that the safety committees were creating and tracking safety improvement plan items, but they were only having limited success in making improvements and closing those items. Contributing to that difficulty was a lack of manager participation in the development, problem resolution, and communication of corrective actions. Since 2008, WTP construction project has modified its approach to addressing employee-raised issues. The Construction Safety Alliance and the Zero Accident Council now review the status of issues and corrective actions as part of their regular meetings. Senior managers are present and participate in these meetings and help identify responsible managers to ensure that actions are addressed. Results of these meetings and corrective actions are shared in the weekly all-hands safety meetings.

In 2008, WTP construction project's behavior-based safety program, SETO, had several implementation issues in that it was functioning without a charter; some crafts were not participating in SETO observations; others found SETO to be a distraction; and observations were conducted only after the person to be observed was informed and, in some cases, prepared for the observation. Since then, WTP construction project has made significant improvements. A SETO charter has been implemented and most crafts are now participating. In addition, under a pilot program, observations are conducted without permission of the employee being observed. Through interviews and observations, the Team concluded that most of the employees have received training in SETO, support the program, and workers recognize its benefits. There are still some improvements upon which WTP construction project should focus. In particular, WTP construction project should review the correlation between the employee population and the number of qualified SETO observers. In particular, the Team noted that although ironworkers make up approximately 20 percent of the project population, only two ironworkers were actively participating in SETO observations. WTP construction project should ensure that all the crafts are proportionally represented in the SETO program.

**Opportunity for Improvement:** WTP construction project should ensure that all the crafts are proportionally represented in the SETO program.

In 2008, WTP construction project Construction Safety Council (CSC) did not function as a joint labor management council because it lacked the support and participation of middle managers. As a result, it did not fully meet the criteria for DOE-VPP. In addition, new members were nominated by standing committee members needing replacement with no apparent input coming from the craft leadership. In 2010, with the formation of the Construction Safety Alliance, WTP construction project has addressed this concern. Labor participation is no longer selected by the committee members. Labor leaders are asked to recommend personnel for open positions that exhibit positive attributes, energy, and are respected by the craftspeople. These candidates are



reviewed by the Construction Site Manager for approval. As a result, craftspeople now believe they are better represented on the Construction Safety Alliance.

The DOE-VPP Manual requires the safety council to be in existence for at least 12 months prior to a VPP assessment. While the Construction Safety Alliance has been in existence for only about 6 months, it assumed the responsibilities of CSC, which had been in existence prior to the 2008 assessment. Therefore, it effectively meets the intent of the 12-month requirement.

The 2008 review noted that the Craft Safety Representative (CSR) program was operating without a charter. WTP construction project has since developed a charter for the CSR program. The charter clearly defines how CSRs are selected, their roles and responsibilities, and the various functions they perform in the CSR program. The charter clearly identifies that CSRs' primary function is as a communication pathway between workers and managers. Some CSRs are very effective in this role, while others are not as effective. WTP construction project should consider coaching and mentoring CSRs to ensure they are all effective in translating and communicating worker concerns to managers, as well as communicating solutions back to the workers.

**Opportunity for Improvement:** WTP construction project should consider coaching and mentoring CSRs in communicating craft safety concerns to managers and communicating solutions back to workers.

In 2008, WTP construction project did not have a mechanism to document and trend the results of weekly self-inspections, thereby ensuring that the entire project is inspected at least monthly and that findings are trended across the project. In 2010, the Team found that the safety walkdown information is placed into the Teamwork database and is available to the area superintendents. Superintendents assign observations to a specific category, such as housekeeping, PPE, or cranes. The data in the Teamwork database are tracked and trended by area and the responsibility for closure is assigned to the area superintendent.

WTP construction project has corrected an issue identified in the 2008 review relating to the absence of Worker Rights posters. During this review, the Team found information posted on worker rights under title 10, Code of Federal Regulations (C.F.R.), part 851 (10 CFR 851), and the posters were posted in all lunchrooms throughout the construction project. These locations are accessible to workers and are in the daily pathway of a large majority of workers. The workers interviewed were familiar with the posters.

A program gaining support in general industry is the STS program. This program provides supervisors with a third-party certification by the Board of Certified Safety Professionals through the Council on Certification of Health, Environmental, and Safety Technologists. STS certification establishes a minimum competency in general safety practices. To achieve the certification, candidates must meet minimum safety training and work experience and demonstrate knowledge of safety fundamentals and standards by examination. Those holding STS certification must renew it annually and meet recertification requirements every 5 years. The program has proven effective at other sites in helping supervisors recognize potential unsafe acts and conditions and make improvements in safety. WTP construction project should consider encouraging and supporting supervisors and managers to pursue this certification.

<p><b>Opportunity for Improvement:</b> WTP construction project should consider encouraging and supporting supervisors and managers to pursue certification as an STS.</p>
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## Conclusion

Since the 2008 VPP assessment, employee involvement in safety has improved significantly. Formation of the Construction Safety Alliance and improvements in CSR and SETO programs has contributed to expanded worker involvement in safety. Communication has improved to the point where workers now actively identify and document safety issues in safety logbooks. Additionally, most workers now recognize that participation in VPP is beneficial to them, not just BNI. As a result of the improvements made since 2008, WTP construction project now meets the employee involvement tenet of DOE-VPP at the Star Level.

## V. WORKSITE ANALYSIS

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

The 2008 observations of HS-64 and the ORP ISMS reviews conducted in 2008 concluded that WTP construction project processes had not been effective in systematically identifying and analyzing hazards for all construction work activities as required by 10 CFR 851 and DOE Policy 450.4, *Safety Management System Policy*. Based on those reviews, as well as independent observations, the 2008 Team determined that the Worksite Analysis tenet of DOE-VPP had not yet been met. In the past 18 months, WTP construction project corrective actions have included implementation of a single, systematic process for all work and an activity hazard analysis for each scope of work. WTP construction project has implemented a new work control process with significant improvements. One of the improvements includes Automated Job Hazard Analysis (AJHA) tool with work control reviews. The use of Safety Task Analysis Risk Reduction Talk (STARRT) cards has also been improved and STARRT card use was frequently observed by the review Team this year. The STARRT card no longer functions as a stand-alone hazard analysis for a particular job, but instead serves as a prestart situational hazard analysis to assist the worker to identify new situational hazards that may not have been identified (or even been present) in the formal hazard analysis prepared for the task. The STARRT card also serves to focus the worker on the hazards and controls identified in the formal AJHA.

The Team reviewed the revised hazards analysis process. *Hazard Analysis and Control*, 24590-WTP-GPP-WPHA-002, section 5.3 establishes the hierarchy of analysis based upon complexity, detail, and the type of work being performed. The hierarchy is categorized into five types: (1) routine repetitive work; (2) new installation/removal (repetitive); (3) activity-specific/modification (nonrepetitive); (4) preapproved procedure or instruction; and (5) immediate mitigation nonrepetitive. In all cases, the work is required to utilize AJHA tool. This is a particularly noteworthy approach. At many other sites in the DOE complex, contractors have attempted a graded approach to hazard analysis based on an assumption of the outcome (e.g., high, medium, or low hazard). WTP construction project requires a Job Hazard Analysis (JHA) for all work, but has graded the approach based on how the results will be used. For example, for routine work requiring a procedure, a JHA is used to translate controls into a procedure or standard. For construction work packages, JHA is used as a stand-alone document in the work package and is reviewed prior to performing tasks. Prior to work being released, the work control center performs a check to ensure hazards and controls have been identified properly, and AJHA and other hazard controls have been documented as appropriate. Some interviews with workers suggested that the work packages are not always readily available at the worksite and that the change control process for the worksite located documents is insufficient. Specifically, when line changes are made to a large document, there is no change control sheet that identifies that change has been made and the date it occurred. While this change would typically be captured in the prejob brief and described to the worker, new or reassigned workers would not be

aware of these changes. WTP construction project does have job-boxes located in most of the areas for storage of the active project work packages. However, Team requests for work packages in the field sometimes resulted in lengthy delays as the packages were located, indicating either a lack of a sufficient number of packages in the field or inadequate location for their retention.

**Opportunity for Improvement:** WTP construction project should assure that work packages are readily available in designated areas in the field for workers' and managers' review and that a comprehensive change control system is formally included in the site work packages.

The Team reviewed several types of work packages and discussed AJHA process at length with the industrial safety professionals. AJHA has a reference to analysis or sampling documents from which controls are derived. For example, a work document for roof work will have the referenced WTP construction project procedure on Fall Prevention and Protection, 24590-WTP-TNGC-SA-07-000022 in the "Hazard and Control Requirements" section of AJHA. Although this represents an excellent way to refer to the rationale for control selection, the worker may have difficulty accessing the information due to the lack of computers or written procedures. Discussions with Industrial Hygiene professionals indicated that the foreman could provide the information should a worker request it. WTP construction project should review how the analysis identifying other controls is documented. In some cases, AJHA team may identify that there are no regulatory or procedural controls already identified. In those cases, the basis for controls derived by the AJHA team may not be clearly captured. These controls may be selected based upon craft experience or best management practices. WTP construction project should consider strengthening the process by better documentation of the analysis, especially for those controls that are not driven by procedure or other regulatory driver.

In other cases, some controls in work packages were not clearly specified. Use of words, such as "proper" or "appropriate" in the controls section, indicates that the final analysis is being left for the worker rather than specifying the control. Further enhancements could be realized through clearer control description rather than generic descriptors.

**Opportunity for Improvement:** WTP construction project should consider strengthening the Work Site Analysis process by better documentation of the analysis, especially for those controls that are not driven by procedures or other regulatory drivers, and through clear description of controls rather than generic descriptors.

During the 2008 review, the Team determined that SMEs and safety professionals were not effectively engaged in the hazard analysis process. Workers were relied upon to conduct most of the hazard identification and implement the necessary controls with little input from SMEs or safety professionals. A lack of hazard analysis training or expertise was evident and JHAs and STARRT cards were not well understood. During this review, the use of STARRT cards, engagement of safety professionals, and participation of the workforce in walking down jobs was very evident. WTP construction project process requires that the safety professional and the workers perform a walkdown of the job and all input is specifically annotated in the process. The workforce with the expertise and skills necessary to perform the tasks is actively engaged

and displayed ownership of its responsibility for providing input and utilizing the STARRT cards. Numerous interviews with craft workers supported the Team observations in this area.

A number of employees expressed concern to the Team that multiple crafts in the same work area, performing different activities, may present hazards that are not effectively communicated between crafts. These hazards are intended to be identified and discussed as part of the morning superintendents meetings, plan-of-the-day meetings, and crew briefings. WTP construction project process requires supervisors to evaluate the day's work and assess encroachment impacts that may exist. Observations by the Team indicated that, in some cases, these hazards are discussed, but are not captured on STARRT cards. WTP should consider adding a question to the STARRT card addressing hazards present at the worksite due to other jobs as a means of reminding workers to discuss those hazards before starting work.

**Opportunity for Improvement:** WTP construction project should consider adding a question to the STARRT card addressing hazards present at the worksite due to other jobs as a means of reminding workers to discuss those hazards before starting work.

In 2008, the Team interviewed craft workers about the Employee Job Task Analysis (EJTA) process. An opportunity for improvement was identified to include employees in the development and review of these documents. Interviews with workers on this review revealed that workers were included in the development of, and were aware of, the content and purpose of the EJTA.

WTP construction project has a process to investigate and evaluate incidents. The process appears to be effective and consistent with DOE expectations. There have been no issues to date concerning this system. To the project's credit, reports generated by HS-64 and the ORP ISMS verification have been utilized to their advantage. Performance of causal analysis and development of corrective actions have generated very positive results as witnessed in this review.

WTP construction project performs tracking and trending of various events and publishes a quarterly report utilizing the guidance from Occurrence Reporting and Performance Analysis Guide, (DOE G 231.1-1) and Performance Management Handbook, volume 5. Data are collected from the Occurrence Reporting and Processing System (ORPS) events and BNI reporting processes. The Team reviewed the reports for fiscal year (FY) 2009 and queried WTP construction project on the types of analysis performed with the data collected. Trend data indicate that there is downward trend in ORPS reportable event frequency since 2006. In July and August 2009, there was an increase in insect-related, first-aid reports. Hand injuries were the major contributor to ORPS recordable events in 2009. WTP construction project initiated a safety awareness campaign to reduce those types of injuries and conversations with the foreman and workers validated that the campaign has been effective. BNI concluded that approximately 45 percent of all injuries occur during the workers' first year on the project. This statistic has caused WTP construction project to develop ways to reduce unwanted behaviors through SETO observations and safety topics presented by crafts at All-Hands Meetings.

## **Conclusion**

WTP construction project has significantly improved the Work Site Analysis process by taking advantage of reviews by HS-64 and ORP. WTP construction project has also utilized previous findings and instituted effective corrective actions. The formal hazard analysis process is significantly improved from the 2008 review. AJHA process has been implemented with satisfactory results. Tracking and trending of data collected is effective and WTP construction project is managing the incidents well. As a result of these improvements, WTP construction project now meets the tenet for Work Site Analysis.

## VI. HAZARD PREVENTION AND CONTROLS

Once hazards have been identified and analyzed, they must be eliminated (by substitution or changing work methods) or addressed by the implementation of effective controls (engineered controls, administrative controls, or PPE). Equipment maintenance processes to ensure compliance with requirements and emergency preparedness must also be implemented where necessary. Safety rules and work procedures must be developed, communicated, and understood by supervisors and employees. These rules/procedures must also be followed by everyone in the workplace to prevent mishaps or control their frequency/severity.

The observations of HS-64 and ORP Integrated Safety Management (ISM) reviews conducted in 2008 concluded that WTP construction project work control processes contained systemic weaknesses that resulted in periodic, ineffective identification and analysis of hazards and controls. While the emphasis of the conclusions focused on insufficient analysis, the resulting unidentified controls remained a weakness that needed to be addressed in order to satisfy the Hazard Prevention and Control tenet. WTP construction project's corrective actions for HS-64 and ORP ISM findings have resulted in a significantly improved work control process (as described in the Worksite Analysis section) that provides much better identification of hazard controls.

Employees were generally knowledgeable of the requirements to wear safety glasses, safety shoes, hardhats, and electrical safety PPE. However, the Team observed several instances where personnel failed to comply with the requirements for these general PPE. In most cases, this failure involved the use of shaded eye protection indoors or workers forgetting to don their safety gloves while handling materials. Overall, these instances were not the norm for the observations by the Team, but BNI should consider emphasizing its expectations for proper use of PPE with the workforce and the direct supervisors who oversee them in the work areas.

Most observed work was performed in accordance with established controls; however, two issues were identified that failed to meet the established controls, and one of those issues required immediate response from WTP construction project.

At the T-21 concrete forms shop, wooden concrete forms were being stored too close to a building without a fire protection system. WTP construction project Fire Protection program requires a 20-foot setback for emergency ingress and egress, as well as best-practice combustible fuel storage. Team discussions with the fire protection engineer confirmed that the storage of the wooden concrete forms was inside the 20-foot setback. WTP construction project personnel took immediate action to move the forms to a suitable location. WTP construction project should consider installing postings that clearly state this requirement in order to avoid recurrence.

Significantly, the Team observed that hoisting and rigging flight plans were not being appropriately used at the High-Level waste project. Several Team observations identified individuals standing or moving under suspended loads. While controls are established requiring that flight plans be used, this control was not consistently followed. WTP construction project managers took immediate steps to address the Team's concern. A Safety Pause was held the following day focusing on the importance of performing flight plans per project requirements. Corrective actions for this issue are discussed in greater detail in the Management Leadership section.

In 2009, WTP construction project replaced the onsite medical provider. Onsite medical services are now provided under contract with MedCor, Inc. When the new provider started, it made several changes to the physical examination process. Physical testing requirements were established based on employee job category and employee job task analyses. To provide a thorough physical examination and try to uncover any medical concerns, MedCor, Inc., initially adopted some practices that concerned workers. When those concerns were identified, WTP construction project immediately directed MedCor, Inc., to alter its practices. These changes, although quickly implemented, were not effectively communicated to workers. As a result, some workers interviewed during this assessment remained concerned about how the annual physicals were being conducted. To address these concerns, WTP construction project, in conjunction with MedCor, Inc., should consider developing an informational package, such as a trifold pamphlet, that is provided to each employee when they are notified of a scheduled medical examination. The pamphlet should clearly explain what the employee can expect to be asked or do during the physical examination. This will help employees understand that previous concerns have been addressed, as well as give employees a basis to raise concerns should the examination deviate from those expectations.

**Opportunity for Improvement:** WTP construction project, in conjunction with MedCor, Inc., should consider developing an informational package, such as a trifold pamphlet, that is provided to each employee when they are notified of a scheduled medical examination.

As discussed in the Management Leadership section, the method for the use of two retractable safety lines per worker for fall protection during rebar emplacement, as commended in the 2008 review, was not observed during this review. The use of the dual SRL for fall protection allowed rebar installers to maintain proper safety line alignment for longer periods of time. Use of the single SRL limited the workers position to no greater than 30 degrees from center for the fall protection to be effective. The use of two arrest systems simultaneously eliminated the need for the worker to ensure they did not exceed the 30-degree travel limit and to perform more work in between safety line system relocations. Discussions with workers and foremen suggested that new WTP construction project procurement changes created delays in procurement of new SRLs to replace the older SRLs removed from service. As a result, the limited number of SRLs has forced the workers to resort to single SRL use. WTP construction project's review of the current procurement process and corrections recommended in the Management Leadership section should adequately address this issue.

In 2008, rumors regarding worker injuries abounded. It was clear that WTP construction project had not been effective in communicating the facts of injuries and accidents to workers in a timely manner. This contributed to workers' perceptions that WTP construction project was not accurately reporting or recording accidents and injuries. In response to that observation, BNI initiated and completed changes to several applicable procedures regarding injury and illness reporting and feedback of that information to the workers. The revisions to the procedures emphasized providing greater clarity and flowdown of requirements for recording and dissemination of injury/illness data and changes in the notification process.

Supervisor safety meetings have been implemented at the first of each month where the previous month's injuries and illnesses are discussed with all the general foremen, superintendents, and workers, along with an injury summary provided during these safety meetings. WTP



construction project also issues “Safety Bulletins” and “Just-in-Time Bulletins” to further disseminate injury information to the workers.

## **Conclusion**

Since the 2008 review, WTP construction project has satisfactorily implemented changes to the work control process to ensure proper identification and control of hazards based on the more comprehensive analysis. The project has also successfully addressed the concerns regarding injury/illness reporting and dissemination of that information to the workers. Concerns raised during this assessment regarding controls on movement of overhead loads, while significant, were quickly and effectively addressed by project managers; and those improvements were then reviewed by ORP and determined to be effective. As a result of these actions and improvements, WTP has now met the expectations of the Hazard Prevention and Control tenet.

## **VII. SAFETY AND HEALTH TRAINING**

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

The 2008 review determined that Safety and Health Training was robust and effective in addressing the hazards associated with working at WTP construction project. No opportunities for improvement in training were identified. Based upon the documents reviewed and the field verification, this VPP tenet had been met. Therefore, this progress assessment did not specifically address worker training.

## VIII. CONCLUSIONS

Since the initial assessment in 2008, WTP construction project has made significant improvement in its workforce safety culture. Communications between workers and managers are positive, and efforts by managers to increase worker involvement and participation are paying significant dividends. WTP construction project managers have successfully demonstrated to the workforce their commitment to safe, efficient work. Many workers are now cooperating with managers to drive improvements. Managers continue to be supportive, and are committing resources to make improvements. Participation by middle managers has also improved with some resistance by a few foremen and general foremen. WTP construction project is aware of these issues and is working actively to make improvements where necessary. Communications have improved in that workers now believe messages from managers are credible. Process improvements made by WTP construction project in some cases represent best practices, and WTP construction project now has a fully functional ISMS.

Similarly, employee involvement is markedly improved. Most workers now believe that participation in VPP would improve their personal safety and that of their coworkers. They are actively participating in raising safety issues where warranted and are using the safety logbooks to document those issues. Improvements in SETO process have also improved the quality and effectiveness of safety observations, and the resulting data are being used to make additional improvements.

WTP construction project has significantly improved the work site analysis process by taking advantage of past reviews by HS-64 and ORP. WTP construction project has utilized previous findings and instituted effective corrective actions. The formal hazard analysis process is significantly improved from the 2008 review. AJHA process has been implemented with satisfactory results. Tracking and trending of data collected is effective and WTP construction project is managing the incidents well.

Implementation of controls has improved significantly. Most work observations by the Team reflected proper use of PPE, although some instances were noted where some workers exhibited complacency regarding use of safety glasses and work gloves. Managers, supervisors, safety professionals, and craft safety representatives are working diligently to change these behaviors. In addition, complacency with overhead loads was noted; WTP construction project managers took immediate and effective actions to address these behaviors. WTP construction project also successfully addressed the concerns raised in 2008 regarding injury/illness reporting and dissemination of that information to the workers.

As a result of these improvements, WTP construction project now meets or exceeds the criteria for participation in DOE-VPP at the Star level. As such, the Team is recommending that WTP construction project continue to participate in DOE-VPP, and be elevated to Star status.

## Appendix A

### Onsite VPP Audit Team Roster

#### Management

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